

Table S1. Culture medium and pretreatment conditions

No.	Medium	No.	Code	Pretreatment
1	BA	1	LCLDYZMA30D	storage under 4 dgree for 7 days , then under -20 dgree for 30 days, finally growth in seawater medium for 30 days
2	BHI	2	lcldyz25d	storage under 4 dgree for 7 days , then under -20 dgree for 30 days, finally growth in GCB + 5% blood + 10% rumen juice for 25 days
3	CBA	3	lcldyzma25d	storage under 4 dgree for 7 days , then growth in seawater medium for 25 days
4	CMM	4	LCYZO10D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 10 days
5	CMPYG	5	LCYZO13D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 13 days
6	CYCFA	6	LCYZO15d	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 15 days
7	DA	7	LCYZO16d	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 16 days
8	FA	8	LCYZO17d	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 17 days
9	GSYCFA	9	LCYZO18d	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 18 days
10	GYCFA	10	LCYZO2D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 2 days
11	IYCFA	11	LCYZO3D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 3 days
12	LGA	12	LCYZO6D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 6 days
13	M17	13	LCYZO7D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 7 days
14	MA	14	LCYZO8D	storage under 4 dgree in BD standard for 10 days , then growth in F culture for 8 days
15	MGYCFA	15	LCIYCFAYZA0D	growth of the 4 degree stored samples in IYCFA medium for 0 days
16	MRS	16	lciYCFAYZA10d	growth of the 4 degree stored samples in IYCFA medium for 10 days
17	PYG	17	lciYCFAYZA14d	growth of the 4 degree stored samples in IYCFA medium for 14 days
18	RA	18	lciYCFAYZA16d	growth of the 4 degree stored samples in IYCFA medium for 16 days
19	SA	19	lciYCFAYZA17d	growth of the 4 degree stored samples in IYCFA medium for 17 days
20	SYCFA	20	lciYCFAYZA18d	growth of the 4 degree stored samples in IYCFA medium for 18 days
21	TBA	21	LCIYCFAYZA1D	growth of the 4 degree stored samples in IYCFA medium for 1 days
22	TSB	22	lciYCFAYZA20d	growth of the 4 degree stored samples in IYCFA medium for 20 days

23	YCFA
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23	lclYCFAYZA2d	growth of the 4 degree stored samples in IYCFA medium for 2 days
24	LCIYCFAYZA3d	growth of the 4 degree stored samples in IYCFA medium for 3 days
25	lclYCFAYZA6d	growth of the 4 degree stored samples in IYCFA medium for 6 days
26	lclYCFAYZA7d	growth of the 4 degree stored samples in IYCFA medium for 7 days
27	lclYCFAYZA9d	growth of the 4 degree stored samples in IYCFA medium for 9 days
28	LCYZA0D	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 0 days
29	lclYZA10d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 10 days
30	lclYZA12d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 12 days
31	lclYZA13d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 13 days
32	lclYZA14d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 14 days
33	lclYZA15d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 15 days
34	lclYZA17d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 17 days
35	lclYZA19d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 19 days
36	LCYZA1D	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 1 day
37	lclYZA21d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 21 days
38	LCYZA2D	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 2 days
39	LCYZA3D	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 3 days
40	lclYZA5d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 5 days

41	IcYZA6d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 6 days
42	IcYZA7d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 7 days
43	IcYZA8d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 8 days
44	IcYZA9d	storage under 4 degree in Lytic for 10 days , then growth in F +5%Blood+10% Fluid for 9 days
45	LCYZTO25D	growth of the 4 degree stored samples in Versa TREK1 for 25 days
46	LCMAYZO0D	growth of the 4 degree stored samples in seawater medium for 0 days
47	LCMAYZO10D	growth of the 4 degree stored samples in seawater medium for 10 days
48	LCMAYZO13D	growth of the 4 degree stored samples in seawater medium for 13 days
49	LCMAYZO15d	growth of the 4 degree stored samples in seawater medium for 15 days
50	LCMAYZO16d	growth of the 4 degree stored samples in seawater medium for 16 days
51	LCMAYZO17d	growth of the 4 degree stored samples in seawater medium for 17 days
52	LCMAYZO18d	growth of the 4 degree stored samples in seawater medium for 18 days
53	LCMAYZO1D	growth of the 4 degree stored samples in seawater medium for 1 day
54	LCMAYZO20d	growth of the 4 degree stored samples in seawater medium for 20 days
55	LCMAYZO25D	growth of the 4 degree stored samples in seawater medium for 25 days
56	LCMAYZO2D	growth of the 4 degree stored samples in seawater medium for 2 days
57	LCMAYZO3D	growth of the 4 degree stored samples in seawater medium for 3 days
58	LCMAYZO6D	growth of the 4 degree stored samples in seawater medium for 6 days
59	LCMAYZO7D	growth of the 4 degree stored samples in seawater medium for 7 days
60	LCMAYZO8D	growth of the 4 degree stored samples in seawater medium for 8 days
61	IdIYCFAYZA0d	growth of the -20 degree stored samples in IYCFA medium for 0 days
62	IdIYCFAYZA10d	growth of the -20 degree stored samples in IYCFA medium for 10 days
63	IdIYCFAYZA11d	growth of the -20 degree stored samples in IYCFA medium for 11 days

64	IdIYCFAYZA3d	growth of the -20 degree stored samples in IYCFA medium for 3 days
65	IdIYCFAYZA4d	growth of the -20 degree stored samples in IYCFA medium for 4 days
66	IdIYCFAYZA5d	growth of the -20 degree stored samples in IYCFA medium for 5 days
67	IdIYCFAYZA6d	growth of the -20 degree stored samples in IYCFA medium for 6 days
68	IdIYCFAYZA7d	growth of the -20 degree stored samples in IYCFA medium for 7 days
69	IdIYCFAYZA8d	growth of the -20 degree stored samples in IYCFA medium for 8 days
70	Idyza0d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+10%Fluid for 0 day
71	IdYZA10d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 10 days
72	IdYZA13d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 13 days
73	Idyza15d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 15 days
74	IdYZA17d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 17 days
75	Idyza1d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 1 day
76	IdYZA20d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 20 days
77	IdYZA23d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 23 days
78	IdYZA27d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 27 days
79	LdYZA2d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 2 days
80	IdYZA31d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 31 days
81	IdYZA38d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 38 days

82	ldyza3d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 3 days
83	ldYZA42d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 42 days
84	ldYZA4d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 4 days
85	ldYZA5d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 5 days
86	ldYZA6d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 6 days
87	ldYZA7d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 7 days
88	ldYZA8d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 8 days
89	ldYZA9d	growth of the -20 degree stored samples in Lytic medium for 10 days, then growth in F +5%Blood+11%Fluid for 9 days
90	LDYZTO24D	growth of the -20 degree stored samples in Versa TREK1 for 24 days
91	LDYZTO25D	growth of the -20 degree stored samples in Versa TREK1 for 25 days
92	LDMAYZO24D	growth of the -20 degree stored samples in seawater medium for 24 days
93	LDMAYZO25D	growth of the -20 degree stored samples in seawater medium for 25 days
94	yza	growth of the fresh samples in BD Lytic for 210 days, then growth in F +5%Blood+11%Fluid for 0 day
95	YZTA10d	growth of the fresh samples in BD Lytic for 210 days, then growth in F +5%Blood+11%Fluid for 10 days
96	YZTA3d	growth of the fresh samples in BD Lytic for 210 days, then growth in F +5%Blood+11%Fluid for 3 days
97	YZTA7d	growth of the fresh samples in BD Lytic for 210 days, then growth in F +5%Blood+11%Fluid for 7 days
98	YZTO1d	growth of the fresh samples in Versa TREK1 for 1 day

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68C_bin.101	97.32	0.34	HQ
F68C_bin.104	93.34	0	HQ
F68C_bin.111	97.65	0.34	HQ
F68C_bin.16	96.64	0	HQ
F68C_bin.19	91.55	3.36	HQ
F68C_bin.2	99.18	0	HQ
F68C_bin.20	91.25	0.74	HQ
F68C_bin.25	97.65	0	HQ
F68C_bin.26	90.91	1.7	HQ
F68C_bin.27	91.16	0.34	HQ
F68C_bin.32	99.3	1.17	HQ
F68C_bin.41	90.2	1.34	HQ
F68C_bin.42	91.1	2.04	HQ
F68C_bin.43	94.6	1.67	HQ
F6D7_bin.32	94.6	1.67	HQ
F68C_bin.44	99.33	0	HQ
F68C_bin.47	98.55	1.76	HQ
F68C_bin.49	96.16	0.19	HQ
F68H_bin.37	95.42	0.56	HQ
F68W_bin.15	94.3	0.19	HQ
F6DH_bin.120	96.53	0.56	HQ
F68C_bin.51	99.06	0	HQ
F6D7_bin.95	99.06	1.89	HQ
F68C_bin.54	98.82	2.4	HQ
F68C_bin.62	94.23	0.67	HQ
F68C_bin.70	96.63	2.08	HQ
F68C_bin.74	95.91	0	HQ
F68C_bin.76	97.47	1.58	HQ
F68C_bin.88	92.7	2.25	HQ
F68C_bin.89	100	0	HQ
F68N_bin.55	94.66	0.28	HQ
F68C_bin.94	97.5	0.62	HQ
F68C_bin.98	96.15	1.88	HQ
F68D_bin.103	97.54	3.74	HQ
F68D_bin.105	96.11	0	HQ
F68D_bin.12	92.52	1.43	HQ
F68D_bin.14	100	0.08	HQ
F68D_bin.19	95.74	0	HQ
F68C_bin.92	100	0	HQ
F68D_bin.21	100	0	HQ
F68G_bin.35	100	0	HQ
F68H_bin.60	100	0.8	HQ
F68J_bin.33	100	0.8	HQ
F68M_bin.53	100	0	HQ
F6D7_bin.99	91.29	1.66	HQ
F6D8_bin.35	100	0	HQ
F6DB_bin.111	100	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MX_bin.135	100	0	HQ
F6MY_bin.118	100	0	HQ
F68D_bin.30	98.79	0	HQ
F68D_bin.39	96.98	0.34	HQ
F68D_bin.41	92.6	1.34	HQ
F68D_bin.42	91.33	1.02	HQ
F68D_bin.46	97.52	0	HQ
F68G_bin.21	90.78	0	HQ
F68D_bin.47	99.12	0.58	HQ
F68D_bin.49	93.35	1.61	HQ
F68D_bin.5	96.15	0	HQ
F68D_bin.53	96.5	0.71	HQ
F68D_bin.56	95.66	1.96	HQ
F68D_bin.62	95.07	2.03	HQ
F68D_bin.65	97.82	0	HQ
F68D_bin.68	91.11	2.4	HQ
F68D_bin.69	96.4	0.81	HQ
F68D_bin.7	95.71	0.71	HQ
F68D_bin.70	96.64	0	HQ
F68D_bin.71	98.73	1.74	HQ
F6MY_bin.48	99.33	1.96	HQ
F68D_bin.72	90.73	1.1	HQ
F68D_bin.75	100	0	HQ
F68D_bin.77	93.15	0.81	HQ
F6MX_bin.131	93.15	2.42	HQ
F68D_bin.79	92.62	0.67	HQ
F68D_bin.80	92.84	1.35	HQ
F68D_bin.81	100	0.94	HQ
F68M_bin.7	100	0.94	HQ
F68D_bin.82	99.97	0.9	HQ
F68D_bin.83	94.63	1.34	HQ
F68D_bin.86	93.24	3.94	HQ
F68D_bin.89	97.5	0.38	HQ
F68K_bin.15	99.1	1.47	HQ
F6DE_bin.91	97.12	0.38	HQ
F68D_bin.9	98.31	0	HQ
F68D_bin.90	100	0.7	HQ
F68D_bin.93	97.96	0	HQ
F68D_bin.94	95.39	0.35	HQ
F68D_bin.97	94.36	2.33	HQ
F68D_bin.99	98.96	0	HQ
F68E_bin.10	99.37	1.27	HQ
F68U_bin.24	92.89	0.63	HQ
F6DA_bin.15	91.46	1.18	HQ
F68E_bin.11	96.35	0.38	HQ
F68E_bin.13	94.96	1.35	HQ
F68E_bin.17	95.64	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68E_bin.18	97.28	4.88	HQ
F68E_bin.19	96.76	2.85	HQ
F68E_bin.20	93.7	0	HQ
F68E_bin.21	97.96	0	HQ
F68E_bin.22	93.02	0.72	HQ
F68E_bin.23	98.66	0	HQ
F68E_bin.27	98.4	0	HQ
F68E_bin.28	95.97	1.34	HQ
F68E_bin.3	98.07	1.45	HQ
F68E_bin.30	99.37	1.9	HQ
F68E_bin.31	100	0.11	HQ
F68E_bin.32	96.24	1.6	HQ
F68E_bin.38	98.2	0.9	HQ
F68E_bin.39	95.32	0.58	HQ
F6DB_bin.86	90.35	1.75	HQ
F68E_bin.4	100	0	HQ
F68E_bin.41	90.27	2.5	HQ
F68E_bin.42	96.94	0.56	HQ
F68E_bin.44	100	0.81	HQ
F68E_bin.45	95.2	1.29	HQ
F68E_bin.47	95.75	0.09	HQ
F68E_bin.6	97.95	0.88	HQ
F68F_bin.1	92.6	1.34	HQ
F68F_bin.10	90.34	1.7	HQ
F68C_bin.79	90.04	0.2	HQ
F68D_bin.8	94.15	0	HQ
F68F_bin.100	98.83	0	HQ
F68H_bin.56	97.58	0	HQ
F68K_bin.52	97	0.58	HQ
F68R_bin.23	95.91	0	HQ
F68T_bin.28	96.2	0.68	HQ
F6DB_bin.110	94.15	0	HQ
F6DG_bin.9	98.45	0	HQ
F6MY_bin.32	97.66	1.56	HQ
F68F_bin.101	95.08	0.69	HQ
F68F_bin.103	91.88	1.5	HQ
F68F_bin.108	100	0	HQ
F68H_bin.73	99.4	0	HQ
F68T_bin.53	99.4	0	HQ
F68F_bin.111	91.83	0	HQ
F68F_bin.16	96.98	0	HQ
F68F_bin.19	97.88	0.3	HQ
F68F_bin.2	91.11	2.54	HQ
F68F_bin.23	100	0.8	HQ
F68F_bin.25	96.92	1.22	HQ
F68F_bin.28	99.35	0.96	HQ
F68F_bin.30	96.64	0.67	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68F_bin.33	97.27	0	HQ
F68F_bin.34	96.39	0.63	HQ
F68F_bin.35	100	2.42	HQ
F68F_bin.37	92.08	0.75	HQ
F68F_bin.38	99.19	0	HQ
F68F_bin.39	97.38	1.25	HQ
F68F_bin.4	98.23	0	HQ
F68N_bin.18	90.17	1.65	HQ
F68F_bin.41	98.66	0	HQ
F68K_bin.87	98.66	0	HQ
F68M_bin.11	97.09	0.02	HQ
F68F_bin.43	97.99	0	HQ
F68F_bin.46	97.3	0.84	HQ
F68F_bin.5	99.33	0.83	HQ
F68F_bin.50	90.39	3.3	HQ
F68F_bin.51	95.97	1.2	HQ
F68F_bin.52	97.01	0.8	HQ
F68F_bin.55	97.1	0.24	HQ
F68F_bin.57	97.4	1.25	HQ
F68F_bin.59	92.67	1.08	HQ
F68F_bin.64	96.42	0	HQ
F68F_bin.68	97.58	0.12	HQ
F68F_bin.7	94.35	0	HQ
F68F_bin.70	99.37	0	HQ
F68T_bin.48	92.03	0.63	HQ
F6MX_bin.42	94.94	0	HQ
F68F_bin.74	92.26	1.01	HQ
F68F_bin.77	98.12	0.62	HQ
F68F_bin.81	95.97	1.7	HQ
F68F_bin.82	92.42	2.25	HQ
F68F_bin.84	97.13	1.93	HQ
F68F_bin.85	93.96	0.89	HQ
F68F_bin.89	94.35	1.01	HQ
F68F_bin.9	96.64	0.68	HQ
F6MY_bin.134	95.56	2.27	HQ
F68F_bin.90	98.88	0.37	HQ
F68F_bin.91	96.81	0.34	HQ
F68F_bin.98	95.05	3.77	HQ
F68F_bin.99	98.07	0.6	HQ
F68G_bin.10	92.21	0.67	HQ
F68D_bin.88	90.57	1.84	HQ
F68G_bin.12	95.43	1.19	HQ
F68G_bin.13	97.99	0	HQ
F68G_bin.14	90.56	1.27	HQ
F68G_bin.20	93.09	1.31	HQ
F68G_bin.22	96.81	0.67	HQ
F68G_bin.26	93.96	1.36	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68G_bin.27	99.12	0.24	HQ
F68G_bin.28	99.28	0.97	HQ
F68G_bin.29	92.52	0.95	HQ
F68G_bin.31	94.97	4.13	HQ
F68G_bin.33	92	4	HQ
F68G_bin.37	97.05	1.7	HQ
F68G_bin.39	97.78	0.63	HQ
F68G_bin.4	97.6	0	HQ
F68N_bin.63	96.8	0	HQ
F68G_bin.41	92.74	1.88	HQ
F68C_bin.82	96.6	0	HQ
F68G_bin.46	97.27	0	HQ
F68W_bin.72	96.6	0	HQ
F6DH_bin.44	96.6	0	HQ
F68G_bin.47	93.35	0.81	HQ
F68G_bin.50	96.95	0.89	HQ
F68R_bin.64	96.14	4.31	HQ
F6D7_bin.47	98.07	1.21	HQ
F6DG_bin.86	92.18	1.55	HQ
F6MY_bin.45	97.21	0.97	HQ
F68G_bin.52	93.16	0.59	HQ
F68G_bin.53	96.57	3.49	HQ
F68E_bin.14	95.96	0.56	HQ
F68G_bin.54	98.76	0	HQ
F68G_bin.55	92.34	0.03	HQ
F68G_bin.56	99.19	0.81	HQ
F68G_bin.57	95.58	0.63	HQ
F68G_bin.6	98.73	0.32	HQ
F68V_bin.49	91.5	0.63	HQ
F68G_bin.61	96.64	3.25	HQ
F68G_bin.62	91.92	0.74	HQ
F68G_bin.63	92.04	0.67	HQ
F68G_bin.65	92.7	1.97	HQ
F68G_bin.66	91.95	0.67	HQ
F68G_bin.67	95.5	0	HQ
F68G_bin.68	93.85	0.06	HQ
F68G_bin.7	96.45	0.35	HQ
F68G_bin.72	91.28	0.67	HQ
F68G_bin.73	97.32	2.01	HQ
F68G_bin.74	99.46	0	HQ
F6MY_bin.83	93.14	4.01	HQ
F68G_bin.76	91.84	1.87	HQ
F68G_bin.77	90.44	1.01	HQ
F68G_bin.8	97.35	1.61	HQ
F68G_bin.85	95.62	2.27	HQ
F68E_bin.26	94.85	2.26	HQ
F68G_bin.80	98.02	1.17	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68H_bin.1	98.5	0	HQ
F68K_bin.41	94.36	0	HQ
F68N_bin.25	97.1	1.57	HQ
F68P_bin.38	96.87	0	HQ
F68U_bin.54	95.86	0.56	HQ
F6MY_bin.44	94.36	0.01	HQ
F68H_bin.11	90.38	1.11	HQ
F68H_bin.14	95.8	0	HQ
F68H_bin.15	100	0.62	HQ
F68H_bin.16	95.42	3.67	HQ
F68H_bin.19	96.59	0.1	HQ
F68H_bin.2	96.14	3.67	HQ
F68H_bin.22	95.21	0.6	HQ
F68G_bin.51	97.36	0.05	HQ
F68H_bin.24	97.36	0	HQ
F68W_bin.7	96.98	0.5	HQ
F6DH_bin.14	96.6	0	HQ
F68H_bin.25	98.66	2.01	HQ
F6DB_bin.82	91.83	3.36	HQ
F68H_bin.28	97.09	0.24	HQ
F68H_bin.29	92.6	1.34	HQ
F68H_bin.3	95.89	1.21	HQ
F68H_bin.30	90.54	0.69	HQ
F68H_bin.31	97.48	1.01	HQ
F68H_bin.39	97.01	2.01	HQ
F68H_bin.4	98.66	0.67	HQ
F68H_bin.40	97.32	0	HQ
F68H_bin.44	94.92	1.83	HQ
F68H_bin.47	98.5	0.62	HQ
F6DB_bin.15	91.92	3.13	HQ
F68H_bin.49	95.19	1.51	HQ
F68H_bin.50	99.18	0.54	HQ
F68H_bin.52	95.48	0.8	HQ
F68H_bin.55	97.99	3.36	HQ
F68H_bin.6	97.27	0	HQ
F68H_bin.63	98.49	0.34	HQ
F68F_bin.65	92.42	0	HQ
F68H_bin.66	97.4	0.74	HQ
F68H_bin.7	99.19	0	HQ
F68H_bin.70	94.48	1.1	HQ
F68H_bin.72	100	1.87	HQ
F68H_bin.79	99.07	0.08	HQ
F68H_bin.80	91.66	3.86	HQ
F68J_bin.10	95.12	0.63	HQ
F68J_bin.11	98.8	0.19	HQ
F68J_bin.14	98.83	1.15	HQ
F68J_bin.16	92.32	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68J_bin.19	92.54	1.61	HQ
F68D_bin.50	97.62	3.28	HQ
F68G_bin.19	97.98	1.92	HQ
F68J_bin.20	99.23	0.77	HQ
F68J_bin.22	95.77	0	HQ
F68J_bin.23	97.32	0	HQ
F68J_bin.25	97.75	1.12	HQ
F68J_bin.27	91.89	0.13	HQ
F68J_bin.29	95.97	3.86	HQ
F68J_bin.3	98.82	0.29	HQ
F68J_bin.32	91.01	3.08	HQ
F68J_bin.34	97.53	2.01	HQ
F68J_bin.37	90.51	2.93	HQ
F68J_bin.41	95.31	0.56	HQ
F68J_bin.42	93.15	1.61	HQ
F68J_bin.43	92.4	0.7	HQ
F68J_bin.44	99.4	1.2	HQ
F68J_bin.45	94.8	0.04	HQ
F68J_bin.5	97.4	1.25	HQ
F68R_bin.1	91.09	2.71	HQ
F68J_bin.51	94.43	1.86	HQ
F68J_bin.53	97.99	0	HQ
F68J_bin.55	98.32	0	HQ
F68J_bin.59	90.25	0	HQ
F68J_bin.6	94.29	0	HQ
F68J_bin.62	100	0.81	HQ
F68J_bin.65	99.33	0	HQ
F68C_bin.95	97.75	1.12	HQ
F68D_bin.23	93.26	2.81	HQ
F68J_bin.67	100	1.12	HQ
F68K_bin.38	97.56	2.25	HQ
F68P_bin.50	98.88	1.12	HQ
F6DA_bin.25	98.88	1.12	HQ
F6DG_bin.65	94.38	2.25	HQ
F68J_bin.69	95.63	0.17	HQ
F68J_bin.7	99.42	0	HQ
F68J_bin.72	94.57	0.81	HQ
F68J_bin.74	97.4	1.25	HQ
F68J_bin.76	94.63	0.17	HQ
F68J_bin.79	95.95	0.5	HQ
F68J_bin.81	100	0	HQ
F68J_bin.9	99.24	0	HQ
F68K_bin.1	92.12	0	HQ
F68K_bin.10	93.2	0.34	HQ
F68K_bin.103	90.94	0	HQ
F68K_bin.105	94.86	1.06	HQ
F68K_bin.108	94.27	2.94	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68K_bin.18	93.16	2.24	HQ
F68K_bin.2	98.4	2.79	HQ
F68K_bin.24	99.2	0	HQ
F68K_bin.25	98.8	1.2	HQ
F68K_bin.26	91.02	1.63	HQ
F68K_bin.28	97.2	0	HQ
F68R_bin.90	97.43	0.4	HQ
F6DB_bin.61	96.15	0.34	HQ
F68K_bin.3	93.19	1.25	HQ
F68K_bin.32	97.76	0	HQ
F68K_bin.34	92.36	2.68	HQ
F68K_bin.35	98.11	0	HQ
F68K_bin.37	92.74	1.08	HQ
F68K_bin.39	97.32	0	HQ
F68K_bin.44	98.8	0	HQ
F68K_bin.46	93.06	0.67	HQ
F68K_bin.47	93.86	0	HQ
F68K_bin.49	92.36	0	HQ
F68K_bin.50	91.28	0.67	HQ
F68K_bin.51	91.32	2.19	HQ
F68K_bin.54	98.64	0	HQ
F68K_bin.55	94.36	1.13	HQ
F68K_bin.61	97.78	1.31	HQ
F68K_bin.66	96.45	0	HQ
F68K_bin.69	97.16	0	HQ
F6DE_bin.65	93.36	2.33	HQ
F68K_bin.72	91.02	4.11	HQ
F68K_bin.75	99.48	1.45	HQ
F68K_bin.77	97.84	1.38	HQ
F68K_bin.78	93.86	2.35	HQ
F68K_bin.79	97.99	0	HQ
F68K_bin.8	90.08	1.15	HQ
F68K_bin.82	96.63	0.67	HQ
F68K_bin.83	99.33	1.01	HQ
F68K_bin.91	97.32	0.34	HQ
F68K_bin.96	91.13	0.74	HQ
F68K_bin.98	95.3	0	HQ
F68M_bin.12	99.19	1.08	HQ
F68M_bin.13	99.6	1.49	HQ
F68M_bin.15	99.63	0	HQ
F68M_bin.2	99.42	0.13	HQ
F68M_bin.22	96.58	1.35	HQ
F68V_bin.1	90.61	4.05	HQ
F68D_bin.6	95.83	0.48	HQ
F68M_bin.24	100	0	HQ
F68T_bin.26	97.36	1.12	HQ
F6D8_bin.87	97	2	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DA_bin.5	95.43	0	HQ
F6DB_bin.18	94.23	0.16	HQ
F6DE_bin.52	99.6	0.18	HQ
F6DG_bin.62	94.71	4.25	HQ
F6MX_bin.88	99.04	0	HQ
F6MY_bin.85	94.71	0.96	HQ
F68M_bin.26	96.8	0	HQ
F68M_bin.27	90.64	4.01	HQ
F68M_bin.3	90.1	3.58	HQ
F68M_bin.30	94.3	2.55	HQ
F68D_bin.44	97.15	1.14	HQ
F68M_bin.31	96.53	0.67	HQ
F6D9_bin.19	95.02	1.98	HQ
F68M_bin.32	99.19	0.81	HQ
F68M_bin.33	98.93	0	HQ
F68M_bin.34	97.99	2.01	HQ
F68M_bin.35	95.13	0.67	HQ
F68M_bin.37	91.22	0.68	HQ
F68M_bin.39	93.96	1.7	HQ
F68M_bin.40	94.77	2.22	HQ
F68M_bin.41	95.58	0.68	HQ
F68M_bin.42	97.54	0.42	HQ
F6DA_bin.63	91.89	0.84	HQ
F68M_bin.46	95.3	1.34	HQ
F68M_bin.49	90.9	1.24	HQ
F68M_bin.50	98.58	0.71	HQ
F68M_bin.55	98.39	1.61	HQ
F68M_bin.57	97.27	0	HQ
F6MX_bin.4	92.53	1.73	HQ
F68M_bin.6	98.52	0.32	HQ
F68M_bin.60	95.03	0.57	HQ
F68M_bin.61	97.32	0.69	HQ
F68V_bin.26	96.56	1.07	HQ
F6MY_bin.60	94.63	1.46	HQ
F68M_bin.65	92.6	1.34	HQ
F6DB_bin.99	92.6	1.34	HQ
F68M_bin.67	97.57	0.88	HQ
F68M_bin.68	91.53	0	HQ
F68M_bin.70	98.94	1.06	HQ
F68M_bin.72	90.84	4.76	HQ
F68K_bin.63	96.06	0.56	HQ
F68M_bin.73	97.96	0.37	HQ
F6D7_bin.87	93.48	1.6	HQ
F68M_bin.76	96.32	0	HQ
F68M_bin.78	100	0	HQ
F68M_bin.84	96.09	3.34	HQ
F68M_bin.85	99.32	1.02	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68M_bin.86	93.15	1.09	HQ
F68N_bin.12	95.91	0	HQ
F68N_bin.16	93.11	0.97	HQ
F68N_bin.2	96.2	0.46	HQ
F68N_bin.21	99.33	0	HQ
F68N_bin.22	98.95	0.02	HQ
F68N_bin.27	93.97	1.83	HQ
F68N_bin.28	96.49	2.42	HQ
F68N_bin.32	98.24	0.29	HQ
F68N_bin.39	94.1	2.04	HQ
F68N_bin.44	97.27	0	HQ
F68N_bin.50	93.66	0.05	HQ
F68N_bin.54	90.09	0.37	HQ
F68N_bin.56	99.33	0	HQ
F68N_bin.57	98.66	1.01	HQ
F68N_bin.58	93.94	0.67	HQ
F68N_bin.6	90.7	2.57	HQ
F68N_bin.60	98.68	0.6	HQ
F68N_bin.64	92.6	1.34	HQ
F68N_bin.65	97.99	0	HQ
F68N_bin.66	93.13	0.98	HQ
F68M_bin.58	100	1.61	HQ
F68N_bin.67	99.19	0.16	HQ
F68N_bin.68	95.17	1.7	HQ
F68N_bin.69	99.59	0	HQ
F68N_bin.73	97.63	0.59	HQ
F68R_bin.15	92.94	1.48	HQ
F6MY_bin.100	94.38	0.59	HQ
F68K_bin.14	96.81	0.97	HQ
F68N_bin.75	97.48	0.34	HQ
F68N_bin.76	93.98	1.87	HQ
F68N_bin.78	97.99	0	HQ
F68N_bin.79	97.99	0	HQ
F6DE_bin.57	97.32	0	HQ
F68P_bin.11	98.21	1.93	HQ
F68P_bin.14	98.75	0.62	HQ
F68H_bin.67	90.6	0.67	HQ
F68P_bin.18	92.62	0	HQ
F68P_bin.20	96.73	4	HQ
F68P_bin.21	94.61	0.17	HQ
F68P_bin.32	95.23	0.19	HQ
F68P_bin.39	99.06	0.31	HQ
F68P_bin.41	93.01	1.02	HQ
F68P_bin.43	92.43	0.91	HQ
F68P_bin.46	98.66	0	HQ
F68P_bin.5	100	0.81	HQ
F68P_bin.55	95.95	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68P_bin.6	93.5	0	HQ
F68P_bin.7	97.52	1.53	HQ
F68P_bin.9	97.1	0.6	HQ
F68R_bin.103	97.18	0.93	HQ
F68R_bin.109	91.95	0.34	HQ
F68R_bin.11	98.11	0	HQ
F68R_bin.110	93.09	0.67	HQ
F68R_bin.118	92.62	0.67	HQ
F68R_bin.121	93.06	3.36	HQ
F68R_bin.124	91.11	0.19	HQ
F68R_bin.19	92.6	1.34	HQ
F68R_bin.28	94.13	0.02	HQ
F68R_bin.31	99.59	0	HQ
F68D_bin.74	98.39	0	HQ
F68F_bin.18	98.39	0.81	HQ
F68R_bin.34	98.39	0	HQ
F68R_bin.35	96.21	0	HQ
F68R_bin.37	90.79	0.05	HQ
F68R_bin.4	94.65	0.6	HQ
F68R_bin.42	94.22	2.28	HQ
F68R_bin.43	92.21	0.34	HQ
F68R_bin.52	97.32	0	HQ
F68R_bin.56	100	1.69	HQ
F68F_bin.58	98.66	0	HQ
F68R_bin.59	98.66	0	HQ
F68R_bin.6	91.51	0.94	HQ
F68R_bin.62	96.42	0	HQ
F68R_bin.66	91	0.7	HQ
F68R_bin.69	93.35	0.81	HQ
F68D_bin.26	96.6	0	HQ
F68R_bin.7	97.27	0	HQ
F68T_bin.86	95.26	0.44	HQ
F68R_bin.71	95.41	0.34	HQ
F68R_bin.72	96.2	0.71	HQ
F68R_bin.73	94.97	1.34	HQ
F68R_bin.74	92.61	2.94	HQ
F68R_bin.75	90.6	0.67	HQ
F68R_bin.77	91.12	1.27	HQ
F68T_bin.50	90.17	3.8	HQ
F68R_bin.79	98.11	1.86	HQ
F68K_bin.92	98.14	0.62	HQ
F68N_bin.48	98.14	1.24	HQ
F68R_bin.81	98.14	0.62	HQ
F68R_bin.86	98.39	0.81	HQ
F68R_bin.92	97.67	0.24	HQ
F68R_bin.98	95.32	1.57	HQ
F68T_bin.101	99.78	0.67	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68T_bin.102	97.7	0.68	HQ
F68T_bin.106	98.66	0.34	HQ
F68T_bin.18	98.16	0.92	HQ
F68T_bin.20	100	0.24	HQ
F68T_bin.21	97.32	0	HQ
F68T_bin.27	92.43	2.7	HQ
F68T_bin.31	95.27	0.59	HQ
F68T_bin.32	97.36	0	HQ
F68K_bin.88	97.99	1.45	HQ
F68T_bin.35	91.32	0	HQ
F68T_bin.37	98.54	0.88	HQ
F68T_bin.4	90.92	1.52	HQ
F68T_bin.40	97.59	0.9	HQ
F68T_bin.41	97.99	1.01	HQ
F68T_bin.42	96.26	0.08	HQ
F68T_bin.44	96.7	1.42	HQ
F68T_bin.45	92.89	1.11	HQ
F68T_bin.46	98.66	0	HQ
F68T_bin.5	99.3	1.19	HQ
F68T_bin.51	97.65	0	HQ
F6D8_bin.27	96.98	0	HQ
F68T_bin.52	94.54	0	HQ
F68T_bin.59	98.77	0	HQ
F68T_bin.66	97.47	0	HQ
F68E_bin.36	90.54	2.27	HQ
F68K_bin.9	99.04	0.96	HQ
F68N_bin.19	94.87	1.92	HQ
F68T_bin.67	99.52	0.96	HQ
F6D7_bin.44	96.79	0.99	HQ
F6DB_bin.23	97.12	0.96	HQ
F6DE_bin.28	99.52	0.96	HQ
F6DG_bin.87	99.52	1.44	HQ
F6MY_bin.39	98.72	1.44	HQ
F68F_bin.73	97.53	0.64	HQ
F68T_bin.69	94.53	0	HQ
F68U_bin.102	95.54	0.57	HQ
F68T_bin.70	98.56	1.53	HQ
F68T_bin.73	96.55	1.02	HQ
F68T_bin.74	97.68	2.85	HQ
F68T_bin.76	97.08	1.25	HQ
F68T_bin.79	95.9	1.57	HQ
F68T_bin.82	90.6	0	HQ
F68T_bin.84	95.39	0.17	HQ
F68T_bin.85	94.41	0	HQ
F68T_bin.88	96.6	0	HQ
F68T_bin.90	97.55	0.2	HQ
F68U_bin.101	96.33	1.61	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68U_bin.103	90.2	0.49	HQ
F68F_bin.62	92.37	4.09	HQ
F68U_bin.106	96.84	1.84	HQ
F68U_bin.107	97.12	0.62	HQ
F6DH_bin.110	95	1.38	HQ
F68U_bin.11	98.14	1.55	HQ
F68U_bin.17	93.67	4.02	HQ
F68U_bin.18	98.8	1.8	HQ
F68U_bin.19	97.75	0	HQ
F68U_bin.20	95.33	0	HQ
F68U_bin.21	98.39	4.44	HQ
F68U_bin.23	98.1	1.27	HQ
F6DG_bin.41	94.58	1.27	HQ
F6MY_bin.106	93.88	0.79	HQ
F68U_bin.3	94.1	0.48	HQ
F6DH_bin.9	91.37	2.16	HQ
F68U_bin.30	98.66	0	HQ
F68W_bin.62	98.66	0	HQ
F6DE_bin.59	98.66	0	HQ
F6DH_bin.76	98.66	0.02	HQ
F68U_bin.34	96.23	1.25	HQ
F68U_bin.38	93.46	0	HQ
F68U_bin.39	99.03	2.09	HQ
F68U_bin.40	93.54	1.8	HQ
F68W_bin.9	91.29	3.92	HQ
F6DH_bin.68	91.29	2.69	HQ
F68U_bin.41	96.26	3.34	HQ
F68U_bin.47	98.07	0	HQ
F68U_bin.49	96.31	0.67	HQ
F68U_bin.5	96.08	0	HQ
F6DH_bin.46	94.15	1.08	HQ
F68U_bin.51	91.56	2.62	HQ
F68U_bin.55	100	1.12	HQ
F68U_bin.56	94.62	0.86	HQ
F68U_bin.6	99.23	0	HQ
F68U_bin.61	90.84	2.01	HQ
F68U_bin.65	97.27	0.34	HQ
F68U_bin.66	97.36	0	HQ
F68K_bin.95	97.99	0	HQ
F68U_bin.68	97.99	0	HQ
F68U_bin.7	90.62	1.34	HQ
F68U_bin.70	91.95	0	HQ
F68U_bin.71	92.98	1.75	HQ
F68U_bin.75	94.27	1.04	HQ
F68U_bin.78	93.96	0	HQ
F68U_bin.79	99.69	0.15	HQ
F68U_bin.80	98.11	0.79	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68U_bin.81	99.03	1.28	HQ
F68U_bin.91	92.13	0.71	HQ
F68N_bin.31	93.83	0.43	HQ
F68U_bin.96	98.99	0	HQ
F68W_bin.57	98.99	0	HQ
F6DH_bin.64	98.83	0	HQ
F68U_bin.97	93.35	1.48	HQ
F6DH_bin.54	90.93	1.98	HQ
F68U_bin.98	98.66	0.67	HQ
F68W_bin.3	97.32	0.67	HQ
F6DH_bin.5	96.64	0.67	HQ
F68V_bin.108	98.99	1.79	HQ
F68V_bin.109	98.28	0	HQ
F68V_bin.11	93.74	1.08	HQ
F68J_bin.21	97.63	0.67	HQ
F68V_bin.112	97.48	0.34	HQ
F68V_bin.113	93.92	2.93	HQ
F68M_bin.75	95.61	4.9	HQ
F68T_bin.3	96.96	0.38	HQ
F68V_bin.116	99.04	0.38	HQ
F6DA_bin.39	98.53	0.9	HQ
F6DB_bin.31	91.86	3.6	HQ
F6DE_bin.62	95.64	0.38	HQ
F6DG_bin.106	99.23	1.25	HQ
F68V_bin.117	99.33	0.34	HQ
F68V_bin.13	97.76	0	HQ
F68V_bin.14	96.64	0.67	HQ
F68V_bin.15	99.33	1.01	HQ
F68V_bin.2	93.97	2.66	HQ
F68V_bin.20	99.28	1.22	HQ
F68V_bin.22	97.28	0	HQ
F68V_bin.23	97.27	0	HQ
F68V_bin.27	92.26	0	HQ
F68V_bin.28	91.44	0.67	HQ
F68K_bin.21	92.62	1.34	HQ
F68V_bin.31	94.32	1.34	HQ
F68V_bin.35	100	1.21	HQ
F68V_bin.37	99.2	0	HQ
F68V_bin.42	93.29	0.67	HQ
F68C_bin.109	91.97	1.22	HQ
F68V_bin.45	99.42	0.13	HQ
F6MY_bin.77	93.11	1.41	HQ
F68V_bin.47	92.48	2.68	HQ
F68V_bin.50	97.53	0.15	HQ
F68V_bin.52	90.6	0	HQ
F68V_bin.53	94.44	1.05	HQ
F68V_bin.54	93.46	2.2	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68V_bin.58	99.33	0.22	HQ
F68V_bin.59	98.6	1.52	HQ
F68V_bin.6	97.1	0	HQ
F68V_bin.60	91.25	2.01	HQ
F68D_bin.91	95.02	0	HQ
F68H_bin.34	97.91	0	HQ
F68M_bin.17	92.57	0	HQ
F68N_bin.70	90.32	0	HQ
F68U_bin.9	96.67	0.56	HQ
F68V_bin.62	98.88	0	HQ
F68V_bin.65	94.58	1.46	HQ
F68V_bin.66	95.36	0.45	HQ
F68V_bin.68	98.99	0.34	HQ
F6MX_bin.81	90.91	1.76	HQ
F68V_bin.71	99.33	0	HQ
F68V_bin.72	94.13	0.67	HQ
F68V_bin.74	95.9	0.95	HQ
F68V_bin.76	97.79	0	HQ
F68V_bin.8	98.66	0	HQ
F68V_bin.83	95.51	0.81	HQ
F68V_bin.84	96.42	0	HQ
F68V_bin.85	97.32	0.67	HQ
F68V_bin.93	91.34	0.58	HQ
F68W_bin.1	96.57	0.48	HQ
F68U_bin.35	91.03	0	HQ
F68W_bin.100	91.03	0	HQ
F6DH_bin.113	91.03	0	HQ
F68W_bin.101	97.03	0.36	HQ
F6DH_bin.50	94.37	0	HQ
F68W_bin.108	95.25	0.87	HQ
F6DH_bin.32	93.83	0.63	HQ
F68W_bin.12	90.6	0	HQ
F6DH_bin.57	90.6	1.34	HQ
F68W_bin.13	94.33	1.53	HQ
F68W_bin.17	94.51	1.96	HQ
F6DH_bin.128	91.35	2.23	HQ
F68J_bin.57	96.23	0	HQ
F68K_bin.58	96.53	0.24	HQ
F68W_bin.30	99.06	0	HQ
F6DH_bin.79	99.06	0	HQ
F68W_bin.36	94.63	2.03	HQ
F68W_bin.37	93.82	0	HQ
F6DH_bin.82	93.26	1.12	HQ
F68W_bin.38	94.03	0.3	HQ
F68U_bin.37	94.17	0.02	HQ
F68W_bin.54	98.02	0.47	HQ
F6DH_bin.69	93.93	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68W_bin.6	93.59	3.13	HQ
F68W_bin.77	94.19	2.04	HQ
F6DH_bin.102	92.38	2.45	HQ
F68W_bin.78	97.45	0	HQ
F6DH_bin.88	97.45	0	HQ
F68W_bin.8	94.8	1.87	HQ
F68W_bin.80	99.28	0	HQ
F6DH_bin.90	98.79	0	HQ
F68W_bin.87	94.91	0.5	HQ
F6DH_bin.72	96.04	0.88	HQ
F68W_bin.88	90.82	2.34	HQ
F68W_bin.90	92.03	1.34	HQ
F6D7_bin.1	91.61	0.81	HQ
F6D7_bin.10	92.08	1	HQ
F6D7_bin.107	95.71	3.75	HQ
F6D7_bin.11	91.93	0	HQ
F6D7_bin.13	95.3	3.69	HQ
F6D7_bin.14	97.96	0	HQ
F6D7_bin.15	92.38	0.11	HQ
F6D7_bin.16	96.61	2.66	HQ
F6D7_bin.17	93.4	2.01	HQ
F6D7_bin.2	97.97	0	HQ
F68D_bin.52	93.2	2.03	HQ
F6D7_bin.22	93.88	1.35	HQ
F6D7_bin.26	98.81	0.59	HQ
F6D7_bin.27	94.59	0.68	HQ
F6D7_bin.28	98.66	1.01	HQ
F6D7_bin.3	99.28	1.93	HQ
F6D7_bin.30	96.29	1.72	HQ
F6D7_bin.31	92.42	3.37	HQ
F6D7_bin.33	97.04	1.21	HQ
F6D7_bin.35	95.89	0.95	HQ
F6D7_bin.38	93.82	0.56	HQ
F6D7_bin.4	95.97	0	HQ
F6D7_bin.40	91.59	0.04	HQ
F6D7_bin.43	95.97	0	HQ
F6D7_bin.46	93.61	0.63	HQ
F6D7_bin.48	95.57	0.63	HQ
F6D7_bin.5	99.54	2.63	HQ
F6D7_bin.51	96.53	0.68	HQ
F6D7_bin.52	97.99	0	HQ
F6D7_bin.54	97.99	0.13	HQ
F6D7_bin.56	96.58	0	HQ
F6D7_bin.58	97.99	0	HQ
F6D7_bin.59	95.01	2.17	HQ
F6D7_bin.6	97.27	0.34	HQ
F6D7_bin.73	99.33	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D7_bin.74	93.76	4.37	HQ
F68C_bin.66	92.6	1.34	HQ
F6D7_bin.77	92.6	1.34	HQ
F6D7_bin.81	93.89	2.48	HQ
F6D7_bin.82	97.65	1.34	HQ
F6D7_bin.83	95.56	0.05	HQ
F6D7_bin.84	98.66	0	HQ
F6D7_bin.86	96.42	0	HQ
F6D7_bin.90	96.08	0.37	HQ
F6D7_bin.94	99.08	0.07	HQ
F6D7_bin.97	90.19	2.24	HQ
F68R_bin.36	97.99	0.67	HQ
F6D8_bin.11	96.64	0	HQ
F6D8_bin.14	97.18	0.72	HQ
F6D8_bin.17	99.38	0.9	HQ
F6D8_bin.18	95.8	0	HQ
F68M_bin.36	97.32	0.36	HQ
F6D8_bin.19	97.99	0	HQ
F6D8_bin.20	98.83	0	HQ
F6D8_bin.21	96.5	1.3	HQ
F6D8_bin.22	95.93	0	HQ
F6D8_bin.25	93.23	1.64	HQ
F68R_bin.80	92.6	0	HQ
F6D8_bin.26	98.64	0	HQ
F6D8_bin.3	95.65	2.22	HQ
F6D8_bin.30	90.71	0	HQ
F6D8_bin.37	99.18	0	HQ
F6D8_bin.38	96.64	0.73	HQ
F6D8_bin.41	96.26	2.08	HQ
F6D8_bin.42	97.04	0.74	HQ
F6D8_bin.43	99.33	0	HQ
F6D8_bin.47	97.82	0	HQ
F6D8_bin.49	96.49	4	HQ
F6D8_bin.5	95.74	3.9	HQ
F6D8_bin.50	92.4	0.7	HQ
F6D8_bin.51	94.41	1.57	HQ
F6D8_bin.52	97.27	0	HQ
F6D8_bin.54	100	0.81	HQ
F6D8_bin.55	96.09	1.34	HQ
F6D8_bin.57	92.95	0	HQ
F6D8_bin.58	93.96	0.84	HQ
F6DG_bin.43	99.06	2.36	HQ
F6D8_bin.6	92.6	1.34	HQ
F68D_bin.92	97.58	0.81	HQ
F68N_bin.3	99.19	1.61	HQ
F6D8_bin.63	99.19	0.81	HQ
F6D8_bin.64	93.29	0.34	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D8_bin.66	96.62	2.24	HQ
F6D8_bin.68	99.33	1.01	HQ
F6D8_bin.7	92.7	4.49	HQ
F6D8_bin.8	100	0	HQ
F6D8_bin.84	99.28	2.9	HQ
F6D8_bin.86	95.56	0.05	HQ
F6D8_bin.9	98.66	0	HQ
F6D8_bin.91	99.52	1.2	HQ
F6D8_bin.92	97.32	0	HQ
F6D8_bin.93	97.9	1.17	HQ
F68G_bin.49	92.6	1.34	HQ
F6D9_bin.1	92.6	1.34	HQ
F6D9_bin.10	99.36	4.46	HQ
F6D9_bin.11	91.07	2.68	HQ
F6D9_bin.12	99.9	1.29	HQ
F6D9_bin.14	96.77	1.73	HQ
F6D9_bin.15	100	0.7	HQ
F6D9_bin.17	99.33	0.67	HQ
F6D9_bin.18	93.29	1.34	HQ
F6D9_bin.2	98.66	0.67	HQ
F6D9_bin.23	97.58	0	HQ
F6D9_bin.25	94.28	0.56	HQ
F6D9_bin.29	93.27	1.98	HQ
F6D9_bin.3	99.28	0	HQ
F6D9_bin.30	93.29	1.34	HQ
F6D9_bin.33	95.75	0	HQ
F6D9_bin.35	99.4	0.6	HQ
F68T_bin.7	96.27	0.54	HQ
F6D9_bin.39	98.92	0.27	HQ
F68D_bin.3	92.07	2.88	HQ
F6D8_bin.45	97.28	1.68	HQ
F6D9_bin.4	98.56	1.6	HQ
F6D9_bin.40	96.92	1.58	HQ
F6D9_bin.41	97.44	0.67	HQ
F6D9_bin.42	97.27	0	HQ
F6DA_bin.48	97.27	0	HQ
F6D9_bin.45	94.43	1.41	HQ
F6D9_bin.48	93.81	1.64	HQ
F6D9_bin.5	97.54	0.09	HQ
F6D9_bin.50	99.33	0.67	HQ
F6D9_bin.53	97.65	0.34	HQ
F6DH_bin.51	97.48	0.34	HQ
F6D9_bin.54	93.96	0	HQ
F6D9_bin.59	96.23	0.5	HQ
F6D9_bin.63	94.09	0.71	HQ
F6D9_bin.64	97.05	0	HQ
F6D9_bin.65	99.33	0.34	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D9_bin.69	98.65	0.9	HQ
F6D9_bin.7	97.32	0.67	HQ
F6D9_bin.71	95.95	0	HQ
F6D9_bin.73	96.24	0	HQ
F6D9_bin.74	94.56	0.62	HQ
F6D9_bin.77	98.66	0.34	HQ
F6D9_bin.78	91.55	1.28	HQ
F68N_bin.9	91.53	0	HQ
F6D9_bin.79	100	0	HQ
F6DB_bin.63	94.92	0	HQ
F68E_bin.34	100	0.13	HQ
F68M_bin.1	100	0	HQ
F68V_bin.38	100	0	HQ
F6D9_bin.8	100	0	HQ
F68N_bin.15	100	0	HQ
F68R_bin.18	100	0	HQ
F68T_bin.78	97.6	0	HQ
F68U_bin.100	100	0	HQ
F6D9_bin.81	100	0	HQ
F6D9_bin.82	97.32	0	HQ
F6D9_bin.84	94.06	2.1	HQ
F6D9_bin.89	95.75	1.34	HQ
F6D9_bin.93	100	1.24	HQ
F6DA_bin.13	97.73	0.84	HQ
F6DA_bin.18	99.03	0	HQ
F6DA_bin.19	97.99	0.34	HQ
F6DA_bin.22	97.6	0.6	HQ
F68K_bin.94	93.26	2.95	HQ
F68U_bin.48	99.24	0.74	HQ
F6DA_bin.29	99.62	0.1	HQ
F6DA_bin.3	91.1	1.52	HQ
F6DA_bin.32	95.99	0	HQ
F6DA_bin.33	93.96	1.69	HQ
F6DA_bin.35	94.28	4.36	HQ
F6DA_bin.36	93.6	2.41	HQ
F6DA_bin.37	91.93	1.34	HQ
F68N_bin.29	91.05	3.27	HQ
F68P_bin.10	99.02	0.9	HQ
F68U_bin.36	95.19	0.38	HQ
F6DA_bin.41	99.04	0.13	HQ
F6DA_bin.43	97.32	0	HQ
F6DA_bin.44	93.67	0.63	HQ
F6DA_bin.45	96.44	0.19	HQ
F6DA_bin.47	91.08	2.42	HQ
F6DA_bin.49	98.66	0	HQ
F6DA_bin.51	98.49	2.72	HQ
F6DA_bin.53	92.51	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DA_bin.55	94.57	0.17	HQ
F6DA_bin.57	93.1	1.34	HQ
F6DA_bin.60	92.2	0.02	HQ
F6DA_bin.61	99.06	0	HQ
F6DA_bin.64	94.06	0.56	HQ
F6DA_bin.66	90.77	0.97	HQ
F6DA_bin.69	92.62	0.67	HQ
F6DA_bin.7	97.99	0.34	HQ
F6MY_bin.22	90.49	1.85	HQ
F6DA_bin.70	97.99	0	HQ
F6DA_bin.72	100	1.27	HQ
F6DA_bin.75	93.89	3.6	HQ
F6DA_bin.76	99.33	0	HQ
F6DA_bin.77	100	0.48	HQ
F6DA_bin.79	90.27	0	HQ
F6DA_bin.82	98.14	1.55	HQ
F6DA_bin.85	96.18	0.32	HQ
F6DA_bin.86	91.3	0	HQ
F6DA_bin.87	92.36	0	HQ
F6DA_bin.88	97.32	0	HQ
F68C_bin.22	95.97	0	HQ
F68N_bin.72	95.82	0.03	HQ
F6DA_bin.9	95.97	0	HQ
F6DA_bin.93	97.32	0	HQ
F6D9_bin.68	94.23	2.15	HQ
F6DA_bin.95	97.99	0	HQ
F6DA_bin.97	91.78	2.17	HQ
F6DB_bin.10	97.63	3.45	HQ
F68R_bin.33	98.37	1.53	HQ
F68T_bin.63	100	1.34	HQ
F6DB_bin.102	99.35	0.19	HQ
F6DB_bin.103	97.99	0	HQ
F6DB_bin.105	93.24	2.36	HQ
F6DB_bin.107	93.62	2.01	HQ
F68R_bin.61	93.93	1.68	HQ
F6DB_bin.109	97.32	0	HQ
F6MY_bin.91	98.64	0.67	HQ
F6DB_bin.11	94.1	1.27	HQ
F6DB_bin.113	93.74	0	HQ
F6DB_bin.114	93.92	1.35	HQ
F6DB_bin.116	90.4	4.11	HQ
F6DB_bin.117	98.66	0.89	HQ
F6DB_bin.12	98.66	0	HQ
F6DB_bin.13	99.14	1.88	HQ
F6DB_bin.14	91.95	0.75	HQ
F6DB_bin.16	100	0.48	HQ
F6DB_bin.19	96.58	0.28	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DB_bin.2	97.27	0	HQ
F6DB_bin.21	96.12	1.52	HQ
F6DB_bin.24	98.39	0	HQ
F6DB_bin.29	95.97	0.94	HQ
F6DB_bin.3	93.25	2.53	HQ
F6DB_bin.32	98.75	0.62	HQ
F6DB_bin.33	97.83	0	HQ
F6DB_bin.36	96.5	1.52	HQ
F6DB_bin.38	99.37	0	HQ
F6DB_bin.43	100	0.23	HQ
F6DB_bin.44	97.99	0	HQ
F6DB_bin.45	95.3	0.67	HQ
F6MY_bin.18	91.37	0.67	HQ
F6DB_bin.47	98.63	0	HQ
F6DB_bin.48	96.85	1.2	HQ
F6DE_bin.77	100	2.08	HQ
F6DB_bin.51	97.32	0	HQ
F6DB_bin.54	98.66	0	HQ
F6DB_bin.56	99.29	0	HQ
F6DB_bin.58	90.56	2.91	HQ
F6DB_bin.6	99.33	1.34	HQ
F68N_bin.5	92.06	1.08	HQ
F6DB_bin.65	98.11	0.47	HQ
F6DB_bin.66	90.86	2.8	HQ
F6DB_bin.67	92.62	1.68	HQ
F6DB_bin.68	97.52	0	HQ
F68R_bin.65	95.97	0	HQ
F68V_bin.10	97.32	0.73	HQ
F6D7_bin.55	93.29	0	HQ
F6DB_bin.7	97.99	0	HQ
F6MY_bin.34	93.29	0	HQ
F68N_bin.23	92.8	2.24	HQ
F6DB_bin.74	93.96	2.01	HQ
F6DB_bin.76	99.33	0	HQ
F6D7_bin.98	93.74	0	HQ
F6DA_bin.6	92.31	0	HQ
F6DB_bin.79	97.63	0	HQ
F6MX_bin.121	99.7	0.59	HQ
F6DB_bin.81	94.76	2.69	HQ
F6DB_bin.83	98.66	0	HQ
F6DB_bin.87	93.89	2.03	HQ
F6MX_bin.7	92.54	2.03	HQ
F6DB_bin.88	94.37	0.96	HQ
F6DB_bin.9	94.9	0	HQ
F6D9_bin.91	93.66	2.15	HQ
F6DB_bin.90	99.98	0.6	HQ
F6DB_bin.91	93.1	3.92	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DB_bin.93	92.23	2.73	HQ
F68D_bin.4	98.53	0	HQ
F6DB_bin.95	98.53	0	HQ
F6D8_bin.40	92.54	0.16	HQ
F6DB_bin.97	97.56	0.16	HQ
F6DB_bin.98	98.21	1.87	HQ
F6DE_bin.10	95.27	1.87	HQ
F6DE_bin.11	99.63	0.07	HQ
F68F_bin.107	94.23	0	HQ
F68R_bin.78	91.27	0.96	HQ
F6D8_bin.29	98	0.48	HQ
F6DB_bin.64	100	0.48	HQ
F6DE_bin.14	98.56	0	HQ
F6MX_bin.22	98.56	0	HQ
F6MY_bin.7	98.56	0.48	HQ
F6DE_bin.15	94.18	3.55	HQ
F6DE_bin.16	92.01	3.94	HQ
F6DE_bin.17	91.94	0.03	HQ
F6DG_bin.37	93.68	3.28	HQ
F6DE_bin.19	96.63	0	HQ
F68G_bin.40	96.06	0.67	HQ
F6DE_bin.2	99.33	0	HQ
F6DB_bin.84	94.63	3.02	HQ
F6DE_bin.21	92.17	2.07	HQ
F6DB_bin.53	90.27	1.39	HQ
F6DE_bin.23	99.31	0	HQ
F6DE_bin.3	99.33	0	HQ
F6DE_bin.30	95.24	0.68	HQ
F6DE_bin.32	98.73	0.48	HQ
F6DE_bin.33	98.49	0	HQ
F6DE_bin.34	99.85	2.1	HQ
F6DE_bin.36	97.27	0	HQ
F6DE_bin.38	98.6	1.17	HQ
F6DE_bin.39	94.63	0	HQ
F6DE_bin.4	98.88	1.12	HQ
F6DE_bin.42	96.43	2.55	HQ
F6DE_bin.43	100	1.2	HQ
F6DE_bin.47	98.66	0	HQ
F6MY_bin.54	91.95	0	HQ
F6DE_bin.49	97.8	0.67	HQ
F6DE_bin.5	97.82	0.02	HQ
F6DE_bin.50	99.33	1.33	HQ
F68H_bin.78	99.67	0.12	HQ
F68J_bin.52	92.07	3.09	HQ
F68N_bin.13	99.85	1.36	HQ
F68V_bin.92	99.47	0.04	HQ
F6DE_bin.51	99.97	0.07	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MX_bin.52	92.17	3.86	HQ
F6DE_bin.54	93.29	2.01	HQ
F6DE_bin.6	98.63	0.68	HQ
F6DE_bin.67	91.53	1.87	HQ
F6DE_bin.68	91.72	0	HQ
F6DE_bin.70	96.33	1.18	HQ
F6DE_bin.72	91.98	2.48	HQ
F6DE_bin.74	93.19	2.13	HQ
F6DE_bin.78	99.74	0	HQ
F6DE_bin.8	92.09	3.64	HQ
F68D_bin.2	93.84	0.74	HQ
F68M_bin.62	91.84	0	HQ
F68V_bin.4	92.18	0.68	HQ
F6DE_bin.82	96.71	0.57	HQ
F6DE_bin.84	98.76	0.74	HQ
F6DE_bin.85	93.29	0.67	HQ
F6DE_bin.9	97.9	0.7	HQ
F68C_bin.18	97.85	0.57	HQ
F68F_bin.44	98.39	0	HQ
F68H_bin.21	91.32	0.81	HQ
F68K_bin.85	98.39	0	HQ
F68N_bin.53	97.85	0.54	HQ
F68R_bin.29	98.92	0	HQ
F68T_bin.29	97.85	0	HQ
F68U_bin.105	96.24	0	HQ
F6D7_bin.96	95.43	2.15	HQ
F6D8_bin.62	99.46	0	HQ
F6DA_bin.40	97.85	0	HQ
F6DB_bin.73	99.46	0	HQ
F6DE_bin.90	99.46	0	HQ
F6DG_bin.55	97.31	0	HQ
F6MX_bin.119	98.39	0	HQ
F6MY_bin.116	98.92	0	HQ
F6DG_bin.1	91.38	0.63	HQ
F6DG_bin.100	97.83	0.48	HQ
F6DG_bin.101	95.55	0.71	HQ
F6DG_bin.104	97.09	2.01	HQ
F6DG_bin.14	97.2	0.93	HQ
F6DG_bin.15	97.36	0	HQ
F6DG_bin.18	97.32	0.67	HQ
F6DG_bin.2	91.56	0.34	HQ
F6DG_bin.20	94.56	3.54	HQ
F6DG_bin.21	96.81	0	HQ
F6DG_bin.23	96.62	0.6	HQ
F6DG_bin.24	91.97	0	HQ
F6DG_bin.29	92.62	0	HQ
F6DG_bin.3	94.01	1.84	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DG_bin.30	95.76	2.11	HQ
F6DG_bin.32	94.53	1.02	HQ
F68P_bin.22	98.66	1.34	HQ
F6DG_bin.34	98.32	0	HQ
F6DG_bin.35	97.32	0	HQ
F6DG_bin.39	94.71	0.48	HQ
F6DG_bin.40	92.62	0.67	HQ
F6DG_bin.48	96.64	0	HQ
F6DG_bin.49	92.18	1.01	HQ
F68G_bin.71	94.3	0.06	HQ
F6DG_bin.50	97.99	0	HQ
F6DG_bin.51	98.66	0.67	HQ
F6DA_bin.31	97.34	0.34	HQ
F6DG_bin.52	98.66	0.15	HQ
F6DG_bin.56	93.62	0	HQ
F6DG_bin.63	98.49	0	HQ
F6DG_bin.64	99.33	0.67	HQ
F6DG_bin.66	98.14	1.55	HQ
F6DG_bin.67	93.47	2.73	HQ
F6DG_bin.70	93.06	3.02	HQ
F6DG_bin.72	91.31	0.11	HQ
F6DG_bin.73	90.06	0.58	HQ
F6DG_bin.75	97.87	0	HQ
F6DG_bin.76	95.86	1.16	HQ
F6DG_bin.77	97.44	1.63	HQ
F6DG_bin.79	91.55	2.5	HQ
F6D8_bin.32	92.49	2.16	HQ
F6DG_bin.80	98.38	0.48	HQ
F6DG_bin.83	96.91	0.19	HQ
F68G_bin.43	98.27	0.13	HQ
F68H_bin.5	97	3.79	HQ
F68T_bin.22	97.5	0.38	HQ
F6D7_bin.92	95.76	1.63	HQ
F6DB_bin.1	98.27	0.19	HQ
F6DG_bin.90	99.04	0	HQ
F6DG_bin.92	91.71	1.03	HQ
F6DG_bin.96	91.11	0.4	HQ
F68R_bin.119	92.84	3.42	HQ
F68W_bin.81	93.58	2.07	HQ
F6D9_bin.57	93.92	2.7	HQ
F6DH_bin.10	94.26	2.03	HQ
F6MY_bin.42	92.57	2.03	HQ
F68W_bin.24	90.02	0.67	HQ
F6DH_bin.101	95.7	0.34	HQ
F68W_bin.28	94.94	0	HQ
F6DH_bin.108	96.64	0	HQ
F68W_bin.42	94.54	0.45	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DH_bin.11	97.99	0.45	HQ
F68W_bin.68	96.42	0	HQ
F6DH_bin.115	96.42	0	HQ
F6DH_bin.116	94.91	0.67	HQ
F68W_bin.103	94.3	2.01	HQ
F6DH_bin.122	99.33	0	HQ
F68W_bin.46	94.92	0.74	HQ
F6DH_bin.16	95	0.74	HQ
F6DH_bin.17	92.23	0	HQ
F6DH_bin.2	98.66	0	HQ
F6DH_bin.21	99.33	0	HQ
F6DH_bin.25	91.08	3.17	HQ
F6DH_bin.29	91.55	0	HQ
F68W_bin.40	90.46	0	HQ
F6DH_bin.31	98.32	0.81	HQ
F6DH_bin.33	93.67	0.63	HQ
F68W_bin.109	93.96	1.34	HQ
F6DH_bin.35	95.3	1.34	HQ
F68U_bin.29	92.75	0.86	HQ
F68W_bin.10	94.96	0.37	HQ
F6DH_bin.36	97.26	0.22	HQ
F6DH_bin.43	97.49	2.42	HQ
F6DH_bin.52	93.45	2.81	HQ
F68W_bin.26	96.05	0.38	HQ
F6DH_bin.6	96.86	0.38	HQ
F6DH_bin.61	93.04	1.53	HQ
F68W_bin.66	95.83	1.88	HQ
F6DH_bin.66	95.83	1.88	HQ
F68W_bin.52	96.58	1.36	HQ
F6DH_bin.71	98.66	0	HQ
F6DH_bin.78	96.5	0.23	HQ
F6DH_bin.85	91.75	1.23	HQ
F6DH_bin.87	96.1	0	HQ
F6DH_bin.93	96.22	1.27	HQ
F68W_bin.69	97.32	0.67	HQ
F6DH_bin.95	95.97	0	HQ
F6MX_bin.1	92.34	0.03	HQ
F6MX_bin.100	93.33	0	HQ
F6MX_bin.101	97.58	1.69	HQ
F6MX_bin.106	91.38	3.63	HQ
F6MX_bin.107	92.23	0	HQ
F6MX_bin.108	93.68	2.84	HQ
F6MX_bin.111	91.94	0.7	HQ
F6MX_bin.115	96.51	0.05	HQ
F6MX_bin.116	92.46	1.34	HQ
F6DE_bin.37	97.96	1.36	HQ
F6MX_bin.117	97.96	1.36	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MX_bin.124	92.39	2.35	HQ
F6MX_bin.125	90.99	2.01	HQ
F6MX_bin.126	95.24	0	HQ
F6MX_bin.127	97.83	0	HQ
F6MX_bin.128	92.49	2.4	HQ
F6MX_bin.129	93.88	0.34	HQ
F6MX_bin.14	95.61	0.57	HQ
F6MX_bin.15	97.58	2.42	HQ
F6MX_bin.20	90.44	0	HQ
F6MX_bin.24	92.7	3.93	HQ
F6MX_bin.26	98.99	0.96	HQ
F6DA_bin.16	90.88	1.45	HQ
F6MX_bin.32	98.6	1.4	HQ
F6MX_bin.35	95.85	0	HQ
F6MX_bin.36	93.48	0	HQ
F6MX_bin.44	96.26	2.09	HQ
F6MX_bin.48	90.37	1.9	HQ
F6MX_bin.51	98.97	0.2	HQ
F68C_bin.48	98.2	1.2	HQ
F68U_bin.88	98.8	1.2	HQ
F68W_bin.14	98.2	1.2	HQ
F6D7_bin.7	98.2	1.2	HQ
F6DH_bin.89	99.4	1.4	HQ
F6MX_bin.53	99.2	1.2	HQ
F6MX_bin.54	93.86	0.29	HQ
F6MX_bin.56	98.32	0.67	HQ
F6D7_bin.24	94.55	0	HQ
F6MX_bin.58	95.36	0	HQ
F6MX_bin.60	94.74	0	HQ
F6MX_bin.67	95.97	0.54	HQ
F6MX_bin.68	96.42	0.22	HQ
F6MX_bin.70	90.81	1.34	HQ
F6MX_bin.71	92.6	1.34	HQ
F6MX_bin.74	94.04	1.56	HQ
F6MX_bin.79	96.74	1.77	HQ
F6MX_bin.84	94.55	1.35	HQ
F6MX_bin.91	96.77	1.88	HQ
F6MX_bin.92	96.98	0	HQ
F6MX_bin.96	95.95	0.48	HQ
F68J_bin.56	95.56	0.87	HQ
F68M_bin.63	95.53	0.63	HQ
F6MX_bin.98	95.53	0.63	HQ
F6MX_bin.99	90.3	3.23	HQ
F6MY_bin.103	94.18	0	HQ
F6MY_bin.110	92.6	1.34	HQ
F68K_bin.4	96.38	0	HQ
F6MY_bin.113	96.86	0	HQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MY_bin.114	90.6	0.67	HQ
F6MY_bin.119	91.28	0.67	HQ
F68H_bin.12	96.64	0.69	HQ
F6MY_bin.12	100	0.67	HQ
F6MY_bin.120	97.99	0	HQ
F6MY_bin.123	93.68	0.69	HQ
F6MY_bin.124	95.89	0	HQ
F6MY_bin.125	96.64	0	HQ
F6MY_bin.126	92.22	2.76	HQ
F6MY_bin.129	98.66	3.02	HQ
F6MY_bin.130	96.51	0.22	HQ
F6MY_bin.136	93.55	0	HQ
F6MY_bin.15	94.41	0.67	HQ
F68D_bin.24	98.71	1.02	HQ
F6MY_bin.25	99.62	0	HQ
F6MY_bin.28	96.41	0	HQ
F6MY_bin.36	94.41	0.93	HQ
F6MY_bin.40	94.63	1.34	HQ
F6MY_bin.47	98.39	0.81	HQ
F68K_bin.99	92.01	0	HQ
F6MY_bin.52	97.41	0	HQ
F6MY_bin.56	97.9	1.17	HQ
F6MY_bin.58	95.86	0.63	HQ
F6MY_bin.61	96.32	0.67	HQ
F6MY_bin.65	96.64	0.67	HQ
F6MY_bin.66	97.28	1.05	HQ
F6MY_bin.70	93.02	3.75	HQ
F6MY_bin.75	91.39	0	HQ
F6MY_bin.78	100	0.89	HQ
F6MY_bin.81	91.15	2.74	HQ
F6D7_bin.9	93.33	2.67	HQ
F6MY_bin.87	92.42	1.12	HQ
F6MY_bin.88	96.6	0	HQ
F6MY_bin.90	96.5	1.3	HQ
F68P_bin.44	98.01	1.6	HQ
F68T_bin.62	96.58	0.75	HQ
F6MY_bin.94	98.05	0.23	HQ
F6MY_bin.98	92.35	0.6	HQ
F68G_bin.24	90.8	1.89	HQ
F6MY_bin.99	98.11	1.42	HQ
F68C_bin.102	71.57	1.76	MQ
F68C_bin.103	58.33	1.84	MQ
F68C_bin.107	78.62	1.9	MQ
F6D8_bin.83	78.62	3.24	MQ
F6MX_bin.64	78.62	1.9	MQ
F68C_bin.108	66.71	0.84	MQ
F68C_bin.112	53.71	0.67	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68C_bin.12	83.88	1.93	MQ
F68C_bin.14	73.04	0	MQ
F68C_bin.15	72.28	3.58	MQ
F68C_bin.17	87.33	2.68	MQ
F6D7_bin.102	63.16	0	MQ
F6DE_bin.1	75.5	3.97	MQ
F68F_bin.78	76.21	0	MQ
F68K_bin.70	76.9	1.72	MQ
F6DB_bin.41	58.1	3.45	MQ
F6MY_bin.95	52.07	0	MQ
F68C_bin.23	72.45	4.31	MQ
F68C_bin.24	69.12	0.86	MQ
F68C_bin.28	79.83	3.6	MQ
F68C_bin.29	78.77	3.03	MQ
F68C_bin.3	80.17	4.73	MQ
F68C_bin.30	73.22	2.64	MQ
F68C_bin.31	81.83	4.13	MQ
F68C_bin.34	71.64	4.97	MQ
F68C_bin.36	80	1.45	MQ
F68C_bin.37	83.44	2.22	MQ
F68C_bin.40	76.67	2.89	MQ
F68C_bin.45	89.26	0	MQ
F68J_bin.83	89.57	1.05	MQ
F68C_bin.50	67.55	4.09	MQ
F68H_bin.20	86.79	2.78	MQ
F6D7_bin.21	53.4	3.16	MQ
F68C_bin.55	69.3	3.51	MQ
F68C_bin.59	59.31	0	MQ
F68C_bin.6	81.56	0	MQ
F68C_bin.60	85.58	0.81	MQ
F68C_bin.63	81.88	0	MQ
F6D7_bin.100	79.19	0	MQ
F68C_bin.64	52.47	1.79	MQ
F68C_bin.68	61.38	0	MQ
F68C_bin.7	71.73	0	MQ
F68C_bin.73	68.83	2.78	MQ
F68C_bin.78	78.21	1.03	MQ
F68C_bin.8	69.7	1.17	MQ
F68C_bin.80	77.05	0	MQ
F68C_bin.81	82.59	0	MQ
F68C_bin.86	76.46	4.53	MQ
F68C_bin.87	82.89	0.67	MQ
F68C_bin.9	78.48	0	MQ
F68C_bin.90	69.6	4.5	MQ
F68C_bin.93	86.23	3.13	MQ
F68D_bin.10	86.88	2.63	MQ
F68D_bin.100	79.73	2.55	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68D_bin.101	57.53	3.51	MQ
F68D_bin.102	74.29	2.52	MQ
F68M_bin.28	52.63	0	MQ
F68D_bin.107	89.17	3.32	MQ
F68D_bin.108	68.16	0	MQ
F68D_bin.11	89.04	4.57	MQ
F68D_bin.110	62.55	4.22	MQ
F68D_bin.112	67.05	2.25	MQ
F68D_bin.113	79.48	3.98	MQ
F68D_bin.13	85.85	1.34	MQ
F68D_bin.16	87.18	0.4	MQ
F68D_bin.17	88.75	1.81	MQ
F68D_bin.18	88.63	2.35	MQ
F6DE_bin.20	52.5	1.77	MQ
F68D_bin.20	83.63	2.38	MQ
F68D_bin.22	89.26	0.67	MQ
F68D_bin.25	85.19	0.67	MQ
F68D_bin.27	84.96	0.67	MQ
F68D_bin.31	64.75	3.3	MQ
F68D_bin.32	56.61	0.86	MQ
F68D_bin.35	52.61	2.59	MQ
F68D_bin.36	77	0	MQ
F68M_bin.9	82.36	1.78	MQ
F6DA_bin.23	54.55	1.34	MQ
F68D_bin.37	86.06	0.22	MQ
F68D_bin.38	69.83	1.72	MQ
F68D_bin.51	71.99	0	MQ
F68D_bin.54	82.27	2.13	MQ
F68D_bin.55	77.66	2.58	MQ
F68D_bin.58	84.54	1.68	MQ
F6DG_bin.8	85.65	4.16	MQ
F68D_bin.59	54.75	0	MQ
F68D_bin.61	85.04	4.14	MQ
F68D_bin.63	70.37	1.36	MQ
F68D_bin.64	58.5	0	MQ
F68D_bin.66	72.98	4.09	MQ
F68M_bin.20	79.3	4.11	MQ
F68D_bin.78	76.91	2.32	MQ
F68F_bin.116	56.82	2.03	MQ
F68D_bin.84	67.9	1.72	MQ
F68D_bin.85	52.54	2.68	MQ
F6D8_bin.85	86.55	2.78	MQ
F68D_bin.98	84.97	1.72	MQ
F68E_bin.1	87.64	4.33	MQ
F68C_bin.72	66.58	2.24	MQ
F68E_bin.15	52.39	0	MQ
F68E_bin.16	65.86	1.72	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68E_bin.2	89.86	0.63	MQ
F68E_bin.24	82.22	3.41	MQ
F68E_bin.25	52.95	0	MQ
F68E_bin.29	82.79	2.85	MQ
F68E_bin.35	84.54	0	MQ
F68E_bin.37	66.59	3.51	MQ
F68E_bin.40	67.41	0.86	MQ
F6DA_bin.94	88.88	2.72	MQ
F6MX_bin.102	89.65	0.19	MQ
F68E_bin.48	88.14	0.96	MQ
F68E_bin.7	70	4.32	MQ
F68M_bin.5	52.37	0.12	MQ
F68N_bin.24	89.41	1.95	MQ
F68F_bin.104	80.44	0.83	MQ
F68F_bin.109	65.75	0	MQ
F68F_bin.110	78.01	4.26	MQ
F68F_bin.113	54.73	1.06	MQ
F68F_bin.115	57.18	2.63	MQ
F68F_bin.13	89.77	4.83	MQ
F68F_bin.14	56.14	1.75	MQ
F68F_bin.17	75.59	3.24	MQ
F68F_bin.20	55.68	0.67	MQ
F68F_bin.22	81.8	3.4	MQ
F68F_bin.26	76.14	3.02	MQ
F68F_bin.27	86.24	2.22	MQ
F6D7_bin.19	77.4	1.4	MQ
F68F_bin.29	52.59	0	MQ
F68F_bin.3	69.98	2.85	MQ
F68R_bin.32	61.32	4.66	MQ
F68F_bin.31	71.48	0	MQ
F68F_bin.32	81.76	4.24	MQ
F68R_bin.107	81.29	1.9	MQ
F68V_bin.89	85.94	1.59	MQ
F68K_bin.48	73.05	1.41	MQ
F68F_bin.36	52.19	3.16	MQ
F68H_bin.51	82.08	0.41	MQ
F68K_bin.16	88.5	0.71	MQ
F6DB_bin.77	88.25	0.24	MQ
F68F_bin.40	58.04	0	MQ
F6MX_bin.65	60.4	0	MQ
F68F_bin.42	61.32	0.48	MQ
F68F_bin.47	72.87	1.27	MQ
F68F_bin.49	80.98	2.37	MQ
F68F_bin.53	86.58	0.67	MQ
F68F_bin.54	57.14	0	MQ
F68F_bin.56	66.11	0	MQ
F68F_bin.63	66.07	1.79	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68F_bin.66	86.81	3.22	MQ
F68F_bin.67	85.68	0	MQ
F68F_bin.75	62.34	0	MQ
F68F_bin.76	89.54	3.65	MQ
F68F_bin.79	59.94	4.17	MQ
F68F_bin.80	78.34	3.09	MQ
F68F_bin.86	76.12	2.46	MQ
F68F_bin.87	66.26	2.07	MQ
F68F_bin.88	88.36	3.01	MQ
F68V_bin.87	84.43	3.06	MQ
F6DE_bin.88	80.37	0	MQ
F68F_bin.92	88.81	4.44	MQ
F68F_bin.93	82.22	1.81	MQ
F68F_bin.94	56.03	1.72	MQ
F68F_bin.95	56.55	1.72	MQ
F68F_bin.96	67.73	1.08	MQ
F68F_bin.97	84.27	0.03	MQ
F68G_bin.1	56.31	1.75	MQ
F68G_bin.11	62.67	2.15	MQ
F68P_bin.51	69.75	0	MQ
F68G_bin.15	89.04	0	MQ
F68G_bin.16	85.57	0.67	MQ
F68G_bin.17	77.3	1.93	MQ
F68G_bin.18	89.86	4.08	MQ
F68D_bin.15	88.39	1.34	MQ
F68G_bin.2	85.32	0.67	MQ
F68G_bin.23	86.26	2.01	MQ
F68G_bin.25	61.85	3.74	MQ
F68G_bin.3	66.75	1	MQ
F68G_bin.32	62.73	0.37	MQ
F68G_bin.34	85.32	0.79	MQ
F68G_bin.38	78.84	0.37	MQ
F68D_bin.96	50.73	0	MQ
F68R_bin.120	85.59	2.84	MQ
F68E_bin.49	51.96	3.51	MQ
F68G_bin.42	88.61	0	MQ
F68G_bin.44	81.38	3.01	MQ
F68U_bin.111	59.44	4.39	MQ
F68G_bin.58	50.16	0	MQ
F68G_bin.59	77.16	0.79	MQ
F68M_bin.83	89.89	3.38	MQ
F68G_bin.60	86.3	1.8	MQ
F68H_bin.81	56.68	0.36	MQ
F68G_bin.64	71.75	0.62	MQ
F68G_bin.70	87.76	1.36	MQ
F68G_bin.75	87.91	0.22	MQ
F68G_bin.78	87.27	3.16	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68G_bin.81	74.6	1.79	MQ
F68G_bin.86	74.93	2.4	MQ
F68G_bin.89	51.99	3.55	MQ
F68G_bin.9	83.43	2.33	MQ
F68C_bin.85	56.9	0	MQ
F68D_bin.95	82.76	1.72	MQ
F68F_bin.72	83.71	0.94	MQ
F68M_bin.81	81.87	2.16	MQ
F68R_bin.97	64.32	0.56	MQ
F68T_bin.39	65.52	0	MQ
F68V_bin.99	82.76	1.72	MQ
F68W_bin.97	64.66	0.86	MQ
F6D7_bin.71	51.72	2.59	MQ
F6D8_bin.31	89.84	3.76	MQ
F6DE_bin.61	67.24	0	MQ
F68H_bin.17	57.81	0.88	MQ
F68H_bin.18	80.63	1.19	MQ
F68H_bin.26	84.91	2.35	MQ
F68H_bin.27	78.04	1.79	MQ
F68H_bin.32	69.87	0.73	MQ
F68H_bin.38	82.42	0.67	MQ
F68H_bin.41	50.67	1.75	MQ
F68H_bin.42	83.6	2.17	MQ
F6D9_bin.27	50	3.51	MQ
F68H_bin.45	86.95	0.57	MQ
F68H_bin.58	80.86	4.31	MQ
F68H_bin.59	78.97	0	MQ
F68H_bin.61	78.06	0.67	MQ
F68H_bin.62	63.81	1.1	MQ
F68H_bin.64	65.25	4.11	MQ
F68H_bin.68	58.62	0	MQ
F68H_bin.71	89.04	1.48	MQ
F68H_bin.75	86.97	0.34	MQ
F68H_bin.76	57.38	0	MQ
F68H_bin.77	67.99	1.42	MQ
F68H_bin.82	58.66	2.66	MQ
F68H_bin.9	55.26	1.75	MQ
F68J_bin.12	88.79	4.48	MQ
F68J_bin.13	82.59	3.11	MQ
F68J_bin.15	83	3.91	MQ
F68J_bin.17	73.6	1.51	MQ
F68J_bin.18	74.55	0	MQ
F6D9_bin.83	82.48	2.66	MQ
F68J_bin.24	77.93	1.79	MQ
F68C_bin.65	56.74	2.36	MQ
F68J_bin.26	80.16	2.93	MQ
F6D7_bin.23	74.9	3.76	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68J_bin.28	67.86	1.79	MQ
F68J_bin.30	79.73	0.88	MQ
F6DE_bin.80	81.66	1.48	MQ
F68J_bin.31	81.76	2.02	MQ
F68J_bin.36	82.91	1.45	MQ
F68J_bin.38	85.22	1.46	MQ
F68J_bin.4	89.82	0.71	MQ
F68J_bin.40	54.9	0	MQ
F6DH_bin.112	89.41	2.85	MQ
F68J_bin.47	88.48	0.73	MQ
F68J_bin.48	66.79	0.67	MQ
F68J_bin.50	51.57	2.9	MQ
F68J_bin.54	82.34	1.81	MQ
F68J_bin.58	53.75	0	MQ
F6DB_bin.52	54.81	0	MQ
F68J_bin.60	58.93	1.72	MQ
F68J_bin.63	89.4	4.13	MQ
F68J_bin.64	89.44	0.71	MQ
F68J_bin.66	83.3	3.19	MQ
F68G_bin.84	51.88	1.72	MQ
F68T_bin.33	56.22	0.94	MQ
F68J_bin.68	57.37	0	MQ
F68E_bin.8	75.24	1.16	MQ
F68H_bin.53	82.75	2.92	MQ
F68P_bin.49	88.06	0.58	MQ
F6D9_bin.20	51.72	0	MQ
F6DG_bin.99	75.57	1.38	MQ
F6MY_bin.74	76.02	0	MQ
F68J_bin.71	74.45	0	MQ
F68R_bin.16	88.9	1.34	MQ
F68J_bin.73	65.23	1.75	MQ
F68J_bin.75	55.23	0.02	MQ
F68J_bin.77	79.81	1.91	MQ
F68J_bin.78	73.67	0.49	MQ
F68J_bin.8	82.29	0.85	MQ
F68J_bin.80	70.09	0.32	MQ
F68J_bin.82	86.67	2.14	MQ
F68J_bin.84	55.16	1.72	MQ
F68J_bin.85	69.48	2.64	MQ
F68J_bin.86	55.46	0.56	MQ
F68J_bin.87	62.47	0.06	MQ
F68K_bin.100	85.69	2.36	MQ
F68K_bin.107	69.8	4.03	MQ
F68K_bin.109	63.75	1.56	MQ
F68J_bin.46	56.14	0	MQ
F68K_bin.11	78.95	0	MQ
F68R_bin.14	69.96	1.23	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68K_bin.110	67.86	0	MQ
F68K_bin.112	64.19	2.45	MQ
F68K_bin.113	62.14	0.94	MQ
F68K_bin.12	56.03	3.45	MQ
F68K_bin.17	89.55	0.38	MQ
F68K_bin.19	66.89	2.58	MQ
F68K_bin.20	88.89	0.24	MQ
F68K_bin.22	72.24	0	MQ
F68K_bin.23	62.07	0	MQ
F68K_bin.29	53.43	0	MQ
F68R_bin.95	87.73	3.76	MQ
F68V_bin.119	57.35	1.08	MQ
F6MX_bin.110	81.83	0.99	MQ
F68K_bin.30	82.65	2.85	MQ
F68K_bin.31	88.02	1.01	MQ
F68K_bin.40	80.59	0.11	MQ
F6DB_bin.89	53.57	1.44	MQ
F6DG_bin.12	89.34	0.88	MQ
F68K_bin.45	84.85	2.91	MQ
F6D7_bin.57	73.28	1.72	MQ
F68K_bin.5	73.29	0.68	MQ
F68K_bin.53	64.62	1.75	MQ
F68K_bin.57	54.39	1.75	MQ
F68K_bin.59	84.78	1.34	MQ
F68K_bin.6	85.23	0	MQ
F68K_bin.62	84.53	0.5	MQ
F68K_bin.65	67.68	1.18	MQ
F68K_bin.68	55.6	3.7	MQ
F68U_bin.85	57.89	0	MQ
F68K_bin.73	62.07	1.42	MQ
F68K_bin.76	83.96	2.07	MQ
F68P_bin.54	69.58	2.32	MQ
F68K_bin.80	78.25	0.64	MQ
F68K_bin.81	53.68	0	MQ
F68K_bin.84	85.45	2.67	MQ
F68K_bin.86	54.78	1.72	MQ
F68K_bin.89	79.81	0.67	MQ
F68K_bin.90	76.29	0.84	MQ
F68K_bin.97	50.16	1.75	MQ
F68M_bin.16	88.46	0	MQ
F68M_bin.18	54.48	3.79	MQ
F68M_bin.19	86.46	1.59	MQ
F6MX_bin.57	50.94	0	MQ
F68M_bin.23	68.21	3.26	MQ
F68F_bin.11	85.48	3.94	MQ
F68N_bin.37	54.31	2.59	MQ
F68R_bin.38	71.55	3.45	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D7_bin.39	88.94	3.22	MQ
F68M_bin.25	65.96	0.27	MQ
F6DB_bin.60	70.67	1.68	MQ
F6MX_bin.109	59.64	3.61	MQ
F68M_bin.29	70.6	2.72	MQ
F6MX_bin.76	72.01	0.67	MQ
F6MX_bin.55	77.34	0.68	MQ
F68M_bin.4	56.24	0.85	MQ
F68D_bin.60	86.09	1.74	MQ
F68M_bin.43	52.8	1.22	MQ
F68M_bin.44	83.43	3.23	MQ
F68M_bin.48	68.42	0.38	MQ
F68M_bin.52	85.21	0.67	MQ
F68M_bin.59	58.86	1.16	MQ
F6MX_bin.41	72.86	2.94	MQ
F68H_bin.35	86.29	2.82	MQ
F68M_bin.71	61.21	0.86	MQ
F68C_bin.46	67.9	0.37	MQ
F68M_bin.74	67.6	2.68	MQ
F68M_bin.77	84.37	0.83	MQ
F68M_bin.79	75.27	0	MQ
F68M_bin.8	71.19	3.44	MQ
F68D_bin.29	54.63	2.63	MQ
F68M_bin.87	52.32	1.59	MQ
F68M_bin.88	79.62	2.09	MQ
F68M_bin.89	52.14	0.83	MQ
F68N_bin.1	76.61	0.12	MQ
F68N_bin.10	79.53	1.34	MQ
F68N_bin.11	66.18	2.97	MQ
F68N_bin.20	82.46	0.29	MQ
F68W_bin.22	74.55	1.35	MQ
F6DH_bin.19	69.58	3.03	MQ
F68N_bin.30	73.79	1.72	MQ
F68N_bin.40	74.94	3.19	MQ
F68N_bin.42	57.5	1.79	MQ
F68N_bin.45	75.24	0.68	MQ
F68N_bin.46	82.58	0	MQ
F68N_bin.47	80.08	1.7	MQ
F68N_bin.51	61.36	0	MQ
F68N_bin.62	60.51	0.63	MQ
F68N_bin.71	55.32	0.58	MQ
F68N_bin.74	79.87	1.96	MQ
F68N_bin.77	88.93	0	MQ
F68N_bin.8	86.65	0.82	MQ
F68P_bin.1	80.33	0.52	MQ
F68U_bin.84	89.9	3.46	MQ
F68P_bin.12	76.85	1.59	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68P_bin.13	53.61	0	MQ
F68P_bin.15	69.86	0.32	MQ
F68P_bin.16	69.72	0.67	MQ
F68P_bin.17	80.54	0	MQ
F68R_bin.46	54.36	0	MQ
F68V_bin.124	51.23	0	MQ
F68P_bin.25	88.11	0.38	MQ
F68P_bin.26	82.49	0.67	MQ
F68P_bin.27	53.02	2.12	MQ
F68P_bin.28	77.84	0.9	MQ
F68P_bin.29	79.56	2.87	MQ
F68P_bin.31	79.45	0.63	MQ
F68P_bin.33	73.01	3.02	MQ
F68P_bin.35	62.34	0.37	MQ
F68P_bin.37	76.21	2.07	MQ
F68P_bin.4	87.92	3.02	MQ
F68P_bin.42	85.06	1.22	MQ
F68G_bin.83	89.98	0	MQ
F68P_bin.56	76.29	2.23	MQ
F68P_bin.57	54.31	1.72	MQ
F68P_bin.58	51.69	0	MQ
F68P_bin.59	78.11	0.74	MQ
F68P_bin.61	88.79	0.73	MQ
F68P_bin.8	82.57	1.25	MQ
F68R_bin.100	53.62	4.96	MQ
F68R_bin.101	64.04	0	MQ
F68R_bin.106	71.32	0	MQ
F68C_bin.39	78.12	0.89	MQ
F68R_bin.108	78.12	0.89	MQ
F6MX_bin.118	78.12	1.57	MQ
F68R_bin.112	75.52	3.57	MQ
F68R_bin.113	59.59	0.88	MQ
F68R_bin.114	58.36	1.79	MQ
F68R_bin.115	77.29	3.47	MQ
F68R_bin.116	74.52	3.13	MQ
F68R_bin.117	88.18	0.51	MQ
F68R_bin.122	72.03	0.37	MQ
F68R_bin.123	75.59	0	MQ
F68R_bin.125	86.34	1.51	MQ
F68R_bin.127	88.38	4.25	MQ
F68R_bin.128	66.52	1.69	MQ
F68R_bin.13	75.62	2.96	MQ
F68R_bin.2	88.59	0.67	MQ
F68R_bin.21	77.93	0.27	MQ
F68R_bin.25	68.45	2.59	MQ
F68R_bin.27	89.08	0.97	MQ
F68U_bin.53	81.24	0.22	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68R_bin.30	72.44	1.95	MQ
F68R_bin.39	89.04	0	MQ
F68R_bin.41	84.27	1.6	MQ
F68R_bin.44	68.93	2.35	MQ
F68R_bin.49	65.31	0	MQ
F68R_bin.53	63.67	1.75	MQ
F68R_bin.55	66.26	0.7	MQ
F68R_bin.58	53.68	0	MQ
F68R_bin.60	86.25	0.81	MQ
F68D_bin.1	88.69	1.9	MQ
F68R_bin.63	79.3	2.98	MQ
F68R_bin.67	56.41	1.5	MQ
F68R_bin.68	59.48	3.45	MQ
F68R_bin.70	69.19	0	MQ
F6MY_bin.108	50.08	0	MQ
F68G_bin.36	83.54	0.63	MQ
F6D8_bin.67	71.39	1.75	MQ
F6D9_bin.70	59.65	0	MQ
F68R_bin.8	86.4	0.47	MQ
F6D7_bin.101	81.03	2.59	MQ
F6DB_bin.20	53.1	1.72	MQ
F6DE_bin.48	80.43	2.93	MQ
F6MY_bin.59	58.39	0	MQ
F68R_bin.82	89.04	3.1	MQ
F68R_bin.83	65.52	1.75	MQ
F68R_bin.84	57.74	0.08	MQ
F68R_bin.88	81.37	3.58	MQ
F68R_bin.89	53.18	4.76	MQ
F68R_bin.9	54.39	0	MQ
F68R_bin.91	59.49	0.94	MQ
F68R_bin.93	50.18	0	MQ
F68R_bin.99	80.7	0	MQ
F68T_bin.1	86.07	0.89	MQ
F68T_bin.10	86.59	0.35	MQ
F68T_bin.100	81.57	2.54	MQ
F68T_bin.104	66.45	1.75	MQ
F68T_bin.105	58.52	3.14	MQ
F68T_bin.12	82.59	2.18	MQ
F68T_bin.13	84.56	1.01	MQ
F68T_bin.17	50.34	3.06	MQ
F68R_bin.57	88.07	2.48	MQ
F68T_bin.19	86.82	1.24	MQ
F68T_bin.2	75.07	3.22	MQ
F68T_bin.23	73.83	0	MQ
F68T_bin.24	58.83	0.9	MQ
F68T_bin.25	80.04	2.46	MQ
F68T_bin.34	68.77	0.16	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68T_bin.36	89.37	0	MQ
F68T_bin.47	88.76	1.69	MQ
F68K_bin.111	71.6	0.63	MQ
F68T_bin.54	78.91	0	MQ
F6DB_bin.8	70.25	0.63	MQ
F68T_bin.55	76.58	2.79	MQ
F68T_bin.56	79.31	1.92	MQ
F68T_bin.57	87.87	2.74	MQ
F68T_bin.58	87.75	1.23	MQ
F68T_bin.6	84.8	2.01	MQ
F68T_bin.61	83.23	1.29	MQ
F68T_bin.65	77.12	1.68	MQ
F68N_bin.59	81.38	0	MQ
F6D7_bin.53	61.78	3.45	MQ
F6DB_bin.26	60.78	3.09	MQ
F68T_bin.71	81.7	1.21	MQ
F68T_bin.72	50.05	3.45	MQ
F68T_bin.75	75.83	0.67	MQ
F68T_bin.83	73.32	0.47	MQ
F68T_bin.87	55.93	0.19	MQ
F68T_bin.89	74.37	1.21	MQ
F68R_bin.22	62.67	1.03	MQ
F68T_bin.91	61.4	0	MQ
F68T_bin.92	76.67	0	MQ
F68T_bin.94	73.48	2.78	MQ
F68T_bin.95	52.64	0.5	MQ
F68T_bin.98	88.08	0.84	MQ
F68T_bin.99	61.4	0	MQ
F68W_bin.70	77.9	3.45	MQ
F6DH_bin.27	89.81	2.79	MQ
F68U_bin.104	88.5	4.36	MQ
F68W_bin.20	89.79	1.25	MQ
F68U_bin.108	82.73	3.82	MQ
F68U_bin.112	57.72	3.86	MQ
F68U_bin.113	61.8	4.77	MQ
F68U_bin.13	63.04	0.94	MQ
F68U_bin.14	68.99	2.49	MQ
F68U_bin.15	89.51	0.63	MQ
F68U_bin.16	87.58	0.67	MQ
F68W_bin.73	57.02	0	MQ
F6DH_bin.4	85.41	2.37	MQ
F68U_bin.2	60.67	0	MQ
F68U_bin.22	67.25	1.51	MQ
F68K_bin.43	85.56	2.74	MQ
F68P_bin.52	89.83	1.03	MQ
F68R_bin.48	68.3	2.44	MQ
F68U_bin.27	83.07	2.58	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68U_bin.28	79.2	4.65	MQ
F68D_bin.43	74.07	0.48	MQ
F68W_bin.4	83.15	2.24	MQ
F68U_bin.31	78.8	0.63	MQ
F68U_bin.32	63.33	2.33	MQ
F68U_bin.33	57.89	0	MQ
F68U_bin.43	70.67	1.75	MQ
F6DH_bin.34	77.4	3.54	MQ
F68U_bin.44	86.57	0	MQ
F68U_bin.45	80.01	1.7	MQ
F68W_bin.35	58.57	3.76	MQ
F6DH_bin.86	59.23	3.69	MQ
F68U_bin.50	81.17	0.75	MQ
F68U_bin.52	59.65	0	MQ
F68U_bin.57	60.45	2.9	MQ
F68U_bin.58	71.53	1.75	MQ
F6DH_bin.100	74.66	4.74	MQ
F6DH_bin.47	88.88	1.96	MQ
F68U_bin.63	87.26	1.73	MQ
F68W_bin.63	80.89	2.78	MQ
F68U_bin.64	81.31	4.46	MQ
F68U_bin.67	80.02	1.01	MQ
F68U_bin.72	59.29	0	MQ
F68U_bin.74	74.46	2.57	MQ
F68U_bin.76	81.72	0.29	MQ
F68U_bin.77	69.48	0	MQ
F68W_bin.92	56.9	3.45	MQ
F6DH_bin.42	60.5	1.72	MQ
F68C_bin.100	89.24	2.93	MQ
F68T_bin.103	71.98	1.04	MQ
F68D_bin.106	77.91	1.24	MQ
F68U_bin.83	80.47	0.79	MQ
F68U_bin.86	68.38	2.3	MQ
F68U_bin.89	80.23	0.54	MQ
F68U_bin.90	76.49	1.01	MQ
F68U_bin.93	84.57	4.05	MQ
F68W_bin.55	62.53	3.02	MQ
F68U_bin.99	73.1	0.4	MQ
F68V_bin.100	70.75	0	MQ
F68V_bin.101	84	4	MQ
F68V_bin.102	67.53	2.96	MQ
F68V_bin.103	79.46	0.67	MQ
F68V_bin.104	51.52	0	MQ
F68V_bin.105	76.88	3.23	MQ
F68M_bin.54	76.4	1.23	MQ
F68V_bin.106	89.89	2.15	MQ
F6DE_bin.7	79.83	0.22	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MY_bin.27	68.94	0.67	MQ
F68M_bin.69	86.21	1.88	MQ
F68V_bin.111	73.42	3.36	MQ
F68V_bin.114	88.93	0.67	MQ
F68E_bin.9	57.07	0	MQ
F68N_bin.36	88.68	1.67	MQ
F68P_bin.3	68.26	0	MQ
F6D7_bin.34	88.83	0.58	MQ
F6MY_bin.51	86.73	1.74	MQ
F68V_bin.12	75.21	0.4	MQ
F68V_bin.121	55.59	1.23	MQ
F68V_bin.123	50.7	2.24	MQ
F68V_bin.125	52.93	0	MQ
F68V_bin.16	81.98	3.69	MQ
F68V_bin.17	83.76	0	MQ
F68V_bin.19	61.97	3.51	MQ
F68V_bin.21	82.41	1.21	MQ
F68V_bin.24	81.65	1.34	MQ
F68V_bin.25	74.27	1.27	MQ
F68D_bin.34	54.02	0	MQ
F68V_bin.29	72.22	1.17	MQ
F68K_bin.67	80.52	2.91	MQ
F68V_bin.3	87.45	1.48	MQ
F6DG_bin.89	81.37	4.81	MQ
F6MY_bin.4	89.26	1.34	MQ
F68V_bin.32	74.54	3.15	MQ
F68V_bin.33	77.04	2.01	MQ
F68V_bin.36	89.93	1.34	MQ
F68V_bin.40	56.79	1.72	MQ
F6DE_bin.94	54.35	1.9	MQ
F68V_bin.44	63.79	0.86	MQ
F68V_bin.46	84.99	2.25	MQ
F68V_bin.48	80.31	1.01	MQ
F68V_bin.5	78.06	0	MQ
F68V_bin.51	57.05	1.72	MQ
F6MY_bin.97	62.28	3.38	MQ
F68M_bin.80	71.64	0.88	MQ
F68V_bin.55	81.81	4.26	MQ
F68V_bin.56	78.73	1.34	MQ
F68E_bin.46	78.79	0	MQ
F68K_bin.102	67.45	2.42	MQ
F6D9_bin.55	63.2	0	MQ
F6MX_bin.114	56.9	0	MQ
F68V_bin.67	52.72	3.51	MQ
F68V_bin.69	84.18	1.06	MQ
F68V_bin.7	85.09	0.31	MQ
F68V_bin.70	53.33	1.13	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68V_bin.75	89.46	0.42	MQ
F6MX_bin.83	60.39	2.82	MQ
F68V_bin.77	89.26	1.4	MQ
F68V_bin.79	84.27	4.33	MQ
F68V_bin.80	71.26	0.53	MQ
F68V_bin.81	55.35	2.9	MQ
F68V_bin.82	87.03	1.01	MQ
F68V_bin.9	56.2	3.02	MQ
F68V_bin.91	88.44	1.63	MQ
F68T_bin.97	84.8	0	MQ
F68V_bin.94	62.43	1.53	MQ
F68V_bin.96	71.77	2.69	MQ
F68V_bin.97	89.61	3.13	MQ
F68V_bin.98	68.34	2.01	MQ
F6MY_bin.72	61.09	2.46	MQ
F68U_bin.26	78.71	0	MQ
F68W_bin.110	68.63	0.51	MQ
F6DH_bin.59	70.28	2.63	MQ
F6DH_bin.12	86.96	2.68	MQ
F68W_bin.16	80.44	4.33	MQ
F68W_bin.19	86.8	0	MQ
F6DH_bin.67	81.71	0	MQ
F68W_bin.2	83.86	0.3	MQ
F6DH_bin.119	62.23	3.45	MQ
F68W_bin.23	87.25	0.67	MQ
F6DH_bin.55	66.11	0	MQ
F68U_bin.109	68.84	0.37	MQ
F68W_bin.25	84.76	1.11	MQ
F68W_bin.31	85.49	1.87	MQ
F6DH_bin.45	89.26	4.7	MQ
F6DH_bin.99	89.37	2.43	MQ
F68W_bin.41	56.4	3.36	MQ
F68W_bin.44	83.9	4.99	MQ
F68W_bin.45	88.26	0.67	MQ
F6DH_bin.91	71.48	0.67	MQ
F68W_bin.48	59.48	0.86	MQ
F6DH_bin.62	52.83	1.34	MQ
F68W_bin.51	83.82	0.17	MQ
F6DH_bin.127	82.51	0	MQ
F68W_bin.56	75.48	1.55	MQ
F6DH_bin.28	78.9	2.49	MQ
F68W_bin.58	55.33	0	MQ
F68W_bin.59	70.54	0	MQ
F6DH_bin.20	57.31	0	MQ
F68U_bin.12	70.39	0	MQ
F6DH_bin.1	74.14	3.45	MQ
F68W_bin.61	81.97	1.62	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68W_bin.65	55.6	3.61	MQ
F6DH_bin.24	51.9	4.75	MQ
F68U_bin.10	85.23	0	MQ
F68W_bin.67	89.93	0	MQ
F6DH_bin.8	86.58	0	MQ
F68W_bin.71	53.45	1.72	MQ
F68W_bin.75	52.79	0.81	MQ
F68W_bin.79	74.25	0.89	MQ
F6DH_bin.41	78.39	4.08	MQ
F6DH_bin.56	80.92	0	MQ
F68W_bin.82	89.26	0.67	MQ
F6DH_bin.104	89.26	1.01	MQ
F68W_bin.83	79.62	3.95	MQ
F68W_bin.85	85.76	1.43	MQ
F6DH_bin.38	76.49	2.38	MQ
F6DH_bin.73	56.52	0	MQ
F68W_bin.89	73.82	2.01	MQ
F6DH_bin.94	82.47	0.82	MQ
F68U_bin.73	89.19	0.68	MQ
F68W_bin.93	89.19	0.68	MQ
F6DH_bin.58	89.19	0.68	MQ
F68W_bin.95	86.9	3.15	MQ
F6DH_bin.97	80.36	4.49	MQ
F6D7_bin.103	87.08	1.12	MQ
F6D7_bin.104	78.87	3.75	MQ
F6D7_bin.105	80.02	2.01	MQ
F6D7_bin.109	56.67	3.37	MQ
F68V_bin.39	88.79	0.02	MQ
F6D7_bin.18	66.81	1.48	MQ
F68H_bin.8	87.53	4.05	MQ
F6D7_bin.29	89.26	1.01	MQ
F68M_bin.14	88.23	4.05	MQ
F6MX_bin.25	72.14	1.05	MQ
F6D7_bin.36	61.05	0	MQ
F6D7_bin.37	85.52	2.62	MQ
F6D7_bin.41	70.42	0.77	MQ
F6D7_bin.45	87.38	2.15	MQ
F68C_bin.96	87.4	2.53	MQ
F6D7_bin.49	79.03	0.05	MQ
F6D7_bin.50	89.6	1.68	MQ
F6MY_bin.80	53.25	0.56	MQ
F6D7_bin.60	75	1.25	MQ
F6D7_bin.61	80.24	0.03	MQ
F6D7_bin.62	67.89	3.51	MQ
F6D7_bin.63	81.31	2.57	MQ
F6D7_bin.66	88.37	1.42	MQ
F6D7_bin.68	59.26	1.13	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D7_bin.69	68.59	0	MQ
F6D7_bin.70	79.08	2.35	MQ
F68K_bin.93	72.93	0.4	MQ
F6D7_bin.76	85.01	0.34	MQ
F6D7_bin.78	81.34	2.49	MQ
F6D7_bin.79	86.52	0.34	MQ
F6D7_bin.8	64.83	1.34	MQ
F6D7_bin.80	50.33	3.45	MQ
F6D7_bin.85	88.26	0	MQ
F6D7_bin.88	55.49	1.72	MQ
F6D7_bin.89	57.27	0	MQ
F68C_bin.58	67.02	0.12	MQ
F6D7_bin.93	85.23	1.04	MQ
F6D8_bin.1	78.64	0	MQ
F6D8_bin.10	85.2	2.18	MQ
F6D8_bin.12	87.3	0.67	MQ
F6D8_bin.15	71.17	0	MQ
F6D8_bin.2	74.34	1.72	MQ
F6D8_bin.23	57.14	0	MQ
F6D8_bin.24	77.84	2.4	MQ
F6D8_bin.34	82.66	0.67	MQ
F6D8_bin.36	86.34	1.85	MQ
F68D_bin.87	74.14	0	MQ
F6D8_bin.39	79.4	1.12	MQ
F6D8_bin.4	89.26	0.17	MQ
F6DA_bin.83	85.44	2.88	MQ
F6D8_bin.48	87.92	1.48	MQ
F68M_bin.21	88.53	3.91	MQ
F68V_bin.88	60.34	0	MQ
F6DE_bin.26	51.72	0	MQ
F6DB_bin.49	86.11	0	MQ
F6D9_bin.44	72.68	2.57	MQ
F6D8_bin.56	64.17	0.12	MQ
F68R_bin.26	80.28	0.67	MQ
F6D8_bin.59	88.12	0.09	MQ
F6DG_bin.53	84.56	4.36	MQ
F6D8_bin.65	80.7	0	MQ
F6D8_bin.69	53.4	1.61	MQ
F6D8_bin.70	88.11	0	MQ
F6D8_bin.71	81.9	1.85	MQ
F6D8_bin.72	83.82	2.68	MQ
F6D8_bin.73	68.1	1.89	MQ
F6D8_bin.75	79.19	0.34	MQ
F6D8_bin.77	54.1	3.33	MQ
F6D8_bin.78	52.19	4.35	MQ
F6D8_bin.79	80.27	2.59	MQ
F6D8_bin.80	75.72	0.95	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6D8_bin.94	56.79	1.68	MQ
F6D8_bin.95	59.87	1.88	MQ
F6D8_bin.98	58.32	1.85	MQ
F6D9_bin.21	70.17	3.45	MQ
F6D9_bin.24	89.92	0.18	MQ
F6D9_bin.26	88.1	2.74	MQ
F6D9_bin.31	77.07	1.72	MQ
F6D9_bin.32	76.12	4.03	MQ
F6D9_bin.34	84.76	0.17	MQ
F6D9_bin.38	87.94	0	MQ
F6D9_bin.43	79.06	0.37	MQ
F6D9_bin.46	80.95	0	MQ
F6D9_bin.47	69.51	0.43	MQ
F6D9_bin.49	52.6	1.34	MQ
F6D9_bin.51	62.21	0.95	MQ
F68C_bin.75	53.45	1.72	MQ
F68D_bin.104	54.58	3.45	MQ
F68T_bin.8	85.34	0.25	MQ
F6D9_bin.52	86.18	0.37	MQ
F68W_bin.102	73.66	0	MQ
F6D9_bin.56	53.23	0	MQ
F6D9_bin.58	50.86	3.45	MQ
F6D9_bin.6	76.18	0.49	MQ
F6D9_bin.61	56.9	1.72	MQ
F68M_bin.66	82.91	0	MQ
F6D9_bin.66	85.29	3.16	MQ
F6D9_bin.72	72.19	1.12	MQ
F6D9_bin.75	89.61	4.58	MQ
F6D9_bin.76	81.84	1.08	MQ
F68N_bin.26	70	1.72	MQ
F6D9_bin.80	55.93	0	MQ
F68F_bin.8	87.99	1.89	MQ
F68W_bin.64	83.64	2.01	MQ
F6D9_bin.85	82.21	0	MQ
F6DH_bin.75	78.41	1.81	MQ
F6D9_bin.86	89.87	1.05	MQ
F6D9_bin.87	89.26	1.29	MQ
F6D9_bin.88	55.59	1.12	MQ
F6D9_bin.9	88.36	0.67	MQ
F6D9_bin.92	81.85	2.36	MQ
F6D9_bin.94	77.07	1.56	MQ
F6D9_bin.96	61.11	1.01	MQ
F6DA_bin.11	77.87	1.37	MQ
F6DG_bin.11	56.63	3.37	MQ
F6DA_bin.12	84.3	1.44	MQ
F6DA_bin.14	83.47	1.73	MQ
F6DA_bin.17	71.29	0	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DA_bin.2	84.12	3.76	MQ
F6DA_bin.20	66.18	2.4	MQ
F6DA_bin.21	79.94	4.01	MQ
F6DA_bin.27	88.28	1.34	MQ
F6DA_bin.28	87.76	0.68	MQ
F68T_bin.15	84.69	1.71	MQ
F6D8_bin.16	76.68	2.44	MQ
F6D9_bin.60	82.26	2.44	MQ
F6DA_bin.30	84.1	1.43	MQ
F6DE_bin.87	78.59	1.34	MQ
F6DA_bin.38	86	2.63	MQ
F6DA_bin.4	80.57	0.24	MQ
F6MX_bin.39	89.94	2.08	MQ
F6DA_bin.42	58.91	0	MQ
F6DA_bin.46	66.94	0.81	MQ
F6DA_bin.50	58.62	0	MQ
F6DA_bin.52	89.47	0.68	MQ
F6DA_bin.54	87.12	0.84	MQ
F68R_bin.3	51.75	0	MQ
F6DB_bin.92	88.61	2.68	MQ
F6DA_bin.58	76.67	3.51	MQ
F6DA_bin.62	67.14	2.5	MQ
F6DA_bin.65	76.48	0.67	MQ
F6DA_bin.67	72.99	0	MQ
F6DA_bin.68	83.97	2.85	MQ
F6DA_bin.71	83.89	0.67	MQ
F6DA_bin.74	77.92	1.34	MQ
F68R_bin.104	84.99	3.38	MQ
F68H_bin.46	87.54	1.68	MQ
F6DA_bin.78	81.99	0.34	MQ
F6DA_bin.80	62.28	4.39	MQ
F6DA_bin.81	86.98	0.56	MQ
F6DA_bin.84	84.91	3.33	MQ
F6DG_bin.7	82	2.55	MQ
F68F_bin.69	87.02	0.34	MQ
F6DA_bin.89	55.94	0.67	MQ
F68H_bin.10	87.82	1.41	MQ
F68J_bin.35	89.14	0	MQ
F6DA_bin.90	73.69	2.74	MQ
F6DA_bin.92	83.1	1.72	MQ
F6DA_bin.96	86.79	0	MQ
F68D_bin.73	53.49	2.63	MQ
F6DB_bin.101	78.79	0.67	MQ
F6DG_bin.31	74.3	1	MQ
F68R_bin.5	82.7	1.34	MQ
F6DB_bin.108	86.98	0.59	MQ
F6DB_bin.115	79.71	3.1	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68P_bin.23	60.71	1.79	MQ
F6D8_bin.82	51.25	0	MQ
F6DB_bin.22	87.32	1.4	MQ
F6DB_bin.27	72.55	1.02	MQ
F6DB_bin.28	75.2	0.68	MQ
F6DB_bin.30	85.53	1.84	MQ
F6DB_bin.34	70.67	1.27	MQ
F6DB_bin.35	54.9	0	MQ
F6DB_bin.37	85.99	0	MQ
F68T_bin.68	78.45	2.91	MQ
F6DB_bin.4	86.79	0.67	MQ
F6MY_bin.135	82.53	0.67	MQ
F6DB_bin.40	89.47	0	MQ
F6DB_bin.42	71.72	2.5	MQ
F68V_bin.126	52.15	0.86	MQ
F6DB_bin.46	77.31	1.72	MQ
F6DB_bin.5	89.53	0.73	MQ
F6DB_bin.50	83.63	1.51	MQ
F6DB_bin.55	75.94	0.49	MQ
F6DB_bin.57	67.59	0	MQ
F6DE_bin.89	53.45	0.86	MQ
F6DB_bin.59	68.62	2.65	MQ
F6DB_bin.69	89.59	4.95	MQ
F6D8_bin.97	58.06	2.11	MQ
F68C_bin.77	51.38	0	MQ
F68F_bin.83	85.23	0.67	MQ
F68J_bin.1	74.38	1.34	MQ
F68T_bin.14	85.91	0.67	MQ
F6DB_bin.70	84.56	0	MQ
F6DE_bin.35	87.25	0.67	MQ
F6DB_bin.72	83.67	0	MQ
F68C_bin.113	68.56	3.51	MQ
F6DB_bin.75	77.01	1.01	MQ
F68G_bin.45	82.26	1.41	MQ
F68M_bin.45	82.83	0.59	MQ
F68P_bin.53	71.74	4.06	MQ
F6DE_bin.55	74.52	0.66	MQ
F6DG_bin.36	89.74	0.95	MQ
F6DB_bin.80	74.48	0	MQ
F6DB_bin.85	84.9	1.75	MQ
F68C_bin.33	83.93	4.39	MQ
F68U_bin.114	82.78	1.35	MQ
F6DE_bin.76	81.38	1.72	MQ
F6DB_bin.96	89.86	2.02	MQ
F6DE_bin.12	86.09	1.81	MQ
F6DE_bin.13	73.71	1.57	MQ
F68D_bin.48	58.17	2.64	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68E_bin.5	87.71	1.39	MQ
F68K_bin.56	80.09	1.6	MQ
F6DA_bin.10	88.28	2.08	MQ
F6DH_bin.131	51.18	0.23	MQ
F6DE_bin.22	85.23	0.21	MQ
F68T_bin.30	78.05	2.53	MQ
F6DE_bin.24	58.79	4.31	MQ
F6DE_bin.29	75.84	3.69	MQ
F68V_bin.78	60.66	3.45	MQ
F68V_bin.107	86.83	1.5	MQ
F6DE_bin.40	89.26	0	MQ
F6DE_bin.41	70.89	0	MQ
F6DE_bin.44	89.52	0.81	MQ
F6DE_bin.45	78.68	1.93	MQ
F6DE_bin.46	78.52	1.16	MQ
F68C_bin.110	86.43	3.66	MQ
F68F_bin.105	77	2.1	MQ
F6D7_bin.65	62.93	1.72	MQ
F6DB_bin.17	61.94	2.51	MQ
F6D7_bin.12	85.19	2.74	MQ
F6DE_bin.58	88.99	3.23	MQ
F6DG_bin.28	64.98	1.72	MQ
F6DE_bin.60	77.63	4.7	MQ
F6D8_bin.96	54.02	1.92	MQ
F6DE_bin.63	89.13	1.84	MQ
F6DE_bin.64	67.67	0	MQ
F68H_bin.36	70.08	3.32	MQ
F68R_bin.24	85.4	0.27	MQ
F68V_bin.18	84.08	2.01	MQ
F6DA_bin.98	51.28	0.12	MQ
F6DE_bin.69	84.94	1.63	MQ
F6DE_bin.71	68.68	1.79	MQ
F6DE_bin.75	84.34	1.46	MQ
F6DB_bin.112	85.04	1.52	MQ
F6DG_bin.59	89.54	0.56	MQ
F6DE_bin.79	88.87	4.72	MQ
F6DE_bin.81	82.12	0	MQ
F68G_bin.79	89.28	2.78	MQ
F68K_bin.64	85.47	0.45	MQ
F68T_bin.96	82.97	1.52	MQ
F6DB_bin.39	87.84	0.79	MQ
F6DE_bin.83	88.02	2.56	MQ
F68D_bin.57	89.96	0.02	MQ
F68E_bin.43	84.91	0.56	MQ
F68V_bin.73	65.67	0	MQ
F6D9_bin.16	62.63	2.33	MQ
F6DE_bin.92	70.7	2.63	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6DE_bin.93	72.28	3.57	MQ
F6DG_bin.10	86.58	1.01	MQ
F6DG_bin.102	87.76	0	MQ
F6DG_bin.105	51.67	4.47	MQ
F6DG_bin.107	55.3	3.52	MQ
F6DG_bin.108	73.29	2.01	MQ
F6DG_bin.16	58.62	1.72	MQ
F6DG_bin.17	85.23	0	MQ
F6DG_bin.22	86.47	1.34	MQ
F6DG_bin.25	50.61	3.45	MQ
F6DG_bin.26	82.21	0	MQ
F6DG_bin.27	77.19	0	MQ
F6DG_bin.33	50.94	4.31	MQ
F6DG_bin.4	59.44	0	MQ
F6DB_bin.71	76.45	2.35	MQ
F6DG_bin.44	80.57	0	MQ
F6DG_bin.45	71.74	1.45	MQ
F6DG_bin.46	61.82	0.82	MQ
F6DG_bin.47	82.49	1.8	MQ
F6DG_bin.5	68.11	1.27	MQ
F6DG_bin.57	89.87	0	MQ
F6DG_bin.58	56.47	0.78	MQ
F6DG_bin.6	57.71	0	MQ
F6DG_bin.60	65	4.92	MQ
F6DG_bin.74	78.87	2.01	MQ
F6DG_bin.78	55.15	0.79	MQ
F6DG_bin.82	61.72	0.36	MQ
F68P_bin.45	85.92	3.14	MQ
F6DG_bin.85	65.67	0.32	MQ
F6DG_bin.93	86.11	1.81	MQ
F6DG_bin.94	86.39	1.03	MQ
F6DG_bin.95	62.52	4.03	MQ
F6DG_bin.98	89.92	1.61	MQ
F68W_bin.39	76.42	0	MQ
F6DH_bin.105	81.7	0	MQ
F6DH_bin.107	57.76	1.75	MQ
F6DH_bin.109	82.33	1.14	MQ
F68W_bin.106	88.59	2.72	MQ
F6DH_bin.111	83.08	0	MQ
F68W_bin.111	54.38	1.49	MQ
F6DG_bin.61	68.96	1.9	MQ
F6DH_bin.117	81.24	0	MQ
F6DH_bin.121	53.62	2.59	MQ
F6DH_bin.124	59.04	3.92	MQ
F6DH_bin.125	60.5	0.21	MQ
F6DH_bin.126	84.24	0.63	MQ
F68K_bin.7	74.6	0	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F68U_bin.8	72.41	1.72	MQ
F68W_bin.74	73.58	0	MQ
F6DH_bin.15	79.41	0	MQ
F68W_bin.11	83.66	2.35	MQ
F6DH_bin.18	81.21	0.81	MQ
F68U_bin.87	85.91	0	MQ
F68W_bin.107	82.38	0	MQ
F6D8_bin.89	68.68	4.39	MQ
F6D9_bin.36	67.72	2.37	MQ
F68U_bin.25	85.07	1.74	MQ
F68W_bin.34	85.59	0.67	MQ
F68W_bin.29	74.39	1.77	MQ
F6DH_bin.23	75.68	1.77	MQ
F68W_bin.99	89.54	0	MQ
F68W_bin.98	52.96	1.01	MQ
F6DH_bin.30	55.82	0	MQ
F68W_bin.60	55.72	0	MQ
F68U_bin.95	87.69	0.93	MQ
F68W_bin.27	87.64	1.02	MQ
F6DH_bin.37	89.25	0.23	MQ
F6DH_bin.39	81.7	3.32	MQ
F68W_bin.32	79.34	2.03	MQ
F6DH_bin.40	88.31	1.69	MQ
F6MY_bin.111	75.58	1.69	MQ
F68W_bin.86	71.85	3.32	MQ
F6DH_bin.48	80.3	1.34	MQ
F68U_bin.46	81.19	1.72	MQ
F68W_bin.5	61.32	1.72	MQ
F6DH_bin.53	64.64	3.57	MQ
F68W_bin.76	79.29	0.59	MQ
F6DH_bin.60	81.66	0.59	MQ
F6DH_bin.63	56.41	1.91	MQ
F6DH_bin.65	73	0	MQ
F6DH_bin.70	77.55	1.24	MQ
F6DH_bin.74	52.59	3.45	MQ
F68W_bin.50	69.49	2.59	MQ
F6DH_bin.77	85.94	2.03	MQ
F68W_bin.84	58.18	0	MQ
F6DH_bin.80	54.37	2.46	MQ
F6DH_bin.81	69.98	3.43	MQ
F6DH_bin.83	85.09	4.28	MQ
F6DH_bin.84	50.88	1.75	MQ
F6DH_bin.92	56.11	1.01	MQ
F6MX_bin.10	79.57	2.01	MQ
F6MX_bin.103	86.44	3.58	MQ
F6MX_bin.105	88.38	1.88	MQ
F6MX_bin.11	76.96	0.84	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MX_bin.112	86.88	0.17	MQ
F6MX_bin.12	83.64	0	MQ
F6MX_bin.120	57.89	1.75	MQ
F6MX_bin.122	88.14	0	MQ
F6MX_bin.132	89.26	0	MQ
F6MX_bin.133	65.48	0.68	MQ
F6MX_bin.134	84.84	4.37	MQ
F6MX_bin.136	89.09	0.67	MQ
F6MX_bin.137	50.89	0.67	MQ
F6MX_bin.138	72.4	4.7	MQ
F68C_bin.91	77.92	0	MQ
F6MX_bin.16	89.26	1.34	MQ
F6MX_bin.17	57.97	3.19	MQ
F6MX_bin.2	59.76	0	MQ
F6MX_bin.21	86.19	1.89	MQ
F6DG_bin.103	88.2	3.37	MQ
F6MX_bin.27	84.42	0.49	MQ
F6MX_bin.28	54.15	0	MQ
F6MX_bin.29	84.6	2.36	MQ
F68F_bin.6	86.24	3.36	MQ
F6MX_bin.3	86.91	0.67	MQ
F6MX_bin.30	89.14	0	MQ
F6MX_bin.31	74.71	0.67	MQ
F6MX_bin.33	59.23	4.38	MQ
F6MX_bin.34	72.87	0.22	MQ
F6MX_bin.37	52.59	2.35	MQ
F6MX_bin.43	67.65	1.11	MQ
F6MX_bin.45	88.98	0.1	MQ
F68N_bin.4	84.28	0.34	MQ
F6MX_bin.46	87.02	0	MQ
F6MX_bin.47	87.7	4.87	MQ
F6MX_bin.49	74.52	0.71	MQ
F6MX_bin.5	89.35	1.17	MQ
F6MX_bin.50	86.36	3.54	MQ
F6MX_bin.6	62.09	2.9	MQ
F6MX_bin.62	86.02	0	MQ
F68R_bin.40	79.69	0.22	MQ
F68V_bin.110	79.02	2.91	MQ
F6D8_bin.60	79.69	0.22	MQ
F6MX_bin.66	80.36	0.22	MQ
F6DG_bin.97	84.11	2.57	MQ
F6MX_bin.73	87.25	1.01	MQ
F6MX_bin.75	50.52	0	MQ
F6MX_bin.77	63.91	0.37	MQ
F6MX_bin.78	78.79	1.34	MQ
F6MY_bin.3	73.62	1.86	MQ
F6MX_bin.82	70.05	3.25	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MX_bin.85	54.7	1.75	MQ
F6MX_bin.89	80.5	2.18	MQ
F6MX_bin.9	60.34	1.72	MQ
F6MX_bin.90	68.64	2.31	MQ
F6MX_bin.93	52.51	4.98	MQ
F6MX_bin.94	77.07	0	MQ
F6MX_bin.97	73.08	0.71	MQ
F6MY_bin.1	83.9	0.68	MQ
F6MY_bin.10	85.12	2.42	MQ
F6MY_bin.101	67.48	0	MQ
F6MY_bin.102	83.66	0.53	MQ
F6MY_bin.104	86.8	1.57	MQ
F6MY_bin.105	74.96	0.67	MQ
F6MY_bin.107	52.38	0.81	MQ
F6MY_bin.109	65.52	1.72	MQ
F6MY_bin.112	68.6	0	MQ
F68H_bin.69	86.23	0.48	MQ
F68K_bin.36	75.06	0.37	MQ
F6D8_bin.28	81.2	0.37	MQ
F6MY_bin.117	87.23	0.93	MQ
F6MY_bin.122	58.62	0	MQ
F6MY_bin.127	53.36	0.34	MQ
F6MY_bin.128	67.41	1.57	MQ
F6MY_bin.13	75.89	3.44	MQ
F6MY_bin.132	88.73	2.41	MQ
F6MY_bin.133	64.86	1.75	MQ
F6MY_bin.138	58.28	1.45	MQ
F6MY_bin.139	71.35	0.74	MQ
F6MY_bin.14	77.3	2.84	MQ
F6MY_bin.16	80.93	0.96	MQ
F6MY_bin.17	52.14	0	MQ
F6MY_bin.19	88.5	0.94	MQ
F6MY_bin.2	53.65	3.78	MQ
F6MY_bin.20	60.34	0	MQ
F6MY_bin.23	53.63	3.57	MQ
F6MY_bin.26	68.45	2.59	MQ
F6MY_bin.29	70.16	2.59	MQ
F6MY_bin.30	68.57	0	MQ
F6MY_bin.31	88.36	0.87	MQ
F6MY_bin.37	62.6	3.51	MQ
F68U_bin.4	83.67	0.67	MQ
F6MY_bin.38	83.33	0	MQ
F68J_bin.2	74.9	1.73	MQ
F6MY_bin.49	89.26	0	MQ
F6MY_bin.53	52.68	0	MQ
F6MY_bin.55	78.15	2.13	MQ
F6MY_bin.57	87.9	2.01	MQ

Table S2. MAGs quanlity

	CheckM_completeness	CheckM_contamination	Quality
F6MY_bin.6	59.99	2.55	MQ
F6MY_bin.62	80.72	2.21	MQ
F6MY_bin.63	80.51	2.18	MQ
F6MY_bin.67	60.6	0.69	MQ
F6MY_bin.68	79.75	2.13	MQ
F6MY_bin.69	58.39	0	MQ
F6MY_bin.76	80.96	1.68	MQ
F6MY_bin.79	89.57	0.71	MQ
F6MY_bin.8	73.95	0.74	MQ
F68T_bin.43	59.42	2.34	MQ
F6MY_bin.82	71.83	1.89	MQ
F6MY_bin.84	74.35	0.17	MQ
F6MY_bin.86	85.14	2.27	MQ
F68V_bin.63	85.67	0	MQ
F6MX_bin.104	87.92	1.12	MQ
F6MY_bin.89	77.91	3.74	MQ
F6MY_bin.9	88.68	0.38	MQ
F6MY_bin.93	89.57	4.76	MQ
F68D_bin.40	70.33	2.59	MQ
F68G_bin.82	87.66	1.65	MQ
F68H_bin.33	56.54	1.72	MQ
F6D7_bin.20	52.76	0.86	MQ
F6DG_bin.38	79.46	4.14	MQ
F6MX_bin.113	72.14	0	MQ

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.37	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_	N/A	187	187_0	F68V_bin.37.fa	F68V_bin.37.fa	99.2	0	1
F68C_bin.92	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68C_bin.92.fa	100	0	1
F68D_bin.21	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68D_bin.21.fa	100	0	1
F68G_bin.35	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68G_bin.35.fa	100	0	1
F68H_bin.60	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68H_bin.60.fa	100	0.8	1
F68J_bin.33	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68J_bin.33.fa	100	0.8	1

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.53	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F68M_bin.53.fa	100	0	1
F6D7_bin.99	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F6D7_bin.99.fa	91.29	1.66	1
F6D8_bin.35	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F6D8_bin.35.fa	100	0	1
F6DB_bin.111	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F6DB_bin.111.fa	100	0	1
F6MX_bin.135	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F6MX_bin.135.fa	100	0	1
F6MY_bin.118	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_2	F68D_bin.21.fa	F6MY_bin.118.fa	100	0	1

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.15	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_1	F6D9_bin.81.fa	F68N_bin.15.fa	100	0	1
F68R_bin.18	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_1	F6D9_bin.81.fa	F68R_bin.18.fa	100	0	1
F68T_bin.78	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_1	F6D9_bin.81.fa	F68T_bin.78.fa	97.6	0	1
F68U_bin.100	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_1	F6D9_bin.81.fa	F68U_bin.100.fa	100	0	1
F6D9_bin.81	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Asmithii	GCF_000016525.1	186	186_1	F6D9_bin.81.fa	F6D9_bin.81.fa	100	0	1
F68F_bin.23	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Awoesei	GCA_00311605.1	185	185_1	F68F_bin.23.fa	F68F_bin.23.fa	100	0.8	1

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.12	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanobrevibacter_A	s_Methanobrevibacter_Awoesei	GCA_00311605.1	185	185_2	F68V_bin.12.fa	F68V_bin.12.fa	75.21	0.4	1
F68D_bin.96	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanospira	s_Methanospira stadtmannae	GCF_000012545.1	198	198_1	F68G_bin.4.fa	F68D_bin.96.fa	50.73	0	1
F68G_bin.4	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanospira	s_Methanospira stadtmannae	GCF_000012545.1	198	198_1	F68G_bin.4.fa	F68G_bin.4.fa	97.6	0	1
F68N_bin.63	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanospira	s_Methanospira stadtmannae	GCF_000012545.1	198	198_1	F68G_bin.4.fa	F68N_bin.63.fa	96.8	0	1
F68R_bin.120	d_Archaea	p_Euryarchaeota	c_Methanobacteria	o_Methanobacteriales	f_Methanobacteriaceae	g_Methanospira	s_Methanospira stadtmannae	GCF_000012545.1	198	198_1	F68G_bin.4.fa	F68R_bin.120.fa	85.59	2.84	1
F68G_bin.8	d_Archaea	p_Thermoplasmata	c_Thermoplasmata	o_Methanomassiliicoccales	f_Methanomethylphilaceae	g_Methanomethylphilus	s_Methanomethylphilus alvus	GCF_000300255.2	244	244_2	F68G_bin.8.fa	F68G_bin.8.fa	97.35	1.61	1

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.74	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__Methanomethylphilus	s__Methanomethylphilus alvus	GCF_000300255.2	244	244_1	F68R_bin.34.fa	F68D_bin.74.fa	98.39	0	1
F68F_bin.18	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__Methanomethylphilus	s__Methanomethylphilus alvus	GCF_000300255.2	244	244_1	F68R_bin.34.fa	F68F_bin.18.fa	98.39	0.81	1
F68R_bin.34	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__Methanomethylphilus	s__Methanomethylphilus alvus	GCF_000300255.2	244	244_1	F68R_bin.34.fa	F68R_bin.34.fa	98.39	0	1
F68G_bin.3	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__UBA71	s__	N/A	245	245_0	F68G_bin.3.fa	F68G_bin.3.fa	66.75	1	2
F68M_bin.6	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__UBA71	s__	N/A	246	246_0	F68M_bin.6.fa	F68M_bin.6.fa	98.52	0.32	3
F68T_bin.56	d__Archaea	p__Thermoplasmatota	c__Thermoplasmatia	o__Methanomassiliicoccales	f__Methanomethylphilaceae	g__UBA71	s__	N/A	247	247_0	F68T_bin.56.fa	F68T_bin.56.fa	79.31	1.92	4

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.102	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Actinomycetaceae	g_Pauljensenia	s_Pauljensenia sp001838165	GCF_001838165.1	468	468_0	F68V_bin.102.fa	F68V_bin.102.fa	67.53	2.96	4
F68H_bin.72	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium adolescentis	GCF_000010425.1	525	525_0	F68H_bin.72.fa	F68H_bin.72.fa	100	1.87	4
F68T_bin.18	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium bifidum	GCF_001025135.1	526	526_1	F68T_bin.18.fa	F68T_bin.18.fa	98.16	0.92	4
F6DB_bin.30	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium bifidum	GCF_001025135.1	526	526_2	F6DB_bin.30.fa	F6DB_bin.30.fa	85.53	1.84	4
F68M_bin.14	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium dentium	GCF_001042595.1	523	523_1	F6D7_bin.30.fa	F68M_bin.14.fa	88.23	4.05	4
F6D7_bin.30	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium dentium	GCF_001042595.1	523	523_1	F6D7_bin.30.fa	F6D7_bin.30.fa	96.29	1.72	4
F6MX_bin.25	d_Bacteria	p_Actinobacteriota	c_Actinobacteriia	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium dentium	GCF_001042595.1	523	523_1	F6D7_bin.30.fa	F6MX_bin.25.fa	72.14	1.05	4

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.30	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium longum	GCF_000196555.1	527	527_1	F6DE_bin.23.fa	F68T_bin.30.fa	78.05	2.53	4
F6DB_bin.53	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium longum	GCF_000196555.1	527	527_1	F6DE_bin.23.fa	F6DB_bin.53.fa	90.27	1.39	4
F6DE_bin.23	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium longum	GCF_000196555.1	527	527_1	F6DE_bin.23.fa	F6DE_bin.23.fa	99.31	0	4
F68V_bin.66	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium pseudocatenulatum	GCF_001025215.1	524	524_1	F68V_bin.66.fa	F68V_bin.66.fa	95.36	0.45	4
F6DB_bin.43	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Bifidobacteriaceae	g_Bifidobacterium	s_Bifidobacterium pseudocatenulatum	GCF_001025215.1	524	524_2	F6DB_bin.43.fa	F6DB_bin.43.fa	100	0.23	4
F6DE_bin.50	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Actinomycetales	f_Micrococcaceae	g_Rothia	s_Rothia mucilaginosa B	GCF_001548235.1	383	383_0	F6DE_bin.50.fa	F6DE_bin.50.fa	99.33	1.33	4

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.69	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Mycobacteriales	f_Mycobacteriaceae	g_Corynebacterium	s_Corynebacterium argenteum	GCF_000590555.1	21	21_1	F68V_bin.69.fa	F68V_bin.69.fa	84.18	1.06	4
F6MX_bin.115	d_Bacteria	p_Actinobacteriota	c_Actinobacteria	o_Mycobacteriales	f_Mycobacteriaceae	g_Corynebacterium	s_Corynebacterium argenteum	GCF_000590555.1	21	21_2	F6MX_bin.115.fa	F6MX_bin.115.fa	96.51	0.05	4
F68M_bin.13	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Atopobiaceae	g__	s__	N/A	512	512_0	F68M_bin.13.fa	F68M_bin.13.fa	99.6	1.49	5
F68M_bin.44	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Atopobiaceae	g_Olsenella	s_Olsenella phocaenensis	GCF_900120385.1	658	658_0	F68M_bin.44.fa	F68M_bin.44.fa	83.43	3.23	5
F68M_bin.58	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Atopobiaceae	g_Olsenella_B	s_Olsenella_B sp000752675	GCF_000752675.2	511	511_1	F68N_bin.67.fa	F68M_bin.58.fa	100	1.61	5
F68N_bin.67	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Atopobiaceae	g_Olsenella_B	s_Olsenella_B sp000752675	GCF_000752675.2	511	511_1	F68N_bin.67.fa	F68N_bin.67.fa	99.19	0.16	5
F6MY_bin.6	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Atopobiaceae	g_Olsenella_B	s_Olsenella_B sp000752675	GCF_000752675.2	511	511_2	F6MY_bin.6.fa	F6MY_bin.6.fa	59.99	2.55	5

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.29	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_17	F68C_bin.29.fa	F68C_bin.29.fa	78.77	3.03	6
F68R_bin.74	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_5	F68R_bin.74.fa	F68R_bin.74.fa	92.61	2.94	7
F68U_bin.63	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_6	F68U_bin.63.fa	F68U_bin.63.fa	87.26	1.73	8
F68W_bin.63	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_6	F68U_bin.63.fa	F68W_bin.63.fa	80.89	2.78	9
F6DB_bin.96	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_2	F6DB_bin.96.fa	F6DB_bin.96.fa	89.86	2.02	10
F6DE_bin.44	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_19	F6DE_bin.44.fa	F6DE_bin.44.fa	89.52	0.81	11
F6MY_bin.78	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	514	514_18	F6MY_bin.78.fa	F6MY_bin.78.fa	100	0.89	12
F68K_bin.51	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	516	516_1	F68K_bin.51.fa	F68K_bin.51.fa	91.32	2.19	13
F68D_bin.30	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s__	N/A	517	517_0	F68D_bin.30.fa	F68D_bin.30.fa	98.79	0	14

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.15	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella bouchesdurhonensis	GCF_900155365.1	513	513_1	F6MX_bin.15.fa	F6MX_bin.15.fa	97.58	2.42	14
F6MY_bin.107	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella bouchesdurhonensis	GCF_900155365.1	513	513_2	F6MY_bin.107.fa	F6MY_bin.107.fa	52.38	0.81	14
F68U_bin.51	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella intestinalis	GCF_000156175.1	516	516_2	F68U_bin.51.fa	F68U_bin.51.fa	91.56	2.62	14
F68D_bin.11	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_16	F68D_bin.11.fa	F68D_bin.11.fa	89.04	4.57	14
F68E_bin.44	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_7	F68E_bin.44.fa	F68E_bin.44.fa	100	0.81	14
F68F_bin.89	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_14	F68F_bin.89.fa	F68F_bin.89.fa	94.35	1.01	14
F68G_bin.11	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Corionebacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_3	F68G_bin.11.fa	F68G_bin.11.fa	62.67	2.15	14

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.62	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_12	F68J_bin.62.fa	F68J_bin.62.fa	100	0.81	14
F68K_bin.37	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_9	F68K_bin.37.fa	F68K_bin.37.fa	92.74	1.08	14
F68M_bin.55	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_11	F68M_bin.55.fa	F68M_bin.55.fa	98.39	1.61	14
F68P_bin.5	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_4	F68P_bin.5.fa	F68P_bin.5.fa	100	0.81	14
F68V_bin.35	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_8	F68V_bin.35.fa	F68V_bin.35.fa	100	1.21	14
F6D7_bin.16	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_10	F6D7_bin.16.fa	F6D7_bin.16.fa	96.61	2.66	14
F6D8_bin.54	d_Bacteria	p_Actinobacteriota	c_Corionobacteriia	o_Corionobacteriales	f_Corionobacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_15	F6D8_bin.54.fa	F6D8_bin.54.fa	100	0.81	14

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.14	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_13	F6D9_bin.14.fa	F6D9_bin.14.fa	96.77	1.73	14
F6DA_bin.46	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella sp002232035	GCF_002232035.1	514	514_1	F6DA_bin.46.fa	F6DA_bin.46.fa	66.94	0.81	14
F68D_bin.5	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella tanakaei	GCF_000225705.1	515	515_3	F68D_bin.5.fa	F68D_bin.5.fa	96.15	0	14
F68F_bin.35	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella tanakaei	GCF_000225705.1	515	515_1	F68F_bin.35.fa	F68F_bin.35.fa	100	2.42	14
F68K_bin.48	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella tanakaei	GCF_000225705.1	515	515_1	F68F_bin.35.fa	F68K_bin.48.fa	73.05	1.41	14
F6DE_bin.43	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Corionibacteriaceae	g_Collinsella	s_Collinsella tanakaei	GCF_000225705.1	515	515_2	F6DE_bin.43.fa	F6DE_bin.43.fa	100	1.2	14
F68C_bin.102	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g__	s__	N/A	518	518_0	F68C_bin.102.fa	F68C_bin.102.fa	71.57	1.76	15
F6DB_bin.28	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g__	s__	N/A	531	531_3	F6DB_bin.28.fa	F6DB_bin.28.fa	75.2	0.68	16

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.81	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g__	s__	N/A	531	531_1	F6DH_bin.81.fa	F6DH_bin.81.fa	69.98	3.43	17
F6MX_bin.2	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g__	s__	N/A	531	531_2	F6MX_bin.2.fa	F6MX_bin.2.fa	59.76	0	18
F68F_bin.63	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_Adlercreutzia	s_Adlercreutziaequolifaciens	GCF_000478885.1	520	520_0	F68F_bin.63.fa	F68F_bin.63.fa	66.07	1.79	18
F68T_bin.70	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427sp000431675	GCA_000431675.1	530	530_0	F68T_bin.70.fa	F68T_bin.70.fa	98.56	1.53	18
F68F_bin.68	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427sp000435475	GCA_000435475.1	529	529_3	F68F_bin.68.fa	F68F_bin.68.fa	97.58	0.12	18
F68N_bin.1	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427sp000435475	GCA_000435475.1	529	529_5	F68N_bin.1.fa	F68N_bin.1.fa	76.61	0.12	18
F68T_bin.71	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427sp000435475	GCA_000435475.1	529	529_1	F68T_bin.71.fa	F68T_bin.71.fa	81.7	1.21	18
F6D7_bin.93	d_Bacteria	p_Actinobacteriota	c_Corionibacteriia	o_Corionibacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427sp000435475	GCA_000435475.1	529	529_2	F6D7_bin.93.fa	F6D7_bin.93.fa	85.23	1.04	18

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.51	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_CAG-1427	s_CAG-1427 sp000435475	GCA_000435475.1	529	529_4	F6MX_bin.51.fa	F6MX_bin.51.fa	98.97	0.2	18
F68E_bin.29	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_Eggerthella	s_Eggerthella lenta	GCF_000024265.1	519	519_0	F68E_bin.29.fa	F68E_bin.29.fa	82.79	2.85	18
F68K_bin.86	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_Raoultibacter	s__	N/A	522	522_0	F68K_bin.86.fa	F68K_bin.86.fa	54.78	1.72	19
F68F_bin.96	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_Senegalimassilia	s_Senegalimassilia anaerobila	GCF_000236865.1	532	532_0	F68F_bin.96.fa	F68F_bin.96.fa	67.73	1.08	19
F6DG_bin.4	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_Slackia_A	s__	N/A	528	528_1	F6DG_bin.4.fa	F6DG_bin.4.fa	59.44	0	20
F6DH_bin.18	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_Eggerthellaceae	g_Slackia_A	s__	N/A	528	528_2	F6DH_bin.18.fa	F6DH_bin.18.fa	81.21	0.81	21
F68V_bin.105	d_Bacteria	p_Actinobacteriota	c_Corionebacteriia	o_Corionebacteriales	f_QAMH01	g_QAMH01	s__	N/A	521	521_0	F68V_bin.105.fa	F68V_bin.105.fa	76.88	3.23	22
F68F_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g__	s__	N/A	75	75_0	F68F_bin.29.fa	F68F_bin.29.fa	52.59	0	23
F6DH_bin.121	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g__	s__	N/A	409	409_0	F6DH_bin.121.fa	F6DH_bin.121.fa	53.62	2.59	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.80	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_43-108	s_43-108 sp001915545	GCA_001915545.1	74	74_0	F68C_bin.80.fa	F68C_bin.80.fa	77.05	0	24
F6DB_bin.88	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides caccae	GCF_00222615.2	92	92_1	F6DB_bin.88.fa	F6DB_bin.88.fa	94.37	0.96	24
F6DE_bin.76	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides caccae	GCF_00222615.2	92	92_1	F6DB_bin.88.fa	F6DE_bin.76.fa	81.38	1.72	24
F68C_bin.75	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides eggerthii	GCF_000155815.1	96	96_1	F6D9_bin.52.fa	F68C_bin.75.fa	53.45	1.72	24
F68D_bin.104	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides eggerthii	GCF_000155815.1	96	96_1	F6D9_bin.52.fa	F68D_bin.104.fa	54.58	3.45	24
F68T_bin.8	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides eggerthii	GCF_000155815.1	96	96_1	F6D9_bin.52.fa	F68T_bin.8.fa	85.34	0.25	24
F6D9_bin.52	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides eggerthii	GCF_000155815.1	96	96_1	F6D9_bin.52.fa	F6D9_bin.52.fa	86.18	0.37	24
F68D_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fluxus	GCF_000195635.1	97	97_0	F68D_bin.38.fa	F68D_bin.38.fa	69.83	1.72	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.91	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68D_bin.91.fa	95.02	0	24
F68E_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68E_bin.46.fa	78.79	0	24
F68H_bin.34	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68H_bin.34.fa	97.91	0	24
F68K_bin.102	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68K_bin.102.fa	67.45	2.42	24
F68M_bin.17	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68M_bin.17.fa	92.57	0	24
F68N_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68N_bin.70.fa	90.32	0	24
F68U_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68U_bin.9.fa	96.67	0.56	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F68V_bin.62.fa	98.88	0	24
F6D9_bin.55	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F6D9_bin.55.fa	63.2	0	24
F6MX_bin.114	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis	GCF_000025985.1	86	86_1	F68V_bin.62.fa	F6MX_bin.114.fa	56.9	0	24
F68G_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis A	GCF_002849695.1	87	87_2	F68G_bin.32.fa	F68G_bin.32.fa	62.73	0.37	24
F6DB_bin.57	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis A	GCF_002849695.1	87	87_1	F6DB_bin.57.fa	F6DB_bin.57.fa	67.59	0	24
F6DE_bin.89	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides fragilis A	GCF_002849695.1	87	87_1	F6DB_bin.57.fa	F6DE_bin.89.fa	53.45	0.86	24
F68M_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides intestinalis	GCF_000172175.1	101	101_1	F68M_bin.27.fa	F68M_bin.27.fa	90.64	4.01	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.60	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides intestinalis	GCF_000172175.1	101	101_1	F68M_bin.27.fa	F6DB_bin.60.fa	70.67	1.68	24
F6MX_bin.109	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides intestinalis	GCF_000172175.1	101	101_1	F68M_bin.27.fa	F6MX_bin.109.fa	59.64	3.61	24
F6DG_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides nordii	GCF_000613465.1	103	103_0	F6DG_bin.16.fa	F6DG_bin.16.fa	58.62	1.72	24
F68F_bin.94	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides ovatus	GCF_001314995.1	94	94_3	F68F_bin.94.fa	F68F_bin.94.fa	56.03	1.72	24
F6DE_bin.15	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides salyersiae	GCF_000381365.1	102	102_0	F6DE_bin.15.fa	F6DE_bin.15.fa	94.18	3.55	24
F68C_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_1	F68C_bin.20.fa	F68C_bin.20.fa	91.25	0.74	24
F68F_bin.78	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_1	F68C_bin.20.fa	F68F_bin.78.fa	76.21	0	24
F68K_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_1	F68C_bin.20.fa	F68K_bin.70.fa	76.9	1.72	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_1	F68C_bin.20.fa	F6DB_bin.41.fa	58.1	3.45	24
F6MY_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_1	F68C_bin.20.fa	F6MY_bin.95.fa	52.07	0	24
F68E_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_3	F68E_bin.16.fa	F68E_bin.16.fa	65.86	1.72	24
F68R_bin.57	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_2	F68T_bin.19.fa	F68R_bin.57.fa	88.07	2.48	24
F68T_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides stercoris	GCF_000154525.1	95	95_2	F68T_bin.19.fa	F68T_bin.19.fa	86.82	1.24	24
F68E_bin.18	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides thetaiotaomicron	GCF_000011065.1	93	93_1	F68E_bin.18.fa	F68E_bin.18.fa	97.28	4.88	24
F6DE_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides thetaiotaomicron	GCF_000011065.1	93	93_2	F6DE_bin.83.fa	F6DE_bin.83.fa	88.02	2.56	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_2	F68D_bin.19.fa	F68D_bin.19.fa	95.74	0	24
F6DE_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_2	F68D_bin.19.fa	F6DE_bin.20.fa	52.5	1.77	24
F68E_bin.40	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_6	F68E_bin.40.fa	F68E_bin.40.fa	67.41	0.86	24
F68H_bin.68	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_4	F68H_bin.68.fa	F68H_bin.68.fa	58.62	0	24
F68F_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F68F_bin.73.fa	97.53	0.64	24
F68N_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F68N_bin.59.fa	81.38	0	24
F68T_bin.69	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F68T_bin.69.fa	94.53	0	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.102	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F68U_bin.102.fa	95.54	0.57	24
F6D7_bin.53	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F6D7_bin.53.fa	61.78	3.45	24
F6DB_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_3	F68T_bin.69.fa	F6DB_bin.26.fa	60.78	3.09	24
F68V_bin.75	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_1	F68V_bin.75.fa	F68V_bin.75.fa	89.46	0.42	24
F6MX_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_1	F68V_bin.75.fa	F6MX_bin.83.fa	60.39	2.82	24
F6DA_bin.92	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_5	F6DA_bin.92.fa	F6DA_bin.92.fa	83.1	1.72	24
F6MY_bin.109	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides uniformis	GCF_000154205.1	98	98_7	F6MY_bin.109.fa	F6MY_bin.109.fa	65.52	1.72	24

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.34	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides_xylanisolvens	GCA_000210075.1	94	94_1	F68T_bin.34.fa	F68T_bin.34.fa	68.77	0.16	24
F6MX_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides	s_Bacteroides_xylanisolvens	GCA_000210075.1	94	94_2	F6MX_bin.9.fa	F6MX_bin.9.fa	60.34	1.72	24
F6D9_bin.56	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_	N/A	91	91_0	F6D9_bin.56.fa	F6D9_bin.56.fa	53.23	0	25
F68K_bin.99	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_A_coprocola	GCF_000154845.1	89	89_1	F6MY_bin.52.fa	F68K_bin.99.fa	92.01	0	25
F6MY_bin.52	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_A_coprocola	GCF_000154845.1	89	89_1	F6MY_bin.52.fa	F6MY_bin.52.fa	97.41	0	25
F68F_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_A_plebeius_A	GCA_000433715.1	90	90_2	F68F_bin.90.fa	F68F_bin.90.fa	98.88	0.37	25
F6DA_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_A_plebeius_A	GCA_000433715.1	90	90_1	F6DA_bin.11.fa	F6DA_bin.11.fa	77.87	1.37	25

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_Aplebeius_A	GCA_000433715.1	90	90_1	F6DA_bin.11.fa	F6DG_bin.11.fa	56.63	3.37	25
F68J_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_Asp000434735	GCA_000434735.1	88	88_1	F68J_bin.45.fa	F68J_bin.45.fa	94.8	0.04	25
F6DH_bin.112	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_A	s_Bacteroides_Asp000434735	GCA_000434735.1	88	88_1	F68J_bin.45.fa	F6DH_bin.112.fa	89.41	2.85	25
F68E_bin.42	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_Bmassiliensis	GCF_000382445.1	99	99_1	F68E_bin.42.fa	F68E_bin.42.fa	96.94	0.56	25
F6MX_bin.102	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_Bmassiliensis	GCF_000382445.1	99	99_1	F68E_bin.42.fa	F6MX_bin.102.fa	89.65	0.19	25
F68C_bin.85	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_Bvulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68C_bin.85.fa	56.9	0	25

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68D_bin.95.fa	82.76	1.72	25
F68E_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68E_bin.26.fa	94.85	2.26	25
F68F_bin.72	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68F_bin.72.fa	83.71	0.94	25
F68G_bin.80	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68G_bin.80.fa	98.02	1.17	25
F68H_bin.1	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68H_bin.1.fa	98.5	0	25
F68K_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68K_bin.41.fa	94.36	0	25

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.81	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68M_bin.81.fa	81.87	2.16	25
F68N_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68N_bin.25.fa	97.1	1.57	25
F68P_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68P_bin.38.fa	96.87	0	25
F68R_bin.97	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68R_bin.97.fa	64.32	0.56	25
F68T_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68T_bin.39.fa	65.52	0	25
F68U_bin.54	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68U_bin.54.fa	95.86	0.56	25

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.99	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68V_bin.99.fa	82.76	1.72	25
F68W_bin.97	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F68W_bin.97.fa	64.66	0.86	25
F6D7_bin.71	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F6D7_bin.71.fa	51.72	2.59	25
F6D8_bin.31	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F6D8_bin.31.fa	89.84	3.76	25
F6DE_bin.61	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F6DE_bin.61.fa	67.24	0	25
F6MY_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Bacteroides_B	s_Bacteroides_B_vulgatus	GCF_000012825.1	100	100_1	F68H_bin.1.fa	F6MY_bin.44.fa	94.36	0.01	25

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_CAG-617	s__	N/A	22	22_0	F68F_bin.36.fa	F68F_bin.36.fa	52.19	3.16	26
F68K_bin.22	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s__	N/A	286	286_0	F68K_bin.22.fa	F68K_bin.22.fa	72.24	0	27
F68E_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_6	F68E_bin.27.fa	F68E_bin.27.fa	98.4	0	27
F68T_bin.102	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_4	F68T_bin.102.fa	F68T_bin.102.fa	97.7	0.68	27
F6DA_bin.64	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_7	F6DA_bin.64.fa	F6DA_bin.64.fa	94.06	0.56	27
F68P_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_3	F6DG_bin.83.fa	F68P_bin.45.fa	85.92	3.14	27
F6DG_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_3	F6DG_bin.83.fa	F6DG_bin.83.fa	96.91	0.19	27
F6MY_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotellaceae	s_Paraprevotellaceae clara	GCF_000233955.1	73	73_5	F6MY_bin.20.fa	F6MY_bin.20.fa	60.34	0	27

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotella	s_Paraprevotella xylaniphila	GCF_000205165.1	73	73_1	F6D8_bin.41.fa	F6D8_bin.41.fa	96.26	2.08	27
F6DE_bin.84	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Paraprevotella	s_Paraprevotella xylaniphila	GCF_000205165.1	73	73_2	F6DE_bin.84.fa	F6DE_bin.84.fa	98.76	0.74	27
F68T_bin.87	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	15	15_0	F68T_bin.87.fa	F68T_bin.87.fa	55.93	0.19	28
F68U_bin.72	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	46	46_0	F68U_bin.72.fa	F68U_bin.72.fa	59.29	0	29
F6D8_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	48	48_2	F6D8_bin.73.fa	F6D8_bin.73.fa	68.1	1.89	30
F68C_bin.108	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	48	48_1	F68C_bin.108.fa	F68C_bin.108.fa	66.71	0.84	31
F6D9_bin.58	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	48	48_3	F6D9_bin.58.fa	F6D9_bin.58.fa	50.86	3.45	32
F68H_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	49	49_1	F68H_bin.62.fa	F68H_bin.62.fa	63.81	1.1	33
F68K_bin.100	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevootella	s__	N/A	49	49_2	F68K_bin.100.fa	F68K_bin.100.fa	85.69	2.36	34

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	50	50_1	F68P_bin.27.fa	F68P_bin.27.fa	53.02	2.12	35
F68W_bin.71	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	50	50_2	F68W_bin.71.fa	F68W_bin.71.fa	53.45	1.72	36
F68P_bin.57	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	51	51_0	F68P_bin.57.fa	F68P_bin.57.fa	54.31	1.72	37
F68K_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	57	57_1	F6MY_bin.117.fa	F68K_bin.36.fa	75.06	0.37	38
F6D8_bin.28	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	57	57_1	F6MY_bin.117.fa	F6D8_bin.28.fa	81.2	0.37	39
F6MY_bin.117	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	57	57_1	F6MY_bin.117.fa	F6MY_bin.117.fa	87.23	0.93	40
F68D_bin.113	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	59	59_1	F68D_bin.113.fa	F68D_bin.113.fa	79.48	3.98	41
F68G_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	59	59_2	F68G_bin.38.fa	F68G_bin.38.fa	78.84	0.37	42
F68H_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_4	F68H_bin.11.fa	F68H_bin.11.fa	90.38	1.11	43
F68K_bin.49	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_2	F68K_bin.49.fa	F68K_bin.49.fa	92.36	0	44

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.57	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_2	F68K_bin.49.fa	F6D7_bin.57.fa	73.28	1.72	45
F68N_bin.66	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_5	F68N_bin.66.fa	F68N_bin.66.fa	93.13	0.98	46
F68R_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_3	F68R_bin.37.fa	F68R_bin.37.fa	90.79	0.05	47
F68U_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_1	F6DH_bin.52.fa	F68U_bin.46.fa	81.19	1.72	48
F68W_bin.5	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_1	F6DH_bin.52.fa	F68W_bin.5.fa	61.32	1.72	49
F6DH_bin.52	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	61	61_1	F6DH_bin.52.fa	F6DH_bin.52.fa	93.45	2.81	50
F68K_bin.96	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	63	63_2	F68K_bin.96.fa	F68K_bin.96.fa	91.13	0.74	51
F68P_bin.8	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	63	63_3	F68P_bin.8.fa	F68P_bin.8.fa	82.57	1.25	52
F68U_bin.109	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	63	63_1	F68W_bin.25.fa	F68U_bin.109.fa	68.84	0.37	53
F68W_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	63	63_1	F68W_bin.25.fa	F68W_bin.25.fa	84.76	1.11	54

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.124	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	65	65_0	F6DH_bin.124.fa	F6DH_bin.124.fa	59.04	3.92	55
F68J_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	67	67_2	F68J_bin.11.fa	F68J_bin.11.fa	98.8	0.19	56
F68U_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	67	67_1	F6DH_bin.37.fa	F68U_bin.95.fa	87.69	0.93	57
F68W_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	67	67_1	F6DH_bin.37.fa	F68W_bin.27.fa	87.64	1.02	58
F6DH_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s__	N/A	67	67_1	F6DH_bin.37.fa	F6DH_bin.37.fa	89.25	0.23	59
F68E_bin.13	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella_copri	GCF_000157935.1	47	47_4	F68E_bin.13.fa	F68E_bin.13.fa	94.96	1.35	59
F68K_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella_copri	GCF_000157935.1	47	47_8	F68K_bin.90.fa	F68K_bin.90.fa	76.29	0.84	59
F68P_bin.13	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella_copri	GCF_000157935.1	47	47_1	F68P_bin.13.fa	F68P_bin.13.fa	53.61	0	59
F6D9_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella_copri	GCF_000157935.1	47	47_2	F6D9_bin.29.fa	F6D9_bin.29.fa	93.27	1.98	59
F6DA_bin.50	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella_copri	GCF_000157935.1	47	47_6	F6DA_bin.50.fa	F6DA_bin.50.fa	58.62	0	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.80	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri	GCF_000157935.1	47	47_3	F6DB_bin.80.fa	F6DB_bin.80.fa	74.48	0	59
F6DG_bin.82	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri	GCF_000157935.1	47	47_7	F6DG_bin.82.fa	F6DG_bin.82.fa	61.72	0.36	59
F6MY_bin.31	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri	GCF_000157935.1	47	47_5	F6MY_bin.31.fa	F6MY_bin.31.fa	88.36	0.87	59
F68F_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri A	GCF_002224675.1	49	49_5	F68F_bin.95.fa	F68F_bin.95.fa	56.55	1.72	59
F68W_bin.58	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri A	GCF_002224675.1	49	49_3	F68W_bin.58.fa	F68W_bin.58.fa	55.33	0	59
F6DG_bin.78	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri A	GCF_002224675.1	49	49_4	F6DG_bin.78.fa	F6DG_bin.78.fa	55.15	0.79	59
F68F_bin.104	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri sp000434515	GCA_000434515.1	53	53_2	F68F_bin.104.fa	F68F_bin.104.fa	80.44	0.83	59
F68U_bin.77	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri sp000434515	GCA_000434515.1	53	53_1	F68U_bin.77.fa	F68U_bin.77.fa	69.48	0	59
F68W_bin.92	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotecopri sp000434515	GCA_000434515.1	53	53_1	F68U_bin.77.fa	F68W_bin.92.fa	56.9	3.45	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.42	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434515	GCA_000434515.1	53	53_1	F68U_bin.77.fa	F6DH_bin.42.fa	60.5	1.72	59
F68E_bin.23	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_11	F68E_bin.23.fa	F68E_bin.23.fa	98.66	0	59
F68G_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_8	F68G_bin.62.fa	F68G_bin.62.fa	91.92	0.74	59
F68F_bin.65	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_7	F68H_bin.66.fa	F68F_bin.65.fa	92.42	0	59
F68H_bin.66	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_7	F68H_bin.66.fa	F68H_bin.66.fa	97.4	0.74	59
F68R_bin.103	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_10	F68R_bin.103.fa	F68R_bin.103.fa	97.18	0.93	59
F6D9_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000434975	GCA_000434975.1	60	60_9	F6D9_bin.73.fa	F6D9_bin.73.fa	96.24	0	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000434975	GCA_000434975.1	60	60_6	F68U_bin.29.fa	F68U_bin.29.fa	92.75	0.86	59
F68W_bin.10	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000434975	GCA_000434975.1	60	60_6	F68W_bin.10.fa	F68W_bin.10.fa	94.96	0.37	59
F68H_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000434975	GCA_000434975.1	60	60_6	F68H_bin.36.fa	F68H_bin.36.fa	97.26	0.22	59
F68J_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000436035	GCA_000436035.1	52	52_1	F68J_bin.51.fa	F68J_bin.51.fa	94.43	1.86	59
F68J_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000436915	GCA_000436915.1	66	66_1	F68J_bin.41.fa	F68J_bin.41.fa	95.31	0.56	59
F68P_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella sp000436915	GCA_000436915.1	66	66_2	F68P_bin.20.fa	F68P_bin.20.fa	96.73	4	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.124	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000436915	GCA_000436915.1	66	66_3	F68R_bin.124.fa	F68R_bin.124.fa	91.11	0.19	59
F68K_bin.8	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000834015	GCF_000834015.1	68	68_3	F68K_bin.8.fa	F68K_bin.8.fa	90.08	1.15	59
F68N_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000834015	GCF_000834015.1	68	68_1	F68N_bin.45.fa	F68N_bin.45.fa	75.24	0.68	59
F6D9_bin.43	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp000834015	GCF_000834015.1	68	68_2	F6D9_bin.43.fa	F6D9_bin.43.fa	79.06	0.37	59
F68J_bin.78	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_3	F68J_bin.78.fa	F68J_bin.78.fa	73.67	0.49	59
F68R_bin.122	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_2	F68R_bin.122.fa	F68R_bin.122.fa	72.03	0.37	59
F6D9_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_4	F6D9_bin.6.fa	F6D9_bin.6.fa	76.18	0.49	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.7	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_1	F6DH_bin.15.fa	F68K_bin.7.fa	74.6	0	59
F68U_bin.8	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_1	F6DH_bin.15.fa	F68U_bin.8.fa	72.41	1.72	59
F68W_bin.74	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_1	F6DH_bin.15.fa	F68W_bin.74.fa	73.58	0	59
F6DH_bin.15	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002251385	GCF_002251385.1	55	55_1	F6DH_bin.15.fa	F6DH_bin.15.fa	79.41	0	59
F68D_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_4	F68D_bin.59.fa	F68D_bin.59.fa	54.75	0	59
F68H_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_2	F68H_bin.45.fa	F68H_bin.45.fa	86.95	0.57	59
F68P_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_5	F68P_bin.59.fa	F68P_bin.59.fa	78.11	0.74	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.103	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_1	F68U_bin.103.fa	F68U_bin.103.fa	90.2	0.49	59
F68W_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_1	F68U_bin.103.fa	F68W_bin.70.fa	77.9	3.45	59
F6DH_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_1	F68U_bin.103.fa	F6DH_bin.27.fa	89.81	2.79	59
F6MX_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002265625	GCF_002265625.1	62	62_3	F6MX_bin.27.fa	F6MX_bin.27.fa	84.42	0.49	59
F6D9_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp002300055	GCA_002300055.1	58	58_0	F6D9_bin.45.fa	F6D9_bin.45.fa	94.43	1.41	59
F68C_bin.74	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_2	F68C_bin.74.fa	F68C_bin.74.fa	95.91	0	59
F68D_bin.88	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_3	F68G_bin.12.fa	F68D_bin.88.fa	90.57	1.84	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.12	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_3	F68G_bin.12.fa	F68G_bin.12.fa	95.43	1.19	59
F68P_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_3	F68G_bin.12.fa	F68P_bin.51.fa	69.75	0	59
F68J_bin.22	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_4	F68J_bin.22.fa	F68J_bin.22.fa	95.77	0	59
F68M_bin.67	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_6	F68M_bin.67.fa	F68M_bin.67.fa	97.57	0.88	59
F68U_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_1	F68W_bin.101.fa	F68U_bin.26.fa	78.71	0	59
F68W_bin.101	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_1	F68W_bin.101.fa	F68W_bin.101.fa	97.03	0.36	59
F6DH_bin.50	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_1	F68W_bin.101.fa	F6DH_bin.50.fa	94.37	0	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp003447235	GCA_003447235.1	56	56_5	F6MX_bin.36.fa	F6MX_bin.36.fa	93.48	0	59
F68H_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900290275	GCF_900290275.1	64	64_2	F68H_bin.19.fa	F68H_bin.19.fa	96.59	0.1	59
F68U_bin.5	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900290275	GCF_900290275.1	64	64_1	F68U_bin.5.fa	F68U_bin.5.fa	96.08	0	59
F6DH_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900290275	GCF_900290275.1	64	64_1	F68U_bin.5.fa	F6DH_bin.46.fa	94.15	1.08	59
F68C_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_1	F68C_bin.6.fa	F68C_bin.6.fa	81.56	0	59
F68H_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_3	F68H_bin.70.fa	F68H_bin.70.fa	94.48	1.1	59
F68K_bin.84	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_2	F68K_bin.84.fa	F68K_bin.84.fa	85.45	2.67	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.47	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_4	F68N_bin.47.fa	F68N_bin.47.fa	80.08	1.7	59
F68P_bin.1	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_6	F68P_bin.1.fa	F68P_bin.1.fa	80.33	0.52	59
F68U_bin.84	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_6	F68P_bin.1.fa	F68U_bin.84.fa	89.9	3.46	59
F68W_bin.2	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_5	F68W_bin.2.fa	F68W_bin.2.fa	83.86	0.3	59
F6DH_bin.119	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella sp900313215	GCA_900313215.1	45	45_5	F68W_bin.2.fa	F6DH_bin.119.fa	62.23	3.45	59
F68C_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella stercorea	GCF_000235885.1	60	60_1	F68M_bin.73.fa	F68C_bin.46.fa	67.9	0.37	59
F68K_bin.63	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preotella	s_Preotella stercorea	GCF_000235885.1	60	60_1	F68M_bin.73.fa	F68K_bin.63.fa	96.06	0.56	59

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_1	F68M_bin.73.fa	F68M_bin.73.fa	97.96	0.37	59
F6D7_bin.87	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_1	F68M_bin.73.fa	F6D7_bin.87.fa	93.48	1.6	59
F68N_bin.54	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_2	F68N_bin.54.fa	F68N_bin.54.fa	90.09	0.37	59
F68P_bin.35	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_5	F68P_bin.35.fa	F68P_bin.35.fa	62.34	0.37	59
F6D8_bin.18	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_3	F6D8_bin.18.fa	F6D8_bin.18.fa	95.8	0	59
F6DB_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s_Prevo tella stercorea	GCF_000235885.1	60	60_4	F6DB_bin.37.fa	F6DB_bin.37.fa	85.99	0	59
F68D_bin.42	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s____ tellamas silia	N/A	54	54_3	F68D_bin.42.fa	F68D_bin.42.fa	91.33	1.02	60
F68R_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevo	s____ tellamas silia	N/A	54	54_4	F68R_bin.70.fa	F68R_bin.70.fa	69.19	0	61

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.12	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_1	F68W_bin.6.fa	F68U_bin.12.fa	70.39	0	62
F68W_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_1	F68W_bin.6.fa	F68W_bin.6.fa	93.59	3.13	63
F6DH_bin.1	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_1	F68W_bin.6.fa	F6DH_bin.1.fa	74.14	3.45	64
F68C_bin.58	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_2	F6D7_bin.90.fa	F68C_bin.58.fa	67.02	0.12	65
F6D7_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_2	F6D7_bin.90.fa	F6D7_bin.90.fa	96.08	0.37	66
F6D8_bin.56	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	54	54_5	F6D8_bin.56.fa	F6D8_bin.56.fa	64.17	0.12	67
F68U_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	70	70_1	F68W_bin.54.fa	F68U_bin.37.fa	94.17	0.02	68
F68W_bin.54	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	70	70_1	F68W_bin.54.fa	F68W_bin.54.fa	98.02	0.47	69
F6DH_bin.69	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	70	70_1	F68W_bin.54.fa	F6DH_bin.69.fa	93.93	0	70
F68U_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Prevoellamasilia	s__	N/A	71	71_1	F68U_bin.38.fa	F68U_bin.38.fa	93.46	0	71

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s__	N/A	71	71_3	F6DA_bin.45.fa	F6DA_bin.45.fa	96.44	0.19	72
F6DG_bin.21	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s__	N/A	71	71_2	F6DG_bin.21.fa	F6DG_bin.21.fa	96.81	0	73
F68J_bin.75	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s_Preveltellamasilimonensis	GCF_900106785.1	72	72_4	F68J_bin.75.fa	F68J_bin.75.fa	55.23	0.02	73
F68N_bin.50	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s_Preveltellamasilimonensis	GCF_900106785.1	72	72_3	F68N_bin.50.fa	F68N_bin.50.fa	93.66	0.05	73
F68P_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s_Preveltellamasilimonensis	GCF_900106785.1	72	72_1	F68P_bin.32.fa	F68P_bin.32.fa	95.23	0.19	73
F6MX_bin.74	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_Preveltellamasilia	s_Preveltellamasilimonensis	GCF_900106785.1	72	72_2	F6MX_bin.74.fa	F6MX_bin.74.fa	94.04	1.56	73
F68C_bin.49	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_1	F68C_bin.49.fa	F68C_bin.49.fa	96.16	0.19	74

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_1	F68C_bin.49.fa	F68H_bin.37.fa	95.42	0.56	75
F68J_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_1	F68C_bin.49.fa	F68J_bin.83.fa	89.57	1.05	76
F68W_bin.15	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_1	F68C_bin.49.fa	F68W_bin.15.fa	94.3	0.19	77
F6DH_bin.120	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_1	F68C_bin.49.fa	F6DH_bin.120.fa	96.53	0.56	78
F6D9_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA4372	s__	N/A	69	69_2	F6D9_bin.25.fa	F6D9_bin.25.fa	94.28	0.56	79
F68F_bin.93	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_6	F68F_bin.93.fa	F68F_bin.93.fa	82.22	1.81	80
F68M_bin.88	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_5	F68M_bin.88.fa	F68M_bin.88.fa	79.62	2.09	81
F6D7_bin.10	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_1	F6D7_bin.10.fa	F6D7_bin.10.fa	92.08	1	82
F6D8_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_2	F6D8_bin.95.fa	F6D8_bin.95.fa	59.87	1.88	83
F6DB_bin.55	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_3	F6DB_bin.55.fa	F6DB_bin.55.fa	75.94	0.49	84

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.77	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_4	F6MX_bin.77.fa	F6MX_bin.77.fa	63.91	0.37	85
F6MY_bin.8	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Bacteroidaceae	g_UBA6398	s__	N/A	16	16_7	F6MY_bin.8.fa	F6MY_bin.8.fa	73.95	0.74	86
F68K_bin.17	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_5	F68K_bin.17.fa	F68K_bin.17.fa	89.55	0.38	86
F68T_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_2	F68T_bin.59.fa	F68T_bin.59.fa	98.77	0	86
F6DE_bin.33	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_3	F6DE_bin.33.fa	F6DE_bin.33.fa	98.49	0	86
F6DG_bin.15	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_4	F6DG_bin.15.fa	F6DG_bin.15.fa	97.36	0	86
F68D_bin.24	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_1	F6MY_bin.25.fa	F68D_bin.24.fa	98.71	1.02	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Barlesiellaceae	g_Barlesiella	s_Barlesiella intestinalis	GCF_000296465.1	116	116_1	F6MY_bin.25.fa	F6MY_bin.25.fa	99.62	0	86
F6DH_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas sp002161485	GCF_002161485.1	78	78_10	F6DH_bin.83.fa	F6DH_bin.83.fa	85.09	4.28	86
F6MX_bin.67	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas sp900184685	GCF_900184685.1	79	79_0	F6MX_bin.67.fa	F6MX_bin.67.fa	95.97	0.54	86
F6D7_bin.12	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas sp900258545	GCF_900258545.1	77	77_1	F6DE_bin.58.fa	F6D7_bin.12.fa	85.19	2.74	86
F6DE_bin.58	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas sp900258545	GCF_900258545.1	77	77_1	F6DE_bin.58.fa	F6DE_bin.58.fa	88.99	3.23	86
F6DG_bin.28	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas sp900258545	GCF_900258545.1	77	77_1	F6DE_bin.58.fa	F6DG_bin.28.fa	64.98	1.72	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.2	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas synergistica_A	GCA_001915615.1	78	78_9	F6DA_bin.2.fa	F6DA_bin.2.fa	84.12	3.76	86
F68C_bin.24	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_7	F68C_bin.24.fa	F68C_bin.24.fa	69.12	0.86	86
F68E_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_3	F68E_bin.20.fa	F68E_bin.20.fa	93.7	0	86
F68G_bin.74	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_1	F68G_bin.74.fa	F68G_bin.74.fa	99.46	0	86
F6MY_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_1	F68G_bin.74.fa	F6MY_bin.83.fa	93.14	4.01	86
F68H_bin.64	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_4	F68H_bin.64.fa	F68H_bin.64.fa	65.25	4.11	86
F68K_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_2	F68K_bin.3.fa	F68K_bin.3.fa	93.19	1.25	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_2	F68K_bin.3.fa	F68R_bin.95.fa	87.73	3.76	86
F68V_bin.119	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_2	F68K_bin.3.fa	F68V_bin.119.fa	57.35	1.08	86
F6MX_bin.110	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_2	F68K_bin.3.fa	F6MX_bin.110.fa	81.83	0.99	86
F68U_bin.21	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_5	F68U_bin.21.fa	F68U_bin.21.fa	98.39	4.44	86
F6DB_bin.66	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_8	F6DB_bin.66.fa	F6DB_bin.66.fa	90.86	2.8	86
F6DE_bin.69	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Butyricimonas	s_Butyricimonas virosa	GCF_000519105.1	78	78_6	F6DE_bin.69.fa	F6DE_bin.69.fa	84.94	1.63	86
F68C_bin.18	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68C_bin.18.fa	97.85	0.57	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.57	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68D_bin.57.fa	89.96	0.02	86
F68E_bin.43	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68E_bin.43.fa	84.91	0.56	86
F68F_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68F_bin.44.fa	98.39	0	86
F68H_bin.21	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68H_bin.21.fa	91.32	0.81	86
F68K_bin.85	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68K_bin.85.fa	98.39	0	86
F68N_bin.53	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68N_bin.53.fa	97.85	0.54	86
F68R_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68R_bin.29.fa	98.92	0	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68T_bin.29.fa	97.85	0	86
F68U_bin.105	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68U_bin.105.fa	96.24	0	86
F68V_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F68V_bin.73.fa	65.67	0	86
F6D7_bin.96	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6D7_bin.96.fa	95.43	2.15	86
F6D8_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6D8_bin.62.fa	99.46	0	86
F6D9_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6D9_bin.16.fa	62.63	2.33	86
F6DA_bin.40	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6DA_bin.40.fa	97.85	0	86

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.73	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter_splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6DB_bin.73.fa	99.46	0	86
F6DE_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter_splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6DE_bin.90.fa	99.46	0	86
F6DG_bin.55	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter_splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6DG_bin.55.fa	97.31	0	86
F6MX_bin.119	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter_splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6MX_bin.119.fa	98.39	0	86
F6MY_bin.116	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Marinifilaceae	g_Odoribacter	s_Odoribacter_splanchnicus	GCF_000190535.1	76	76_1	F6DE_bin.90.fa	F6MY_bin.116.fa	98.92	0	86
F68J_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_C941	s__	N/A	264	264_2	F68J_bin.27.fa	F68J_bin.27.fa	91.89	0.13	87
F68P_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_C941	s__	N/A	264	264_3	F68P_bin.29.fa	F68P_bin.29.fa	79.56	2.87	88
F68W_bin.87	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_C941	s__	N/A	264	264_1	F68W_bin.87.fa	F68W_bin.87.fa	94.91	0.5	89

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.72	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_C941	s__	N/A	264	264_1	F68W_bin.87.fa	F6DH_bin.72.fa	96.04	0.88	90
F6D9_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_C941	s__	N/A	264	264_4	F6D9_bin.59.fa	F6D9_bin.59.fa	96.23	0.5	91
F68K_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s__	N/A	114	114_3	F68K_bin.62.fa	F68K_bin.62.fa	84.53	0.5	92
F6DE_bin.67	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s__	N/A	114	114_1	F6DE_bin.67.fa	F6DE_bin.67.fa	91.53	1.87	93
F6MY_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s__	N/A	114	114_2	F6MY_bin.9.fa	F6MY_bin.9.fa	88.68	0.38	94
F6MX_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s__	N/A	38	38_0	F6MX_bin.90.fa	F6MX_bin.90.fa	68.64	2.31	95
F68F_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_2	F68F_bin.37.fa	F68F_bin.37.fa	92.08	0.75	95
F68H_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_2	F68F_bin.37.fa	F68H_bin.51.fa	82.08	0.41	95
F68J_bin.85	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_6	F68J_bin.85.fa	F68J_bin.85.fa	69.48	2.64	95

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_9	F68N_bin.46.fa	F68N_bin.46.fa	82.58	0	95
F68P_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_12	F68P_bin.25.fa	F68P_bin.25.fa	88.11	0.38	95
F68R_bin.106	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_11	F68R_bin.106.fa	F68R_bin.106.fa	71.32	0	95
F68T_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_8	F68T_bin.32.fa	F68T_bin.32.fa	97.36	0	95
F68U_bin.50	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_4	F68U_bin.50.fa	F68U_bin.50.fa	81.17	0.75	95
F6D8_bin.70	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_10	F6D8_bin.70.fa	F6D8_bin.70.fa	88.11	0	95
F6D9_bin.94	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_13	F6D9_bin.94.fa	F6D9_bin.94.fa	77.07	1.56	95

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.96	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_7	F6DA_bin.96.fa	F6DA_bin.96.fa	86.79	0	95
F6DG_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_5	F6DG_bin.44.fa	F6DG_bin.44.fa	80.57	0	95
F68W_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_1	F6DH_bin.105.fa	F68W_bin.39.fa	76.42	0	95
F6DH_bin.105	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_1	F6DH_bin.105.fa	F6DH_bin.105.fa	81.7	0	95
F68C_bin.91	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_3	F6MX_bin.14.fa	F68C_bin.91.fa	77.92	0	95
F6MX_bin.14	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-279	s_CAG-279 sp000437795	GCA_000437795.1	113	113_3	F6MX_bin.14.fa	F6MX_bin.14.fa	95.61	0.57	95
F68E_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-485	s__	N/A	117	117_0	F68E_bin.11.fa	F68E_bin.11.fa	96.35	0.38	96
F6DB_bin.14	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-485	s__	N/A	17	17_0	F6DB_bin.14.fa	F6DB_bin.14.fa	91.95	0.75	97

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-873	s_CAG-873 sp001701165	GCA_001701165.1	115	115_1	F68H_bin.24.fa	F68G_bin.51.fa	97.36	0.05	97
F68H_bin.24	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-873	s_CAG-873 sp001701165	GCA_001701165.1	115	115_1	F68H_bin.24.fa	F68H_bin.24.fa	97.36	0	97
F68W_bin.7	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-873	s_CAG-873 sp001701165	GCA_001701165.1	115	115_1	F68H_bin.24.fa	F68W_bin.7.fa	96.98	0.5	97
F6DH_bin.14	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Muribaculaceae	g_CAG-873	s_CAG-873 sp001701165	GCA_001701165.1	115	115_1	F68H_bin.24.fa	F6DH_bin.14.fa	96.6	0	97
F68G_bin.67	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_P3	g_UBA3388	s__	N/A	25	25_0	F68G_bin.67.fa	F68G_bin.67.fa	95.5	0	98
F68T_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s__	N/A	34	34_0	F68T_bin.20.fa	F68T_bin.20.fa	100	0.24	99
F6MY_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s__	N/A	35	35_0	F6MY_bin.29.fa	F6MY_bin.29.fa	70.16	2.59	100
F6MY_bin.66	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s__	N/A	36	36_0	F6MY_bin.66.fa	F6MY_bin.66.fa	97.28	1.05	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.80	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_finegoldii	GCF_000265365.1	32	32_2	F68K_bin.80.fa	F68K_bin.80.fa	78.25	0.64	101
F68U_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_finegoldii	GCF_000265365.1	32	32_3	F68U_bin.6.fa	F68U_bin.6.fa	99.23	0	101
F6DB_bin.112	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_finegoldii	GCF_000265365.1	32	32_1	F6DE_bin.78.fa	F6DB_bin.112.fa	85.04	1.52	101
F6DE_bin.78	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_finegoldii	GCF_000265365.1	32	32_1	F6DE_bin.78.fa	F6DE_bin.78.fa	99.74	0	101
F6DG_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_finegoldii	GCF_000265365.1	32	32_1	F6DE_bin.78.fa	F6DG_bin.59.fa	89.54	0.56	101
F68D_bin.48	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F68D_bin.48.fa	58.17	2.64	101
F68E_bin.5	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F68E_bin.5.fa	87.71	1.39	101
F68F_bin.107	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes_obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F68F_bin.107.fa	94.23	0	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.56	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F68K_bin.56.fa	80.09	1.6	101
F68R_bin.78	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F68R_bin.78.fa	91.27	0.96	101
F6D8_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6D8_bin.29.fa	98	0.48	101
F6DA_bin.10	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6DA_bin.10.fa	88.28	2.08	101
F6DB_bin.64	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6DB_bin.64.fa	100	0.48	101
F6DE_bin.14	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6DE_bin.14.fa	98.56	0	101
F6MX_bin.22	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6MX_bin.22.fa	98.56	0	101
F6MY_bin.7	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes obesi	GCF_000311925.1	29	29_1	F6DE_bin.14.fa	F6MY_bin.7.fa	98.56	0.48	101
F68E_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_1	F68E_bin.41.fa	F68E_bin.41.fa	90.27	2.5	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.94	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_1	F68E_bin.41.fa	F6DA_bin.94.fa	88.88	2.72	101
F68V_bin.79	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_2	F68V_bin.79.fa	F68V_bin.79.fa	84.27	4.33	101
F6DE_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_5	F6DE_bin.32.fa	F6DE_bin.32.fa	98.73	0.48	101
F6D8_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_4	F6DG_bin.80.fa	F6D8_bin.32.fa	92.49	2.16	101
F6DG_bin.80	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_4	F6DG_bin.80.fa	F6DG_bin.80.fa	98.38	0.48	101
F6MX_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes onderdonkii	GCF_000374505.1	33	33_3	F6MX_bin.26.fa	F6MX_bin.26.fa	98.99	0.96	101
F68E_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F68E_bin.36.fa	90.54	2.27	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F68K_bin.9.fa	99.04	0.96	101
F68N_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F68N_bin.19.fa	94.87	1.92	101
F68T_bin.67	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F68T_bin.67.fa	99.52	0.96	101
F6D7_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F6D7_bin.44.fa	96.79	0.99	101
F6DB_bin.23	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F6DB_bin.23.fa	97.12	0.96	101
F6DE_bin.28	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F6DE_bin.28.fa	99.52	0.96	101
F6DG_bin.87	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F6DG_bin.87.fa	99.52	1.44	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_2	F68T_bin.67.fa	F6MY_bin.39.fa	98.72	1.44	101
F68D_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_1	F6D9_bin.4.fa	F68D_bin.3.fa	92.07	2.88	101
F6D8_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_1	F6D9_bin.4.fa	F6D8_bin.45.fa	97.28	1.68	101
F6D9_bin.4	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes putredinis	GCF_000154465.1	28	28_1	F6D9_bin.4.fa	F6D9_bin.4.fa	98.56	1.6	101
F68C_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes senegalensis	GCF_000312145.1	30	30_2	F68C_bin.3.fa	F68C_bin.3.fa	80.17	4.73	101
F68W_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes senegalensis	GCF_000312145.1	30	30_1	F68W_bin.95.fa	F68W_bin.95.fa	86.9	3.15	101
F6DH_bin.97	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes senegalensis	GCF_000312145.1	30	30_1	F68W_bin.95.fa	F6DH_bin.97.fa	80.36	4.49	101
F68G_bin.89	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_2	F68G_bin.89.fa	F68G_bin.89.fa	51.99	3.55	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68D_bin.6.fa	95.83	0.48	101
F68F_bin.11	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68F_bin.11.fa	85.48	3.94	101
F68M_bin.24	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68M_bin.24.fa	100	0	101
F68N_bin.37	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68N_bin.37.fa	54.31	2.59	101
F68R_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68R_bin.38.fa	71.55	3.45	101
F68T_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F68T_bin.26.fa	97.36	1.12	101
F6D7_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6D7_bin.39.fa	88.94	3.22	101
F6D8_bin.87	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6D8_bin.87.fa	97	2	101
F6DA_bin.5	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6DA_bin.5.fa	95.43	0	101
F6DB_bin.18	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6DB_bin.18.fa	94.23	0.16	101

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.52	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6DE_bin.52.fa	99.6	0.18	101
F6DG_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6DG_bin.62.fa	94.71	4.25	101
F6MX_bin.88	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6MX_bin.88.fa	99.04	0	101
F6MY_bin.85	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes	s_Alistipes shahii	GCF_000210575.1	31	31_1	F68M_bin.24.fa	F6MY_bin.85.fa	94.71	0.96	101
F68E_bin.48	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_6	F68E_bin.48.fa	F68E_bin.48.fa	88.14	0.96	102
F68F_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_1	F68F_bin.51.fa	F68F_bin.51.fa	95.97	1.2	103
F6D8_bin.91	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_4	F6D8_bin.91.fa	F6D8_bin.91.fa	99.52	1.2	104
F6DA_bin.77	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_2	F6DA_bin.77.fa	F6DA_bin.77.fa	100	0.48	105
F6DB_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_5	F6DB_bin.16.fa	F6DB_bin.16.fa	100	0.48	106
F6DG_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	104	104_3	F6DG_bin.39.fa	F6DG_bin.39.fa	94.71	0.48	107

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s__	N/A	106	106_0	F6MY_bin.16.fa	F6MY_bin.16.fa	80.93	0.96	108
F68K_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_ihumii	GCF_000321205.1	27	27_1	F68K_bin.44.fa	F68K_bin.44.fa	98.8	0	108
F6DB_bin.89	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_ihumii	GCF_000321205.1	27	27_1	F68K_bin.44.fa	F6DB_bin.89.fa	53.57	1.44	108
F6DG_bin.12	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_ihumii	GCF_000321205.1	27	27_1	F68K_bin.44.fa	F6DG_bin.12.fa	89.34	0.88	108
F6DE_bin.42	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_indistinctus	GCF_000231275.1	105	105_0	F6DE_bin.42.fa	F6DE_bin.42.fa	96.43	2.55	108
F6DB_bin.48	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_sp900240235	GCF_900240235.1	26	26_1	F6DB_bin.48.fa	F6DB_bin.48.fa	96.85	1.2	108
F6DE_bin.77	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Alistipes_A	s_Alistipes_A_sp900240235	GCF_900240235.1	26	26_1	F6DB_bin.48.fa	F6DE_bin.77.fa	100	2.08	108
F68V_bin.25	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Rikenella	s__	N/A	174	174_0	F68V_bin.25.fa	F68V_bin.25.fa	74.27	1.27	109
F6D8_bin.96	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Tidjanibacter	s_Tidjanibacter_inops	GCF_000786575.1	173	173_1	F6DE_bin.63.fa	F6D8_bin.96.fa	54.02	1.92	109

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.63	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Rikenellaceae	g_Tidjanibacter	s_Tidjanibacterinops	GCF_000786575.1	173	173_1	F6DE_bin.63.fa	F6DE_bin.63.fa	89.13	1.84	109
F68D_bin.50	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s__	N/A	112	112_1	F68J_bin.20.fa	F68D_bin.50.fa	97.62	3.28	110
F68G_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s__	N/A	112	112_1	F68J_bin.20.fa	F68G_bin.19.fa	97.98	1.92	111
F68J_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s__	N/A	112	112_1	F68J_bin.20.fa	F68J_bin.20.fa	99.23	0.77	112
F6D9_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s__	N/A	112	112_1	F68J_bin.20.fa	F6D9_bin.83.fa	82.48	2.66	113
F6DE_bin.24	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s__	N/A	111	111_0	F6DE_bin.24.fa	F6DE_bin.24.fa	58.79	4.31	114
F68D_bin.89	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_7	F68D_bin.89.fa	F68D_bin.89.fa	97.5	0.38	114
F68K_bin.15	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_7	F68D_bin.89.fa	F68K_bin.15.fa	99.1	1.47	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.85	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_7	F68D_bin.89.fa	F6D8_bin.85.fa	86.55	2.78	114
F6DE_bin.91	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_7	F68D_bin.89.fa	F6DE_bin.91.fa	97.12	0.38	114
F68E_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_10	F68E_bin.32.fa	F68E_bin.32.fa	96.24	1.6	114
F68F_bin.28	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_8	F68F_bin.28.fa	F68F_bin.28.fa	99.35	0.96	114
F68M_bin.2	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_4	F68M_bin.2.fa	F68M_bin.2.fa	99.42	0.13	114
F68R_bin.79	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_6	F68R_bin.79.fa	F68R_bin.79.fa	98.11	1.86	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.109	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_1	F68V_bin.45.fa	F68C_bin.109.fa	91.97	1.22	114
F68V_bin.45	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_1	F68V_bin.45.fa	F68V_bin.45.fa	99.42	0.13	114
F6MY_bin.77	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_1	F68V_bin.45.fa	F6MY_bin.77.fa	93.11	1.41	114
F68W_bin.110	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_3	F68W_bin.110.fa	F68W_bin.110.fa	68.63	0.51	114
F6DH_bin.59	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_3	F68W_bin.110.fa	F6DH_bin.59.fa	70.28	2.63	114
F6D9_bin.69	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_9	F6D9_bin.69.fa	F6D9_bin.69.fa	98.65	0.9	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.29	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_5	F6DA_bin.41.fa	F68N_bin.29.fa	91.05	3.27	114
F68P_bin.10	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_5	F6DA_bin.41.fa	F68P_bin.10.fa	99.02	0.9	114
F68U_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_5	F6DA_bin.41.fa	F68U_bin.36.fa	95.19	0.38	114
F6DA_bin.41	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_5	F6DA_bin.41.fa	F6DA_bin.41.fa	99.04	0.13	114
F6MX_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_5	F6DA_bin.41.fa	F6MX_bin.39.fa	89.94	2.08	114
F68G_bin.43	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F68G_bin.43.fa	98.27	0.13	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.5	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F68H_bin.5.fa	97	3.79	114
F68T_bin.22	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F68T_bin.22.fa	97.5	0.38	114
F6D7_bin.92	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F6D7_bin.92.fa	95.76	1.63	114
F6DB_bin.1	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F6DB_bin.1.fa	98.27	0.19	114
F6DG_bin.90	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides distasonis	GCF_000012845.1	107	107_2	F6DG_bin.90.fa	F6DG_bin.90.fa	99.04	0	114
F68V_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides goldsteini	GCF_000969835.1	109	109_2	F68V_bin.44.fa	F68V_bin.44.fa	63.79	0.86	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides goldsteini	GCF_000969835.1	109	109_1	F68W_bin.26.fa	F68W_bin.26.fa	96.05	0.38	114
F68DH_bin.6	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides goldsteini	GCF_000969835.1	109	109_1	F68DH_bin.6.fa	F68DH_bin.6.fa	96.86	0.38	114
F68J_bin.14	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides gordonii	GCF_000969825.1	110	110_0	F68J_bin.14.fa	F68J_bin.14.fa	98.83	1.15	114
F68R_bin.68	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_2	F68R_bin.68.fa	F68R_bin.68.fa	59.48	3.45	114
F68E_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68E_bin.9.fa	F68E_bin.9.fa	57.07	0	114
F68M_bin.75	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68M_bin.75.fa	F68M_bin.75.fa	95.61	4.9	114
F68N_bin.36	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68N_bin.36.fa	F68N_bin.36.fa	88.68	1.67	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F68P_bin.3.fa	68.26	0	114
F68T_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F68T_bin.3.fa	96.96	0.38	114
F68V_bin.116	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F68V_bin.116.fa	99.04	0.38	114
F6D7_bin.34	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6D7_bin.34.fa	88.83	0.58	114
F6DA_bin.39	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6DA_bin.39.fa	98.53	0.9	114
F6DB_bin.31	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6DB_bin.31.fa	91.86	3.6	114
F6DE_bin.62	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6DE_bin.62.fa	95.64	0.38	114

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.106	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6DG_bin.106.fa	99.23	1.25	114
F6MY_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_1	F68V_bin.116.fa	F6MY_bin.51.fa	86.73	1.74	114
F6D9_bin.26	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_Tannerellaceae	g_Parabacteroides	s_Parabacteroides merdae	GCF_000154105.1	108	108_3	F6D9_bin.26.fa	F6D9_bin.26.fa	88.1	2.74	114
F68U_bin.35	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s__	N/A	42	42_1	F68W_bin.100.fa	F68U_bin.35.fa	91.03	0	115
F68W_bin.100	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s__	N/A	42	42_1	F68W_bin.100.fa	F68W_bin.100.fa	91.03	0	116
F6DH_bin.113	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s__	N/A	42	42_1	F68W_bin.100.fa	F6DH_bin.113.fa	91.03	0	117
F6D9_bin.38	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s__	N/A	24	24_0	F6D9_bin.38.fa	F6D9_bin.38.fa	87.94	0	118
F6D9_bin.51	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s__	N/A	41	41_0	F6D9_bin.51.fa	F6D9_bin.51.fa	62.21	0.95	119
F68G_bin.34	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_3	F68G_bin.34.fa	F68G_bin.34.fa	85.32	0.79	119

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.43	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_1	F68U_bin.3.fa	F68D_bin.43.fa	74.07	0.48	119
F68U_bin.3	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_1	F68U_bin.3.fa	F68U_bin.3.fa	94.1	0.48	119
F68W_bin.4	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_1	F68U_bin.3.fa	F68W_bin.4.fa	83.15	2.24	119
F6DH_bin.9	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_1	F68U_bin.3.fa	F6DH_bin.9.fa	91.37	2.16	119
F68J_bin.56	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_2	F6MX_bin.98.fa	F68J_bin.56.fa	95.56	0.87	119
F68M_bin.63	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_2	F6MX_bin.98.fa	F68M_bin.63.fa	95.53	0.63	119
F6MX_bin.98	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000431015	GCA_000431015.1	43	43_2	F6MX_bin.98.fa	F6MX_bin.98.fa	95.53	0.63	119
F68C_bin.43	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_2	F68C_bin.43.fa	F68C_bin.43.fa	94.6	1.67	119
F6D7_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_2	F68C_bin.43.fa	F6D7_bin.32.fa	94.6	1.67	119
F68D_bin.20	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_3	F68D_bin.20.fa	F68D_bin.20.fa	83.63	2.38	119

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.17	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_4	F68G_bin.17.fa	F68G_bin.17.fa	77.3	1.93	119
F68H_bin.44	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_5	F68H_bin.44.fa	F68H_bin.44.fa	94.92	1.83	119
F68N_bin.27	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_1	F68N_bin.27.fa	F68N_bin.27.fa	93.97	1.83	119
F68W_bin.22	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_1	F68N_bin.27.fa	F68W_bin.22.fa	74.55	1.35	119
F6DH_bin.19	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_1	F68N_bin.27.fa	F6DH_bin.19.fa	69.58	3.03	119
F68T_bin.4	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000433355	GCA_000433355.1	44	44_6	F68T_bin.4.fa	F68T_bin.4.fa	90.92	1.52	119
F68D_bin.12	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_4	F68D_bin.12.fa	F68D_bin.12.fa	92.52	1.43	119
F68G_bin.83	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_3	F68P_bin.55.fa	F68G_bin.83.fa	89.98	0	119
F68P_bin.55	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_3	F68P_bin.55.fa	F68P_bin.55.fa	95.95	0	119
F68W_bin.108	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_1	F68W_bin.108.fa	F68W_bin.108.fa	95.25	0.87	119

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.32	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_1	F68W_bin.108.fa	F6DH_bin.32.fa	93.83	0.63	119
F6D9_bin.71	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_2	F6D9_bin.71.fa	F6D9_bin.71.fa	95.95	0	119
F6MX_bin.96	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000434935	GCA_000434935.1	40	40_5	F6MX_bin.96.fa	F6MX_bin.96.fa	95.95	0.48	119
F68G_bin.31	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000435075	GCA_000435075.1	39	39_2	F68G_bin.31.fa	F68G_bin.31.fa	94.97	4.13	119
F68J_bin.79	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000435075	GCA_000435075.1	39	39_3	F68J_bin.79.fa	F68J_bin.79.fa	95.95	0.5	119
F68W_bin.46	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000435075	GCA_000435075.1	39	39_1	F6DH_bin.16.fa	F68W_bin.46.fa	94.92	0.74	119
F6DH_bin.16	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Bacteroidales	f_UBA932	g_RC9	s_RC9sp000435075	GCA_000435075.1	39	39_1	F6DH_bin.16.fa	F6DH_bin.16.fa	95	0.74	119
F68M_bin.76	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Flavobacteriales	f_UBA1820	g_UBA1820	s__	N/A	439	439_3	F68M_bin.76.fa	F68M_bin.76.fa	96.32	0	120
F68V_bin.76	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Flavobacteriales	f_UBA1820	g_UBA1820	s__	N/A	439	439_1	F68V_bin.76.fa	F68V_bin.76.fa	97.79	0	121
F6MY_bin.139	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Flavobacteriales	f_UBA1820	g_UBA1820	s__	N/A	439	439_2	F6MY_bin.139.fa	F6MY_bin.139.fa	71.35	0.74	122

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.4	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Flavobacteriales	f_UBA1820	g_UBA1820	s_UBA1820 sp003150615	GCA_003150615.1	14	14_1	F6DB_bin.95.fa	F68D_bin.4.fa	98.53	0	122
F6DB_bin.95	d_Bacteria	p_Bacteroidota	c_Bacteroidia	o_Flavobacteriales	f_UBA1820	g_UBA1820	s_UBA1820 sp003150615	GCA_003150615.1	14	14_1	F6DB_bin.95.fa	F6DB_bin.95.fa	98.53	0	122
F68M_bin.87	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g__	s__	N/A	449	449_0	F68M_bin.87.fa	F68M_bin.87.fa	52.32	1.59	123
F68E_bin.45	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s__	N/A	547	547_0	F68E_bin.45.fa	F68E_bin.45.fa	95.2	1.29	124
F68T_bin.31	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_2	F68T_bin.31.fa	F68T_bin.31.fa	95.27	0.59	124
F68G_bin.45	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F68G_bin.45.fa	82.26	1.41	124
F68M_bin.45	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F68M_bin.45.fa	82.83	0.59	124

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.53	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F68P_bin.53.fa	71.74	4.06	124
F6D7_bin.98	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6D7_bin.98.fa	93.74	0	124
F6DA_bin.6	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6DA_bin.6.fa	92.31	0	124
F6DB_bin.79	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6DB_bin.79.fa	97.63	0	124
F6DE_bin.55	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6DE_bin.55.fa	74.52	0.66	124
F6DG_bin.36	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6DG_bin.36.fa	89.74	0.95	124
F6MX_bin.121	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Bilophila	s_Bilophila wadsworthia	GCF_000701705.1	546	546_1	F6DB_bin.79.fa	F6MX_bin.121.fa	99.7	0.59	124

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.54	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_4	F68C_bin.54.fa	F68C_bin.54.fa	98.82	2.4	124
F68H_bin.20	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_4	F68C_bin.54.fa	F68H_bin.20.fa	86.79	2.78	124
F6D7_bin.21	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_4	F68C_bin.54.fa	F6D7_bin.21.fa	53.4	3.16	124
F68D_bin.107	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_12	F68D_bin.107.fa	F68D_bin.107.fa	89.17	3.32	124
F68F_bin.25	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_7	F68F_bin.25.fa	F68F_bin.25.fa	96.92	1.22	124
F68G_bin.52	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_8	F68G_bin.52.fa	F68G_bin.52.fa	93.16	0.59	124
F68M_bin.30	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_11	F68M_bin.30.fa	F68M_bin.30.fa	94.3	2.55	124

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.73	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_6	F68N_bin.73.fa	F68N_bin.73.fa	97.63	0.59	124
F68R_bin.15	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_6	F68N_bin.73.fa	F68R_bin.15.fa	92.94	1.48	124
F6MY_bin.100	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_6	F68N_bin.73.fa	F6MY_bin.100.fa	94.38	0.59	124
F68U_bin.101	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_2	F68U_bin.101.fa	F68U_bin.101.fa	96.33	1.61	124
F68V_bin.74	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_5	F68V_bin.74.fa	F68V_bin.74.fa	95.9	0.95	124
F6D9_bin.74	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_3	F6D9_bin.74.fa	F6D9_bin.74.fa	94.56	0.62	124
F6DB_bin.108	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_10	F6DB_bin.108.fa	F6DB_bin.108.fa	86.98	0.59	124

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.67	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_9	F6DG_bin.67.fa	F6DG_bin.67.fa	93.47	2.73	124
F68W_bin.76	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_1	F6DH_bin.60.fa	F68W_bin.76.fa	79.29	0.59	124
F6DH_bin.60	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_1	F6DH_bin.60.fa	F6DH_bin.60.fa	81.66	0.59	124
F6MX_bin.82	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio piger	GCF_000156375.1	548	548_13	F6MX_bin.82.fa	F6MX_bin.82.fa	70.05	3.25	124
F6DE_bin.70	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Desulfovibrio	s_Desulfovibrio sp900319575	GCA_900319575.1	381	381_0	F6DE_bin.70.fa	F6DE_bin.70.fa	96.33	1.18	124
F68C_bin.17	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Mailhella	s__	N/A	551	551_0	F68C_bin.17.fa	F68C_bin.17.fa	87.33	2.68	125
F68F_bin.62	d_Bacteria	p_Desulfobacterota_A	c_Desulfovibrionia	o_Desulfovibrionales	f_Desulfovibrionaceae	g_Mailhella	s__	N/A	549	549_1	F68U_bin.106.fa	F68F_bin.62.fa	92.37	4.09	126

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.106	d_Bacteria	p_Desulfobacterota_A	c_Desulfobivibronia	o_Desulfobivibrionales	f_Desulfobivibrionaceae	g_Mailhella	s__	N/A	549	549_1	F68U_bin.106.fa	F68U_bin.106.fa	96.84	1.84	127
F68H_bin.82	d_Bacteria	p_Desulfobacterota_A	c_Desulfobivibronia	o_Desulfobivibrionales	f_Desulfobivibrionaceae	g_Mailhella	s_Mailhella massiliensis	GCF_900155525.1	550	550_0	F68H_bin.82.fa	F68H_bin.82.fa	58.66	2.66	127
F68D_bin.73	d_Bacteria	p_Desulfobacterota_A	c_Desulfobivibronia	o_Desulfobivibrionales	f_Desulfobivibrionaceae	g_Mailhella	s_Mailhella sp003150275	GCA_003150275.1	382	382_1	F68D_bin.73.fa	F68D_bin.73.fa	53.49	2.63	127
F6DA_bin.97	d_Bacteria	p_Desulfobacterota_A	c_Desulfobivibronia	o_Desulfobivibrionales	f_Desulfobivibrionaceae	g_Mailhella	s_Mailhella sp003150275	GCA_003150275.1	382	382_1	F6DA_bin.97.fa	F6DA_bin.97.fa	91.78	2.17	127
F68U_bin.44	d_Bacteria	p_Eremiobacterota	c__UBP9	o__UBA4705	f__UBA4705	g__	s__	N/A	509	509_0	F68U_bin.44.fa	F68U_bin.44.fa	86.57	0	128
F68J_bin.57	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Catenibacterium	s_Catenibacterium mitsuoka	GCF_000173795.1	210	210_1	F68J_bin.57.fa	F68J_bin.57.fa	96.23	0	128
F68K_bin.58	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Catenibacterium	s_Catenibacterium mitsuoka	GCF_000173795.1	210	210_1	F68K_bin.58.fa	F68K_bin.58.fa	96.53	0.24	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.30	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium mitsuoka	GCF_000173795.1	210	210_1	F68W_bin.30.fa	F68W_bin.30.fa	99.06	0	128
F6DH_bin.79	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium mitsuoka	GCF_000173795.1	210	210_1	F68W_bin.30.fa	F6DH_bin.79.fa	99.06	0	128
F6MX_bin.21	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium mitsuoka	GCF_000173795.1	210	210_2	F6MX_bin.21.fa	F6MX_bin.21.fa	86.19	1.89	128
F68D_bin.31	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium sp000437715	GCA_000437715.1	210	210_4	F68D_bin.31.fa	F68D_bin.31.fa	64.75	3.3	128
F68U_bin.80	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium sp000437715	GCA_000437715.1	210	210_6	F68U_bin.80.fa	F68U_bin.80.fa	98.11	0.79	128
F6D7_bin.68	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridiaceae	g_Catenibacterium	s_Catenibacterium sp000437715	GCA_000437715.1	210	210_5	F6D7_bin.68.fa	F6D7_bin.68.fa	59.26	1.13	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.5	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Catenibacterium	s_Catenibacterium sp000437715	GCA_000437715.1	210	210_3	F6DB_bin.65.fa	F68N_bin.5.fa	92.06	1.08	128
F6DB_bin.65	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Catenibacterium	s_Catenibacterium sp000437715	GCA_000437715.1	210	210_3	F6DB_bin.65.fa	F6DB_bin.65.fa	98.11	0.47	128
F68D_bin.81	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Coprobacillus	s_Coprobacillus cateniformis	GCA_001312445.1	214	214_1	F68D_bin.81.fa	F68D_bin.81.fa	100	0.94	128
F68M_bin.7	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Coprobacillus	s_Coprobacillus cateniformis	GCA_001312445.1	214	214_1	F68D_bin.81.fa	F68M_bin.7.fa	100	0.94	128
F68E_bin.34	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum ramosum	GCF_000154485.1	211	211_1	F6D9_bin.8.fa	F68E_bin.34.fa	100	0.13	128
F68M_bin.1	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum ramosum	GCF_000154485.1	211	211_1	F6D9_bin.8.fa	F68M_bin.1.fa	100	0	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.38	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridia	g_Erysipelatoclostridium	s_Erysipelatoclostridium ramosum	GCF_000154485.1	211	211_1	F6D9_bin.8.fa	F68V_bin.38.fa	100	0	128
F6D9_bin.8	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridia	g_Erysipelatoclostridium	s_Erysipelatoclostridium ramosum	GCF_000154485.1	211	211_1	F6D9_bin.8.fa	F6D9_bin.8.fa	100	0	128
F68C_bin.51	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridia	g_Erysipelatoclostridium	s_Erysipelatoclostridium sp000752095	GCF_000752095.2	213	213_4	F68C_bin.51.fa	F68C_bin.51.fa	99.06	0	128
F6D7_bin.95	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridia	g_Erysipelatoclostridium	s_Erysipelatoclostridium sp000752095	GCF_000752095.2	213	213_4	F68C_bin.51.fa	F6D7_bin.95.fa	99.06	1.89	128
F68F_bin.98	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelatoclostridia	g_Erysipelatoclostridium	s_Erysipelatoclostridium sp000752095	GCF_000752095.2	213	213_8	F68F_bin.98.fa	F68F_bin.98.fa	95.05	3.77	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.59	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_1	F68J_bin.59.fa	F68J_bin.59.fa	90.25	0	128
F6DB_bin.52	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_1	F68J_bin.59.fa	F6DB_bin.52.fa	54.81	0	128
F68P_bin.39	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_2	F68P_bin.39.fa	F68P_bin.39.fa	99.06	0.31	128
F68R_bin.6	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_3	F68R_bin.6.fa	F68R_bin.6.fa	91.51	0.94	128
F68U_bin.13	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_9	F68U_bin.13.fa	F68U_bin.13.fa	63.04	0.94	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.59	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_5	F6D8_bin.59.fa	F6D8_bin.59.fa	88.12	0.09	128
F6DG_bin.43	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_5	F6D8_bin.59.fa	F6DG_bin.43.fa	99.06	2.36	128
F6DA_bin.61	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_6	F6DA_bin.61.fa	F6DA_bin.61.fa	99.06	0	128
F6MY_bin.19	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp000752095	GCF_000752095.2	213	213_7	F6MY_bin.19.fa	F6MY_bin.19.fa	88.5	0.94	128
F68J_bin.68	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp003024675	GCF_003024675.1	212	212_1	F68J_bin.68.fa	F68J_bin.68.fa	57.37	0	128

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.44	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Erysipelotrichum	s_Erysipelotrichum sp003024675	GCF_003024675.1	212	212_2	F68T_bin.44.fa	F68T_bin.44.fa	96.7	1.42	128
F68J_bin.31	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Massiliomicrobiota	s_Massiliomicrobiota sp002160815	GCF_002160815.1	215	215_0	F68J_bin.31.fa	F68J_bin.31.fa	81.76	2.02	128
F68J_bin.63	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g__	s__	N/A	217	217_1	F68J_bin.63.fa	F68J_bin.63.fa	89.4	4.13	129
F68R_bin.89	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g__	s__	N/A	217	217_2	F68R_bin.89.fa	F68R_bin.89.fa	53.18	4.76	130
F6MX_bin.48	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g__	s__	N/A	595	595_0	F6MX_bin.48.fa	F6MX_bin.48.fa	90.37	1.9	131
F68E_bin.47	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Absiella	s_Absiella innocuum	GCF_000371425.1	438	438_2	F68E_bin.47.fa	F68E_bin.47.fa	95.75	0.09	131
F68G_bin.24	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Absiella	s_Absiella innocuum	GCF_000371425.1	438	438_1	F6MY_bin.99.fa	F68G_bin.24.fa	90.8	1.89	131

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.113	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Absiella	s_Absiella innocuum	GCF_000371425.1	438	438_1	F6MY_bin.99.fa	F6MX_bin.113.fa	72.14	0	131
F6MY_bin.99	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Absiella	s_Absiella innocuum	GCF_000371425.1	438	438_1	F6MY_bin.99.fa	F6MY_bin.99.fa	98.11	1.42	131
F68M_bin.29	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_CAG-536	s__	N/A	209	209_0	F68M_bin.29.fa	F68M_bin.29.fa	70.6	2.72	132
F68K_bin.65	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Dielma	s_Dielma fastidiosa	GCF_000313565.1	6	6_0	F68K_bin.65.fa	F68K_bin.65.fa	67.68	1.18	132
F68F_bin.59	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Faecalitalea	s_Faecalitalea cylindroides	GCF_000469305.1	208	208_0	F68F_bin.59.fa	F68F_bin.59.fa	92.67	1.08	132
F68D_bin.101	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s__	N/A	206	206_1	F68D_bin.101.fa	F68D_bin.101.fa	57.53	3.51	133
F68F_bin.46	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s__	N/A	206	206_2	F68F_bin.46.fa	F68F_bin.46.fa	97.3	0.84	134

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.77	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s__	N/A	207	207_14	F68K_bin.77.fa	F68K_bin.77.fa	97.84	1.38	135
F68N_bin.51	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s__	N/A	207	207_11	F68N_bin.51.fa	F68N_bin.51.fa	61.36	0	136
F68H_bin.16	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s_Holde manella biformis	GCF_000156655.1	207	207_5	F68H_bin.16.fa	F68H_bin.16.fa	95.42	3.67	136
F68J_bin.73	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s_Holde manella biformis	GCF_000156655.1	207	207_2	F68J_bin.73.fa	F68J_bin.73.fa	65.23	1.75	136
F68M_bin.84	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s_Holde manella biformis	GCF_000156655.1	207	207_4	F68M_bin.84.fa	F68M_bin.84.fa	96.09	3.34	136
F68R_bin.63	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde manella	s_Holde manella biformis	GCF_000156655.1	207	207_7	F68R_bin.63.fa	F68R_bin.63.fa	79.3	2.98	136

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.58	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella biformis	GCF_000156655.1	207	207_1	F68U_bin.58.fa	F68U_bin.58.fa	71.53	1.75	136
F6DH_bin.100	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella biformis	GCF_000156655.1	207	207_1	F68U_bin.58.fa	F6DH_bin.100.fa	74.66	4.74	136
F6DG_bin.101	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella biformis	GCF_000156655.1	207	207_3	F6DG_bin.101.fa	F6DG_bin.101.fa	95.55	0.71	136
F6MY_bin.133	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella biformis	GCF_000156655.1	207	207_6	F6MY_bin.133.fa	F6MY_bin.133.fa	64.86	1.75	136
F68D_bin.61	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_10	F68D_bin.61.fa	F68D_bin.61.fa	85.04	4.14	136
F68J_bin.12	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_9	F68J_bin.12.fa	F68J_bin.12.fa	88.79	4.48	136

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.43	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_8	F68U_bin.43.fa	F68U_bin.43.fa	70.67	1.75	136
F6DH_bin.34	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_8	F68U_bin.43.fa	F6DH_bin.34.fa	77.4	3.54	136
F6DB_bin.50	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_13	F6DB_bin.50.fa	F6DB_bin.50.fa	83.63	1.51	136
F6MX_bin.50	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Holde	s_Holde manella sp002299315	GCA_002299315.1	207	207_12	F6MX_bin.50.fa	F6MX_bin.50.fa	86.36	3.54	136
F68G_bin.29	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Solobacterium	s__	N/A	205	205_2	F68G_bin.29.fa	F68G_bin.29.fa	92.52	0.95	137
F68J_bin.6	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Solobacterium	s__	N/A	205	205_3	F68J_bin.6.fa	F68J_bin.6.fa	94.29	0	138

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.85	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Solobacterium	s__	N/A	205	205_1	F68W_bin.85.fa	F68W_bin.85.fa	85.76	1.43	139
F6DH_bin.38	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_Solobacterium	s__	N/A	205	205_1	F68W_bin.85.fa	F6DH_bin.38.fa	76.49	2.38	140
F68D_bin.7	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_UBA636	s__	N/A	216	216_3	F68D_bin.7.fa	F68D_bin.7.fa	95.71	0.71	141
F68H_bin.18	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_UBA636	s__	N/A	216	216_5	F68H_bin.18.fa	F68H_bin.18.fa	80.63	1.19	142
F68J_bin.82	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_UBA636	s__	N/A	216	216_4	F68J_bin.82.fa	F68J_bin.82.fa	86.67	2.14	143
F68U_bin.57	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_UBA636	s__	N/A	216	216_1	F68U_bin.57.fa	F68U_bin.57.fa	60.45	2.9	144
F6MX_bin.49	d_Bacteria	p_Firmicutes	c_Bacilli	o_Erysipelotrichales	f_Erysipelotrichaceae	g_UBA636	s__	N/A	216	216_2	F6MX_bin.49.fa	F6MX_bin.49.fa	74.52	0.71	145
F68M_bin.25	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Aerococcaceae	g_Granulicatella	s__	N/A	151	151_0	F68M_bin.25.fa	F68M_bin.25.fa	65.96	0.27	146

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.15	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Enterococcaceae	g_Enterococcus	s_Enterococcus faecalis	GCF_000392875.1	150	150_1	F68M_bin.15.fa	F68M_bin.15.fa	99.63	0	146
F6DE_bin.11	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Enterococcaceae	g_Enterococcus	s_Enterococcus faecalis	GCF_000392875.1	150	150_2	F6DE_bin.11.fa	F6DE_bin.11.fa	99.63	0.07	146
F68T_bin.55	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Enterococcaceae	g_Enterococcus_D	s_Enterococcus_D casseliflavus	GCF_001544095.1	10	10_0	F68T_bin.55.fa	F68T_bin.55.fa	76.58	2.79	146
F6D9_bin.84	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Enterococcaceae	g_Enterococcus_D	s_Enterococcus_D gallinarum	GCF_001544275.1	11	11_0	F6D9_bin.84.fa	F6D9_bin.84.fa	94.06	2.1	146
F68D_bin.68	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s__	N/A	378	378_3	F68D_bin.68.fa	F68D_bin.68.fa	91.11	2.4	147
F68R_bin.11	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s__	N/A	378	378_1	F68R_bin.11.fa	F68R_bin.11.fa	98.11	0	148
F68T_bin.45	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s__	N/A	378	378_4	F68T_bin.45.fa	F68T_bin.45.fa	92.89	1.11	149

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.20	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s__	N/A	378	378_2	F6D8_bin.20.fa	F6D8_bin.20.fa	98.83	0	150
F68H_bin.40	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s_Lactobacillus amylovorus	GCF_002706375.1	379	379_2	F68H_bin.40.fa	F68H_bin.40.fa	97.32	0	150
F68D_bin.69	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus	s_Lactobacillus kitasatonis	GCF_000615285.1	379	379_1	F68D_bin.69.fa	F68D_bin.69.fa	96.4	0.81	150
F68T_bin.79	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_B	s_Lactobacillus_B salivarius	GCF_001435955.1	171	171_0	F68T_bin.79.fa	F68T_bin.79.fa	95.9	1.57	150
F68J_bin.77	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H fermentum	GCF_000159215.1	12	12_0	F68J_bin.77.fa	F68J_bin.77.fa	79.81	1.91	150
F68H_bin.50	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H mucosae	GCF_001436025.1	377	377_1	F68H_bin.50.fa	F68H_bin.50.fa	99.18	0.54	150
F68M_bin.3	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H mucosae	GCF_001436025.1	377	377_4	F68M_bin.3.fa	F68M_bin.3.fa	90.1	3.58	150

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.55	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H_mucosae	GCF_001436025.1	377	377_2	F68R_bin.55.fa	F68R_bin.55.fa	66.26	0.7	150
F68D_bin.87	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H_mucosae	GCF_001436025.1	377	377_3	F6D8_bin.37.fa	F68D_bin.87.fa	74.14	0	150
F6D8_bin.37	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g_Lactobacillus_H	s_Lactobacillus_H_mucosae	GCF_001436025.1	377	377_3	F6D8_bin.37.fa	F6D8_bin.37.fa	99.18	0	150
F6D9_bin.96	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g>Weissella	s>Weissella_cibaria	GCF_000193635.1	153	153_0	F6D9_bin.96.fa	F6D9_bin.96.fa	61.11	1.01	150
F68R_bin.22	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g>Weissella	s>Weissella_confusa	GCF_001436895.1	152	152_1	F68T_bin.90.fa	F68R_bin.22.fa	62.67	1.03	150
F68T_bin.90	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Lactobacillaceae	g>Weissella	s>Weissella_confusa	GCF_001436895.1	152	152_1	F68T_bin.90.fa	F68T_bin.90.fa	97.55	0.2	150
F68J_bin.15	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Lactococcus	s_Lactococcus_petauri	GCF_002154895.1	164	164_0	F68J_bin.15.fa	F68J_bin.15.fa	83	3.91	150
F68M_bin.43	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_	N/A	159	159_0	F68M_bin.43.fa	F68M_bin.43.fa	52.8	1.22	151
F6MX_bin.93	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_	N/A	154	154_2	F6MX_bin.93.fa	F6MX_bin.93.fa	52.51	4.98	152

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.77	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus anginosus	GCF_002088025.1	156	156_1	F68M_bin.77.fa	F68M_bin.77.fa	84.37	0.83	152
F6MX_bin.79	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus anginosus	GCF_002088025.1	156	156_2	F6MX_bin.79.fa	F6MX_bin.79.fa	96.74	1.77	152
F68N_bin.2	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus gallolyticus	GCF_002000985.1	162	162_2	F68N_bin.2.fa	F68N_bin.2.fa	96.2	0.46	152
F68C_bin.89	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_2	F68C_bin.89.fa	F68C_bin.89.fa	100	0	152
F68N_bin.55	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_2	F68C_bin.89.fa	F68N_bin.55.fa	94.66	0.28	152
F68R_bin.33	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_1	F6DB_bin.102.fa	F68R_bin.33.fa	98.37	1.53	152

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.63	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_1	F6DB_bin.102.fa	F68T_bin.63.fa	100	1.34	152
F6DB_bin.102	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_1	F6DB_bin.102.fa	F6DB_bin.102.fa	99.35	0.19	152
F6DG_bin.31	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus infantarius	GCF_000154985.1	161	161_1	F6DB_bin.102.fa	F6DG_bin.31.fa	74.3	1	152
F6D7_bin.37	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus parasanguinis_B	GCF_000963275.1	158	158_0	F6D7_bin.37.fa	F6D7_bin.37.fa	85.52	2.62	152
F68D_bin.75	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus pasteurianus	GCF_900478025.1	162	162_1	F68D_bin.75.fa	F68D_bin.75.fa	100	0	152
F68N_bin.11	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus salivarius	GCF_000785515.1	154	154_3	F68N_bin.11.fa	F68N_bin.11.fa	66.18	2.97	152

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.17	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus salivarius	GCF_000785515.1	154	154_1	F68T_bin.17.fa	F68T_bin.17.fa	50.34	3.06	152
F68M_bin.71	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus sinensis	GCF_000767835.1	160	160_0	F68M_bin.71.fa	F68M_bin.71.fa	61.21	0.86	152
F68M_bin.48	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus sp001587175	GCF_001587175.1	157	157_0	F68M_bin.48.fa	F68M_bin.48.fa	68.42	0.38	152
F68J_bin.32	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus sp002300045	GCA_002300045.1	163	163_0	F68J_bin.32.fa	F68J_bin.32.fa	91.01	3.08	152
F68V_bin.50	d_Bacteria	p_Firmicutes	c_Bacilli	o_Lactobacillales	f_Streptococcaceae	g_Streptococcus	s_Streptococcus thermophilus	GCF_000014485.1	155	155_0	F68V_bin.50.fa	F68V_bin.50.fa	97.53	0.15	152
F6D7_bin.103	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-1000	g_CAG-460	s__	N/A	243	243_0	F6D7_bin.103.fa	F6D7_bin.103.fa	87.08	1.12	153

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.110	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-1000	g_CAG-533	s_CAG-533 sp000434495	GCA_000434495.1	234	234_0	F68F_bin.110.fa	F68F_bin.110.fa	78.01	4.26	153
F6D7_bin.109	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g__	s__	N/A	172	172_0	F6D7_bin.109.fa	F6D7_bin.109.fa	56.67	3.37	154
F68U_bin.40	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s__	N/A	236	236_1	F68U_bin.40.fa	F68U_bin.40.fa	93.54	1.8	155
F68W_bin.9	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s__	N/A	236	236_1	F68U_bin.40.fa	F68W_bin.9.fa	91.29	3.92	156
F6DH_bin.68	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s__	N/A	236	236_1	F68U_bin.40.fa	F6DH_bin.68.fa	91.29	2.69	157
F6D9_bin.72	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s__	N/A	236	236_2	F6D9_bin.72.fa	F6D9_bin.72.fa	72.19	1.12	158
F68V_bin.63	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp000431795	GCA_000431795.1	235	235_1	F6MY_bin.87.fa	F68V_bin.63.fa	85.67	0	158
F6D7_bin.9	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp000431795	GCA_000431795.1	235	235_1	F6MY_bin.87.fa	F6D7_bin.9.fa	93.33	2.67	158
F6MX_bin.104	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp000431795	GCA_000431795.1	235	235_1	F6MY_bin.87.fa	F6MX_bin.104.fa	87.92	1.12	158
F6MY_bin.87	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp000431795	GCA_000431795.1	235	235_1	F6MY_bin.87.fa	F6MY_bin.87.fa	92.42	1.12	158

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.82	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_3	F68F_bin.82.fa	F68F_bin.82.fa	92.42	2.25	158
F68G_bin.33	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_5	F68G_bin.33.fa	F68G_bin.33.fa	92	4	158
F6D7_bin.31	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_4	F6D7_bin.31.fa	F6D7_bin.31.fa	92.42	3.37	158
F6D8_bin.7	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_2	F6D8_bin.7.fa	F6D8_bin.7.fa	92.7	4.49	158
F6DG_bin.103	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_1	F6MX_bin.24.fa	F6DG_bin.103.fa	88.2	3.37	158
F6MX_bin.24	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-302	s_CAG-302 sp001916775	GCA_001916775.1	237	237_1	F6MX_bin.24.fa	F6MX_bin.24.fa	92.7	3.93	158
F68V_bin.101	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-302	g_CAG-914	s_CAG-914 sp000437895	GCA_000437895.1	240	240_0	F68V_bin.101.fa	F68V_bin.101.fa	84	4	158
F6D7_bin.38	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-433	g_CAG-433	s__	N/A	238	238_0	F6D7_bin.38.fa	F6D7_bin.38.fa	93.82	0.56	159

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.88	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-433	g_CAG-594	s_CAG-594 sp000434835	GCA_000434835.1	233	233_1	F68C_bin.88.fa	F68C_bin.88.fa	92.7	2.25	159
F6D8_bin.39	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-433	g_CAG-594	s_CAG-594 sp000434835	GCA_000434835.1	233	233_2	F6D8_bin.39.fa	F6D8_bin.39.fa	79.4	1.12	159
F6D8_bin.77	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-611	g_CAG-611	s__	N/A	239	239_2	F6D8_bin.77.fa	F6D8_bin.77.fa	54.1	3.33	160
F68V_bin.46	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-611	g_CAG-611	s_CAG-611 sp000434175	GCA_000434175.1	239	239_1	F68V_bin.46.fa	F68V_bin.46.fa	84.99	2.25	160
F68W_bin.37	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-822	g_UBA5026	s__	N/A	242	242_1	F68W_bin.37.fa	F68W_bin.37.fa	93.82	0	161
F6DH_bin.82	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_CAG-822	g_UBA5026	s__	N/A	242	242_1	F68W_bin.37.fa	F6DH_bin.82.fa	93.26	1.12	162
F6MX_bin.100	d_Bacteria	p_Firmicutes	c_Bacilli	o_RF39	f_UBA5348	g_CAG-1193	s__	N/A	241	241_0	F6MX_bin.100.fa	F6MX_bin.100.fa	93.33	0	163
F68J_bin.16	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-288	g_UBA7642	s__	N/A	426	426_0	F68J_bin.16.fa	F68J_bin.16.fa	92.32	0	164
F68J_bin.81	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-449	g_CAG-449	s__	N/A	118	118_0	F68J_bin.81.fa	F68J_bin.81.fa	100	0	165
F68J_bin.25	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-826	g_UBA733	s__	N/A	9	9_1	F68J_bin.25.fa	F68J_bin.25.fa	97.75	1.12	166
F68U_bin.19	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-826	g_UBA733	s__	N/A	9	9_4	F68U_bin.19.fa	F68U_bin.19.fa	97.75	0	167
F68W_bin.78	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-826	g_UBA733	s__	N/A	9	9_3	F68W_bin.78.fa	F68W_bin.78.fa	97.45	0	168

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.88	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-826	g_UBA733	s__	N/A	9	9_3	F68W_bin.78.fa	F6DH_bin.88.fa	97.45	0	169
F6D9_bin.92	d_Bacteria	p_Firmicutes	c_Bacilli	o_RFN20	f_CAG-826	g_UBA733	s__	N/A	9	9_2	F6D9_bin.92.fa	F6D9_bin.92.fa	81.85	2.36	170
F68M_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o__	f__	g__	s__	N/A	368	368_0	F68M_bin.49.fa	F68M_bin.49.fa	90.9	1.24	171
F6MX_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o__	f__	g__	s__	N/A	665	665_0	F6MX_bin.28.fa	F6MX_bin.28.fa	54.15	0	172
F6D7_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f__	g__	s__	N/A	510	510_0	F6D7_bin.36.fa	F6D7_bin.36.fa	61.05	0	173
F68G_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-314	g_CAG-1435	s_CAG-1435 sp003537755	GCA_003537755.1	231	231_1	F68G_bin.55.fa	F68G_bin.55.fa	92.34	0.03	173
F6MX_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-314	g_CAG-1435	s_CAG-1435 sp003537755	GCA_003537755.1	231	231_2	F6MX_bin.1.fa	F6MX_bin.1.fa	92.34	0.03	173
F68D_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-314	g_CAG-314	s_CAG-314 sp000437915	GCA_000437915.1	500	500_1	F68D_bin.77.fa	F68D_bin.77.fa	93.15	0.81	173
F6MX_bin.131	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-314	g_CAG-314	s_CAG-314 sp000437915	GCA_000437915.1	500	500_1	F68D_bin.77.fa	F6MX_bin.131.fa	93.15	2.42	173
F6D7_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-552	g__	s__	N/A	23	23_0	F6D7_bin.40.fa	F6D7_bin.40.fa	91.59	0.04	174
F68F_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	327	327_0	F68F_bin.97.fa	F68F_bin.97.fa	84.27	0.03	175

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	501	501_1	F68M_bin.86.fa	F68D_bin.29.fa	54.63	2.63	176
F68M_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	501	501_1	F68M_bin.86.fa	F68M_bin.86.fa	93.15	1.09	177
F6D7_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	416	416_0	F6D7_bin.49.fa	F6D7_bin.49.fa	79.03	0.05	178
F6D7_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	328	328_0	F6D7_bin.61.fa	F6D7_bin.61.fa	80.24	0.03	179
F6D7_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	325	325_0	F6D7_bin.83.fa	F6D7_bin.83.fa	95.56	0.05	180
F6D8_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	326	326_0	F6D8_bin.86.fa	F6D8_bin.86.fa	95.56	0.05	181
F6DE_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	324	324_1	F6DE_bin.17.fa	F6DE_bin.17.fa	91.94	0.03	182
F6DG_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	324	324_1	F6DE_bin.17.fa	F6DG_bin.37.fa	93.68	3.28	183
F6DH_bin.131	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g__	s__	N/A	324	324_1	F6DE_bin.17.fa	F6DH_bin.131.fa	51.18	0.23	184
F68F_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_QALSO1	s__	N/A	542	542_1	F68F_bin.27.fa	F68F_bin.27.fa	86.24	2.22	185
F6D7_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_QALSO1	s__	N/A	542	542_1	F68F_bin.27.fa	F6D7_bin.19.fa	77.4	1.4	186
F6D7_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_QALSO1	s_QALSO1 sp003150575	GCA_003150575.1	543	543_2	F6D7_bin.43.fa	F6D7_bin.43.fa	95.97	0	186
F6DG_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_QALSO1	s_QALSO1 sp003150575	GCA_003150575.1	543	543_1	F6DH_bin.117.fa	F6DG_bin.61.fa	68.96	1.9	186

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.117	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_QALSO1	s_QALSO1 sp003150575	GCA_003150575.1	543	543_1	F6DH_bin.117.fa	F6DH_bin.117.fa	81.24	0	186
F68J_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s__	N/A	536	536_1	F68J_bin.42.fa	F68J_bin.42.fa	93.15	1.61	187
F6MX_bin.106	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s__	N/A	536	536_2	F6MX_bin.106.fa	F6MX_bin.106.fa	91.38	3.63	188
F68D_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s_UBA10281 sp000437515	GCA_000437515.1	535	535_3	F68D_bin.49.fa	F68D_bin.49.fa	93.35	1.61	188
F68G_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s_UBA10281 sp000437515	GCA_000437515.1	535	535_1	F68G_bin.47.fa	F68G_bin.47.fa	93.35	0.81	188
F68J_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s_UBA10281 sp000437515	GCA_000437515.1	535	535_2	F68J_bin.19.fa	F68J_bin.19.fa	92.54	1.61	188
F68R_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA10281	s_UBA10281 sp000437515	GCA_000437515.1	535	535_4	F68R_bin.69.fa	F68R_bin.69.fa	93.35	0.81	188
F68F_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s__	N/A	534	534_4	F68F_bin.7.fa	F68F_bin.7.fa	94.35	0	189
F68P_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s__	N/A	534	534_1	F68P_bin.16.fa	F68P_bin.16.fa	69.72	0.67	190
F68R_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s__	N/A	534	534_3	F68R_bin.60.fa	F68R_bin.60.fa	86.25	0.81	191

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.136	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s__	N/A	534	534_2	F6MY_bin.136.fa	F6MY_bin.136.fa	93.55	0	192
F68C_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s_UBA7597 sp003448195	GCA_003448195.1	533	533_1	F6DA_bin.9.fa	F68C_bin.22.fa	95.97	0	192
F68H_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s_UBA7597 sp003448195	GCA_003448195.1	533	533_1	F6DA_bin.9.fa	F68H_bin.10.fa	87.82	1.41	192
F68J_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s_UBA7597 sp003448195	GCA_003448195.1	533	533_1	F6DA_bin.9.fa	F68J_bin.35.fa	89.14	0	192
F68N_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s_UBA7597 sp003448195	GCA_003448195.1	533	533_1	F6DA_bin.9.fa	F68N_bin.72.fa	95.82	0.03	192
F6DA_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-727	g_UBA7597	s_UBA7597 sp003448195	GCA_003448195.1	533	533_1	F6DA_bin.9.fa	F6DA_bin.9.fa	95.97	0	192
F68H_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_3	F68H_bin.3.fa	F68H_bin.3.fa	95.89	1.21	192
F68J_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_5	F68J_bin.43.fa	F68J_bin.43.fa	92.4	0.7	192

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_1	F68R_bin.66.fa	F68R_bin.66.fa	91	0.7	192
F6D8_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_2	F6D8_bin.50.fa	F6D8_bin.50.fa	92.4	0.7	192
F6D9_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_4	F6D9_bin.61.fa	F6D9_bin.61.fa	56.9	1.72	192
F6MX_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_4C28d-15	f_CAG-917	g_CAG-349	s_CAG-349 sp003539515	GCA_003539515.1	333	333_6	F6MX_bin.111.fa	F6MX_bin.111.fa	91.94	0.7	192
F68C_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_7	F68C_bin.70.fa	F68C_bin.70.fa	96.63	2.08	193
F68D_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_2	F68D_bin.55.fa	F68D_bin.55.fa	77.66	2.58	194
F68F_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_4	F68F_bin.92.fa	F68F_bin.92.fa	88.81	4.44	195
F68G_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_6	F68G_bin.86.fa	F68G_bin.86.fa	74.93	2.4	196
F68V_bin.96	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_9	F68V_bin.96.fa	F68V_bin.96.fa	71.77	2.69	197

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_1	F68W_bin.56.fa	F68W_bin.56.fa	75.48	1.55	198
F6DH_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_1	F68W_bin.56.fa	F6DH_bin.28.fa	78.9	2.49	199
F6D8_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_5	F6D8_bin.25.fa	F6D8_bin.25.fa	93.23	1.64	200
F6MX_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_3	F6MX_bin.91.fa	F6MX_bin.91.fa	96.77	1.88	201
F6MY_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g__	s__	N/A	440	440_8	F6MY_bin.36.fa	F6MY_bin.36.fa	94.41	0.93	202
F68V_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_CAG-1024	s__	N/A	567	567_0	F68V_bin.17.fa	F68V_bin.17.fa	83.76	0	203
F68V_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_CAG-1024	s__	N/A	568	568_0	F68V_bin.5.fa	F68V_bin.5.fa	78.06	0	204
F68V_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s__	N/A	480	480_0	F68V_bin.83.fa	F68V_bin.83.fa	95.51	0.81	205
F68D_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_4	F68D_bin.41.fa	F68D_bin.41.fa	92.6	1.34	205

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_12	F68F_bin.1.fa	F68F_bin.1.fa	92.6	1.34	205
F68H_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_7	F68H_bin.29.fa	F68H_bin.29.fa	92.6	1.34	205
F68M_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_2	F68M_bin.65.fa	F68M_bin.65.fa	92.6	1.34	205
F6DB_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_2	F68M_bin.65.fa	F6DB_bin.99.fa	92.6	1.34	205
F68N_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_5	F68N_bin.64.fa	F68N_bin.64.fa	92.6	1.34	205
F68R_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_3	F68R_bin.19.fa	F68R_bin.19.fa	92.6	1.34	205
F68V_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_13	F68V_bin.60.fa	F68V_bin.60.fa	91.25	2.01	205

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_6	F6D7_bin.77.fa	F68C_bin.66.fa	92.6	1.34	205
F6D7_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_6	F6D7_bin.77.fa	F6D7_bin.77.fa	92.6	1.34	205
F6D8_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_11	F6D8_bin.6.fa	F6D8_bin.6.fa	92.6	1.34	205
F68G_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_1	F6D9_bin.1.fa	F68G_bin.49.fa	92.6	1.34	205
F6D9_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_1	F6D9_bin.1.fa	F6D9_bin.1.fa	92.6	1.34	205
F6DA_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_10	F6DA_bin.37.fa	F6DA_bin.37.fa	91.93	1.34	205
F6MX_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_9	F6MX_bin.71.fa	F6MX_bin.71.fa	92.6	1.34	205

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_PeH17	s_PeH17sp000435055	GCA_000435055.1	479	479_8	F6MY_bin.110.fa	F6MY_bin.110.fa	92.6	1.34	205
F6D9_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s__	N/A	230	230_0	F6D9_bin.23.fa	F6D9_bin.23.fa	97.58	0	206
F68F_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_8	F68F_bin.38.fa	F68F_bin.38.fa	99.19	0	206
F68G_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_9	F68G_bin.56.fa	F68G_bin.56.fa	99.19	0.81	206
F68H_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_10	F68H_bin.7.fa	F68H_bin.7.fa	99.19	0	206
F68M_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_4	F68M_bin.32.fa	F68M_bin.32.fa	99.19	0.81	206
F68R_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_6	F68R_bin.86.fa	F68R_bin.86.fa	98.39	0.81	206
F6D7_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_5	F6D7_bin.33.fa	F6D7_bin.33.fa	97.04	1.21	206

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_3	F6D8_bin.63.fa	F68D_bin.92.fa	97.58	0.81	206
F68N_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_3	F6D8_bin.63.fa	F68N_bin.3.fa	99.19	1.61	206
F6D8_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_3	F6D8_bin.63.fa	F6D8_bin.63.fa	99.19	0.81	206
F6DB_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_1	F6DB_bin.24.fa	F6DB_bin.24.fa	98.39	0	206
F6MX_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_2	F6MX_bin.62.fa	F6MX_bin.62.fa	86.02	0	206
F6MY_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_Phill	s_Phillsp001940855	GCA_001940855.1	229	229_7	F6MY_bin.47.fa	F6MY_bin.47.fa	98.39	0.81	206
F68D_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_UBA1685	s_UBA1685sp002320595	GCA_002320595.1	37	37_1	F68D_bin.78.fa	F68D_bin.78.fa	76.91	2.32	206

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_UBA1685	s_UBA1685 sp002320595	GCA_002320595.1	37	37_2	F6MX_bin.32.fa	F6MX_bin.32.fa	98.6	1.4	206
F68V_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-138	g_UBA5394	s_UBA5394 sp003150565	GCA_003150565.1	184	184_0	F68V_bin.11.fa	F68V_bin.11.fa	93.74	1.08	206
F6MX_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	5	5_0	F6MX_bin.6.fa	F6MX_bin.6.fa	62.09	2.9	207
F68G_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	85	85_0	F68G_bin.9.fa	F68G_bin.9.fa	83.43	2.33	208
F68D_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	284	284_1	F68D_bin.112.fa	F68D_bin.112.fa	67.05	2.25	209
F6MY_bin.130	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	284	284_2	F6MY_bin.130.fa	F6MY_bin.130.fa	96.51	0.22	210
F68G_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	433	433_0	F68G_bin.53.fa	F68G_bin.53.fa	96.57	3.49	211
F68V_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	552	552_1	F68V_bin.67.fa	F68V_bin.67.fa	52.72	3.51	212
F6MX_bin.134	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	552	552_2	F6MX_bin.134.fa	F6MX_bin.134.fa	84.84	4.37	213

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	553	553_0	F68M_bin.12.fa	F68M_bin.12.fa	99.19	1.08	214
F68V_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	555	555_0	F68V_bin.70.fa	F68V_bin.70.fa	53.33	1.13	215
F68F_bin.115	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	556	556_1	F68F_bin.115.fa	F68F_bin.115.fa	57.18	2.63	216
F6DG_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	556	556_2	F6DG_bin.98.fa	F6DG_bin.98.fa	89.92	1.61	217
F68K_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	557	557_1	F68K_bin.26.fa	F68K_bin.26.fa	91.02	1.63	218
F68U_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	557	557_2	F68U_bin.89.fa	F68U_bin.89.fa	80.23	0.54	219
F68D_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_2	F68D_bin.97.fa	F68D_bin.97.fa	94.36	2.33	220
F68F_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_8	F68F_bin.79.fa	F68F_bin.79.fa	59.94	4.17	221
F68R_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_7	F68R_bin.21.fa	F68R_bin.21.fa	77.93	0.27	222
F6D7_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_3	F6D7_bin.60.fa	F6D7_bin.60.fa	75	1.25	223

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_4	F6D8_bin.21.fa	F6D8_bin.21.fa	96.5	1.3	224
F6DB_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_6	F6DB_bin.29.fa	F6DB_bin.29.fa	95.97	0.94	225
F68W_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_1	F6DH_bin.78.fa	F68W_bin.84.fa	58.18	0	226
F6DH_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_1	F6DH_bin.78.fa	F6DH_bin.78.fa	96.5	0.23	227
F6MY_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	558	558_5	F6MY_bin.90.fa	F6MY_bin.90.fa	96.5	1.3	228
F68D_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_4	F68D_bin.72.fa	F68D_bin.72.fa	90.73	1.1	229
F68G_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_5	F68G_bin.41.fa	F68G_bin.41.fa	92.74	1.88	230
F68W_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_1	F68W_bin.65.fa	F68W_bin.65.fa	55.6	3.61	231
F6DH_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_1	F68W_bin.65.fa	F6DH_bin.24.fa	51.9	4.75	232
F6DB_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_2	F6DB_bin.81.fa	F6DB_bin.81.fa	94.76	2.69	233

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g__	s__	N/A	663	663_3	F6MX_bin.99.fa	F6MX_bin.99.fa	90.3	3.23	234
F68C_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_9	F68C_bin.32.fa	F68C_bin.32.fa	99.3	1.17	234
F68T_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_7	F68T_bin.5.fa	F68T_bin.5.fa	99.3	1.19	234
F68V_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_1	F68V_bin.59.fa	F68V_bin.59.fa	98.6	1.52	234
F6D8_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_3	F6D8_bin.93.fa	F6D8_bin.93.fa	97.9	1.17	234
F6DB_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_8	F6DB_bin.36.fa	F6DB_bin.36.fa	96.5	1.52	234
F6DE_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_2	F6DE_bin.38.fa	F6DE_bin.38.fa	98.6	1.17	234
F6DG_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_6	F6DG_bin.14.fa	F6DG_bin.14.fa	97.2	0.93	234

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_4	F6MX_bin.5.fa	F6MX_bin.5.fa	89.35	1.17	234
F6MY_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_CAG-74	g_UBA11524	s_UBA11524 sp000437595	GCA_000437595.1	554	554_5	F6MY_bin.56.fa	F6MY_bin.56.fa	97.9	1.17	234
F68T_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_Christensenellaceae	g__	s__	N/A	398	398_0	F68T_bin.104.fa	F68T_bin.104.fa	66.45	1.75	235
F6DE_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_Christensenellaceae	g__	s__	N/A	410	410_0	F6DE_bin.9.fa	F6DE_bin.9.fa	97.9	0.7	236
F68K_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_Christensenellaceae	g_QANA01	s__	N/A	397	397_0	F68K_bin.112.fa	F68K_bin.112.fa	64.19	2.45	237
F6MX_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_QALW01	g_QALW01	s__	N/A	399	399_0	F6MX_bin.45.fa	F6MX_bin.45.fa	88.98	0.1	238
F68G_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_UBA1750	g__	s__	N/A	559	559_0	F68G_bin.58.fa	F68G_bin.58.fa	50.16	0	239
F6MX_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Christensenellales	f_UBA1750	g__	s__	N/A	560	560_0	F6MX_bin.101.fa	F6MX_bin.101.fa	97.58	1.69	240

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium	s__	N/A	192	192_0	F68G_bin.65.fa	F68G_bin.65.fa	92.7	1.97	241
F6D8_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium	s__	N/A	191	191_1	F6DB_bin.97.fa	F6D8_bin.40.fa	92.54	0.16	242
F6DB_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium	s__	N/A	191	191_1	F6DB_bin.97.fa	F6DB_bin.97.fa	97.56	0.16	243
F6DG_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium	s__	N/A	193	193_0	F6DG_bin.24.fa	F6DG_bin.24.fa	91.97	0	244
F6MY_bin.126	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium	s_Clostridium paraputrificum	GCF_900447045.1	194	194_0	F6MY_bin.126.fa	F6MY_bin.126.fa	92.22	2.76	244
F68D_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_Clostridiales	f_Clostridiaceae	g_Clostridium_P	s_Clostridium_P perfringens	GCF_000013285.1	203	203_0	F68D_bin.110.fa	F68D_bin.110.fa	62.55	4.22	244
F68V_bin.123	d_Bacteria	p_Firmicutes	c_Clostridia	o_Eubacteriales	f_Eubacteriaceae	g_Eubacterium	s_Eubacterium limosum_A	GCF_001481725.1	169	169_1	F68V_bin.123.fa	F68V_bin.123.fa	50.7	2.24	244
F6DE_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Eubacteriales	f_Eubacteriaceae	g_Eubacterium	s_Eubacterium limosum_A	GCF_001481725.1	169	169_2	F6DE_bin.92.fa	F6DE_bin.92.fa	70.7	2.63	244

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.117	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f__	g__	s__	N/A	475	475_2	F6DB_bin.117.fa	F6DB_bin.117.fa	98.66	0.89	245
F68E_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g__	s__	N/A	257	257_0	F68E_bin.35.fa	F68E_bin.35.fa	84.54	0	246
F68K_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g__	s__	N/A	258	258_0	F68K_bin.18.fa	F68K_bin.18.fa	93.16	2.24	247
F6D7_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g__	s__	N/A	475	475_1	F6D7_bin.107.fa	F6D7_bin.107.fa	95.71	3.75	248
F6DG_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s__	N/A	442	442_0	F6DG_bin.92.fa	F6DG_bin.92.fa	91.71	1.03	249
F68E_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum lactatifermentans	GCF_900142265.1	441	441_0	F68E_bin.17.fa	F68E_bin.17.fa	95.64	0	249
F68C_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_8	F68C_bin.16.fa	F68C_bin.16.fa	96.64	0	249
F68F_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_1	F68F_bin.16.fa	F68F_bin.16.fa	96.98	0	249

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_3	F68H_bin.32.fa	F68H_bin.32.fa	69.87	0.73	249
F68J_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_2	F68J_bin.29.fa	F68J_bin.29.fa	95.97	3.86	249
F68K_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_10	F68K_bin.79.fa	F68K_bin.79.fa	97.99	0	249
F68N_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_12	F68N_bin.65.fa	F68N_bin.65.fa	97.99	0	249
F68P_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_11	F68P_bin.6.fa	F68P_bin.6.fa	93.5	0	249
F68U_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_14	F68U_bin.70.fa	F68U_bin.70.fa	91.95	0	249

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_5	F6D7_bin.52.fa	F6D7_bin.52.fa	97.99	0	249
F6D8_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_6	F6D8_bin.57.fa	F6D8_bin.57.fa	92.95	0	249
F6DA_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_7	F6DA_bin.70.fa	F6DA_bin.70.fa	97.99	0	249
F68R_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_13	F6DB_bin.103.fa	F68R_bin.5.fa	82.7	1.34	249
F6DB_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_13	F6DB_bin.103.fa	F6DB_bin.103.fa	97.99	0	249
F68G_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotrignaceae	g_Anaerotrignum	s_Anaerotrignum sp000436415	GCA_000436415.1	445	445_4	F6DG_bin.50.fa	F68G_bin.71.fa	94.3	0.06	249

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotruncaceae	g_Anaerotruncum	s_Anaerotruncum sp000436415	GCA_000436415.1	445	445_4	F6DG_bin.50.fa	F6DG_bin.50.fa	97.99	0	249
F68W_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotruncaceae	g_Anaerotruncum	s_Anaerotruncum sp000436415	GCA_000436415.1	445	445_9	F6DH_bin.108.fa	F68W_bin.28.fa	94.94	0	249
F6DH_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Anaerotruncaceae	g_Anaerotruncum	s_Anaerotruncum sp000436415	GCA_000436415.1	445	445_9	F6DH_bin.108.fa	F6DH_bin.108.fa	96.64	0	249
F68C_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	317	317_1	F68C_bin.55.fa	F68C_bin.55.fa	69.3	3.51	250
F68F_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	317	317_3	F68F_bin.14.fa	F68F_bin.14.fa	56.14	1.75	251
F68U_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	317	317_5	F68U_bin.31.fa	F68U_bin.31.fa	78.8	0.63	252
F6DA_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	317	317_4	F6DA_bin.21.fa	F6DA_bin.21.fa	79.94	4.01	253
F6DH_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	317	317_2	F6DH_bin.84.fa	F6DH_bin.84.fa	50.88	1.75	254

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F68G_bin.50.fa	96.95	0.89	255
F68R_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F68R_bin.64.fa	96.14	4.31	256
F68U_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F68U_bin.111.fa	59.44	4.39	257
F6D7_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F6D7_bin.47.fa	98.07	1.21	258
F6DG_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F6DG_bin.86.fa	92.18	1.55	259
F6MY_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	349	349_1	F68G_bin.50.fa	F6MY_bin.45.fa	97.21	0.97	260
F68K_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g__	s__	N/A	350	350_0	F68K_bin.20.fa	F68K_bin.20.fa	88.89	0.24	261
F6D7_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp003447295	GCA_003447295.1	367	367_19	F6D7_bin.3.fa	F6D7_bin.3.fa	99.28	1.93	261
F68K_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_13	F68K_bin.55.fa	F68K_bin.55.fa	94.36	1.13	261

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_11	F68R_bin.27.fa	F68R_bin.27.fa	89.08	0.97	261
F68T_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_16	F68T_bin.89.fa	F68T_bin.89.fa	74.37	1.21	261
F68U_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_17	F68U_bin.39.fa	F68U_bin.39.fa	99.03	2.09	261
F68V_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_12	F68V_bin.53.fa	F68V_bin.53.fa	94.44	1.05	261
F6D8_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_18	F6D8_bin.78.fa	F6D8_bin.78.fa	52.19	4.35	261
F6DA_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_14	F6DA_bin.62.fa	F6DA_bin.62.fa	67.14	2.5	261

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066365	GCA_900066365.1	367	367_15	F6DE_bin.45.fa	F6DE_bin.45.fa	78.68	1.93	261
F68C_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_1	F68C_bin.36.fa	F68C_bin.36.fa	80	1.45	261
F68F_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_9	F68F_bin.84.fa	F68F_bin.84.fa	97.13	1.93	261
F68N_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_7	F68N_bin.40.fa	F68N_bin.40.fa	74.94	3.19	261
F68P_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_6	F68P_bin.11.fa	F68P_bin.11.fa	98.21	1.93	261
F68R_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_3	F68R_bin.49.fa	F68R_bin.49.fa	65.31	0	261

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_10	F68T_bin.61.fa	F68T_bin.61.fa	83.23	1.29	261
F6DA_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_5	F6DA_bin.47.fa	F6DA_bin.47.fa	91.08	2.42	261
F6DB_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_2	F6DB_bin.42.fa	F6DB_bin.42.fa	71.72	2.5	261
F6DG_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_4	F6DG_bin.79.fa	F6DG_bin.79.fa	91.55	2.5	261
F6MY_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Acetatifactor	s_Acetatifactor sp900066565	GCA_900066565.1	367	367_8	F6MY_bin.10.fa	F6MY_bin.10.fa	85.12	2.42	261
F68F_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s__	N/A	340	340_1	F68F_bin.55.fa	F68F_bin.55.fa	97.1	0.24	262
F68N_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s__	N/A	340	340_4	F68N_bin.28.fa	F68N_bin.28.fa	96.49	2.42	263

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s__	N/A	340	340_2	F68R_bin.93.fa	F68R_bin.93.fa	50.18	0	264
F68V_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s__	N/A	340	340_3	F68V_bin.9.fa	F68V_bin.9.fa	56.2	3.02	265
F68C_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_7	F68C_bin.47.fa	F68C_bin.47.fa	98.55	1.76	265
F68E_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_9	F68E_bin.3.fa	F68E_bin.3.fa	98.07	1.45	265
F68H_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_3	F68H_bin.2.fa	F68H_bin.2.fa	96.14	3.67	265
F68R_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_6	F68R_bin.58.fa	F68R_bin.58.fa	53.68	0	265
F68T_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_1	F68U_bin.81.fa	F68T_bin.103.fa	71.98	1.04	265
F68U_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_1	F68U_bin.81.fa	F68U_bin.81.fa	99.03	1.28	265

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_4	F6D8_bin.66.fa	F6D8_bin.66.fa	96.62	2.24	265
F68N_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_2	F6D9_bin.78.fa	F68N_bin.26.fa	70	1.72	265
F6D9_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_2	F6D9_bin.78.fa	F6D9_bin.78.fa	91.55	1.28	265
F6DA_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_8	F6DA_bin.12.fa	F6DA_bin.12.fa	84.3	1.44	265
F6MY_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter faecis	GCF_001405615.1	339	339_5	F6MY_bin.70.fa	F6MY_bin.70.fa	93.02	3.75	265
F68C_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_4	F68C_bin.2.fa	F68C_bin.2.fa	99.18	0	265
F6D7_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_4	F68C_bin.2.fa	F6D7_bin.102.fa	63.16	0	265

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_4	F68C_bin.2.fa	F6DE_bin.1.fa	75.5	3.97	265
F68G_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_12	F68G_bin.28.fa	F68G_bin.28.fa	99.28	0.97	265
F68R_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_6	F68R_bin.92.fa	F68R_bin.92.fa	97.67	0.24	265
F68T_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_3	F68T_bin.23.fa	F68T_bin.23.fa	73.83	0	265
F68U_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_8	F68U_bin.47.fa	F68U_bin.47.fa	98.07	0	265
F68V_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_5	F68V_bin.6.fa	F68V_bin.6.fa	97.1	0	265
F68W_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_2	F68W_bin.80.fa	F68W_bin.80.fa	99.28	0	265

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_2	F68W_bin.80.fa	F6DH_bin.90.fa	98.79	0	265
F6D9_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_10	F6D9_bin.3.fa	F6D9_bin.3.fa	99.28	0	265
F6DA_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_9	F6DA_bin.18.fa	F6DA_bin.18.fa	99.03	0	265
F6DB_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_7	F6DB_bin.33.fa	F6DB_bin.33.fa	97.83	0	265
F6DG_bin.96	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_11	F6DG_bin.96.fa	F6DG_bin.96.fa	91.11	0.4	265
F68H_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_1	F6MY_bin.113.fa	F68H_bin.69.fa	86.23	0.48	265
F68K_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_1	F6MY_bin.113.fa	F68K_bin.4.fa	96.38	0	265

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Agathobacter	s_Agathobacter rectale	GCF_000020605.1	341	341_1	F6MY_bin.113.fa	F6MY_bin.113.fa	96.86	0	265
F6D9_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia hansenii	GCF_002222595.2	299	299_0	F6D9_bin.10.fa	F6D9_bin.10.fa	99.36	4.46	265
F68K_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_1	F68K_bin.40.fa	F68K_bin.40.fa	80.59	0.11	265
F68P_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_5	F68P_bin.56.fa	F68P_bin.56.fa	76.29	2.23	265
F68U_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_4	F68U_bin.75.fa	F68U_bin.75.fa	94.27	1.04	265
F6D7_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_2	F6D7_bin.78.fa	F6D7_bin.78.fa	81.34	2.49	265
F6DA_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_3	F6DA_bin.85.fa	F6DA_bin.85.fa	96.18	0.32	265

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp000436935	GCA_000436935.1	319	319_3	F6DA_bin.85.fa	F6DG_bin.7.fa	82	2.55	265
F68E_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia	s_Blautia sp001304935	GCA_001304935.1	357	357_0	F68E_bin.15.fa	F68E_bin.15.fa	52.39	0	265
F6DH_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s__	N/A	311	311_0	F6DH_bin.63.fa	F6DH_bin.63.fa	56.41	1.91	266
F68E_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s__	N/A	313	313_3	F68E_bin.7.fa	F68E_bin.7.fa	70	4.32	267
F6D9_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s__	N/A	313	313_1	F6D9_bin.48.fa	F6D9_bin.48.fa	93.81	1.64	268
F6DG_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s__	N/A	313	313_2	F6DG_bin.5.fa	F6DG_bin.5.fa	68.11	1.27	269
F6D9_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s__	N/A	338	338_0	F6D9_bin.86.fa	F6D9_bin.86.fa	89.87	1.05	270
F68K_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A massiliensis	GCF_001487165.1	315	315_0	F68K_bin.30.fa	F68K_bin.30.fa	82.65	2.85	270
F6DB_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A obeum	GCF_000153905.1	310	310_0	F6DB_bin.34.fa	F6DB_bin.34.fa	70.67	1.27	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A obeum B	GCA_000210015.1	309	309_1	F68D_bin.62.fa	F68D_bin.62.fa	95.07	2.03	270
F6DB_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A obeum B	GCA_000210015.1	309	309_2	F6DB_bin.35.fa	F6DB_bin.35.fa	54.9	0	270
F68G_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp000285855	GCA_000285855.2	312	312_1	F68G_bin.14.fa	F68G_bin.14.fa	90.56	1.27	270
F68K_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp000285855	GCA_000285855.2	312	312_2	F68K_bin.97.fa	F68K_bin.97.fa	50.16	1.75	270
F68F_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp900066165	GCA_900066165.1	307	307_4	F68F_bin.103.fa	F68F_bin.103.fa	91.88	1.5	270
F68G_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp900066165	GCA_900066165.1	307	307_3	F68G_bin.1.fa	F68G_bin.1.fa	56.31	1.75	270
F68H_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp900066165	GCA_900066165.1	307	307_1	F68H_bin.17.fa	F68H_bin.17.fa	57.81	0.88	270
F68K_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A sp900066165	GCA_900066165.1	307	307_5	F68K_bin.68.fa	F68K_bin.68.fa	55.6	3.7	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A_sp900066165	GCA_900066165.1	307	307_6	F6DA_bin.17.fa	F6DA_bin.17.fa	71.29	0	270
F6DG_bin.105	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A_sp900066165	GCA_900066165.1	307	307_2	F6DG_bin.105.fa	F6DG_bin.105.fa	51.67	4.47	270
F6DA_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A_wexlerae	GCF_000484655.1	314	314_2	F6DA_bin.54.fa	F6DA_bin.54.fa	87.12	0.84	270
F68W_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A_wexlerae	GCF_000484655.1	314	314_1	F6DH_bin.30.fa	F68W_bin.98.fa	52.96	1.01	270
F6DH_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Blautia_A	s_Blautia_A_wexlerae	GCF_000484655.1	314	314_1	F6DH_bin.30.fa	F6DH_bin.30.fa	55.82	0	270
F6DG_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Butyriivibrio_A	s_Butyriivibrio_A_crossotus	GCF_000156015.1	335	335_0	F6DG_bin.2.fa	F6DG_bin.2.fa	91.56	0.34	270
F68H_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Butyriivibrio_A	s_Butyriivibrio_A_sp000431815	GCA_000431815.1	360	360_1	F6MY_bin.12.fa	F68H_bin.12.fa	96.64	0.69	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Butyrvibrio	s_Butyrvibrio_Asp000431815	GCA_000431815.1	360	360_1	F6MY_bin.12.fa	F6MY_bin.12.fa	100	0.67	270
F68C_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_3	F68C_bin.63.fa	F68C_bin.63.fa	81.88	0	270
F6D7_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_3	F68C_bin.63.fa	F6D7_bin.100.fa	79.19	0	270
F68H_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_7	F68H_bin.4.fa	F68H_bin.4.fa	98.66	0.67	270
F68K_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_4	F68K_bin.6.fa	F68K_bin.6.fa	85.23	0	270
F68M_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_9	F68M_bin.72.fa	F68M_bin.72.fa	90.84	4.76	270
F68F_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127sp900319515	GCA_900319515.1	372	372_6	F68R_bin.59.fa	F68F_bin.58.fa	98.66	0	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_6	F68R_bin.59.fa	F68R_bin.59.fa	98.66	0	270
F68V_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_2	F68V_bin.7.fa	F68V_bin.7.fa	85.09	0.31	270
F68U_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_1	F68W_bin.67.fa	F68U_bin.10.fa	85.23	0	270
F68W_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_1	F68W_bin.67.fa	F68W_bin.67.fa	89.93	0	270
F6DH_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_1	F68W_bin.67.fa	F6DH_bin.8.fa	86.58	0	270
F6DA_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_8	F6DA_bin.79.fa	F6DA_bin.79.fa	90.27	0	270
F6DB_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-127	s_CAG-127 sp900319515	GCA_900319515.1	372	372_5	F6DB_bin.44.fa	F6DB_bin.44.fa	97.99	0	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-45	s_CAG-45 sp900066395	GCA_900066395.1	342	342_1	F68V_bin.20.fa	F68V_bin.20.fa	99.28	1.22	270
F6D8_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-45	s_CAG-45 sp900066395	GCA_900066395.1	342	342_2	F6D8_bin.42.fa	F6D8_bin.42.fa	97.04	0.74	270
F6DH_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-45	s_CAG-45 sp900066395	GCA_900066395.1	342	342_3	F6DH_bin.61.fa	F6DH_bin.61.fa	93.04	1.53	270
F68G_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-510	s_CAG-510 sp000434615	GCA_000434615.1	356	356_1	F68G_bin.85.fa	F68G_bin.85.fa	95.62	2.27	270
F68R_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-510	s_CAG-510 sp000434615	GCA_000434615.1	356	356_2	F68R_bin.9.fa	F68R_bin.9.fa	54.39	0	270
F68C_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp900066615	GCA_900066615.1	290	290_3	F68C_bin.31.fa	F68C_bin.31.fa	81.83	4.13	270
F68R_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp900066615	GCA_900066615.1	290	290_1	F68R_bin.72.fa	F68R_bin.72.fa	96.2	0.71	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp90006615	GCA_900066615.1	290	290_1	F68R_bin.72.fa	F6MY_bin.108.fa	50.08	0	270
F68K_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp90006615	GCA_900066615.1	290	290_2	F68T_bin.54.fa	F68K_bin.111.fa	71.6	0.63	270
F68T_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp90006615	GCA_900066615.1	290	290_2	F68T_bin.54.fa	F68T_bin.54.fa	78.91	0	270
F6DB_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-56	s_CAG-56 sp90006615	GCA_900066615.1	290	290_2	F68T_bin.54.fa	F6DB_bin.8.fa	70.25	0.63	270
F68P_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-603	s_CAG-603 sp900066105	GCA_900066105.1	361	361_1	F68P_bin.46.fa	F68P_bin.46.fa	98.66	0	270
F6D8_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-603	s_CAG-603 sp900066105	GCA_900066105.1	361	361_2	F6D8_bin.9.fa	F6D8_bin.9.fa	98.66	0	270
F6D8_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-632	s_CAG-632 sp000431515	GCA_000431515.1	269	269_0	F6D8_bin.43.fa	F6D8_bin.43.fa	99.33	0	270

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-791	s_CAG-791 sp000431495	GCA_000431495.1	18	18_1	F68M_bin.60.fa	F68M_bin.60.fa	95.03	0.57	270
F6MX_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-791	s_CAG-791 sp000431495	GCA_000431495.1	18	18_1	F68M_bin.60.fa	F6MX_bin.41.fa	72.86	2.94	270
F68F_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s__	N/A	272	272_2	F68F_bin.70.fa	F68F_bin.70.fa	99.37	0	271
F68T_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s__	N/A	272	272_2	F68F_bin.70.fa	F68T_bin.48.fa	92.03	0.63	272
F6MX_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s__	N/A	272	272_2	F68F_bin.70.fa	F6MX_bin.42.fa	94.94	0	273
F68W_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s__	N/A	273	273_1	F6DH_bin.33.fa	F68W_bin.60.fa	55.72	0	274
F6DH_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s__	N/A	273	273_1	F6DH_bin.33.fa	F6DH_bin.33.fa	93.67	0.63	275
F68K_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F68K_bin.43.fa	85.56	2.74	275
F68P_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F68P_bin.52.fa	89.83	1.03	275

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F68R_bin.48.fa	68.3	2.44	275
F68U_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F68U_bin.23.fa	98.1	1.27	275
F6DG_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F6DG_bin.41.fa	94.58	1.27	275
F6MY_bin.106	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp000435795	GCA_000435795.1	272	272_1	F68U_bin.23.fa	F6MY_bin.106.fa	93.88	0.79	275
F68R_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066055	GCA_900066055.1	274	274_7	F68R_bin.53.fa	F68R_bin.53.fa	63.67	1.75	275
F68E_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_3	F68E_bin.30.fa	F68E_bin.30.fa	99.37	1.9	275
F68N_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_1	F68N_bin.62.fa	F68N_bin.62.fa	60.51	0.63	275

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_4	F68P_bin.58.fa	F68P_bin.58.fa	51.69	0	275
F68T_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_2	F68T_bin.66.fa	F68T_bin.66.fa	97.47	0	275
F68U_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_6	F68U_bin.56.fa	F68U_bin.56.fa	94.62	0.86	275
F6DA_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066535	GCA_900066535.1	274	274_5	F6DA_bin.90.fa	F6DA_bin.90.fa	73.69	2.74	275
F6DG_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-81	s_CAG-81 sp900066785	GCA_900066785.1	274	274_8	F6DG_bin.102.fa	F6DG_bin.102.fa	87.76	0	275
F68T_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-882	s_CAG-882 sp003486385	GCA_003486385.1	334	334_3	F68T_bin.101.fa	F68T_bin.101.fa	99.78	0.67	275
F6D8_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-882	s_CAG-882 sp003486385	GCA_003486385.1	334	334_1	F6D8_bin.55.fa	F6D8_bin.55.fa	96.09	1.34	275

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-882	s_CAG-882 sp003486385	GCA_003486385.1	334	334_2	F6DE_bin.13.fa	F6DE_bin.13.fa	73.71	1.57	275
F68V_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-95	s_CAG-95 sp000438155	GCA_000438155.1	366	366_1	F68V_bin.94.fa	F68V_bin.94.fa	62.43	1.53	275
F6DB_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-95	s_CAG-95 sp000438155	GCA_000438155.1	366	366_2	F6DB_bin.85.fa	F6DB_bin.85.fa	84.9	1.75	275
F6DG_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_CAG-95	s_CAG-95 sp900066375	GCA_900066375.1	316	316_0	F6DG_bin.45.fa	F6DG_bin.45.fa	71.74	1.45	275
F68E_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_M	s_	N/A	262	262_0	F68E_bin.37.fa	F68E_bin.37.fa	66.59	3.51	276
F6D9_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_M	s_	N/A	321	321_0	F6D9_bin.66.fa	F6D9_bin.66.fa	85.29	3.16	277
F6DB_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_M	s_	N/A	263	263_0	F6DB_bin.38.fa	F6DB_bin.38.fa	99.37	0	278
F6MX_bin.120	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_M	s_Clostridium_M asparagiforme	GCF_000158075.1	562	562_0	F6MX_bin.120.fa	F6MX_bin.120.fa	57.89	1.75	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68E_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Mbolteae	GCF_002234575.2	261	261_1	F68G_bin.54.fa	F68E_bin.14.fa	95.96	0.56	278
F68G_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Mbolteae	GCF_002234575.2	261	261_1	F68G_bin.54.fa	F68G_bin.54.fa	98.76	0	278
F68C_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Msp000431375	GCA_000431375.1	320	320_1	F68E_bin.10.fa	F68C_bin.72.fa	66.58	2.24	278
F68E_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Msp000431375	GCA_000431375.1	320	320_1	F68E_bin.10.fa	F68E_bin.10.fa	99.37	1.27	278
F68U_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Msp000431375	GCA_000431375.1	320	320_1	F68E_bin.10.fa	F68U_bin.24.fa	92.89	0.63	278
F6DA_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium	s_Clostridium_Msp000431375	GCA_000431375.1	320	320_1	F68E_bin.10.fa	F6DA_bin.15.fa	91.46	1.18	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_M	s_Clostridium_Msp000431375	GCA_000431375.1	320	320_2	F6D7_bin.62.fa	F6D7_bin.62.fa	67.89	3.51	278
F68E_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_11	F68E_bin.2.fa	F68E_bin.2.fa	89.86	0.63	278
F68F_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_3	F68F_bin.75.fa	F68F_bin.75.fa	62.34	0	278
F68G_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_8	F68G_bin.78.fa	F68G_bin.78.fa	87.27	3.16	278
F68K_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_1	F68K_bin.61.fa	F68K_bin.61.fa	97.78	1.31	278
F68N_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_10	F68N_bin.22.fa	F68N_bin.22.fa	98.95	0.02	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_12	F68P_bin.31.fa	F68P_bin.31.fa	79.45	0.63	278
F68U_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_4	F68U_bin.33.fa	F68U_bin.33.fa	57.89	0	278
F6D7_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_13	F6D7_bin.18.fa	F6D7_bin.18.fa	66.81	1.48	278
F6DA_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_6	F6DA_bin.44.fa	F6DA_bin.44.fa	93.67	0.63	278
F6DB_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_2	F6DB_bin.11.fa	F6DB_bin.11.fa	94.1	1.27	278
F6DG_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_9	F6DG_bin.1.fa	F6DG_bin.1.fa	91.38	0.63	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_5	F6DH_bin.93.fa	F6DH_bin.93.fa	96.22	1.27	278
F6MY_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsp003024715	GCF_003024715.1	275	275_7	F6MY_bin.102.fa	F6MY_bin.102.fa	83.66	0.53	278
F68E_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsymbiosum	GCF_000466485.1	329	329_1	F68G_bin.42.fa	F68E_bin.49.fa	51.96	3.51	278
F68G_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Clostridium_Q	s_Clostridium_Qsymbiosum	GCF_000466485.1	329	329_1	F68G_bin.42.fa	F68G_bin.42.fa	88.61	0	278
F68R_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_COE1	s_COE1sp001916965	GCA_001916965.1	371	371_1	F68R_bin.113.fa	F68R_bin.113.fa	59.59	0.88	278
F6DG_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_COE1	s_COE1sp001916965	GCA_001916965.1	371	371_2	F6DG_bin.76.fa	F6DG_bin.76.fa	95.86	1.16	278
F68K_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coproccoccus	s_Coproccoccus_eutactus	GCF_000154425.1	370	370_7	F68K_bin.83.fa	F68K_bin.83.fa	99.33	1.01	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus	GCF_000154425.1	370	370_8	F6D7_bin.73.fa	F6D7_bin.73.fa	99.33	0	278
F6D9_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus	GCF_000154425.1	370	370_9	F6D9_bin.17.fa	F6D9_bin.17.fa	99.33	0.67	278
F68V_bin.117	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_2	F68V_bin.117.fa	F68V_bin.117.fa	99.33	0.34	278
F6D8_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_5	F6D8_bin.12.fa	F6D8_bin.12.fa	87.3	0.67	278
F68H_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_3	F6DA_bin.76.fa	F68H_bin.46.fa	87.54	1.68	278
F6DA_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_3	F6DA_bin.76.fa	F6DA_bin.76.fa	99.33	0	278
F6DB_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_4	F6DB_bin.76.fa	F6DB_bin.76.fa	99.33	0	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_1	F6DH_bin.21.fa	F68U_bin.25.fa	85.07	1.74	278
F68W_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_1	F6DH_bin.21.fa	F68W_bin.34.fa	85.59	0.67	278
F6DH_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_1	F6DH_bin.21.fa	F6DH_bin.21.fa	99.33	0	278
F6MY_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus eutactus A	GCF_001404675.1	370	370_6	F6MY_bin.28.fa	F6MY_bin.28.fa	96.41	0	278
F6MX_bin.132	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp000154245	GCF_000154245.1	369	369_9	F6MX_bin.132.fa	F6MX_bin.132.fa	89.26	0	278
F68G_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp000433075	GCA_000433075.1	373	373_2	F6DE_bin.2.fa	F68G_bin.40.fa	96.06	0.67	278
F6DE_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp000433075	GCA_000433075.1	373	373_2	F6DE_bin.2.fa	F6DE_bin.2.fa	99.33	0	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp000433075	GCA_000433075.1	373	373_1	F6DH_bin.122.fa	F68W_bin.103.fa	94.3	2.01	278
F6DH_bin.122	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp000433075	GCA_000433075.1	373	373_1	F6DH_bin.122.fa	F6DH_bin.122.fa	99.33	0	278
F68C_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp900066115	GCA_900066115.1	369	369_2	F68C_bin.44.fa	F68C_bin.44.fa	99.33	0	278
F68K_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp900066115	GCA_900066115.1	369	369_6	F68K_bin.98.fa	F68K_bin.98.fa	95.3	0	278
F68N_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp900066115	GCA_900066115.1	369	369_4	F68N_bin.21.fa	F68N_bin.21.fa	99.33	0	278
F68V_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp900066115	GCA_900066115.1	369	369_5	F68V_bin.58.fa	F68V_bin.58.fa	99.33	0.22	278
F6D7_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus sp900066115	GCA_900066115.1	369	369_7	F6D7_bin.97.fa	F6D7_bin.97.fa	90.19	2.24	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_sp900066115	GCA_900066115.1	369	369_1	F6D8_bin.58.fa	F68R_bin.26.fa	80.28	0.67	278
F6D8_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_sp900066115	GCA_900066115.1	369	369_1	F6D8_bin.58.fa	F6D8_bin.58.fa	93.96	0.84	278
F6D9_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_sp900066115	GCA_900066115.1	369	369_3	F6D9_bin.11.fa	F6D9_bin.11.fa	91.07	2.68	278
F6MY_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_sp900066115	GCA_900066115.1	369	369_8	F6MY_bin.13.fa	F6MY_bin.13.fa	75.89	3.44	278
F68J_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_2	F68J_bin.34.fa	F68J_bin.34.fa	97.53	2.01	278
F68M_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_5	F68M_bin.59.fa	F68M_bin.59.fa	58.86	1.16	278
F68T_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_6	F68T_bin.12.fa	F68T_bin.12.fa	82.59	2.18	278

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_1	F68U_bin.61.fa	F68U_bin.61.fa	90.84	2.01	278
F6DH_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_1	F68U_bin.61.fa	F6DH_bin.47.fa	88.88	1.96	278
F6D7_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_3	F6D7_bin.82.fa	F6D7_bin.82.fa	97.65	1.34	278
F68C_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_4	F6DB_bin.74.fa	F68C_bin.113.fa	68.56	3.51	278
F6DB_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_A	s_Coprococcus_Acatus	GCA_000210555.1	353	353_4	F6DB_bin.74.fa	F6DB_bin.74.fa	93.96	2.01	278
F68P_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_B	s__	N/A	304	304_1	F68P_bin.42.fa	F68P_bin.42.fa	85.06	1.22	279
F6DG_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_B	s__	N/A	304	304_2	F6DG_bin.27.fa	F6DG_bin.27.fa	77.19	0	280
F68C_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus_B	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_1	F68C_bin.8.fa	F68C_bin.8.fa	69.7	1.17	280

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_5	F68K_bin.109.fa	F68K_bin.109.fa	63.75	1.56	280
F68U_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_3	F68U_bin.71.fa	F68U_bin.71.fa	92.98	1.75	280
F6DA_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_2	F6DA_bin.38.fa	F6DA_bin.38.fa	86	2.63	280
F6DG_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_6	F6DG_bin.73.fa	F6DG_bin.73.fa	90.06	0.58	280
F6DH_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Coprococcus	s_Coprococcus_Bcomes	GCF_000155875.1	287	287_4	F6DH_bin.25.fa	F6DH_bin.25.fa	91.08	3.17	280
F68E_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s__	N/A	293	293_1	F68E_bin.39.fa	F68E_bin.39.fa	95.32	0.58	281
F6DB_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s__	N/A	293	293_1	F68E_bin.39.fa	F6DB_bin.86.fa	90.35	1.75	282
F68C_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreiformicigenerans	GCF_000169235.1	288	288_4	F68C_bin.86.fa	F68C_bin.86.fa	76.46	4.53	282

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68E_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_6	F68E_bin.6.fa	F68E_bin.6.fa	97.95	0.88	282
F68J_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_5	F68J_bin.9.fa	F68J_bin.9.fa	99.24	0	282
F68V_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_1	F68V_bin.16.fa	F68V_bin.16.fa	81.98	3.69	282
F68W_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_2	F68W_bin.44.fa	F68W_bin.44.fa	83.9	4.99	282
F68T_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_3	F6MY_bin.82.fa	F68T_bin.43.fa	59.42	2.34	282
F6MY_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Doreaformicigenerans	GCF_000169235.1	288	288_3	F6MY_bin.82.fa	F6MY_bin.82.fa	71.83	1.89	282

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena	GCF_000154065.1	289	289_10	F68J_bin.40.fa	F68J_bin.40.fa	54.9	0	282
F68U_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena	GCF_000154065.1	289	289_9	F68U_bin.52.fa	F68U_bin.52.fa	59.65	0	282
F68W_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena	GCF_000154065.1	289	289_8	F68W_bin.88.fa	F68W_bin.88.fa	90.82	2.34	282
F6DH_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena	GCF_000154065.1	289	289_8	F68W_bin.88.fa	F6DH_bin.73.fa	56.52	0	282
F68C_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_3	F68C_bin.34.fa	F68C_bin.34.fa	71.64	4.97	282
F68K_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_7	F68K_bin.29.fa	F68K_bin.29.fa	53.43	0	282
F68T_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_1	F68T_bin.92.fa	F68T_bin.92.fa	76.67	0	282

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_2	F6DA_bin.66.fa	F6DA_bin.66.fa	90.77	0.97	282
F6DB_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_5	F6DB_bin.40.fa	F6DB_bin.40.fa	89.47	0	282
F6DE_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_4	F6DE_bin.16.fa	F6DE_bin.16.fa	92.01	3.94	282
F6DG_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea longicatena_B	GCF_001404875.1	289	289_6	F6DG_bin.56.fa	F6DG_bin.56.fa	93.62	0	282
F68D_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea sp900066555	GCA_900066555.1	291	291_1	F68D_bin.66.fa	F68D_bin.66.fa	72.98	4.09	282
F6DG_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Dorea	s_Dorea sp900066555	GCA_900066555.1	291	291_2	F6DG_bin.6.fa	F6DG_bin.6.fa	57.71	0	282
F68V_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s__	N/A	348	348_0	F68V_bin.19.fa	F68V_bin.19.fa	61.97	3.51	283

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella massiliensis	GCF_900243045.1	346	346_1	F68V_bin.54.fa	F68M_bin.80.fa	71.64	0.88	283
F68V_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella massiliensis	GCF_900243045.1	346	346_1	F68V_bin.54.fa	F68V_bin.54.fa	93.46	2.2	283
F68K_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella sp900066775	GCA_900066775.1	454	454_1	F68K_bin.76.fa	F68K_bin.76.fa	83.96	2.07	283
F6DG_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella sp900066775	GCA_900066775.1	454	454_2	F6DG_bin.74.fa	F6DG_bin.74.fa	78.87	2.01	283
F68D_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella tayi	GCF_001881565.1	347	347_1	F68D_bin.103.fa	F68D_bin.103.fa	97.54	3.74	283
F68M_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eisenbergiella	s_Eisenbergiella tayi	GCF_001881565.1	347	347_1	F68D_bin.103.fa	F68M_bin.28.fa	52.63	0	283
F68R_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_	N/A	323	323_2	F68R_bin.67.fa	F68R_bin.67.fa	56.41	1.5	284

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_	N/A	323	323_3	F6DG_bin.60.fa	F6DG_bin.60.fa	65	4.92	285
F68F_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_Eubacterium_Ehallii	GCF_000173975.1	322	322_1	F68F_bin.85.fa	F68F_bin.85.fa	93.96	0.89	285
F68K_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_Eubacterium_Ehallii	GCF_000173975.1	322	322_2	F68K_bin.107.fa	F68K_bin.107.fa	69.8	4.03	285
F68W_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_Eubacterium_Ehallii_A	GCF_900209925.1	323	323_1	F68W_bin.36.fa	F68W_bin.36.fa	94.63	2.03	285
F6DH_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_E	s_Eubacterium_Ehallii_A	GCF_900209925.1	323	323_1	F68W_bin.36.fa	F6DH_bin.45.fa	89.26	4.7	285
F68T_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_F	s_Eubacterium_Fsp003491505	GCA_003491505.1	467	467_0	F68T_bin.84.fa	F68T_bin.84.fa	95.39	0.17	285
F68V_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gsp000434315	GCA_000434315.1	266	266_1	F68V_bin.52.fa	F68V_bin.52.fa	90.6	0	285

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gsp000434315	GCA_000434315.1	266	266_1	F68V_bin.52.fa	F6MY_bin.97.fa	62.28	3.38	285
F6DB_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gsp000434315	GCA_000434315.1	266	266_2	F6DB_bin.6.fa	F6DB_bin.6.fa	99.33	1.34	285
F6DE_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gsp000434315	GCA_000434315.1	266	266_3	F6DE_bin.12.fa	F6DE_bin.12.fa	86.09	1.81	285
F68V_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gsp000435815	GCA_000435815.1	267	267_0	F68V_bin.108.fa	F68V_bin.108.fa	98.99	1.79	285
F68K_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gventriosum	GCF_000153885.1	265	265_2	F68K_bin.89.fa	F68K_bin.89.fa	79.81	0.67	285
F68V_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gventriosum	GCF_000153885.1	265	265_1	F6D7_bin.15.fa	F68V_bin.39.fa	88.79	0.02	285

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_G	s_Eubacterium_Gventriosum	GCF_000153885.1	265	265_1	F6D7_bin.15.fa	F6D7_bin.15.fa	92.38	0.11	285
F68M_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_H	s_	N/A	302	302_0	F68M_bin.26.fa	F68M_bin.26.fa	96.8	0	286
F6DH_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Eubacterium_I	s_Eubacterium_Iramulus_A	GCF_003122485.1	281	281_0	F6DH_bin.109.fa	F6DH_bin.109.fa	82.33	1.14	286
F6DH_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_	N/A	295	295_2	F6DH_bin.80.fa	F6DH_bin.80.fa	54.37	2.46	287
F68C_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_1	F68C_bin.30.fa	F68C_bin.30.fa	73.22	2.64	287
F68D_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_5	F68D_bin.47.fa	F68D_bin.47.fa	99.12	0.58	287
F68N_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_3	F68N_bin.20.fa	F68N_bin.20.fa	82.46	0.29	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_2	F6DA_bin.42.fa	F6DA_bin.42.fa	58.91	0	287
F6MX_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_4	F6MX_bin.54.fa	F6MX_bin.54.fa	93.86	0.29	287
F6MY_bin.122	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena faecis	GCF_001312505.1	297	297_6	F6MY_bin.122.fa	F6MY_bin.122.fa	58.62	0	287
F68E_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F68E_bin.8.fa	75.24	1.16	287
F68H_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F68H_bin.53.fa	82.75	2.92	287
F68J_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F68J_bin.7.fa	99.42	0	287
F68P_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F68P_bin.49.fa	88.06	0.58	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F6D9_bin.20.fa	51.72	0	287
F6DG_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F6DG_bin.99.fa	75.57	1.38	287
F6MY_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_1	F68J_bin.7.fa	F6MY_bin.74.fa	76.02	0	287
F68M_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_2	F6D8_bin.49.fa	F68M_bin.21.fa	88.53	3.91	287
F68V_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_2	F6D8_bin.49.fa	F68V_bin.88.fa	60.34	0	287
F6D8_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_2	F6D8_bin.49.fa	F6D8_bin.49.fa	96.49	4	287
F6DE_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena_gnavus	GCF_002959615.1	294	294_2	F6D8_bin.49.fa	F6DE_bin.26.fa	51.72	0	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena lactaris	GCF_000155205.1	296	296_1	F68V_bin.93.fa	F68T_bin.97.fa	84.8	0	287
F68V_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena lactaris	GCF_000155205.1	296	296_1	F68V_bin.93.fa	F68V_bin.93.fa	91.34	0.58	287
F6DG_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena sp900066545	GCA_900066545.1	295	295_1	F6DG_bin.46.fa	F6DG_bin.46.fa	61.82	0.82	287
F68C_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68C_bin.79.fa	90.04	0.2	287
F68D_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68D_bin.8.fa	94.15	0	287
F68F_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68F_bin.100.fa	98.83	0	287
F68H_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68H_bin.56.fa	97.58	0	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68K_bin.52.fa	97	0.58	287
F68M_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68M_bin.5.fa	52.37	0.12	287
F68N_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68N_bin.24.fa	89.41	1.95	287
F68R_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68R_bin.23.fa	95.91	0	287
F68T_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F68T_bin.28.fa	96.2	0.68	287
F6DB_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F6DB_bin.110.fa	94.15	0	287
F6DG_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalicatena	s_Faecalicatena torques	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F6DG_bin.9.fa	98.45	0	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Faecalibacter	s_Faecalibacter	GCF_000153925.1	292	292_1	F68F_bin.100.fa	F6MY_bin.32.fa	97.66	1.56	287
F68C_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusibacter	s_Fusibacter	GCF_001405555.1	270	270_2	F68C_bin.7.fa	F68C_bin.7.fa	71.73	0	287
F68F_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusibacter	s_Fusibacter	GCF_001405555.1	270	270_7	F68F_bin.34.fa	F68F_bin.34.fa	96.39	0.63	287
F68R_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusibacter	s_Fusibacter	GCF_001405555.1	270	270_7	F68F_bin.34.fa	F68R_bin.107.fa	81.29	1.9	287
F68V_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusibacter	s_Fusibacter	GCF_001405555.1	270	270_7	F68F_bin.34.fa	F68V_bin.89.fa	85.94	1.59	287
F68H_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusibacter	s_Fusibacter	GCF_001405555.1	270	270_5	F68H_bin.41.fa	F68H_bin.41.fa	50.67	1.75	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_10	F68J_bin.10.fa	F68J_bin.10.fa	95.12	0.63	287
F68K_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_4	F68K_bin.72.fa	F68K_bin.72.fa	91.02	4.11	287
F68U_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_4	F68K_bin.72.fa	F68U_bin.85.fa	57.89	0	287
F68P_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_9	F68P_bin.15.fa	F68P_bin.15.fa	69.86	0.32	287
F68T_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_3	F68T_bin.74.fa	F68T_bin.74.fa	97.68	2.85	287
F68W_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatenibacter	s_Fusicatenibacter saccharivorans	GCF_001405555.1	270	270_1	F68W_bin.17.fa	F68W_bin.17.fa	94.51	1.96	287

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.128	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatener	s_Fusicatener saccharivorans	GCF_001405555.1	270	270_1	F68W_bin.17.fa	F6DH_bin.128.fa	91.35	2.23	287
F6D7_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatener	s_Fusicatener saccharivorans	GCF_001405555.1	270	270_6	F6D7_bin.46.fa	F6D7_bin.46.fa	93.61	0.63	287
F6DB_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatener	s_Fusicatener saccharivorans	GCF_001405555.1	270	270_8	F6DB_bin.3.fa	F6DB_bin.3.fa	93.25	2.53	287
F6DG_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Fusicatener	s_Fusicatener saccharivorans	GCF_001405555.1	270	270_11	F6DG_bin.30.fa	F6DG_bin.30.fa	95.76	2.11	287
F68T_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_GCA-900066575	s__	N/A	177	177_0	F68T_bin.2.fa	F68T_bin.2.fa	75.07	3.22	288
F68D_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella effluvii	GCF_003201875.1	331	331_1	F68D_bin.71.fa	F68D_bin.71.fa	98.73	1.74	288
F68M_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella effluvii	GCF_003201875.1	331	331_1	F68D_bin.71.fa	F68M_bin.20.fa	79.3	4.11	288

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella effluvii	GCF_003201875.1	331	331_1	F68D_bin.71.fa	F6MY_bin.48.fa	99.33	1.96	288
F6MX_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella effluvii	GCF_003201875.1	331	331_2	F6MX_bin.85.fa	F6MX_bin.85.fa	54.7	1.75	288
F68G_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella hathewayi	GCA_000433395.1	330	330_1	F68G_bin.6.fa	F68G_bin.6.fa	98.73	0.32	288
F68M_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella hathewayi	GCA_000433395.1	330	330_1	F68G_bin.6.fa	F68M_bin.83.fa	89.89	3.38	288
F68V_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella	s_Hungatella hathewayi	GCA_000433395.1	330	330_1	F68G_bin.6.fa	F68V_bin.49.fa	91.5	0.63	288
F68C_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella_A	s__	N/A	306	306_1	F68C_bin.37.fa	F68C_bin.37.fa	83.44	2.22	289
F68R_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella_A	s__	N/A	306	306_3	F68R_bin.83.fa	F68R_bin.83.fa	65.52	1.75	290
F6DH_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella_A	s__	N/A	306	306_4	F6DH_bin.107.fa	F6DH_bin.107.fa	57.76	1.75	291

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella_A	s__	N/A	306	306_2	F6MY_bin.58.fa	F6MY_bin.58.fa	95.86	0.63	292
F68D_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Hungatella_A	s_Hungatella_A hathewayi	GCF_000235505.1	332	332_0	F68D_bin.56.fa	F68D_bin.56.fa	95.66	1.96	292
F6MY_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s__	N/A	285	285_7	F6MY_bin.37.fa	F6MY_bin.37.fa	62.6	3.51	293
F68C_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_2	F68C_bin.76.fa	F68C_bin.76.fa	97.47	1.58	293
F68F_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_4	F68F_bin.88.fa	F68F_bin.88.fa	88.36	3.01	293
F68H_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_12	F68H_bin.9.fa	F68H_bin.9.fa	55.26	1.75	293
F68R_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_10	F68R_bin.99.fa	F68R_bin.99.fa	80.7	0	293
F68T_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_5	F68T_bin.94.fa	F68T_bin.94.fa	73.48	2.78	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_1	F68U_bin.17.fa	F68U_bin.17.fa	93.67	4.02	293
F68W_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_1	F68U_bin.17.fa	F68W_bin.73.fa	57.02	0	293
F6DH_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_1	F68U_bin.17.fa	F6DH_bin.4.fa	85.41	2.37	293
F6D7_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_9	F6D7_bin.35.fa	F6D7_bin.35.fa	95.89	0.95	293
F6D8_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_11	F6D8_bin.3.fa	F6D8_bin.3.fa	95.65	2.22	293
F6D9_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_3	F6D9_bin.40.fa	F6D9_bin.40.fa	96.92	1.58	293
F6DB_bin.116	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_8	F6DB_bin.116.fa	F6DB_bin.116.fa	90.4	4.11	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_KLE1615	s_KLE1615 sp900066985	GCA_900066985.1	285	285_6	F6DG_bin.47.fa	F6DG_bin.47.fa	82.49	1.8	293
F68P_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans	GCF_000146185.1	363	363_12	F68P_bin.21.fa	F68P_bin.21.fa	94.61	0.17	293
F68C_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_9	F68C_bin.81.fa	F68C_bin.81.fa	82.59	0	293
F68N_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_7	F68N_bin.57.fa	F68N_bin.57.fa	98.66	1.01	293
F68U_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_10	F68U_bin.93.fa	F68U_bin.93.fa	84.57	4.05	293
F68V_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_5	F68V_bin.85.fa	F68V_bin.85.fa	97.32	0.67	293
F6D7_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_11	F6D7_bin.58.fa	F6D7_bin.58.fa	97.99	0	293
F68M_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligans_B	GCA_000434415.1	363	363_3	F6D8_bin.19.fa	F68M_bin.36.fa	97.32	0.36	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_3	F6D8_bin.19.fa	F6D8_bin.19.fa	97.99	0	293
F68R_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_4	F6DB_bin.109.fa	F68R_bin.61.fa	93.93	1.68	293
F6DB_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_4	F6DB_bin.109.fa	F6DB_bin.109.fa	97.32	0	293
F6MY_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_4	F6DB_bin.109.fa	F6MY_bin.91.fa	98.64	0.67	293
F6DE_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_8	F6DE_bin.5.fa	F6DE_bin.5.fa	97.82	0.02	293
F6DA_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_2	F6DG_bin.52.fa	F6DA_bin.31.fa	97.34	0.34	293
F6DG_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_2	F6DG_bin.52.fa	F6DG_bin.52.fa	98.66	0.15	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira eligens_B	GCA_000434415.1	363	363_6	F6MX_bin.12.fa	F6MX_bin.12.fa	83.64	0	293
F68C_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_3	F68C_bin.9.fa	F68C_bin.9.fa	78.48	0	293
F68D_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_6	F68D_bin.51.fa	F68D_bin.51.fa	71.99	0	293
F68N_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_5	F68N_bin.56.fa	F68N_bin.56.fa	99.33	0	293
F68T_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_2	F68T_bin.99.fa	F68T_bin.99.fa	61.4	0	293
F68U_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_7	F68U_bin.66.fa	F68U_bin.66.fa	97.36	0	293
F68R_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_1	F6DA_bin.57.fa	F68R_bin.3.fa	51.75	0	293
F6DA_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_1	F6DA_bin.57.fa	F6DA_bin.57.fa	93.1	1.34	293
F6DB_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_1	F6DA_bin.57.fa	F6DB_bin.92.fa	88.61	2.68	293
F6DE_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira rogosae	GCF_90012995.1	365	365_4	F6DE_bin.49.fa	F6DE_bin.49.fa	97.8	0.67	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_5	F68H_bin.25.fa	F68H_bin.25.fa	98.66	2.01	293
F6DB_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_5	F68H_bin.25.fa	F6DB_bin.82.fa	91.83	3.36	293
F68K_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_4	F68K_bin.53.fa	F68K_bin.53.fa	64.62	1.75	293
F6D9_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_6	F6D9_bin.50.fa	F6D9_bin.50.fa	99.33	0.67	293
F6DA_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_1	F6DA_bin.58.fa	F6DA_bin.58.fa	76.67	3.51	293
F6DG_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_2	F6DG_bin.18.fa	F6DG_bin.18.fa	97.32	0.67	293
F68W_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_3	F6DH_bin.71.fa	F68W_bin.52.fa	96.58	1.36	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_3	F6DH_bin.71.fa	F6DH_bin.71.fa	98.66	0	293
F6MY_bin.120	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000436475	GCA_000436475.1	364	364_7	F6MY_bin.120.fa	F6MY_bin.120.fa	97.99	0	293
F68F_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_8	F68F_bin.10.fa	F68F_bin.10.fa	90.34	1.7	293
F68H_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_4	F68H_bin.63.fa	F68H_bin.63.fa	98.49	0.34	293
F68R_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_9	F68R_bin.98.fa	F68R_bin.98.fa	95.32	1.57	293
F68T_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_3	F68T_bin.52.fa	F68T_bin.52.fa	94.54	0	293
F68U_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_10	F68U_bin.22.fa	F68U_bin.22.fa	67.25	1.51	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_1	F6D7_bin.63.fa	F6D7_bin.63.fa	81.31	2.57	293
F6D8_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_6	F6D8_bin.15.fa	F6D8_bin.15.fa	71.17	0	293
F6DA_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_7	F6DA_bin.32.fa	F6DA_bin.32.fa	95.99	0	293
F6DG_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_11	F6DG_bin.63.fa	F6DG_bin.63.fa	98.49	0	293
F6DH_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_2	F6DH_bin.87.fa	F6DH_bin.87.fa	96.1	0	293
F6MY_bin.132	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp000437735	GCA_000437735.1	359	359_5	F6MY_bin.132.fa	F6MY_bin.132.fa	88.73	2.41	293
F68W_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp003537285	GCA_003537285.1	363	363_1	F6DH_bin.101.fa	F68W_bin.24.fa	90.02	0.67	293

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Lachnospira	s_Lachnospira sp003537285	GCA_003537285.1	363	363_1	F6DH_bin.101.fa	F6DH_bin.101.fa	95.7	0.34	293
F68D_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Oribacterium	s__	N/A	19	19_1	F68D_bin.53.fa	F68D_bin.53.fa	96.5	0.71	294
F68G_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Oribacterium	s__	N/A	19	19_2	F68G_bin.57.fa	F68G_bin.57.fa	95.58	0.63	295
F6MX_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Oribacterium	s__	N/A	19	19_3	F6MX_bin.35.fa	F6MX_bin.35.fa	95.85	0	296
F68R_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	337	337_3	F68R_bin.82.fa	F68R_bin.82.fa	89.04	3.1	297
F6D8_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	337	337_4	F6D8_bin.84.fa	F6D8_bin.84.fa	99.28	2.9	298
F6D9_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	337	337_1	F6D9_bin.76.fa	F6D9_bin.76.fa	81.84	1.08	299
F6DG_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	337	337_2	F6DG_bin.100.fa	F6DG_bin.100.fa	97.83	0.48	300
F68F_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_5	F68F_bin.99.fa	F68F_bin.99.fa	98.07	0.6	301
F68P_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_8	F68P_bin.9.fa	F68P_bin.9.fa	97.1	0.6	302

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_1	F68R_bin.4.fa	F68R_bin.4.fa	94.65	0.6	303
F6D7_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_3	F6D7_bin.59.fa	F6D7_bin.59.fa	95.01	2.17	304
F6D8_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_6	F6D8_bin.65.fa	F6D8_bin.65.fa	80.7	0	305
F6DA_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_2	F6DA_bin.80.fa	F6DA_bin.80.fa	62.28	4.39	306
F6DG_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_4	F6DG_bin.23.fa	F6DG_bin.23.fa	96.62	0.6	307
F6MY_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	343	343_7	F6MY_bin.98.fa	F6MY_bin.98.fa	92.35	0.6	308
F6D9_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	351	351_0	F6D9_bin.80.fa	F6D9_bin.80.fa	55.93	0	309
F6MX_bin.127	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s__	N/A	352	352_0	F6MX_bin.127.fa	F6MX_bin.127.fa	97.83	0	310
F68C_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia_hominis	GCF_000225345.1	282	282_4	F68C_bin.12.fa	F68C_bin.12.fa	83.88	1.93	310
F68H_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia_hominis	GCF_000225345.1	282	282_3	F68H_bin.28.fa	F68H_bin.28.fa	97.09	0.24	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia hominis	GCF_000225345.1	282	282_7	F68K_bin.57.fa	F68K_bin.57.fa	54.39	1.75	310
F68R_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia hominis	GCF_000225345.1	282	282_6	F68R_bin.109.fa	F68R_bin.109.fa	91.95	0.34	310
F68T_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia hominis	GCF_000225345.1	282	282_5	F68T_bin.47.fa	F68T_bin.47.fa	88.76	1.69	310
F6D8_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia hominis	GCF_000225345.1	282	282_1	F6D8_bin.14.fa	F6D8_bin.14.fa	97.18	0.72	310
F6MY_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia hominis	GCF_000225345.1	282	282_2	F6MY_bin.112.fa	F6MY_bin.112.fa	68.6	0	310
F68T_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia intestinalis	GCF_000156535.1	343	343_11	F68T_bin.91.fa	F68T_bin.91.fa	61.4	0	310
F68V_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia intestinalis	GCF_000156535.1	343	343_9	F68V_bin.21.fa	F68V_bin.21.fa	82.41	1.21	310
F6DA_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia intestinalis	GCF_000156535.1	343	343_10	F6DA_bin.30.fa	F6DA_bin.30.fa	84.1	1.43	310
F68H_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_5	F68H_bin.42.fa	F68H_bin.42.fa	83.6	2.17	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_5	F68H_bin.42.fa	F6D9_bin.27.fa	50	3.51	310
F68N_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_7	F68N_bin.16.fa	F68N_bin.16.fa	93.11	0.97	310
F68R_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_6	F68R_bin.101.fa	F68R_bin.101.fa	64.04	0	310
F68T_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_9	F68T_bin.36.fa	F68T_bin.36.fa	89.37	0	310
F6DA_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Roseburia	s_Roseburia inulinivorans	GCF_000174195.1	337	337_8	F6DA_bin.3.fa	F6DA_bin.3.fa	91.1	1.52	310
F68U_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Ruminococcus_A	s_Ruminococcus_A sp000437095	GCA_000437095.1	305	305_4	F68U_bin.15.fa	F68U_bin.15.fa	89.51	0.63	310
F68C_bin.96	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Ruminococcus_A	s_Ruminococcus_A sp003011855	GCF_003011855.1	305	305_1	F6D7_bin.48.fa	F68C_bin.96.fa	87.4	2.53	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Ruminococcus	s_Ruminococcus_Asp003011855	GCF_003011855.1	305	305_1	F6D7_bin.48.fa	F6D7_bin.48.fa	95.57	0.63	310
F6DH_bin.126	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Ruminococcus	s_Ruminococcus_Asp003011855	GCF_003011855.1	305	305_2	F6DH_bin.126.fa	F6DH_bin.126.fa	84.24	0.63	310
F6MY_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Ruminococcus	s_Ruminococcus_Asp003011855	GCF_003011855.1	305	305_3	F6MY_bin.89.fa	F6MY_bin.89.fa	77.91	3.74	310
F68T_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Sellimonas	s_Sellimonas_intestinalis	GCF_001280875.1	303	303_0	F68T_bin.37.fa	F68T_bin.37.fa	98.54	0.88	310
F68T_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11sp001414325	GCF_001414325.1	476	476_0	F68T_bin.25.fa	F68T_bin.25.fa	80.04	2.46	310
F68U_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11sp001916135	GCA_001916135.1	376	376_1	F6DH_bin.2.fa	F68U_bin.87.fa	85.91	0	310
F68W_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11sp001916135	GCA_001916135.1	376	376_1	F6DH_bin.2.fa	F68W_bin.107.fa	82.38	0	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp001916135	GCA_001916135.1	376	376_1	F6DH_bin.2.fa	F6D8_bin.89.fa	68.68	4.39	310
F6D9_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp001916135	GCA_001916135.1	376	376_1	F6DH_bin.2.fa	F6D9_bin.36.fa	67.72	2.37	310
F6DH_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp001916135	GCA_001916135.1	376	376_1	F6DH_bin.2.fa	F6DH_bin.2.fa	98.66	0	310
F68R_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F68R_bin.65.fa	95.97	0	310
F68V_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F68V_bin.10.fa	97.32	0.73	310
F6D7_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F6D7_bin.55.fa	93.29	0	310
F6D8_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F6D8_bin.97.fa	58.06	2.11	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F6DB_bin.7.fa	97.99	0	310
F6MY_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_TF01-11	s_TF01-11 sp003529475	GCA_003529475.1	375	375_1	F6DB_bin.7.fa	F6MY_bin.34.fa	93.29	0	310
F68K_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_2	F68K_bin.47.fa	F68K_bin.47.fa	93.86	0	310
F68G_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_1	F68R_bin.77.fa	F68G_bin.36.fa	83.54	0.63	310
F68R_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_1	F68R_bin.77.fa	F68R_bin.77.fa	91.12	1.27	310
F68T_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_1	F68R_bin.77.fa	F68T_bin.50.fa	90.17	3.8	310
F6D8_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_1	F68R_bin.77.fa	F6D8_bin.67.fa	71.39	1.75	310
F6D9_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella nexilis	GCF_000156035.2	300	300_1	F68R_bin.77.fa	F6D9_bin.70.fa	59.65	0	310
F6DE_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella sp000209385	GCF_000209385.2	301	301_0	F6DE_bin.46.fa	F6DE_bin.46.fa	78.52	1.16	310

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella sp000411335	GCF_000411335.1	298	298_1	F6D9_bin.63.fa	F68M_bin.66.fa	82.91	0	310
F6D9_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_Tyzzerella	s_Tyzzerella sp000411335	GCF_000411335.1	298	298_1	F6D9_bin.63.fa	F6D9_bin.63.fa	94.09	0.71	310
F68R_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA11774	s_UBA11774 sp003507655	GCA_003507655.1	280	280_2	F68R_bin.30.fa	F68R_bin.30.fa	72.44	1.95	310
F68V_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA11774	s_UBA11774 sp003507655	GCA_003507655.1	280	280_4	F68V_bin.104.fa	F68V_bin.104.fa	51.52	0	310
F68W_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA11774	s_UBA11774 sp003507655	GCA_003507655.1	280	280_1	F6DH_bin.11.fa	F68W_bin.42.fa	94.54	0.45	310
F6DH_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA11774	s_UBA11774 sp003507655	GCA_003507655.1	280	280_1	F6DH_bin.11.fa	F6DH_bin.11.fa	97.99	0.45	310
F6MX_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA11774	s_UBA11774 sp003507655	GCA_003507655.1	280	280_3	F6MX_bin.44.fa	F6MX_bin.44.fa	96.26	2.09	310
F68J_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA4285	s__	N/A	145	145_1	F68K_bin.11.fa	F68J_bin.46.fa	56.14	0	311

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA4285	s__	N/A	145	145_1	F68K_bin.11.fa	F68K_bin.11.fa	78.95	0	312
F68R_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA4285	s__	N/A	145	145_1	F68K_bin.11.fa	F68R_bin.14.fa	69.96	1.23	313
F68E_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA9502	s__	N/A	276	276_1	F68E_bin.19.fa	F68E_bin.19.fa	96.76	2.85	314
F68F_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA9502	s__	N/A	276	276_2	F68F_bin.47.fa	F68F_bin.47.fa	72.87	1.27	315
F68F_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA9502	s__	N/A	308	308_0	F68F_bin.56.fa	F68F_bin.56.fa	66.11	0	316
F68J_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA7182	s__	N/A	318	318_1	F68J_bin.80.fa	F68J_bin.80.fa	70.09	0.32	317
F6DH_bin.125	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA7182	s__	N/A	318	318_2	F6DH_bin.125.fa	F6DH_bin.125.fa	60.5	0.21	318
F68V_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA7160	s__	N/A	354	354_0	F68V_bin.2.fa	F68V_bin.2.fa	93.97	2.66	319
F68V_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA7096	s__	N/A	355	355_0	F68V_bin.71.fa	F68V_bin.71.fa	99.33	0	320
F68E_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Lachnospirales	f_Lachnospiraceae	g_UBA9502	s_UBA9502 sp003506385	GCA_003506385.1	277	277_0	F68E_bin.25.fa	F68E_bin.25.fa	52.95	0	320

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f__	g__	s__	N/A	496	496_0	F68D_bin.37.fa	F68D_bin.37.fa	86.06	0.22	321
F6D7_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f__	g__	s__	N/A	418	418_0	F6D7_bin.104.fa	F6D7_bin.104.fa	78.87	3.75	322
F6D7_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f__	g__	s__	N/A	421	421_0	F6D7_bin.2.fa	F6D7_bin.2.fa	97.97	0	323
F6DA_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f__	g__	s__	N/A	176	176_0	F6DA_bin.81.fa	F6DA_bin.81.fa	86.98	0.56	324
F68V_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f_Monoglobaceae	g__	s__	N/A	419	419_0	F68V_bin.13.fa	F68V_bin.13.fa	97.76	0	325
F68W_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f_UBA1381	g__	s__	N/A	420	420_0	F68W_bin.31.fa	F68W_bin.31.fa	85.49	1.87	326
F68E_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f_UBA1381	g_CAG-41	s_CAG-41 sp900066215	GCA_900066215.1	175	175_1	F68E_bin.28.fa	F68E_bin.28.fa	95.97	1.34	326
F68G_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f_UBA1381	g_CAG-41	s_CAG-41 sp900066215	GCA_900066215.1	175	175_2	F68G_bin.73.fa	F68G_bin.73.fa	97.32	2.01	326
F68K_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monoglobales	f_UBA1381	g_CAG-41	s_CAG-41 sp900066215	GCA_900066215.1	175	175_4	F68K_bin.31.fa	F68K_bin.31.fa	88.02	1.01	326

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monolobales	f_UBA1381	g_CAG-41	s_CAG-41 sp900066215	GCA_900066215.1	175	175_3	F68T_bin.41.fa	F68T_bin.41.fa	97.99	1.01	326
F6DA_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Monolobales	f_UBA1381	g_CAG-41	s_CAG-41 sp900066215	GCA_900066215.1	175	175_5	F6DA_bin.35.fa	F6DA_bin.35.fa	94.28	4.36	326
F68D_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f__	g__	s__	N/A	448	448_0	F68D_bin.65.fa	F68D_bin.65.fa	97.82	0	327
F68V_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f__	g__	s__	N/A	571	571_0	F68V_bin.97.fa	F68V_bin.97.fa	89.61	3.13	328
F68D_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	183	183_1	F68D_bin.36.fa	F68D_bin.36.fa	77	0	329
F68M_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	183	183_1	F68D_bin.36.fa	F68M_bin.9.fa	82.36	1.78	330
F6DA_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	183	183_1	F68D_bin.36.fa	F6DA_bin.23.fa	54.55	1.34	331
F68J_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	232	232_0	F68J_bin.48.fa	F68J_bin.48.fa	66.79	0.67	332
F6DA_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	412	412_0	F6DA_bin.43.fa	F6DA_bin.43.fa	97.32	0	333

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	423	423_0	F68V_bin.14.fa	F68V_bin.14.fa	96.64	0.67	334
F68V_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	424	424_0	F68V_bin.24.fa	F68V_bin.24.fa	81.65	1.34	335
F6DE_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	425	425_0	F6DE_bin.39.fa	F6DE_bin.39.fa	94.63	0	336
F6DA_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	437	437_0	F6DA_bin.71.fa	F6DA_bin.71.fa	83.89	0.67	337
F68M_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	466	466_1	F68V_bin.106.fa	F68M_bin.54.fa	76.4	1.23	338
F68V_bin.106	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	466	466_1	F68V_bin.106.fa	F68V_bin.106.fa	89.89	2.15	339
F6DE_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	466	466_1	F68V_bin.106.fa	F6DE_bin.7.fa	79.83	0.22	340
F6MY_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	466	466_1	F68V_bin.106.fa	F6MY_bin.27.fa	68.94	0.67	341
F68D_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	497	497_0	F68D_bin.63.fa	F68D_bin.63.fa	70.37	1.36	342
F68F_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	498	498_0	F68F_bin.81.fa	F68F_bin.81.fa	95.97	1.7	343

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.125	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	499	499_0	F68V_bin.125.fa	F68V_bin.125.fa	52.93	0	344
F68M_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	563	563_1	F68M_bin.61.fa	F68M_bin.61.fa	97.32	0.69	345
F68V_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	563	563_1	F68M_bin.61.fa	F68V_bin.26.fa	96.56	1.07	346
F6MY_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	563	563_1	F68M_bin.61.fa	F6MY_bin.60.fa	94.63	1.46	347
F68D_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	564	564_1	F68D_bin.58.fa	F68D_bin.58.fa	84.54	1.68	348
F6DG_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	564	564_1	F68D_bin.58.fa	F6DG_bin.8.fa	85.65	4.16	349
F6D9_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	565	565_1	F6D9_bin.7.fa	F6D9_bin.7.fa	97.32	0.67	350
F6DE_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	565	565_2	F6DE_bin.60.fa	F6DE_bin.60.fa	77.63	4.7	351
F6MY_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g__	s__	N/A	572	572_0	F6MY_bin.65.fa	F6MY_bin.65.fa	96.64	0.67	352
F68M_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Acutalibacter	s__	N/A	602	602_0	F68M_bin.52.fa	F68M_bin.52.fa	85.21	0.67	353

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp000431775	GCA_000431775.1	482	482_0	F6D9_bin.64.fa	F6D9_bin.64.fa	97.05	0	353
F68N_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_12	F68N_bin.44.fa	F68N_bin.44.fa	97.27	0	353
F68V_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_13	F68V_bin.23.fa	F68V_bin.23.fa	97.27	0	353
F6D7_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_14	F6D7_bin.6.fa	F6D7_bin.6.fa	97.27	0.34	353
F6D9_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_10	F6D9_bin.42.fa	F6D9_bin.42.fa	97.27	0	353
F6DA_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_10	F6D9_bin.42.fa	F6DA_bin.48.fa	97.27	0	353
F6DB_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_15	F6DB_bin.2.fa	F6DB_bin.2.fa	97.27	0	353

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_11	F6DE_bin.36.fa	F6DE_bin.36.fa	97.27	0	353
F6MX_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003514385	GCA_003514385.1	649	649_16	F6MX_bin.112.fa	F6MX_bin.112.fa	86.88	0.17	353
F68F_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_9	F68F_bin.33.fa	F68F_bin.33.fa	97.27	0	353
F68C_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_2	F68G_bin.46.fa	F68C_bin.82.fa	96.6	0	353
F68G_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_2	F68G_bin.46.fa	F68G_bin.46.fa	97.27	0	353
F68W_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_2	F68G_bin.46.fa	F68W_bin.72.fa	96.6	0	353
F6DH_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_2	F68G_bin.46.fa	F6DH_bin.44.fa	96.6	0	353

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_4	F68H_bin.6.fa	F68H_bin.6.fa	97.27	0	353
F68J_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_7	F68J_bin.71.fa	F68J_bin.71.fa	74.45	0	353
F68M_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_1	F68M_bin.57.fa	F68M_bin.57.fa	97.27	0	353
F6MX_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_1	F68M_bin.57.fa	F6MX_bin.4.fa	92.53	1.73	353
F68D_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_3	F68R_bin.7.fa	F68D_bin.26.fa	96.6	0	353
F68R_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_3	F68R_bin.7.fa	F68R_bin.7.fa	97.27	0	353
F68T_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_3	F68R_bin.7.fa	F68T_bin.86.fa	95.26	0.44	353

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_8	F68U_bin.65.fa	F68U_bin.65.fa	97.27	0.34	353
F6D8_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_6	F6D8_bin.22.fa	F6D8_bin.22.fa	95.93	0	353
F6MY_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-177	s_CAG-177 sp003538135	GCA_003538135.1	649	649_5	F6MY_bin.88.fa	F6MY_bin.88.fa	96.6	0	353
F6MX_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s__	N/A	478	478_0	F6MX_bin.92.fa	F6MX_bin.92.fa	96.98	0	354
F68C_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_6	F68C_bin.111.fa	F68C_bin.111.fa	97.65	0.34	354
F68F_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_9	F68F_bin.91.fa	F68F_bin.91.fa	96.81	0.34	354
F6DE_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_9	F68F_bin.91.fa	F6DE_bin.88.fa	80.37	0	354
F68G_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_1	F68G_bin.22.fa	F68G_bin.22.fa	96.81	0.67	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68H_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_7	F68H_bin.31.fa	F68H_bin.31.fa	97.48	1.01	354
F68K_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_4	F68N_bin.75.fa	F68K_bin.14.fa	96.81	0.97	354
F68N_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_4	F68N_bin.75.fa	F68N_bin.75.fa	97.48	0.34	354
F68R_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_10	F68R_bin.43.fa	F68R_bin.43.fa	92.21	0.34	354
F68J_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_5	F68V_bin.112.fa	F68J_bin.21.fa	97.63	0.67	354
F68V_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_5	F68V_bin.112.fa	F68V_bin.112.fa	97.48	0.34	354
F68W_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_3	F6D9_bin.53.fa	F68W_bin.102.fa	73.66	0	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_3	F6D9_bin.53.fa	F6D9_bin.53.fa	97.65	0.34	354
F6DH_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_3	F6D9_bin.53.fa	F6DH_bin.51.fa	97.48	0.34	354
F6DA_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_8	F6DA_bin.67.fa	F6DA_bin.67.fa	72.99	0	354
F6MY_bin.127	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-180	s_CAG-180 sp000432435	GCA_000432435.1	477	477_2	F6MY_bin.127.fa	F6MY_bin.127.fa	53.36	0.34	354
F68C_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_4	F68C_bin.101.fa	F68C_bin.101.fa	97.32	0.34	354
F68K_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_1	F68K_bin.39.fa	F68K_bin.39.fa	97.32	0	354
F68R_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_9	F68R_bin.52.fa	F68R_bin.52.fa	97.32	0	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_8	F68T_bin.21.fa	F68T_bin.21.fa	97.32	0	354
F6D7_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_11	F6D7_bin.89.fa	F6D7_bin.89.fa	57.27	0	354
F6D8_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_3	F6D8_bin.92.fa	F6D8_bin.92.fa	97.32	0	354
F6D9_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_2	F6D9_bin.82.fa	F6D9_bin.82.fa	97.32	0	354
F6DA_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_7	F6DA_bin.93.fa	F6DA_bin.93.fa	97.32	0	354
F6DG_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_10	F6DG_bin.35.fa	F6DG_bin.35.fa	97.32	0	354
F68W_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_5	F6DH_bin.95.fa	F68W_bin.69.fa	97.32	0.67	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.95	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_5	F6DH_bin.95.fa	F6DH_bin.95.fa	95.97	0	354
F6MY_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-217	s_CAG-217 sp000436335	GCA_000436335.1	507	507_6	F6MY_bin.63.fa	F6MY_bin.63.fa	80.51	2.18	354
F68F_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_4	F68F_bin.64.fa	F68F_bin.64.fa	96.42	0	354
F68G_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_3	F68G_bin.15.fa	F68G_bin.15.fa	89.04	0	354
F68D_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_2	F68R_bin.62.fa	F68D_bin.1.fa	88.69	1.9	354
F68R_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_2	F68R_bin.62.fa	F68R_bin.62.fa	96.42	0	354
F68V_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_5	F68V_bin.84.fa	F68V_bin.84.fa	96.42	0	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_6	F6D7_bin.86.fa	F6D7_bin.86.fa	96.42	0	354
F68W_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_1	F6DH_bin.115.fa	F68W_bin.68.fa	96.42	0	354
F6DH_bin.115	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_CAG-488	s_CAG-488 sp000434055	GCA_000434055.1	259	259_1	F6DH_bin.115.fa	F6DH_bin.115.fa	96.42	0	354
F68V_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Clostridium_A	s_Clostridium_A leptum	GCF_000154345.1	490	490_1	F6DE_bin.3.fa	F68V_bin.78.fa	60.66	3.45	354
F6DE_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Clostridium_A	s_Clostridium_A leptum	GCF_000154345.1	490	490_1	F6DE_bin.3.fa	F6DE_bin.3.fa	99.33	0	354
F68J_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_R sp000434995	GCA_000434995.1	446	446_1	F68J_bin.55.fa	F68J_bin.55.fa	98.32	0	354
F68V_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_R sp000434995	GCA_000434995.1	446	446_2	F68V_bin.8.fa	F68V_bin.8.fa	98.66	0	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_1	F68F_bin.41.fa	F68F_bin.41.fa	98.66	0	354
F68K_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_1	F68F_bin.41.fa	F68K_bin.87.fa	98.66	0	354
F68M_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_1	F68F_bin.41.fa	F68M_bin.11.fa	97.09	0.02	354
F6MX_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_1	F68F_bin.41.fa	F6MX_bin.65.fa	60.4	0	354
F68N_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_9	F68N_bin.78.fa	F68N_bin.78.fa	97.99	0	354
F68U_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_5	F68U_bin.30.fa	F68U_bin.30.fa	98.66	0	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_5	F68U_bin.30.fa	F68W_bin.62.fa	98.66	0	354
F6DE_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_5	F68U_bin.30.fa	F6DE_bin.59.fa	98.66	0	354
F6DH_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_5	F68U_bin.30.fa	F6DH_bin.76.fa	98.66	0.02	354
F68R_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_3	F6D8_bin.11.fa	F68R_bin.36.fa	97.99	0.67	354
F6D8_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_3	F6D8_bin.11.fa	F6D8_bin.11.fa	96.64	0	354
F6D9_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_6	F6D9_bin.2.fa	F6D9_bin.2.fa	98.66	0.67	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_4	F6DA_bin.49.fa	F6DA_bin.49.fa	98.66	0	354
F6DB_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_7	F6DB_bin.12.fa	F6DB_bin.12.fa	98.66	0	354
F68P_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_8	F6DG_bin.34.fa	F68P_bin.22.fa	98.66	1.34	354
F6DG_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_8	F6DG_bin.34.fa	F6DG_bin.34.fa	98.32	0	354
F6MY_bin.129	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Eubacterium_R	s_Eubacterium_Rsp000436835	GCA_000436835.1	447	447_2	F6MY_bin.129.fa	F6MY_bin.129.fa	98.66	3.02	354
F68V_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_GCA-900066995	s_GCA-900066995sp900291955	GCF_900291955.1	165	165_1	F68V_bin.68.fa	F68V_bin.68.fa	98.99	0.34	354

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_GCA-900066995	s_GCA-900066995 sp900291955	GCF_900291955.1	165	165_1	F68V_bin.68.fa	F6MX_bin.81.fa	90.91	1.76	354
F6D8_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_GCA-900066995	s_GCA-900066995 sp900291955	GCF_900291955.1	165	165_3	F6D8_bin.75.fa	F6D8_bin.75.fa	79.19	0.34	354
F6D9_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_GCA-900066995	s_GCA-900066995 sp900291955	GCF_900291955.1	165	165_2	F6D9_bin.65.fa	F6D9_bin.65.fa	99.33	0.34	354
F68K_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus_E	s__	N/A	167	167_6	F68K_bin.91.fa	F68K_bin.91.fa	97.32	0.34	355
F68M_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus_E	s__	N/A	167	167_1	F68M_bin.89.fa	F68M_bin.89.fa	52.14	0.83	356
F6D9_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus_E	s__	N/A	167	167_7	F6D9_bin.77.fa	F6D9_bin.77.fa	98.66	0.34	357
F6DA_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus_E	s__	N/A	167	167_8	F6DA_bin.19.fa	F6DA_bin.19.fa	97.99	0.34	358

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_5	F68C_bin.78.fa	F68C_bin.78.fa	78.21	1.03	358
F68F_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_6	F68F_bin.86.fa	F68F_bin.86.fa	76.12	2.46	358
F68G_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_3	F68G_bin.26.fa	F68G_bin.26.fa	93.96	1.36	358
F68H_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_1	F68H_bin.39.fa	F68H_bin.39.fa	97.01	2.01	358
F68V_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_2	F68V_bin.15.fa	F68V_bin.15.fa	99.33	1.01	358
F6DG_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Ebromii_B	GCF_002834235.1	166	166_4	F6DG_bin.64.fa	F6DG_bin.64.fa	99.33	0.67	358

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp003526955	GCA_003526955.1	167	167_3	F68D_bin.39.fa	F68D_bin.39.fa	96.98	0.34	358
F68G_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp003526955	GCA_003526955.1	167	167_5	F68G_bin.61.fa	F68G_bin.61.fa	96.64	3.25	358
F68T_bin.106	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp003526955	GCA_003526955.1	167	167_2	F68T_bin.106.fa	F68T_bin.106.fa	98.66	0.34	358
F6MX_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp003526955	GCA_003526955.1	167	167_4	F6MX_bin.94.fa	F6MX_bin.94.fa	77.07	0	358
F68T_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp900314705	GCA_900314705.1	168	168_2	F68T_bin.46.fa	F68T_bin.46.fa	98.66	0	358
F6D9_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp900314705	GCA_900314705.1	168	168_4	F6D9_bin.87.fa	F6D9_bin.87.fa	89.26	1.29	358

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp900314705	GCA_900314705.1	168	168_1	F6DA_bin.7.fa	F6DA_bin.7.fa	97.99	0.34	358
F6MY_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp900314705	GCA_900314705.1	168	168_1	F6DA_bin.7.fa	F6MY_bin.22.fa	90.49	1.85	358
F6DB_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_Ruminococcus	s_Ruminococcus_Esp900314705	GCA_900314705.1	168	168_3	F6DB_bin.83.fa	F6DB_bin.83.fa	98.66	0	358
F68G_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA1417	s_UBA1417sp003531055	GCA_003531055.1	489	489_1	F68G_bin.60.fa	F68G_bin.60.fa	86.3	1.8	358
F68J_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA1417	s_UBA1417sp003531055	GCA_003531055.1	489	489_4	F68J_bin.24.fa	F68J_bin.24.fa	77.93	1.79	358
F68K_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA1417	s_UBA1417sp003531055	GCA_003531055.1	489	489_5	F68K_bin.113.fa	F68K_bin.113.fa	62.14	0.94	358
F68N_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA1417	s_UBA1417sp003531055	GCA_003531055.1	489	489_9	F68N_bin.10.fa	F68N_bin.10.fa	79.53	1.34	358

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_7	F68P_bin.26.fa	F68P_bin.26.fa	82.49	0.67	358
F68T_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_6	F68T_bin.6.fa	F68T_bin.6.fa	84.8	2.01	358
F6D8_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_2	F6D8_bin.94.fa	F6D8_bin.94.fa	56.79	1.68	358
F6DE_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_8	F6DE_bin.47.fa	F6DE_bin.47.fa	98.66	0	358
F6MY_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_8	F6DE_bin.47.fa	F6MY_bin.54.fa	91.95	0	358
F68W_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_3	F6DH_bin.31.fa	F68W_bin.40.fa	90.46	0	358
F6DH_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA1417	s_UBA1417 sp003531055	GCA_003531055.1	489	489_3	F6DH_bin.31.fa	F6DH_bin.31.fa	98.32	0.81	358
F68D_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_9	F68D_bin.83.fa	F68D_bin.83.fa	94.63	1.34	359

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_4	F68F_bin.74.fa	F68F_bin.74.fa	92.26	1.01	360
F68M_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_11	F68M_bin.46.fa	F68M_bin.46.fa	95.3	1.34	361
F68N_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_6	F68N_bin.30.fa	F68N_bin.30.fa	73.79	1.72	362
F68R_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_5	F68R_bin.73.fa	F68R_bin.73.fa	94.97	1.34	363
F68U_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_8	F68U_bin.112.fa	F68U_bin.112.fa	57.72	3.86	364
F68W_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_12	F68W_bin.41.fa	F68W_bin.41.fa	56.4	3.36	365
F6D9_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_10	F6D9_bin.49.fa	F6D9_bin.49.fa	52.6	1.34	366
F6DA_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_2	F6DA_bin.4.fa	F6DA_bin.4.fa	80.57	0.24	367
F6DE_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_3	F6DE_bin.54.fa	F6DE_bin.54.fa	93.29	2.01	368
F6MX_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutalibacteraceae	g_UBA737	s__	N/A	417	417_7	F6MX_bin.70.fa	F6MX_bin.70.fa	90.81	1.34	369

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA737	s__	N/A	417	417_1	F6MY_bin.40.fa	F68J_bin.2.fa	74.9	1.73	370
F6MY_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA737	s__	N/A	417	417_1	F6MY_bin.40.fa	F6MY_bin.40.fa	94.63	1.34	371
F6D7_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Acutilibacteraceae	g_UBA737	s__	N/A	508	508_0	F6D7_bin.4.fa	F6D7_bin.4.fa	95.97	0	372
F68J_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g__	s__	N/A	434	434_0	F68J_bin.36.fa	F68J_bin.36.fa	82.91	1.45	373
F6MY_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g__	s__	N/A	566	566_0	F6MY_bin.84.fa	F6MY_bin.84.fa	74.35	0.17	374
F68J_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s__	N/A	491	491_2	F68J_bin.54.fa	F68J_bin.54.fa	82.34	1.81	375
F68F_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s__	N/A	491	491_1	F6DA_bin.87.fa	F68F_bin.69.fa	87.02	0.34	376
F6DA_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s__	N/A	491	491_1	F6DA_bin.87.fa	F6DA_bin.87.fa	92.36	0	377
F68E_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_9	F68E_bin.24.fa	F68E_bin.24.fa	82.22	3.41	377

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_3	F68F_bin.17.fa	F68F_bin.17.fa	75.59	3.24	377
F68K_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_4	F68K_bin.82.fa	F68K_bin.82.fa	96.63	0.67	377
F68P_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_5	F68P_bin.37.fa	F68P_bin.37.fa	76.21	2.07	377
F68T_bin.105	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_1	F68T_bin.105.fa	F68T_bin.105.fa	58.52	3.14	377
F6D9_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_7	F6D9_bin.41.fa	F6D9_bin.41.fa	97.44	0.67	377

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_8	F6DG_bin.51.fa	F6DG_bin.51.fa	98.66	0.67	377
F6DH_bin.92	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_2	F6DH_bin.92.fa	F6DH_bin.92.fa	56.11	1.01	377
F6MY_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Butyricicoccaceae	g_Agathobaculum	s_Agathobaculum butyriciproducens	GCA_003096535.1	492	492_6	F6MY_bin.55.fa	F6MY_bin.55.fa	78.15	2.13	377
F68J_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_2	F68J_bin.86.fa	F68J_bin.86.fa	55.46	0.56	378
F68R_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_3	F68R_bin.71.fa	F68R_bin.71.fa	95.41	0.34	379
F68W_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_5	F68W_bin.61.fa	F68W_bin.61.fa	81.97	1.62	380
F6D7_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_1	F6D7_bin.51.fa	F6D7_bin.51.fa	96.53	0.68	381

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_1	F6D7_bin.51.fa	F6MY_bin.80.fa	53.25	0.56	382
F6DA_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	278	278_4	F6DA_bin.55.fa	F6DA_bin.55.fa	94.57	0.17	383
F68C_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_4	F68C_bin.19.fa	F68C_bin.19.fa	91.55	3.36	384
F68G_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_2	F68G_bin.70.fa	F68G_bin.70.fa	87.76	1.36	385
F68H_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_3	F6DE_bin.68.fa	F68H_bin.36.fa	70.08	3.32	386
F68R_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_3	F6DE_bin.68.fa	F68R_bin.24.fa	85.4	0.27	387
F68V_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_3	F6DE_bin.68.fa	F68V_bin.18.fa	84.08	2.01	388
F6DA_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_3	F6DE_bin.68.fa	F6DA_bin.98.fa	51.28	0.12	389
F6DE_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_3	F6DE_bin.68.fa	F6DE_bin.68.fa	91.72	0	390
F68W_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_1	F6DH_bin.29.fa	F68W_bin.99.fa	89.54	0	391

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_1	F6DH_bin.29.fa	F6DH_bin.29.fa	91.55	0	392
F6MX_bin.125	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	336	336_5	F6MX_bin.125.fa	F6MX_bin.125.fa	90.99	2.01	393
F68M_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	344	344_1	F68M_bin.8.fa	F68M_bin.8.fa	71.19	3.44	394
F6MY_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	344	344_2	F6MY_bin.15.fa	F6MY_bin.15.fa	94.41	0.67	395
F68D_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	345	345_0	F68D_bin.27.fa	F68D_bin.27.fa	84.96	0.67	396
F68C_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_4	F68C_bin.112.fa	F68C_bin.112.fa	53.71	0.67	397
F68J_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_2	F68J_bin.72.fa	F68J_bin.72.fa	94.57	0.81	398
F68R_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_2	F68J_bin.72.fa	F68R_bin.16.fa	88.9	1.34	399
F6D7_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_3	F6D7_bin.17.fa	F6D7_bin.17.fa	93.4	2.01	400
F68W_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_1	F6DH_bin.116.fa	F68W_bin.111.fa	54.38	1.49	401

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.116	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	362	362_1	F6DH_bin.116.fa	F6DH_bin.116.fa	94.91	0.67	402
F68V_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	413	413_0	F68V_bin.47.fa	F68V_bin.47.fa	92.48	2.68	403
F68G_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_4	F68G_bin.75.fa	F68G_bin.75.fa	87.91	0.22	404
F68D_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_1	F68M_bin.42.fa	F68D_bin.60.fa	86.09	1.74	405
F68M_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_1	F68M_bin.42.fa	F68M_bin.42.fa	97.54	0.42	406
F6DA_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_1	F68M_bin.42.fa	F6DA_bin.63.fa	91.89	0.84	407
F68R_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_5	F68R_bin.8.fa	F68R_bin.8.fa	86.4	0.47	408
F6MX_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_2	F6MX_bin.60.fa	F6MX_bin.60.fa	94.74	0	409
F6MY_bin.123	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	429	429_3	F6MY_bin.123.fa	F6MY_bin.123.fa	93.68	0.69	410
F6D7_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	435	435_0	F6D7_bin.66.fa	F6D7_bin.66.fa	88.37	1.42	411

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	455	455_1	F6D8_bin.51.fa	F6D8_bin.51.fa	94.41	1.57	412
F6DB_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	455	455_1	F6D8_bin.51.fa	F6DB_bin.49.fa	86.11	0	413
F6DG_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	455	455_2	F6DG_bin.10.fa	F6DG_bin.10.fa	86.58	1.01	414
F6DB_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g__	s__	N/A	469	469_0	F6DB_bin.59.fa	F6DB_bin.59.fa	68.62	2.65	415
F68V_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-272	s_CAG-272 sp000433515	GCA_000433515.1	358	358_0	F68V_bin.72.fa	F68V_bin.72.fa	94.13	0.67	415
F68J_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-390	s_CAG-390 sp000437015	GCA_000437015.1	481	481_0	F68J_bin.47.fa	F68J_bin.47.fa	88.48	0.73	415
F68C_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_2	F68C_bin.104.fa	F68C_bin.104.fa	93.34	0	415
F68D_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_8	F68D_bin.18.fa	F68D_bin.18.fa	88.63	2.35	415

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_3	F68F_bin.49.fa	F68F_bin.49.fa	80.98	2.37	415
F68G_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_4	F68G_bin.10.fa	F68G_bin.10.fa	92.21	0.67	415
F68H_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_6	F68H_bin.49.fa	F68H_bin.49.fa	95.19	1.51	415
F68J_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_5	F68J_bin.87.fa	F68J_bin.87.fa	62.47	0.06	415
F6DA_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_7	F6DA_bin.53.fa	F6DA_bin.53.fa	92.51	0	415
F6D7_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_1	F6MX_bin.58.fa	F6D7_bin.24.fa	94.55	0	415
F6MX_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_1	F6MX_bin.58.fa	F6MX_bin.58.fa	95.36	0	415

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-448	s_CAG-448 sp003150135	GCA_003150135.1	427	427_9	F6MY_bin.103.fa	F6MY_bin.103.fa	94.18	0	415
F6MX_bin.122	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-724	s_CAG-724 sp003524145	GCA_003524145.1	405	405_0	F6MX_bin.122.fa	F6MX_bin.122.fa	88.14	0	415
F68F_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_CAG-841	s__	N/A	431	431_0	F68F_bin.111.fa	F68F_bin.111.fa	91.83	0	416
F68C_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_Firm-07	s__	N/A	436	436_1	F68C_bin.26.fa	F68C_bin.26.fa	90.91	1.7	417
F68F_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_Firm-07	s__	N/A	436	436_3	F68F_bin.101.fa	F68F_bin.101.fa	95.08	0.69	418
F68R_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_Firm-07	s__	N/A	436	436_4	F68R_bin.110.fa	F68R_bin.110.fa	93.09	0.67	419
F6D8_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_Firm-07	s__	N/A	436	436_2	F6D8_bin.79.fa	F6D8_bin.79.fa	80.27	2.59	420
F6DA_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_UBA11512	s_UBA11512 sp003522145	GCA_003522145.1	444	444_1	F6MX_bin.30.fa	F6DA_bin.16.fa	90.88	1.45	420
F6MX_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_UBA11512	s_UBA11512 sp003522145	GCA_003522145.1	444	444_1	F6MX_bin.30.fa	F6MX_bin.30.fa	89.14	0	420

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-272	g_UBA1740	s__	N/A	411	411_0	F68J_bin.4.fa	F68J_bin.4.fa	89.82	0.71	421
F68F_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g__	s__	N/A	406	406_0	F68F_bin.87.fa	F68F_bin.87.fa	66.26	2.07	422
F68W_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g__	s__	N/A	407	407_0	F68W_bin.83.fa	F68W_bin.83.fa	79.62	3.95	423
F6DG_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g__	s__	N/A	408	408_0	F6DG_bin.107.fa	F6DG_bin.107.fa	55.3	3.52	424
F6MX_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g__	s__	N/A	414	414_0	F6MX_bin.20.fa	F6MX_bin.20.fa	90.44	0	425
F68G_bin.63	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g_UBA1206	s_UBA1206 sp000433115	GCA_000433115.1	430	430_1	F68G_bin.63.fa	F68G_bin.63.fa	92.04	0.67	425
F68H_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g_UBA1206	s_UBA1206 sp000433115	GCA_000433115.1	430	430_1	F68G_bin.63.fa	F68H_bin.81.fa	56.68	0.36	425
F68M_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g_UCG-010	s_UCG-010 sp003150115	GCA_003150115.1	659	659_1	F68M_bin.19.fa	F68M_bin.19.fa	86.46	1.59	425
F6MX_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_CAG-382	g_UCG-010	s_UCG-010 sp003150115	GCA_003150115.1	659	659_1	F68M_bin.19.fa	F6MX_bin.57.fa	50.94	0	425

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	607	607_1	F68F_bin.30.fa	F68F_bin.30.fa	96.64	0.67	426
F68R_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	607	607_1	F68F_bin.30.fa	F68R_bin.32.fa	61.32	4.66	427
F68J_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	664	664_0	F68J_bin.17.fa	F68J_bin.17.fa	73.6	1.51	428
F68J_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	633	633_0	F68J_bin.65.fa	F68J_bin.65.fa	99.33	0	429
F68J_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	657	657_0	F68J_bin.84.fa	F68J_bin.84.fa	55.16	1.72	430
F68U_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	606	606_1	F68U_bin.104.fa	F68U_bin.104.fa	88.5	4.36	431
F6D8_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	606	606_2	F6D8_bin.68.fa	F6D8_bin.68.fa	99.33	1.01	432
F6MX_bin.37	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g__	s__	N/A	639	639_0	F6MX_bin.37.fa	F6MX_bin.37.fa	52.59	2.35	433
F68C_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_4	F68C_bin.62.fa	F68C_bin.62.fa	94.23	0.67	434
F68P_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_1	F68P_bin.17.fa	F68P_bin.17.fa	80.54	0	435

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_5	F68R_bin.75.fa	F68R_bin.75.fa	90.6	0.67	436
F68T_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_7	F68T_bin.58.fa	F68T_bin.58.fa	87.75	1.23	437
F68U_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_3	F68U_bin.49.fa	F68U_bin.49.fa	96.31	0.67	438
F68W_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_3	F68U_bin.49.fa	F68W_bin.35.fa	58.57	3.76	439
F6DH_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_3	F68U_bin.49.fa	F6DH_bin.86.fa	59.23	3.69	440
F68V_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_9	F68V_bin.29.fa	F68V_bin.29.fa	72.22	1.17	441
F6DB_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_8	F6DB_bin.22.fa	F6DB_bin.22.fa	87.32	1.4	442
F6DB_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_16	F6DB_bin.5.fa	F6DB_bin.5.fa	89.53	0.73	443
F68F_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_6	F6MX_bin.3.fa	F68F_bin.6.fa	86.24	3.36	444
F6MX_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_6	F6MX_bin.3.fa	F6MX_bin.3.fa	86.91	0.67	445

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s__	N/A	652	652_2	F6MY_bin.76.fa	F6MY_bin.76.fa	80.96	1.68	446
F68K_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_13	F68K_bin.103.fa	F68K_bin.103.fa	90.94	0	446
F6D8_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_10	F6D8_bin.64.fa	F6D8_bin.64.fa	93.29	0.34	446
F6DG_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_10	F6D8_bin.64.fa	F6DG_bin.53.fa	84.56	4.36	446
F68F_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_11	F6D9_bin.85.fa	F68F_bin.8.fa	87.99	1.89	446
F68W_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_11	F6D9_bin.85.fa	F68W_bin.64.fa	83.64	2.01	446
F6D9_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_11	F6D9_bin.85.fa	F6D9_bin.85.fa	82.21	0	446
F6DH_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_11	F6D9_bin.85.fa	F6DH_bin.75.fa	78.41	1.81	446

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_14	F6DA_bin.27.fa	F6DA_bin.27.fa	88.28	1.34	446
F6MY_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp000432375	GCA_000432375.1	652	652_12	F6MY_bin.93.fa	F6MY_bin.93.fa	89.57	4.76	446
F68H_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-103	s_CAG-103 sp900317855	GCA_900317855.1	652	652_15	F68H_bin.26.fa	F68H_bin.26.fa	84.91	2.35	446
F6DE_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	545	545_0	F6DE_bin.75.fa	F6DE_bin.75.fa	84.34	1.46	447
F68K_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	604	604_1	F68V_bin.3.fa	F68K_bin.67.fa	80.52	2.91	448
F68V_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	604	604_1	F68V_bin.3.fa	F68V_bin.3.fa	87.45	1.48	449
F68V_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	605	605_0	F68V_bin.33.fa	F68V_bin.33.fa	77.04	2.01	450
F68K_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_4	F68K_bin.28.fa	F68K_bin.28.fa	97.2	0	451
F68R_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_4	F68K_bin.28.fa	F68R_bin.90.fa	97.43	0.4	452

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_4	F68K_bin.28.fa	F6DB_bin.61.fa	96.15	0.34	453
F6D8_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_1	F6D8_bin.36.fa	F6D8_bin.36.fa	86.34	1.85	454
F6DG_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_2	F6DG_bin.75.fa	F6DG_bin.75.fa	97.87	0	455
F6DH_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_3	F6DH_bin.85.fa	F6DH_bin.85.fa	91.75	1.23	456
F6MY_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	608	608_5	F6MY_bin.61.fa	F6MY_bin.61.fa	96.32	0.67	457
F68W_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	609	609_1	F6DH_bin.17.fa	F68W_bin.11.fa	83.66	2.35	458
F6DH_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	609	609_1	F6DH_bin.17.fa	F6DH_bin.17.fa	92.23	0	459
F68F_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	610	610_5	F68F_bin.50.fa	F68F_bin.50.fa	90.39	3.3	460
F6DB_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	610	610_6	F6DB_bin.113.fa	F6DB_bin.113.fa	93.74	0	461
F68C_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	611	611_5	F68C_bin.93.fa	F68C_bin.93.fa	86.23	3.13	462

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	611	611_3	F68D_bin.64.fa	F68D_bin.64.fa	58.5	0	463
F68G_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	611	611_4	F68G_bin.20.fa	F68G_bin.20.fa	93.09	1.31	464
F6DG_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	611	611_1	F6DG_bin.70.fa	F6DG_bin.70.fa	93.06	3.02	465
F6MY_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	611	611_2	F6MY_bin.30.fa	F6MY_bin.30.fa	68.57	0	466
F68R_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	612	612_1	F68R_bin.42.fa	F68R_bin.42.fa	94.22	2.28	467
F6D8_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	612	612_3	F6D8_bin.34.fa	F6D8_bin.34.fa	82.66	0.67	468
F6MY_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	612	612_2	F6MY_bin.17.fa	F6MY_bin.17.fa	52.14	0	469
F68D_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	624	624_1	F68D_bin.10.fa	F68D_bin.10.fa	86.88	2.63	470
F6D9_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	624	624_3	F6D9_bin.89.fa	F6D9_bin.89.fa	95.75	1.34	471
F6MX_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	624	624_2	F6MX_bin.89.fa	F6MX_bin.89.fa	80.5	2.18	472

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s__	N/A	625	625_0	F68M_bin.18.fa	F68M_bin.18.fa	54.48	3.79	473
F68K_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000434635	GCA_000434635.1	610	610_4	F68K_bin.32.fa	F68K_bin.32.fa	97.76	0	473
F6D8_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000434635	GCA_000434635.1	610	610_1	F6D8_bin.69.fa	F6D8_bin.69.fa	53.4	1.61	473
F6MX_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000434635	GCA_000434635.1	610	610_2	F6MX_bin.107.fa	F6MX_bin.107.fa	92.23	0	473
F6MY_bin.105	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000434635	GCA_000434635.1	610	610_3	F6MY_bin.105.fa	F6MY_bin.105.fa	74.96	0.67	473
F68K_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000435995	GCA_000435995.1	544	544_1	F68V_bin.31.fa	F68K_bin.21.fa	92.62	1.34	473
F68V_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000435995	GCA_000435995.1	544	544_1	F68V_bin.31.fa	F68V_bin.31.fa	94.32	1.34	473
F6DG_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000435995	GCA_000435995.1	544	544_1	F68V_bin.31.fa	F6DG_bin.89.fa	81.37	4.81	473

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp000435995	GCA_000435995.1	544	544_1	F68V_bin.31.fa	F6MY_bin.4.fa	89.26	1.34	473
F68C_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_1	F68C_bin.45.fa	F68C_bin.45.fa	89.26	0	473
F68D_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_12	F68D_bin.17.fa	F68D_bin.17.fa	88.75	1.81	473
F68F_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_16	F68F_bin.80.fa	F68F_bin.80.fa	78.34	3.09	473
F68K_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_11	F68K_bin.50.fa	F68K_bin.50.fa	91.28	0.67	473
F68M_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_2	F68M_bin.74.fa	F68M_bin.74.fa	67.6	2.68	473
F68T_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_3	F68T_bin.1.fa	F68T_bin.1.fa	86.07	0.89	473

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_9	F68V_bin.28.fa	F68V_bin.28.fa	91.44	0.67	473
F6D8_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_14	F6D8_bin.48.fa	F6D8_bin.48.fa	87.92	1.48	473
F6D9_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_5	F6D9_bin.34.fa	F6D9_bin.34.fa	84.76	0.17	473
F6DA_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_4	F6DA_bin.65.fa	F6DA_bin.65.fa	76.48	0.67	473
F6DB_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_15	F6DB_bin.72.fa	F6DB_bin.72.fa	83.67	0	473
F6DE_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_6	F6DE_bin.40.fa	F6DE_bin.40.fa	89.26	0	473
F6DG_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_7	F6DG_bin.29.fa	F6DG_bin.29.fa	92.62	0	473

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_13	F6DH_bin.70.fa	F6DH_bin.70.fa	77.55	1.24	473
F6MX_bin.11	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_8	F6MX_bin.11.fa	F6MX_bin.11.fa	76.96	0.84	473
F6MY_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-110	s_CAG-110 sp003525905	GCA_003525905.1	623	623_10	F6MY_bin.49.fa	F6MY_bin.49.fa	89.26	0	473
F68W_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	615	615_1	F6DH_bin.35.fa	F68W_bin.109.fa	93.96	1.34	474
F6DH_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	615	615_1	F6DH_bin.35.fa	F6DH_bin.35.fa	95.3	1.34	475
F68K_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	618	618_3	F68K_bin.59.fa	F68K_bin.59.fa	84.78	1.34	476
F68W_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	618	618_1	F68W_bin.16.fa	F68W_bin.16.fa	80.44	4.33	477
F6DB_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	618	618_2	F6DB_bin.91.fa	F6DB_bin.91.fa	93.1	3.92	478
F6DG_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	618	618_4	F6DG_bin.22.fa	F6DG_bin.22.fa	86.47	1.34	479

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s__	N/A	619	619_0	F6DE_bin.85.fa	F6DE_bin.85.fa	93.29	0.67	480
F68D_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_6	F68D_bin.25.fa	F68D_bin.25.fa	85.19	0.67	480
F68F_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_8	F68F_bin.13.fa	F68F_bin.13.fa	89.77	4.83	480
F68G_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_9	F68G_bin.23.fa	F68G_bin.23.fa	86.26	2.01	480
F68H_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_4	F68H_bin.80.fa	F68H_bin.80.fa	91.66	3.86	480
F68M_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_10	F68M_bin.39.fa	F68M_bin.39.fa	93.96	1.7	480
F68R_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_11	F68R_bin.88.fa	F68R_bin.88.fa	81.37	3.58	480
F68T_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_12	F68T_bin.72.fa	F68T_bin.72.fa	50.05	3.45	480

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_1	F68U_bin.97.fa	F68U_bin.97.fa	93.35	1.48	480
F68W_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_1	F68U_bin.97.fa	F68W_bin.55.fa	62.53	3.02	480
F6DH_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_1	F68U_bin.97.fa	F6DH_bin.54.fa	90.93	1.98	480
F68V_bin.114	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_3	F68V_bin.114.fa	F68V_bin.114.fa	88.93	0.67	480
F6D9_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_7	F6D9_bin.30.fa	F6D9_bin.30.fa	93.29	1.34	480
F6DB_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_2	F6DE_bin.21.fa	F6DB_bin.84.fa	94.63	3.02	480
F6DE_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_2	F6DE_bin.21.fa	F6DE_bin.21.fa	92.17	2.07	480

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.124	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000432135	GCA_000432135.1	614	614_5	F6MX_bin.124.fa	F6MX_bin.124.fa	92.39	2.35	480
F68K_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_3	F68K_bin.34.fa	F68K_bin.34.fa	92.36	2.68	480
F6D7_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_5	F6D7_bin.50.fa	F6D7_bin.50.fa	89.6	1.68	480
F6D9_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_2	F6D9_bin.18.fa	F6D9_bin.18.fa	93.29	1.34	480
F6DA_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_6	F6DA_bin.89.fa	F6DA_bin.89.fa	55.94	0.67	480
F6DB_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_4	F6DB_bin.67.fa	F6DB_bin.67.fa	92.62	1.68	480
F68W_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_1	F6DH_bin.48.fa	F68W_bin.86.fa	71.85	3.32	480

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp000436735	GCA_000436735.1	616	616_1	F6DH_bin.48.fa	F6DH_bin.48.fa	80.3	1.34	480
F68G_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp002404795	GCA_002404795.1	613	613_3	F68G_bin.44.fa	F68G_bin.44.fa	81.38	3.01	480
F6D8_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp002404795	GCA_002404795.1	613	613_1	F6D8_bin.10.fa	F6D8_bin.10.fa	85.2	2.18	480
F6DG_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp002404795	GCA_002404795.1	613	613_2	F6DG_bin.94.fa	F6DG_bin.94.fa	86.39	1.03	480
F6D7_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp003516765	GCA_003516765.1	617	617_1	F6D7_bin.80.fa	F6D7_bin.80.fa	50.33	3.45	480
F6MY_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-170	s_CAG-170 sp003516765	GCA_003516765.1	617	617_2	F6MY_bin.26.fa	F6MY_bin.26.fa	68.45	2.59	480
F68C_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	640	640_4	F68C_bin.50.fa	F68C_bin.50.fa	67.55	4.09	481
F68J_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	640	640_2	F68J_bin.66.fa	F68J_bin.66.fa	83.3	3.19	482

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	640	640_1	F6DA_bin.36.fa	F6DA_bin.36.fa	93.6	2.41	483
F6DE_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	640	640_1	F6DA_bin.36.fa	F6DE_bin.87.fa	78.59	1.34	484
F6DG_bin.49	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	640	640_3	F6DG_bin.49.fa	F6DG_bin.49.fa	92.18	1.01	485
F68J_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	643	643_2	F68J_bin.50.fa	F68J_bin.50.fa	51.57	2.9	486
F68C_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	644	644_3	F68C_bin.90.fa	F68C_bin.90.fa	69.6	4.5	487
F68W_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	644	644_1	F68W_bin.45.fa	F68W_bin.45.fa	88.26	0.67	488
F6DH_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	644	644_1	F68W_bin.45.fa	F6DH_bin.91.fa	71.48	0.67	489
F6MX_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	644	644_2	F6MX_bin.16.fa	F6MX_bin.16.fa	89.26	1.34	490
F68W_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	645	645_1	F68W_bin.90.fa	F68W_bin.90.fa	92.03	1.34	491
F6DH_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	645	645_1	F68W_bin.90.fa	F6DH_bin.94.fa	82.47	0.82	492

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	645	645_2	F6DB_bin.107.fa	F6DB_bin.107.fa	93.62	2.01	493
F68D_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	646	646_4	F68D_bin.79.fa	F68D_bin.79.fa	92.62	0.67	494
F68H_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	646	646_1	F68H_bin.71.fa	F68H_bin.71.fa	89.04	1.48	495
F68R_bin.118	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	646	646_2	F68R_bin.118.fa	F68R_bin.118.fa	92.62	0.67	496
F68V_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s__	N/A	646	646_3	F68V_bin.42.fa	F68V_bin.42.fa	93.29	0.67	497
F68J_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_1	F68J_bin.38.fa	F68J_bin.38.fa	85.22	1.46	497
F68K_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_6	F68K_bin.46.fa	F68K_bin.46.fa	93.06	0.67	497
F68P_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_3	F68P_bin.4.fa	F68P_bin.4.fa	87.92	3.02	497
F6D7_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_7	F6D7_bin.8.fa	F6D7_bin.8.fa	64.83	1.34	497

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DA_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_4	F6DA_bin.69.fa	F6DA_bin.69.fa	92.62	0.67	497
F6DE_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_2	F6DE_bin.93.fa	F6DE_bin.93.fa	72.28	3.57	497
F6DB_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_5	F6DG_bin.40.fa	F6DB_bin.71.fa	76.45	2.35	497
F6DG_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000431575	GCA_000431575.1	642	642_5	F6DG_bin.40.fa	F6DG_bin.40.fa	92.62	0.67	497
F68F_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_5	F68F_bin.53.fa	F68F_bin.53.fa	86.58	0.67	497
F68T_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_1	F68T_bin.98.fa	F68T_bin.98.fa	88.08	0.84	497
F68U_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_2	F68U_bin.16.fa	F68U_bin.16.fa	87.58	0.67	497

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_7	F68V_bin.77.fa	F68V_bin.77.fa	89.26	1.4	497
F6D7_bin.29	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_3	F6D7_bin.29.fa	F6D7_bin.29.fa	89.26	1.01	497
F6MX_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_6	F6MX_bin.73.fa	F6MX_bin.73.fa	87.25	1.01	497
F6MY_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435555	GCA_000435555.1	647	647_4	F6MY_bin.104.fa	F6MY_bin.104.fa	86.8	1.57	497
F6D9_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp000435975	GCA_000435975.1	643	643_16	F6D9_bin.21.fa	F6D9_bin.21.fa	70.17	3.45	497
F68D_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_12	F68D_bin.22.fa	F68D_bin.22.fa	89.26	0.67	497
F68F_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_6	F68F_bin.31.fa	F68F_bin.31.fa	71.48	0	497

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_9	F68G_bin.72.fa	F68G_bin.72.fa	91.28	0.67	497
F68H_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_10	F68H_bin.30.fa	F68H_bin.30.fa	90.54	0.69	497
F68M_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_4	F68M_bin.35.fa	F68M_bin.35.fa	95.13	0.67	497
F6MX_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_4	F68M_bin.35.fa	F6MX_bin.76.fa	72.01	0.67	497
F68N_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_7	F68N_bin.77.fa	F68N_bin.77.fa	88.93	0	497
F68T_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_8	F68T_bin.82.fa	F68T_bin.82.fa	90.6	0	497
F68V_bin.36	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_15	F68V_bin.36.fa	F68V_bin.36.fa	89.93	1.34	497

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_14	F6D7_bin.13.fa	F6D7_bin.13.fa	95.3	3.69	497
F6D8_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_13	F6D8_bin.4.fa	F6D8_bin.4.fa	89.26	0.17	497
F6D9_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_3	F6D9_bin.32.fa	F6D9_bin.32.fa	76.12	4.03	497
F6DE_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_5	F6DE_bin.22.fa	F6DE_bin.22.fa	85.23	0.21	497
F68W_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_1	F6DH_bin.77.fa	F68W_bin.50.fa	69.49	2.59	497
F6DH_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_1	F6DH_bin.77.fa	F6DH_bin.77.fa	85.94	2.03	497
F6MY_bin.119	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp001916855	GCA_001916855.1	643	643_11	F6MY_bin.119.fa	F6MY_bin.119.fa	91.28	0.67	497

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003487665	GCA_003487665.1	648	648_1	F68C_bin.60.fa	F68C_bin.60.fa	85.58	0.81	497
F68U_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003487665	GCA_003487665.1	648	648_2	F68U_bin.7.fa	F68U_bin.7.fa	90.62	1.34	497
F6DA_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003487665	GCA_003487665.1	648	648_3	F6DA_bin.68.fa	F6DA_bin.68.fa	83.97	2.85	497
F68D_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003539495	GCA_003539495.1	641	641_3	F68D_bin.32.fa	F68D_bin.32.fa	56.61	0.86	497
F68G_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003539495	GCA_003539495.1	641	641_1	F68G_bin.66.fa	F68G_bin.66.fa	91.95	0.67	497
F68J_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_CAG-83	s_CAG-83 sp003539495	GCA_003539495.1	641	641_2	F68J_bin.64.fa	F68J_bin.64.fa	89.44	0.71	497
F6DG_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s__	N/A	622	622_11	F6DG_bin.48.fa	F6DG_bin.48.fa	96.64	0	498
F68H_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4 sp000765235	GCF_000765235.1	622	622_5	F68H_bin.55.fa	F68H_bin.55.fa	97.99	3.36	498

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.121	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_2	F68R_bin.121.fa	F68R_bin.121.fa	93.06	3.36	498
F68C_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_3	F68U_bin.78.fa	F68C_bin.100.fa	89.24	2.93	498
F68U_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_3	F68U_bin.78.fa	F68U_bin.78.fa	93.96	0	498
F68V_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_4	F68V_bin.98.fa	F68V_bin.98.fa	68.34	2.01	498
F6MY_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_4	F68V_bin.98.fa	F6MY_bin.72.fa	61.09	2.46	498
F68W_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_6	F68W_bin.75.fa	F68W_bin.75.fa	52.79	0.81	498
F6D7_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_7	F6D7_bin.84.fa	F6D7_bin.84.fa	98.66	0	498
F6D8_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_1	F6D8_bin.47.fa	F6D8_bin.47.fa	97.82	0	498
F6DA_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_1	F6D8_bin.47.fa	F6DA_bin.83.fa	85.44	2.88	498
F6D9_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_8	F6D9_bin.33.fa	F6D9_bin.33.fa	95.75	0	498

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_9	F6DB_bin.54.fa	F6DB_bin.54.fa	98.66	0	498
F6DE_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp000765235	GCF_000765235.1	622	622_10	F6DE_bin.79.fa	F6DE_bin.79.fa	88.87	4.72	498
F68D_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp003522105	GCA_003522105.1	621	621_1	F68D_bin.70.fa	F68D_bin.70.fa	96.64	0	498
F6MX_bin.136	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp003522105	GCA_003522105.1	621	621_2	F6MX_bin.136.fa	F6MX_bin.136.fa	89.09	0.67	498
F68C_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_1	F68C_bin.28.fa	F68C_bin.28.fa	79.83	3.6	498
F68F_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_7	F68F_bin.26.fa	F68F_bin.26.fa	76.14	3.02	498
F68H_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_4	F68H_bin.75.fa	F68H_bin.75.fa	86.97	0.34	498
F68R_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_3	F68R_bin.28.fa	F68R_bin.28.fa	94.13	0.02	498
F68U_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_3	F68R_bin.28.fa	F68U_bin.53.fa	81.24	0.22	498
F68T_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_6	F68T_bin.13.fa	F68T_bin.13.fa	84.56	1.01	498

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_5	F6D8_bin.30.fa	F6D8_bin.30.fa	90.71	0	498
F6MY_bin.128	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_ER4	s_ER4sp900317525	GCA_900317525.1	620	620_2	F6MY_bin.128.fa	F6MY_bin.128.fa	67.41	1.57	498
F68D_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_F23-B02	s_F23-B02sp001916715	GCA_001916715.1	460	460_0	F68D_bin.102.fa	F68D_bin.102.fa	74.29	2.52	498
F68J_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Flavonifractor	s_Flavonifractorplautii	GCF_000239295.1	561	561_1	F68J_bin.30.fa	F68J_bin.30.fa	79.73	0.88	498
F6DE_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Flavonifractor	s_Flavonifractorplautii	GCF_000239295.1	561	561_1	F68J_bin.30.fa	F6DE_bin.80.fa	81.66	1.48	498
F68J_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	626	626_0	F68J_bin.58.fa	F68J_bin.58.fa	53.75	0	499
F68C_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	630	630_4	F68C_bin.59.fa	F68C_bin.59.fa	59.31	0	500
F68J_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	630	630_1	F68J_bin.76.fa	F68J_bin.76.fa	94.63	0.17	501
F6D7_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	630	630_2	F6D7_bin.45.fa	F6D7_bin.45.fa	87.38	2.15	502

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	630	630_3	F6DG_bin.33.fa	F6DG_bin.33.fa	50.94	4.31	503
F6DH_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	630	630_5	F6DH_bin.74.fa	F6DH_bin.74.fa	52.59	3.45	504
F68T_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s__	N/A	631	631_0	F68T_bin.57.fa	F68T_bin.57.fa	87.87	2.74	505
F6MX_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter asaccharolyticus	GCF_00312755.1	632	632_0	F6MX_bin.34.fa	F6MX_bin.34.fa	72.87	0.22	505
F68F_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter sp000177015	GCF_000177015.3	628	628_1	F68F_bin.5.fa	F68F_bin.5.fa	99.33	0.83	505
F68K_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter sp000177015	GCF_000177015.3	628	628_2	F68K_bin.45.fa	F68K_bin.45.fa	84.85	2.91	505
F6DB_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter sp90006645	GCA_900066645.1	627	627_0	F6DB_bin.75.fa	F6DB_bin.75.fa	77.01	1.01	505

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter sp900066825	GCA_900066825.1	629	629_1	F68K_bin.35.fa	F68K_bin.35.fa	98.11	0	505
F6DG_bin.95	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Lawsonibacter	s_Lawsonibacter sp900066825	GCA_900066825.1	629	629_2	F6DG_bin.95.fa	F6DG_bin.95.fa	62.52	4.03	505
F6MX_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	635	635_0	F6MX_bin.10.fa	F6MX_bin.10.fa	79.57	2.01	506
F68D_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	636	636_6	F68D_bin.35.fa	F68D_bin.35.fa	52.61	2.59	507
F6MY_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	636	636_11	F6MY_bin.2.fa	F6MY_bin.2.fa	53.65	3.78	508
F6DG_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	637	637_0	F6DG_bin.25.fa	F6DG_bin.25.fa	50.61	3.45	509
F68J_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	638	638_4	F68J_bin.23.fa	F68J_bin.23.fa	97.32	0	510
F68R_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	638	638_2	F68R_bin.91.fa	F68R_bin.91.fa	59.49	0.94	511
F68U_bin.90	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	638	638_3	F68U_bin.90.fa	F68U_bin.90.fa	76.49	1.01	512

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	638	638_1	F68W_bin.38.fa	F68W_bin.38.fa	94.03	0.3	513
F6DH_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s__	N/A	638	638_1	F68W_bin.38.fa	F6DH_bin.99.fa	89.37	2.43	514
F68C_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_14	F68C_bin.15.fa	F68C_bin.15.fa	72.28	3.58	514
F68J_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_4	F68J_bin.60.fa	F68J_bin.60.fa	58.93	1.72	514
F68K_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_1	F68K_bin.78.fa	F68K_bin.78.fa	93.86	2.35	514
F68P_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_1	F68K_bin.78.fa	F68P_bin.54.fa	69.58	2.32	514
F68N_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_5	F68N_bin.6.fa	F68N_bin.6.fa	90.7	2.57	514

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_13	F68R_bin.44.fa	F68R_bin.44.fa	68.93	2.35	514
F68T_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_2	F68T_bin.75.fa	F68T_bin.75.fa	75.83	0.67	514
F68U_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_8	F68U_bin.86.fa	F68U_bin.86.fa	68.38	2.3	514
F68W_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_12	F68W_bin.48.fa	F68W_bin.48.fa	59.48	0.86	514
F6DH_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_12	F68W_bin.48.fa	F6DH_bin.62.fa	52.83	1.34	514
F6D8_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_15	F6D8_bin.72.fa	F6D8_bin.72.fa	83.82	2.68	514

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_16	F6D9_bin.9.fa	F6D9_bin.9.fa	88.36	0.67	514
F6DA_bin.84	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_9	F6DA_bin.84.fa	F6DA_bin.84.fa	84.91	3.33	514
F6DB_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_7	F6DB_bin.58.fa	F6DB_bin.58.fa	90.56	2.91	514
F6DG_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_3	F6DG_bin.104.fa	F6DG_bin.104.fa	97.09	2.01	514
F6MX_bin.129	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp001916835	GCA_001916835.1	636	636_10	F6MX_bin.129.fa	F6MX_bin.129.fa	93.88	0.34	514
F68T_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp900066435	GCA_900066435.1	634	634_1	F6DB_bin.4.fa	F68T_bin.68.fa	78.45	2.91	514

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp900066435	GCA_900066435.1	634	634_1	F6DB_bin.4.fa	F6DB_bin.4.fa	86.79	0.67	514
F6MY_bin.135	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Oscillobacter	s_Oscillobacter sp900066435	GCA_900066435.1	634	634_1	F6DB_bin.4.fa	F6MY_bin.135.fa	82.53	0.67	514
F68D_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_5	F68D_bin.98.fa	F68D_bin.98.fa	84.97	1.72	515
F68G_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_3	F68G_bin.16.fa	F68G_bin.16.fa	85.57	0.67	516
F68H_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_7	F68H_bin.38.fa	F68H_bin.38.fa	82.42	0.67	517
F68P_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_8	F68P_bin.33.fa	F68P_bin.33.fa	73.01	3.02	518
F68V_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_4	F68V_bin.81.fa	F68V_bin.81.fa	55.35	2.9	519

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68W_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_6	F68W_bin.23.fa	F68W_bin.23.fa	87.25	0.67	520
F6DH_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_6	F68W_bin.23.fa	F6DH_bin.55.fa	66.11	0	521
F6DG_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_1	F6DG_bin.26.fa	F6DG_bin.26.fa	82.21	0	522
F6MY_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	598	598_2	F6MY_bin.67.fa	F6MY_bin.67.fa	60.6	0.69	523
F68M_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	600	600_0	F68M_bin.34.fa	F68M_bin.34.fa	97.99	2.01	524
F6MX_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s__	N/A	601	601_0	F6MX_bin.56.fa	F6MX_bin.56.fa	98.32	0.67	525
F6D7_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_2	F6D7_bin.70.fa	F6D7_bin.70.fa	79.08	2.35	525

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F68C_bin.77.fa	51.38	0	525
F68F_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F68F_bin.83.fa	85.23	0.67	525
F68J_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F68J_bin.1.fa	74.38	1.34	525
F68N_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F68N_bin.23.fa	92.8	2.24	525
F68T_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F68T_bin.14.fa	85.91	0.67	525

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F6DB_bin.70.fa	84.56	0	525
F6DE_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_Ruminiclostridium_C	s_Ruminiclostridium_Csp000435295	GCA_000435295.1	599	599_1	F6DB_bin.70.fa	F6DE_bin.35.fa	87.25	0.67	525
F68D_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_2	F68D_bin.16.fa	F68D_bin.16.fa	87.18	0.4	526
F68R_bin.125	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_4	F68R_bin.125.fa	F68R_bin.125.fa	86.34	1.51	527
F68W_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_1	F68W_bin.51.fa	F68W_bin.51.fa	83.82	0.17	528
F6DH_bin.127	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_1	F68W_bin.51.fa	F6DH_bin.127.fa	82.51	0	529
F6D7_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_3	F6D7_bin.85.fa	F6D7_bin.85.fa	88.26	0	530
F6D9_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s__	N/A	654	654_5	F6D9_bin.46.fa	F6D9_bin.46.fa	80.95	0	531

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s_UBA1777 sp003150355	GCA_003150355.1	653	653_4	F68D_bin.100.fa	F68D_bin.100.fa	79.73	2.55	531
F68W_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s_UBA1777 sp003150355	GCA_003150355.1	653	653_1	F68W_bin.12.fa	F68W_bin.12.fa	90.6	0	531
F6DH_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s_UBA1777 sp003150355	GCA_003150355.1	653	653_1	F68W_bin.12.fa	F6DH_bin.57.fa	90.6	1.34	531
F6D8_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s_UBA1777 sp003150355	GCA_003150355.1	653	653_3	F6D8_bin.2.fa	F6D8_bin.2.fa	74.34	1.72	531
F6MY_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA1777	s_UBA1777 sp003150355	GCA_003150355.1	653	653_2	F6MY_bin.79.fa	F6MY_bin.79.fa	89.57	0.71	531
F68D_bin.15	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA5446	s__	N/A	650	650_1	F68G_bin.2.fa	F68D_bin.15.fa	88.39	1.34	532
F68G_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA5446	s__	N/A	650	650_1	F68G_bin.2.fa	F68G_bin.2.fa	85.32	0.67	533
F68V_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA5446	s__	N/A	650	650_2	F68V_bin.82.fa	F68V_bin.82.fa	87.03	1.01	534

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.34	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA5446	s__	N/A	651	651_1	F68V_bin.27.fa	F68D_bin.34.fa	54.02	0	535
F68V_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA5446	s__	N/A	651	651_1	F68V_bin.27.fa	F68V_bin.27.fa	92.26	0	536
F68V_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s__	N/A	656	656_0	F68V_bin.51.fa	F68V_bin.51.fa	57.05	1.72	537
F68C_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_10	F68C_bin.23.fa	F68C_bin.23.fa	72.45	4.31	537
F68D_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_1	F68D_bin.54.fa	F68D_bin.54.fa	82.27	2.13	537
F68F_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_12	F68F_bin.3.fa	F68F_bin.3.fa	69.98	2.85	537
F68G_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_6	F68G_bin.77.fa	F68G_bin.77.fa	90.44	1.01	537
F68H_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_2	F68H_bin.61.fa	F68H_bin.61.fa	78.06	0.67	537

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_8	F68M_bin.16.fa	F68M_bin.16.fa	88.46	0	537
F68R_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_11	F68R_bin.2.fa	F68R_bin.2.fa	88.59	0.67	537
F68W_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_3	F68W_bin.82.fa	F68W_bin.82.fa	89.26	0.67	537
F6DH_bin.104	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_3	F68W_bin.82.fa	F6DH_bin.104.fa	89.26	1.01	537
F6D7_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_4	F6D7_bin.79.fa	F6D7_bin.79.fa	86.52	0.34	537
F6D8_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_9	F6D8_bin.80.fa	F6D8_bin.80.fa	75.72	0.95	537
F6DA_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_5	F6DA_bin.74.fa	F6DA_bin.74.fa	77.92	1.34	537

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.114	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Oscillospiraceae	g_UBA738	s_UBA738 sp003522945	GCA_003522945.1	655	655_7	F6MY_bin.114.fa	F6MY_bin.114.fa	90.6	0.67	537
F6MX_bin.137	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_QAMX01	g_QAMX01	s_QAMX01 sp003149835	GCA_003149835.1	575	575_0	F6MX_bin.137.fa	F6MX_bin.137.fa	50.89	0.67	537
F6MY_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	179	179_0	F6MY_bin.75.fa	F6MY_bin.75.fa	91.39	0	538
F68G_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	415	415_0	F68G_bin.81.fa	F68G_bin.81.fa	74.6	1.79	539
F68T_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	461	461_0	F68T_bin.100.fa	F68T_bin.100.fa	81.57	2.54	540
F68V_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	463	463_1	F68V_bin.40.fa	F68V_bin.40.fa	56.79	1.72	541
F6DE_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	463	463_1	F68V_bin.40.fa	F6DE_bin.94.fa	54.35	1.9	542
F68J_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	576	576_1	F68J_bin.28.fa	F68J_bin.28.fa	67.86	1.79	543
F6MY_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	576	576_2	F6MY_bin.53.fa	F6MY_bin.53.fa	52.68	0	544

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	578	578_0	F6DG_bin.72.fa	F6DG_bin.72.fa	91.31	0.11	545
F6DG_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	596	596_0	F6DG_bin.108.fa	F6DG_bin.108.fa	73.29	2.01	546
F6DA_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g__	s__	N/A	603	603_0	F6DA_bin.33.fa	F6DA_bin.33.fa	93.96	1.69	547
F68U_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Anaerotruncus	s_Anaerotruncus colihominis	GCF_000154565.1	453	453_0	F68U_bin.113.fa	F68U_bin.113.fa	61.8	4.77	547
F6MX_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Anaerotruncus	s_Anaerotruncus rubiinfantis	GCF_900078395.1	451	451_0	F6MX_bin.17.fa	F6MX_bin.17.fa	57.97	3.19	547
F68M_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Anaerotruncus	s_Anaerotruncus sp900199635	GCF_900199635.1	452	452_0	F68M_bin.23.fa	F68M_bin.23.fa	68.21	3.26	547
F68C_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_3	F68C_bin.14.fa	F68C_bin.14.fa	73.04	0	548
F68F_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_7	F68F_bin.67.fa	F68F_bin.67.fa	85.68	0	549

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_5	F68G_bin.64.fa	F68G_bin.64.fa	71.75	0.62	550
F68H_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_4	F68H_bin.59.fa	F68H_bin.59.fa	78.97	0	551
F68K_bin.93	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_1	F6D7_bin.76.fa	F68K_bin.93.fa	72.93	0.4	552
F6D7_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_1	F6D7_bin.76.fa	F6D7_bin.76.fa	85.01	0.34	553
F6D8_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_8	F6D8_bin.1.fa	F6D8_bin.1.fa	78.64	0	554
F6DA_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_9	F6DA_bin.78.fa	F6DA_bin.78.fa	81.99	0.34	555
F6DE_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_10	F6DE_bin.64.fa	F6DE_bin.64.fa	67.67	0	556
F68N_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_6	F6MX_bin.46.fa	F68N_bin.4.fa	84.28	0.34	557
F6MX_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_6	F6MX_bin.46.fa	F6MX_bin.46.fa	87.02	0	558
F68U_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_2	F6MY_bin.38.fa	F68U_bin.4.fa	83.67	0.67	559

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	593	593_2	F6MY_bin.38.fa	F6MY_bin.38.fa	83.33	0	560
F68D_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	594	594_3	F68D_bin.13.fa	F68D_bin.13.fa	85.85	1.34	561
F68V_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	594	594_2	F68V_bin.56.fa	F68V_bin.56.fa	78.73	1.34	562
F68W_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	594	594_1	F68W_bin.19.fa	F68W_bin.19.fa	86.8	0	563
F6DH_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Angelakisella	s__	N/A	594	594_1	F68W_bin.19.fa	F6DH_bin.67.fa	81.71	0	564
F68U_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-115	s_CAG-115 sp003507295	GCA_003507295.1	181	181_1	F68U_bin.98.fa	F68U_bin.98.fa	98.66	0.67	564
F68W_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-115	s_CAG-115 sp003507295	GCA_003507295.1	181	181_1	F68U_bin.98.fa	F68W_bin.3.fa	97.32	0.67	564
F6DH_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-115	s_CAG-115 sp003507295	GCA_003507295.1	181	181_1	F68U_bin.98.fa	F6DH_bin.5.fa	96.64	0.67	564
F6D7_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-115	s_CAG-115 sp003507295	GCA_003507295.1	181	181_2	F6D7_bin.28.fa	F6D7_bin.28.fa	98.66	1.01	564

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-353	s_CAG-353 sp900066885	GCA_900066885.1	494	494_1	F6D8_bin.52.fa	F6D8_bin.52.fa	97.27	0	564
F6D9_bin.44	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_CAG-353	s_CAG-353 sp900066885	GCA_900066885.1	494	494_1	F6D8_bin.52.fa	F6D9_bin.44.fa	72.68	2.57	564
F68V_bin.126	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_D5	s_D5 sp900113995	GCF_900113995.1	450	450_1	F6DB_bin.45.fa	F68V_bin.126.fa	52.15	0.86	564
F6DB_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_D5	s_D5 sp900113995	GCF_900113995.1	450	450_1	F6DB_bin.45.fa	F6DB_bin.45.fa	95.3	0.67	564
F6MY_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_D5	s_D5 sp900113995	GCF_900113995.1	450	450_1	F6DB_bin.45.fa	F6MY_bin.18.fa	91.37	0.67	564
F68T_bin.95	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	580	580_2	F68T_bin.95.fa	F68T_bin.95.fa	52.64	0.5	565
F6D7_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	580	580_13	F6D7_bin.74.fa	F6D7_bin.74.fa	93.76	4.37	566
F68C_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_6	F68C_bin.27.fa	F68C_bin.27.fa	91.16	0.34	567
F68F_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_7	F68F_bin.40.fa	F68F_bin.40.fa	58.04	0	568

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_1	F68K_bin.110.fa	F68K_bin.110.fa	67.86	0	569
F68N_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_4	F68N_bin.76.fa	F68N_bin.76.fa	93.98	1.87	570
F68U_bin.45	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_5	F68U_bin.45.fa	F68U_bin.45.fa	80.01	1.7	571
F6DA_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_8	F6DA_bin.28.fa	F6DA_bin.28.fa	87.76	0.68	572
F6DE_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_2	F6DE_bin.41.fa	F6DE_bin.41.fa	70.89	0	573
F6DH_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	582	582_3	F6DH_bin.53.fa	F6DH_bin.53.fa	64.64	3.57	574
F6MY_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	583	583_11	F6MY_bin.101.fa	F6MY_bin.101.fa	67.48	0	575
F68W_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	584	584_1	F68W_bin.8.fa	F68W_bin.8.fa	94.8	1.87	576
F6DH_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s__	N/A	584	584_1	F68W_bin.8.fa	F6DH_bin.56.fa	80.92	0	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_5	F68F_bin.54.fa	F68F_bin.54.fa	57.14	0	577
F68H_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_4	F68H_bin.27.fa	F68H_bin.27.fa	78.04	1.79	577
F68K_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_1	F68K_bin.5.fa	F68K_bin.5.fa	73.29	0.68	577
F68N_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_6	F68N_bin.42.fa	F68N_bin.42.fa	57.5	1.79	577
F68P_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_2	F68P_bin.7.fa	F68P_bin.7.fa	97.52	1.53	577
F68U_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_8	F68U_bin.64.fa	F68U_bin.64.fa	81.31	4.46	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_7	F6D7_bin.41.fa	F6D7_bin.41.fa	70.42	0.77	577
F6DA_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_9	F6DA_bin.51.fa	F6DA_bin.51.fa	98.49	2.72	577
F6DB_bin.98	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_3	F6DB_bin.98.fa	F6DB_bin.98.fa	98.21	1.87	577
F6DG_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii C	GCF_000162015.1	581	581_10	F6DG_bin.85.fa	F6DG_bin.85.fa	65.67	0.32	577
F68P_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii D	GCF_002549755.1	584	584_2	F68P_bin.41.fa	F68P_bin.41.fa	93.01	1.02	577
F68R_bin.112	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii D	GCF_002549755.1	584	584_3	F68R_bin.112.fa	F68R_bin.112.fa	75.52	3.57	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D8_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii D	GCF_002549755.1	584	584_4	F6D8_bin.23.fa	F6D8_bin.23.fa	57.14	0	577
F68C_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii E	GCF_002550035.1	579	579_1	F68C_bin.64.fa	F68C_bin.64.fa	52.47	1.79	577
F6MY_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii E	GCF_002550035.1	579	579_2	F6MY_bin.69.fa	F6MY_bin.69.fa	58.39	0	577
F68C_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_10	F68C_bin.103.fa	F68C_bin.103.fa	58.33	1.84	577
F68E_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_5	F68E_bin.1.fa	F68E_bin.1.fa	87.64	4.33	577
F68F_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_3	F68F_bin.66.fa	F68F_bin.66.fa	86.81	3.22	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_9	F68G_bin.25.fa	F68G_bin.25.fa	61.85	3.74	577
F68J_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_12	F68J_bin.69.fa	F68J_bin.69.fa	95.63	0.17	577
F68K_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_1	F68K_bin.73.fa	F68K_bin.73.fa	62.07	1.42	577
F68N_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_4	F68N_bin.39.fa	F68N_bin.39.fa	94.1	2.04	577
F68P_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_11	F68P_bin.43.fa	F68P_bin.43.fa	92.43	0.91	577
F68R_bin.114	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_6	F68R_bin.114.fa	F68R_bin.114.fa	58.36	1.79	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_7	F6DB_bin.69.fa	F6DB_bin.69.fa	89.59	4.95	577
F6DE_bin.8	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii G	GCA_003293635.1	580	580_8	F6DE_bin.8.fa	F6DE_bin.8.fa	92.09	3.64	577
F6DA_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii I	GCA_003287405.1	583	583_10	F6DA_bin.13.fa	F6DA_bin.13.fa	97.73	0.84	577
F68C_bin.73	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_4	F68C_bin.73.fa	F68C_bin.73.fa	68.83	2.78	577
F68G_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_5	F68G_bin.76.fa	F68G_bin.76.fa	91.84	1.87	577
F68K_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_9	F68K_bin.1.fa	F68K_bin.1.fa	92.12	0	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.117	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_6	F68R_bin.117.fa	F68R_bin.117.fa	88.18	0.51	577
F68U_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_7	F68U_bin.28.fa	F68U_bin.28.fa	79.2	4.65	577
F68W_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_8	F68W_bin.13.fa	F68W_bin.13.fa	94.33	1.53	577
F6DH_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_8	F68W_bin.13.fa	F6DH_bin.12.fa	86.96	2.68	577
F6D8_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_1	F6DB_bin.21.fa	F6D8_bin.82.fa	51.25	0	577
F6DB_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_1	F6DB_bin.21.fa	F6DB_bin.21.fa	96.12	1.52	577

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_2	F6DE_bin.10.fa	F6DE_bin.10.fa	95.27	1.87	577
F6MY_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Faecalibacterium	s_Faecalibacterium prausnitzii K	GCA_003312465.1	583	583_3	F6MY_bin.23.fa	F6MY_bin.23.fa	53.63	3.57	577
F68D_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Fournierella	s__	N/A	577	577_3	F68D_bin.85.fa	F68D_bin.85.fa	52.54	2.68	578
F68M_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Fournierella	s__	N/A	577	577_1	F68M_bin.85.fa	F68M_bin.85.fa	99.32	1.02	579
F6MX_bin.126	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Fournierella	s__	N/A	577	577_2	F6MX_bin.126.fa	F6MX_bin.126.fa	95.24	0	580
F68F_bin.76	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	586	586_3	F68F_bin.76.fa	F68F_bin.76.fa	89.54	3.65	581
F6D7_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	586	586_4	F6D7_bin.1.fa	F6D7_bin.1.fa	91.61	0.81	582
F6DB_bin.115	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	586	586_1	F6DB_bin.115.fa	F6DB_bin.115.fa	79.71	3.1	583
F6MY_bin.86	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	586	586_2	F6MY_bin.86.fa	F6MY_bin.86.fa	85.14	2.27	584

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.22	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	587	587_3	F68F_bin.22.fa	F68F_bin.22.fa	81.8	3.4	585
F68V_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	587	587_2	F68V_bin.100.fa	F68V_bin.100.fa	70.75	0	586
F68W_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	587	587_1	F68W_bin.77.fa	F68W_bin.77.fa	94.19	2.04	587
F6DH_bin.102	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	587	587_1	F68W_bin.77.fa	F6DH_bin.102.fa	92.38	2.45	588
F68R_bin.127	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_5	F68R_bin.127.fa	F68R_bin.127.fa	88.38	4.25	589
F68T_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_1	F68T_bin.88.fa	F68T_bin.88.fa	96.6	0	590
F68W_bin.59	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_4	F68W_bin.59.fa	F68W_bin.59.fa	70.54	0	591
F6DH_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_4	F68W_bin.59.fa	F6DH_bin.20.fa	57.31	0	592
F6DB_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_2	F6DB_bin.27.fa	F6DB_bin.27.fa	72.55	1.02	593
F6DE_bin.30	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	589	589_3	F6DE_bin.30.fa	F6DE_bin.30.fa	95.24	0.68	594

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s__	N/A	590	590_0	F68C_bin.40.fa	F68C_bin.40.fa	76.67	2.89	595
F68D_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmigerformicilis	GCF_900167555.1	588	588_4	F68D_bin.108.fa	F68D_bin.108.fa	68.16	0	595
F68K_bin.10	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmigerformicilis	GCF_900167555.1	588	588_3	F68K_bin.10.fa	F68K_bin.10.fa	93.2	0.34	595
F68P_bin.12	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmigerformicilis	GCF_900167555.1	588	588_5	F68P_bin.12.fa	F68P_bin.12.fa	76.85	1.59	595
F6DA_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmigerformicilis	GCF_900167555.1	588	588_1	F6DA_bin.52.fa	F6DA_bin.52.fa	89.47	0.68	595
F6MY_bin.1	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmigerformicilis	GCF_900167555.1	588	588_2	F6MY_bin.1.fa	F6MY_bin.1.fa	83.9	0.68	595
F68C_bin.42	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_5	F68C_bin.42.fa	F68C_bin.42.fa	91.1	2.04	595
F68F_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_3	F68F_bin.9.fa	F68F_bin.9.fa	96.64	0.68	595

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_3	F68F_bin.9.fa	F68V_bin.87.fa	84.43	3.06	595
F6MY_bin.134	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_3	F68F_bin.9.fa	F6MY_bin.134.fa	95.56	2.27	595
F68R_bin.116	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_4	F68R_bin.116.fa	F68R_bin.116.fa	74.52	3.13	595
F68W_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_1	F68W_bin.79.fa	F68W_bin.79.fa	74.25	0.89	595
F6DH_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_1	F68W_bin.79.fa	F6DH_bin.41.fa	78.39	4.08	595
F68P_bin.23	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_2	F6DB_bin.19.fa	F68P_bin.23.fa	60.71	1.79	595
F6DB_bin.19	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_2	F6DB_bin.19.fa	F6DB_bin.19.fa	96.58	0.28	595

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Gemmiger	s_Gemmiger sp003476825	GCA_003476825.1	585	585_6	F6DG_bin.32.fa	F6DG_bin.32.fa	94.53	1.02	595
F68F_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_5	F68F_bin.20.fa	F68F_bin.20.fa	55.68	0.67	595
F68N_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_2	F68N_bin.58.fa	F68N_bin.58.fa	93.94	0.67	595
F68P_bin.28	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_3	F68P_bin.28.fa	F68P_bin.28.fa	77.84	0.9	595
F68K_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_1	F68T_bin.35.fa	F68K_bin.88.fa	97.99	1.45	595
F68T_bin.35	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_1	F68T_bin.35.fa	F68T_bin.35.fa	91.32	0	595

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_6	F68U_bin.74.fa	F68U_bin.74.fa	74.46	2.57	595
F6MX_bin.116	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_7	F6MX_bin.116.fa	F6MX_bin.116.fa	92.46	1.34	595
F6MY_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus massiliensis	GCF_900148495.1	465	465_4	F6MY_bin.57.fa	F6MY_bin.57.fa	87.9	2.01	595
F68C_bin.41	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus sp000435195	GCA_000435195.1	464	464_1	F68C_bin.41.fa	F68C_bin.41.fa	90.2	1.34	595
F68R_bin.115	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Negativibacillus	s_Negativibacillus sp000435195	GCA_000435195.1	464	464_2	F68R_bin.115.fa	F68R_bin.115.fa	77.29	3.47	595
F68C_bin.25	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_3	F68C_bin.25.fa	F68C_bin.25.fa	97.65	0	595

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.33	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_5	F68M_bin.33.fa	F68M_bin.33.fa	98.93	0	595
F68T_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_1	F68T_bin.51.fa	F68T_bin.51.fa	97.65	0	595
F6D8_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_1	F68T_bin.51.fa	F6D8_bin.27.fa	96.98	0	595
F68N_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_2	F68U_bin.96.fa	F68N_bin.31.fa	93.83	0.43	595
F68U_bin.96	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_2	F68U_bin.96.fa	F68U_bin.96.fa	98.99	0	595
F68W_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_2	F68U_bin.96.fa	F68W_bin.57.fa	98.99	0	595

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_2	F68U_bin.96.fa	F6DH_bin.64.fa	98.83	0	595
F6D9_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminiclostridium_E	s_Ruminiclostridium_Esiraeum	GCF_000154325.1	182	182_4	F6D9_bin.54.fa	F6D9_bin.54.fa	93.96	0	595
F68P_bin.61	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s__	N/A	374	374_0	F68P_bin.61.fa	F68P_bin.61.fa	88.79	0.73	596
F68R_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s__	N/A	493	493_1	F6D8_bin.26.fa	F68R_bin.80.fa	92.6	0	597
F6D8_bin.26	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s__	N/A	493	493_1	F6D8_bin.26.fa	F6D8_bin.26.fa	98.64	0	598
F68G_bin.13	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_sp002438605	GCA_002438605.1	487	487_0	F68G_bin.13.fa	F68G_bin.13.fa	97.99	0	598
F6D8_bin.38	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus_C	s__	N/A	483	483_6	F6D8_bin.38.fa	F6D8_bin.38.fa	96.64	0.73	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.43	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_3	F68F_bin.43.fa	F68F_bin.43.fa	97.99	0	599
F68G_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_8	F68G_bin.68.fa	F68G_bin.68.fa	93.85	0.06	599
F68J_bin.53	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_9	F68J_bin.53.fa	F68J_bin.53.fa	97.99	0	599
F68K_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_6	F68K_bin.81.fa	F68K_bin.81.fa	53.68	0	599
F68N_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_4	F68N_bin.79.fa	F68N_bin.79.fa	97.99	0	599
F6DE_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_4	F68N_bin.79.fa	F6DE_bin.57.fa	97.32	0	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.99	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_1	F68U_bin.99.fa	F68U_bin.99.fa	73.1	0.4	599
F68W_bin.89	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_7	F68W_bin.89.fa	F68W_bin.89.fa	73.82	2.01	599
F6D9_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_10	F6D9_bin.47.fa	F6D9_bin.47.fa	69.51	0.43	599
F6DA_bin.88	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_5	F6DA_bin.88.fa	F6DA_bin.88.fa	97.32	0	599
F6MX_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Callidus	GCF_000468015.1	485	485_2	F6MX_bin.47.fa	F6MX_bin.47.fa	87.7	4.87	599
F68K_bin.95	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_4	F68U_bin.68.fa	F68K_bin.95.fa	97.99	0	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_4	F68U_bin.68.fa	F68U_bin.68.fa	97.99	0	599
F6D7_bin.54	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_5	F6D7_bin.54.fa	F6D7_bin.54.fa	97.99	0.13	599
F6D9_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_1	F6DA_bin.95.fa	F6D9_bin.68.fa	94.23	2.15	599
F6DA_bin.95	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_1	F6DA_bin.95.fa	F6DA_bin.95.fa	97.99	0	599
F6DB_bin.51	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_2	F6DB_bin.51.fa	F6DB_bin.51.fa	97.32	0	599
F6MY_bin.125	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000433635	GCA_000433635.1	483	483_3	F6MY_bin.125.fa	F6MY_bin.125.fa	96.64	0	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.87	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000437175	GCA_000437175.1	486	486_0	F68C_bin.87.fa	F68C_bin.87.fa	82.89	0.67	599
F6DG_bin.17	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000437255	GCA_000437255.1	488	488_0	F6DG_bin.17.fa	F6DG_bin.17.fa	85.23	0	599
F68H_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000980705	GCA_000980705.1	484	484_1	F68P_bin.18.fa	F68H_bin.67.fa	90.6	0.67	599
F68P_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000980705	GCA_000980705.1	484	484_1	F68P_bin.18.fa	F68P_bin.18.fa	92.62	0	599
F68R_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000980705	GCA_000980705.1	484	484_1	F68P_bin.18.fa	F68R_bin.46.fa	54.36	0	599
F68V_bin.124	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Csp000980705	GCA_000980705.1	484	484_1	F68P_bin.18.fa	F68V_bin.124.fa	51.23	0	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.109	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_1	F68F_bin.109.fa	F68F_bin.109.fa	65.75	0	599
F68H_bin.52	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_6	F68H_bin.52.fa	F68H_bin.52.fa	95.48	0.8	599
F68N_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_9	F68N_bin.71.fa	F68N_bin.71.fa	55.32	0.58	599
F68R_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_2	F68R_bin.39.fa	F68R_bin.39.fa	89.04	0	599
F6D7_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_7	F6D7_bin.56.fa	F6D7_bin.56.fa	96.58	0	599
F6D8_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_3	F6D8_bin.24.fa	F6D8_bin.24.fa	77.84	2.4	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.47	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_4	F6DB_bin.47.fa	F6DB_bin.47.fa	98.63	0	599
F6DE_bin.6	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_5	F6DE_bin.6.fa	F6DE_bin.6.fa	98.63	0.68	599
F6MY_bin.124	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruminococcus	s_Ruminococcus_Dbicirculans	GCF_000723465.1	495	495_8	F6MY_bin.124.fa	F6MY_bin.124.fa	95.89	0	599
F68D_bin.2	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Rutheibacterium	s_Rutheibacterium_lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68D_bin.2.fa	93.84	0.74	599
F68G_bin.79	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Rutheibacterium	s_Rutheibacterium_lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68G_bin.79.fa	89.28	2.78	599
F68K_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Rutheibacterium	s_Rutheibacterium_lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68K_bin.64.fa	85.47	0.45	599

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruthenibacterium	s_Ruthenibacterium lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68M_bin.62.fa	91.84	0	599
F68T_bin.96	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruthenibacterium	s_Ruthenibacterium lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68T_bin.96.fa	82.97	1.52	599
F68V_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruthenibacterium	s_Ruthenibacterium lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F68V_bin.4.fa	92.18	0.68	599
F6DB_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruthenibacterium	s_Ruthenibacterium lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F6DB_bin.39.fa	87.84	0.79	599
F6DE_bin.82	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_Ruthenibacterium	s_Ruthenibacterium lactatiformans	GCF_000949455.1	283	283_1	F6DE_bin.82.fa	F6DE_bin.82.fa	96.71	0.57	599
F68T_bin.85	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_UBA1394	s__	N/A	139	139_0	F68T_bin.85.fa	F68T_bin.85.fa	94.41	0	600
F6DG_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_UBA866	s__	N/A	180	180_1	F6MX_bin.68.fa	F6DG_bin.97.fa	84.11	2.57	601

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_UBA866	s__	N/A	180	180_1	F6MX_bin.68.fa	F6MX_bin.68.fa	96.42	0.22	602
F6MY_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_Ruminococcaceae	g_UBA866	s__	N/A	180	180_2	F6MY_bin.68.fa	F6MY_bin.68.fa	79.75	2.13	603
F68V_bin.121	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_UBA644	g__	s__	N/A	80	80_0	F68V_bin.121.fa	F68V_bin.121.fa	55.59	1.23	604
F68V_bin.48	d_Bacteria	p_Firmicutes	c_Clostridia	o_Oscillospirales	f_UBA644	g_UBA644	s_UBA644 sp002299265	GCA_002299265.1	574	574_0	F68V_bin.48.fa	F68V_bin.48.fa	80.31	1.01	604
F68G_bin.7	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	123	123_1	F68G_bin.7.fa	F68G_bin.7.fa	96.45	0.35	605
F68H_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	123	123_2	F68H_bin.77.fa	F68H_bin.77.fa	67.99	1.42	606
F68V_bin.55	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	123	123_3	F68V_bin.55.fa	F68V_bin.55.fa	81.81	4.26	607
F68F_bin.4	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	127	127_1	F68F_bin.4.fa	F68F_bin.4.fa	98.23	0	608

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68K_bin.16	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	127	127_1	F68F_bin.4.fa	F68K_bin.16.fa	88.5	0.71	609
F68N_bin.18	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	127	127_1	F68F_bin.4.fa	F68N_bin.18.fa	90.17	1.65	610
F6DB_bin.77	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	127	127_1	F68F_bin.4.fa	F6DB_bin.77.fa	88.25	0.24	611
F6MX_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	271	271_0	F6MX_bin.75.fa	F6MX_bin.75.fa	50.52	0	612
F68U_bin.91	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g__	s__	N/A	573	573_0	F68U_bin.91.fa	F68U_bin.91.fa	92.13	0.71	613
F6MX_bin.97	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	189	189_0	F6MX_bin.97.fa	F6MX_bin.97.fa	73.08	0.71	614
F68V_bin.80	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	190	190_0	F68V_bin.80.fa	F68V_bin.80.fa	71.26	0.53	615

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.94	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_3	F68D_bin.94.fa	F68D_bin.94.fa	95.39	0.35	616
F68K_bin.105	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_7	F68K_bin.105.fa	F68K_bin.105.fa	94.86	1.06	617
F6DA_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_5	F6DA_bin.60.fa	F6DA_bin.60.fa	92.2	0.02	618
F6DG_bin.57	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_6	F6DG_bin.57.fa	F6DG_bin.57.fa	89.87	0	619
F68W_bin.106	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_4	F6DH_bin.111.fa	F68W_bin.106.fa	88.59	2.72	620
F6DH_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_4	F6DH_bin.111.fa	F6DH_bin.111.fa	83.08	0	621
F6DH_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_1	F6DH_bin.65.fa	F6DH_bin.65.fa	73	0	622

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	456	456_2	F6MX_bin.108.fa	F6MX_bin.108.fa	93.68	2.84	623
F6DB_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	457	457_0	F6DB_bin.68.fa	F6DB_bin.68.fa	97.52	0	624
F68R_bin.100	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	458	458_1	F68R_bin.100.fa	F68R_bin.100.fa	53.62	4.96	625
F68T_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s__	N/A	458	458_2	F68T_bin.83.fa	F68T_bin.83.fa	73.32	0.47	626
F68K_bin.69	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s_CAG-145 sp000435715	GCA_000435715.1	188	188_1	F68K_bin.69.fa	F68K_bin.69.fa	97.16	0	626
F6DE_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s_CAG-145 sp000435715	GCA_000435715.1	188	188_1	F68K_bin.69.fa	F6DE_bin.65.fa	93.36	2.33	626
F6DB_bin.9	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s_CAG-145 sp000435715	GCA_000435715.1	188	188_2	F6DB_bin.9.fa	F6DB_bin.9.fa	94.9	0	626

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DG_bin.58	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_CAG-145	s_CAG-145 sp000435715	GCA_000435715.1	188	188_3	F6DG_bin.58.fa	F6DG_bin.58.fa	56.47	0.78	626
F68M_bin.70	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Eubacterium_A	s__	N/A	569	569_0	F68M_bin.70.fa	F68M_bin.70.fa	98.94	1.06	627
F68N_bin.68	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Eubacterium_A	s__	N/A	570	570_0	F68N_bin.68.fa	F68N_bin.68.fa	95.17	1.7	628
F68K_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Eubacterium_M	s__	N/A	7	7_0	F68K_bin.66.fa	F68K_bin.66.fa	96.45	0	629
F6DB_bin.56	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Mogibacterium	s__	N/A	661	661_0	F6DB_bin.56.fa	F6DB_bin.56.fa	99.29	0	630
F68D_bin.46	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Mogibacterium	s_Mogibacterium sp002299625	GCA_002299625.1	268	268_1	F68D_bin.46.fa	F68D_bin.46.fa	97.52	0	630
F68G_bin.21	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Mogibacterium	s_Mogibacterium sp002299625	GCA_002299625.1	268	268_1	F68D_bin.46.fa	F68G_bin.21.fa	90.78	0	630

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68M_bin.50	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Mogibacterium	s_Mogibacterium sp900315625	GCA_900315625.1	660	660_1	F68M_bin.50.fa	F68M_bin.50.fa	98.58	0.71	630
F6D8_bin.5	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_Mogibacterium	s_Mogibacterium sp900315625	GCA_900315625.1	660	660_2	F6D8_bin.5.fa	F6D8_bin.5.fa	95.74	3.9	630
F68F_bin.113	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_UBA1191	s__	N/A	380	380_0	F68F_bin.113.fa	F68F_bin.113.fa	54.73	1.06	631
F6D9_bin.24	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_UBA1191	s__	N/A	124	124_0	F6D9_bin.24.fa	F6D9_bin.24.fa	89.92	0.18	632
F6DE_bin.72	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_UBA1191	s__	N/A	125	125_0	F6DE_bin.72.fa	F6DE_bin.72.fa	91.98	2.48	633
F6DE_bin.81	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_UBA1191	s__	N/A	459	459_0	F6DE_bin.81.fa	F6DE_bin.81.fa	82.12	0	634
F6DE_bin.74	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Anaerovoracaceae	g_UBA1191	s_UBA1191 sp900066305	GCA_900066305.1	126	126_0	F6DE_bin.74.fa	F6DE_bin.74.fa	93.19	2.13	634

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.27	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Peptostreptococcaceae	g_Intestinibacter	s_Intestinibacter bartlettii	GCF_000154445.1	195	195_1	F68T_bin.27.fa	F68T_bin.27.fa	92.43	2.7	634
F6DG_bin.20	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Peptostreptococcaceae	g_Intestinibacter	s_Intestinibacter bartlettii	GCF_000154445.1	195	195_2	F6DG_bin.20.fa	F6DG_bin.20.fa	94.56	3.54	634
F6D9_bin.75	d_Bacteria	p_Firmicutes	c_Clostridia	o_Peptostreptococcales	f_Peptostreptococcaceae	g_Romboutsia	s_Romboutsia timonensis	GCF_900106845.1	196	196_0	F6D9_bin.75.fa	F6D9_bin.75.fa	89.61	4.58	634
F68V_bin.103	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-245	s_CAG-245 sp000435175	GCA_000435175.1	220	220_2	F68V_bin.103.fa	F68V_bin.103.fa	79.46	0.67	634
F6DB_bin.101	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-245	s_CAG-245 sp000435175	GCA_000435175.1	220	220_3	F6DB_bin.101.fa	F6DB_bin.101.fa	78.79	0.67	634
F6MX_bin.78	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-245	s_CAG-245 sp000435175	GCA_000435175.1	220	220_1	F6MX_bin.78.fa	F6MX_bin.78.fa	78.79	1.34	634
F6MY_bin.3	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-245	s_CAG-245 sp000435175	GCA_000435175.1	220	220_1	F6MX_bin.78.fa	F6MY_bin.3.fa	73.62	1.86	634

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.111	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp000431335	GCA_000431335.1	226	226_0	F68V_bin.111.fa	F68V_bin.111.fa	73.42	3.36	634
F6DE_bin.71	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp000435535	GCA_000435535.1	225	225_0	F6DE_bin.71.fa	F6DE_bin.71.fa	68.68	1.79	634
F68V_bin.32	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp000437215	GCA_000437215.1	228	228_0	F68V_bin.32.fa	F68V_bin.32.fa	74.54	3.15	634
F6MY_bin.62	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp000438255	GCA_000438255.1	224	224_0	F6MY_bin.62.fa	F6MY_bin.62.fa	80.72	2.21	634
F68T_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp001916035	GCA_001916035.1	227	227_0	F68T_bin.65.fa	F68T_bin.65.fa	77.12	1.68	634
F6MY_bin.14	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-269	s_CAG-269 sp001916065	GCA_001916065.1	223	223_0	F6MY_bin.14.fa	F6MY_bin.14.fa	77.3	2.84	634
F68C_bin.39	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-273	s_CAG-273 sp000437855	GCA_000437855.1	219	219_1	F68R_bin.108.fa	F68C_bin.39.fa	78.12	0.89	634

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.108	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-273	s_CAG-273 sp000437855	GCA_000437855.1	219	219_1	F68R_bin.108.fa	F68R_bin.108.fa	78.12	0.89	634
F6MX_bin.118	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-273	s_CAG-273 sp000437855	GCA_000437855.1	219	219_1	F68R_bin.108.fa	F6MX_bin.118.fa	78.12	1.57	634
F6MX_bin.31	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-273	s_CAG-273 sp000438355	GCA_000438355.1	197	197_0	F6MX_bin.31.fa	F6MX_bin.31.fa	74.71	0.67	634
F68R_bin.40	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-452	s_CAG-452 sp000434035	GCA_000434035.1	218	218_1	F6MX_bin.66.fa	F68R_bin.40.fa	79.69	0.22	634
F68V_bin.110	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-452	s_CAG-452 sp000434035	GCA_000434035.1	218	218_1	F6MX_bin.66.fa	F68V_bin.110.fa	79.02	2.91	634
F6D8_bin.60	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-452	s_CAG-452 sp000434035	GCA_000434035.1	218	218_1	F6MX_bin.66.fa	F6D8_bin.60.fa	79.69	0.22	634
F6MX_bin.66	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB7	f_CAG-508	g_CAG-452	s_CAG-452 sp000434035	GCA_000434035.1	218	218_1	F6MX_bin.66.fa	F6MX_bin.66.fa	80.36	0.22	634

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.107	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB77	f_CAG-508	g_CAG-492	s_CAG-492 sp000434015	GCA_000434015.1	221	221_1	F68C_bin.107.fa	F68C_bin.107.fa	78.62	1.9	634
F6D8_bin.83	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB77	f_CAG-508	g_CAG-492	s_CAG-492 sp000434015	GCA_000434015.1	221	221_1	F68C_bin.107.fa	F6D8_bin.83.fa	78.62	3.24	634
F6MX_bin.64	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB77	f_CAG-508	g_CAG-492	s_CAG-492 sp000434015	GCA_000434015.1	221	221_1	F68C_bin.107.fa	F6MX_bin.64.fa	78.62	1.9	634
F68U_bin.67	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB77	f_CAG-508	g_CAG-492	s_CAG-492 sp000434335	GCA_000434335.1	222	222_1	F68U_bin.67.fa	F68U_bin.67.fa	80.02	1.01	634
F6D7_bin.105	d_Bacteria	p_Firmicutes	c_Clostridia	o_TANB77	f_CAG-508	g_CAG-492	s_CAG-492 sp000434335	GCA_000434335.1	222	222_2	F6D7_bin.105.fa	F6D7_bin.105.fa	80.02	2.01	634
F68V_bin.65	d_Bacteria	p_Firmicutes	c_Clostridia	o_UBA1212	f_UBA1255	g__	s__	N/A	178	178_0	F68V_bin.65.fa	F68V_bin.65.fa	94.58	1.46	635
F68V_bin.91	d_Bacteria	p_Firmicutes	c_Dehalobacteriia	o_UBA7702	f_UBA7702	g__	s__	N/A	462	462_0	F68V_bin.91.fa	F68V_bin.91.fa	88.44	1.63	636
F68D_bin.84	d_Bacteria	p_Firmicutes	c_Peptococcia	o_Peptococcales	f_Peptococcaceae	g__	s__	N/A	279	279_1	F68D_bin.84.fa	F68D_bin.84.fa	67.9	1.72	637
F68K_bin.23	d_Bacteria	p_Firmicutes	c_Peptococcia	o_Peptococcales	f_Peptococcaceae	g__	s__	N/A	279	279_3	F68K_bin.23.fa	F68K_bin.23.fa	62.07	0	638

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.43	d_Bacteria	p_Firmicutes	c_Peptococcia	o_Peptococcales	f_Peptococcaceae	g__	s__	N/A	279	279_2	F6MX_bin.43.fa	F6MX_bin.43.fa	67.65	1.11	639
F68F_bin.19	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g__	s__	N/A	538	538_1	F68F_bin.19.fa	F68F_bin.19.fa	97.88	0.3	640
F68K_bin.75	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g__	s__	N/A	538	538_2	F68K_bin.75.fa	F68K_bin.75.fa	99.48	1.45	641
F68D_bin.105	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Acidiminococcus	s__	N/A	387	387_1	F68D_bin.105.fa	F68D_bin.105.fa	96.11	0	642
F68G_bin.37	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Acidiminococcus	s__	N/A	387	387_2	F68G_bin.37.fa	F68G_bin.37.fa	97.05	1.7	643
F68N_bin.60	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Acidiminococcus	s__	N/A	422	422_0	F68N_bin.60.fa	F68N_bin.60.fa	98.68	0.6	644
F68F_bin.108	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Acidiminococcus	s_Acidiminococcus intestinali	GCF_000425045.1	386	386_1	F68F_bin.108.fa	F68F_bin.108.fa	100	0	644
F68H_bin.73	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Acidiminococcus	s_Acidiminococcus intestinali	GCF_000425045.1	386	386_1	F68F_bin.108.fa	F68H_bin.73.fa	99.4	0	644

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.53	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Acidaminococcus	s_Acidaminococcus intestinali	GCF_000425045.1	386	386_1	F68F_bin.108.fa	F68T_bin.53.fa	99.4	0	644
F68H_bin.47	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Acidaminococcus	s_Acidaminococcus massiliensis	GCF_900095825.1	388	388_1	F68H_bin.47.fa	F68H_bin.47.fa	98.5	0.62	644
F6DB_bin.15	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Acidaminococcus	s_Acidaminococcus massiliensis	GCF_900095825.1	388	388_1	F68H_bin.47.fa	F6DB_bin.15.fa	91.92	3.13	644
F6D9_bin.35	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Acidaminococcus	s_Acidaminococcus sp000437815	GCA_000437815.1	389	389_0	F6D9_bin.35.fa	F6D9_bin.35.fa	99.4	0.6	644
F68V_bin.107	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Phacelactobacterium	s_Phacelactobacterium faecium	GCA_003269275.1	537	537_1	F6DE_bin.34.fa	F68V_bin.107.fa	86.83	1.5	644
F6DE_bin.34	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidaminococcales	f_Acidaminococcaceae	g_Phacelactobacterium	s_Phacelactobacterium faecium	GCA_003269275.1	537	537_1	F6DE_bin.34.fa	F6DE_bin.34.fa	99.85	2.1	644

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68F_bin.52	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s__	N/A	541	541_0	F68F_bin.52.fa	F68F_bin.52.fa	97.01	0.8	645
F68M_bin.40	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s__	N/A	539	539_8	F68M_bin.40.fa	F68M_bin.40.fa	94.77	2.22	646
F68R_bin.41	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s__	N/A	539	539_7	F68R_bin.41.fa	F68R_bin.41.fa	84.27	1.6	647
F68T_bin.40	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s__	N/A	539	539_6	F68T_bin.40.fa	F68T_bin.40.fa	97.59	0.9	648
F6DA_bin.22	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s__	N/A	540	540_0	F6DA_bin.22.fa	F6DA_bin.22.fa	97.6	0.6	649
F68E_bin.38	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_9	F68E_bin.38.fa	F68E_bin.38.fa	98.2	0.9	649

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.44	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_5	F68J_bin.44.fa	F68J_bin.44.fa	99.4	1.2	649
F6D8_bin.17	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_3	F6D8_bin.17.fa	F6D8_bin.17.fa	99.38	0.9	649
F6D9_bin.91	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_1	F6DB_bin.90.fa	F6D9_bin.91.fa	93.66	2.15	649
F6DB_bin.90	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_1	F6DB_bin.90.fa	F6DB_bin.90.fa	99.98	0.6	649
F6DG_bin.3	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_4	F6DG_bin.3.fa	F6DG_bin.3.fa	94.01	1.84	649

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68C_bin.48	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F68C_bin.48.fa	98.2	1.2	649
F68U_bin.88	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F68U_bin.88.fa	98.8	1.2	649
F68W_bin.14	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F68W_bin.14.fa	98.2	1.2	649
F6D7_bin.7	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F6D7_bin.7.fa	98.2	1.2	649
F6DH_bin.89	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidiminococcales	f_Acidiminococcaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_A_succinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F6DH_bin.89.fa	99.4	1.4	649

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.53	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Acidimicrobiales	f_Acidimicrobiaceae	g_Phascolarctobacterium_A	s_Phascolarctobacterium_Asuccinatutens	GCF_000188175.1	539	539_2	F6MX_bin.53.fa	F6MX_bin.53.fa	99.2	1.2	649
F68K_bin.2	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Anaerovibrio	s__	N/A	443	443_1	F68K_bin.2.fa	F68K_bin.2.fa	98.4	2.79	650
F6D7_bin.5	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Anaerovibrio	s__	N/A	443	443_2	F6D7_bin.5.fa	F6D7_bin.5.fa	99.54	2.63	651
F68E_bin.22	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Megamonas	s_Megamonas funiformis	GCF_000245775.1	170	170_1	F68E_bin.22.fa	F68E_bin.22.fa	93.02	0.72	651
F68K_bin.19	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Megamonas	s_Megamonas funiformis	GCF_000245775.1	170	170_3	F68K_bin.19.fa	F68K_bin.19.fa	66.89	2.58	651
F68U_bin.41	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Megamonas	s_Megamonas funiformis	GCF_000245775.1	170	170_2	F68U_bin.41.fa	F68U_bin.41.fa	96.26	3.34	651
F6DA_bin.72	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Megamonas	s_Megamonas funiformis	GCF_000245775.1	170	170_4	F6DA_bin.72.fa	F6DA_bin.72.fa	100	1.27	651
F68D_bin.14	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s__	N/A	591	591_1	F68D_bin.14.fa	F68D_bin.14.fa	100	0.08	652

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68T_bin.42	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s__	N/A	591	591_2	F68T_bin.42.fa	F68T_bin.42.fa	96.26	0.08	653
F68H_bin.79	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s_Mitsuokella multacidia	GCF_000155955.1	592	592_4	F68H_bin.79.fa	F68H_bin.79.fa	99.07	0.08	653
F68N_bin.8	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s_Mitsuokella multacidia	GCF_000155955.1	592	592_1	F68N_bin.8.fa	F68N_bin.8.fa	86.65	0.82	653
F68R_bin.84	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s_Mitsuokella multacidia	GCF_000155955.1	592	592_3	F68R_bin.84.fa	F68R_bin.84.fa	57.74	0.08	653
F68U_bin.108	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Selenomonadales	f_Selenomonadaceae	g_Mitsuokella	s_Mitsuokella multacidia	GCF_000155955.1	592	592_2	F68U_bin.108.fa	F68U_bin.108.fa	82.73	3.82	653
F68G_bin.59	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Allisonella	s_Allisonella histaminiformans	GCF_900103425.1	390	390_1	F68G_bin.59.fa	F68G_bin.59.fa	77.16	0.79	653
F68U_bin.27	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Allisonella	s_Allisonella histaminiformans	GCF_900103425.1	390	390_2	F68U_bin.27.fa	F68U_bin.27.fa	83.07	2.58	653

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.99	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s__	N/A	391	391_1	F68D_bin.99.fa	F68D_bin.99.fa	98.96	0	654
F68H_bin.14	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s__	N/A	391	391_4	F68H_bin.14.fa	F68H_bin.14.fa	95.8	0	655
F68K_bin.54	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s__	N/A	391	391_5	F68K_bin.54.fa	F68K_bin.54.fa	98.64	0	656
F68N_bin.69	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s__	N/A	391	391_3	F68N_bin.69.fa	F68N_bin.69.fa	99.59	0	657
F68R_bin.31	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s__	N/A	391	391_2	F68R_bin.31.fa	F68R_bin.31.fa	99.59	0	658
F68G_bin.39	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Dialisteraceae	g_Dialister	s_Dialister sp000434475	GCA_000434475.1	392	392_0	F68G_bin.39.fa	F68G_bin.39.fa	97.78	0.63	658
F68E_bin.4	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Anaeroglobus	s_Anaeroglobus micronuciformis	GCF_000165735.1	396	396_0	F68E_bin.4.fa	F68E_bin.4.fa	100	0	658
F68F_bin.2	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Caecibacter	s__	N/A	393	393_3	F68F_bin.2.fa	F68F_bin.2.fa	91.11	2.54	659
F6D9_bin.12	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Caecibacter	s__	N/A	393	393_1	F6D9_bin.12.fa	F6D9_bin.12.fa	99.9	1.29	660

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.138	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Caecibacter	s__	N/A	393	393_2	F6MY_bin.138.fa	F6MY_bin.138.fa	58.28	1.45	661
F68N_bin.12	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_elsdenii	GCF_003010495.1	395	395_4	F68N_bin.12.fa	F68N_bin.12.fa	95.91	0	661
F68H_bin.22	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_sp000417505	GCF_000417505.1	395	395_1	F68H_bin.22.fa	F68H_bin.22.fa	95.21	0.6	661
F68R_bin.35	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_sp000417505	GCF_000417505.1	395	395_3	F68R_bin.35.fa	F68R_bin.35.fa	96.21	0	661
F68T_bin.10	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_sp000417505	GCF_000417505.1	395	395_2	F68T_bin.10.fa	F68T_bin.10.fa	86.59	0.35	661
F68K_bin.25	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_sp900066485	GCA_900066485.1	394	394_1	F68K_bin.25.fa	F68K_bin.25.fa	98.8	1.2	661
F68U_bin.18	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Megasphaerae	g_Megasphaera	s_Megasphaera_sp900066485	GCA_900066485.1	394	394_2	F68U_bin.18.fa	F68U_bin.18.fa	98.8	1.8	661
F68R_bin.123	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Veillonellaceae	g_Veillonella	s_Veillonella_atypica	GCF_002959915.1	147	147_0	F68R_bin.123.fa	F68R_bin.123.fa	75.59	0	661

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DE_bin.29	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Veillonellaceae	g_Veillonella	s_Veillonella parvula	GCF_000024945.1	148	148_0	F6DE_bin.29.fa	F6DE_bin.29.fa	75.84	3.69	661
F6D8_bin.8	d_Bacteria	p_Firmicutes	c_Negativicutes	o_Veillonellales	f_Veillonellaceae	g_Veillonella_A	s_Veillonella_A magna	GCF_000428745.1	8	8_0	F6D8_bin.8.fa	F6D8_bin.8.fa	100	0	661
F6DE_bin.19	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Cetobacterium_A	s__	N/A	204	204_0	F6DE_bin.19.fa	F6DE_bin.19.fa	96.63	0	662
F6D9_bin.88	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s__	N/A	201	201_2	F6D9_bin.88.fa	F6D9_bin.88.fa	55.59	1.12	663
F6DE_bin.4	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s__	N/A	202	202_0	F6DE_bin.4.fa	F6DE_bin.4.fa	98.88	1.12	664
F68C_bin.95	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68C_bin.95.fa	97.75	1.12	664
F68D_bin.23	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68D_bin.23.fa	93.26	2.81	664
F68G_bin.84	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68G_bin.84.fa	51.88	1.72	664

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.67	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68J_bin.67.fa	100	1.12	664
F68K_bin.38	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68K_bin.38.fa	97.56	2.25	664
F68P_bin.50	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68P_bin.50.fa	98.88	1.12	664
F68T_bin.33	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F68T_bin.33.fa	56.22	0.94	664
F6DA_bin.25	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F6DA_bin.25.fa	98.88	1.12	664
F6DG_bin.65	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium_A	s_Fusobacterium_A_mortiferum	GCF_000158195.2	201	201_1	F68J_bin.67.fa	F6DG_bin.65.fa	94.38	2.25	664

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.56	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium	s__	N/A	199	199_0	F68R_bin.56.fa	F68R_bin.56.fa	100	1.69	665
F68U_bin.55	d_Bacteria	p_Fusobacteriota	c_Fusobacteriia	o_Fusobacteriales	f_Fusobacteriaceae	g_Fusobacterium	s__	N/A	200	200_0	F68U_bin.55.fa	F68U_bin.55.fa	100	1.12	666
F68W_bin.29	d_Bacteria	p_Myxococcota	c_Bradymonadia	o_Bradymonadales	f_UBA4248	g_UBA4248	s__	N/A	4	4_1	F6DH_bin.23.fa	F68W_bin.29.fa	74.39	1.77	667
F6DH_bin.23	d_Bacteria	p_Myxococcota	c_Bradymonadia	o_Bradymonadales	f_UBA4248	g_UBA4248	s__	N/A	4	4_1	F6DH_bin.23.fa	F6DH_bin.23.fa	75.68	1.77	668
F68M_bin.4	d_Bacteria	p_Patescibacteria	c_Saccharimonadia	o_Saccharimonadales	f_Saccharimonadaceae	g__	s__	N/A	119	119_0	F68M_bin.4.fa	F68M_bin.4.fa	56.24	0.85	669
F68U_bin.14	d_Bacteria	p_Proteobacteria	c_Alphaproteobacteria	o_RF32	f_CAG-977	g_CAG-977	s__	N/A	3	3_0	F68U_bin.14.fa	F68U_bin.14.fa	68.99	2.49	670
F68D_bin.106	d_Bacteria	p_Proteobacteria	c_Alphaproteobacteria	o_RF32	f_CAG-977	g_CAG-977	s_CAG-977 sp000434295	GCA_000434295.1	1	1_1	F68U_bin.83.fa	F68D_bin.106.fa	77.91	1.24	670
F68U_bin.83	d_Bacteria	p_Proteobacteria	c_Alphaproteobacteria	o_RF32	f_CAG-977	g_CAG-977	s_CAG-977 sp000434295	GCA_000434295.1	1	1_1	F68U_bin.83.fa	F68U_bin.83.fa	80.47	0.79	670
F68U_bin.76	d_Bacteria	p_Proteobacteria	c_Alphaproteobacteria	o_RF32	f_CAG-977	g_UBA11549	s__	N/A	2	2_1	F68U_bin.76.fa	F68U_bin.76.fa	81.72	0.29	671

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D7_bin.88	d_Bacteria	p_Proteobacteria	c_Alphaproteobacteria	o_RF32	f_CAG-977	g_UBA11549	s__	N/A	2	2_2	F6D7_bin.88.fa	F6D7_bin.88.fa	55.49	1.72	672
F68K_bin.108	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s__	N/A	248	248_1	F68K_bin.108.fa	F68K_bin.108.fa	94.27	2.94	673
F6MX_bin.33	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s__	N/A	248	248_2	F6MX_bin.33.fa	F6MX_bin.33.fa	59.23	4.38	674
F68U_bin.34	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s__	N/A	250	250_0	F68U_bin.34.fa	F68U_bin.34.fa	96.23	1.25	675
F6DA_bin.14	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s__	N/A	256	256_0	F6DA_bin.14.fa	F6DA_bin.14.fa	83.47	1.73	676
F68C_bin.98	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_7	F68C_bin.98.fa	F68C_bin.98.fa	96.15	1.88	676
F68F_bin.57	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_4	F68F_bin.57.fa	F68F_bin.57.fa	97.4	1.25	676

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.74	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_9	F68J_bin.74.fa	F68J_bin.74.fa	97.4	1.25	676
F68N_bin.74	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_5	F68N_bin.74.fa	F68N_bin.74.fa	79.87	1.96	676
F68T_bin.76	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_8	F68T_bin.76.fa	F68T_bin.76.fa	97.08	1.25	676
F68U_bin.2	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_2	F68U_bin.2.fa	F68U_bin.2.fa	60.67	0	676
F68W_bin.66	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_1	F6DH_bin.66.fa	F68W_bin.66.fa	95.83	1.88	676
F6DH_bin.66	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_1	F6DH_bin.66.fa	F6DH_bin.66.fa	95.83	1.88	676
F6MX_bin.105	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_3	F6MX_bin.105.fa	F6MX_bin.105.fa	88.38	1.88	676

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.81	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp000437635	GCA_000437635.1	249	249_6	F6MY_bin.81.fa	F6MY_bin.81.fa	91.15	2.74	676
F6DG_bin.93	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_CAG-521	s_CAG-521 sp002329575	GCA_002329575.1	251	251_0	F6DG_bin.93.fa	F6DG_bin.93.fa	86.11	1.81	676
F68D_bin.44	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Comamonas	s_Comamonas kerstersii	GCF_002056725.1	432	432_1	F68M_bin.31.fa	F68D_bin.44.fa	97.15	1.14	676
F68M_bin.31	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Comamonas	s_Comamonas kerstersii	GCF_002056725.1	432	432_1	F68M_bin.31.fa	F68M_bin.31.fa	96.53	0.67	676
F6D9_bin.19	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Comamonas	s_Comamonas kerstersii	GCF_002056725.1	432	432_1	F68M_bin.31.fa	F6D9_bin.19.fa	95.02	1.98	676
F68C_bin.94	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_5	F68C_bin.94.fa	F68C_bin.94.fa	97.5	0.62	677
F68F_bin.77	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_4	F68F_bin.77.fa	F68F_bin.77.fa	98.12	0.62	678

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68P_bin.14	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_2	F68P_bin.14.fa	F68P_bin.14.fa	98.75	0.62	679
F68T_bin.24	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_6	F68T_bin.24.fa	F68T_bin.24.fa	58.83	0.9	680
F68U_bin.107	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_1	F68U_bin.107.fa	F68U_bin.107.fa	97.12	0.62	681
F68W_bin.20	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_1	F68U_bin.107.fa	F68W_bin.20.fa	89.79	1.25	682
F6DH_bin.110	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_1	F68U_bin.107.fa	F6DH_bin.110.fa	95	1.38	683
F6DB_bin.32	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	252	252_3	F6DB_bin.32.fa	F6DB_bin.32.fa	98.75	0.62	684
F68C_bin.68	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	253	253_0	F68C_bin.68.fa	F68C_bin.68.fa	61.38	0	685

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68J_bin.5	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	254	254_1	F68J_bin.5.fa	F68J_bin.5.fa	97.4	1.25	686
F68R_bin.1	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Duodenibacillus	s__	N/A	254	254_1	F68J_bin.5.fa	F68R_bin.1.fa	91.09	2.71	687
F68G_bin.27	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Oxalobacter	s__	N/A	384	384_1	F68G_bin.27.fa	F68G_bin.27.fa	99.12	0.24	688
F68W_bin.1	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Oxalobacter	s__	N/A	384	384_2	F68W_bin.1.fa	F68W_bin.1.fa	96.57	0.48	689
F68F_bin.42	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Oxalobacter	s__	N/A	385	385_0	F68F_bin.42.fa	F68F_bin.42.fa	61.32	0.48	690
F68E_bin.31	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Parasutterella	s_Parasutterella excrementihominis	GCF_000205025.1	255	255_0	F68E_bin.31.fa	F68E_bin.31.fa	100	0.11	690
F68F_bin.39	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Sutterella	s__	N/A	471	471_1	F68F_bin.39.fa	F68F_bin.39.fa	97.38	1.25	691

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68U_bin.32	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s__	N/A	471	471_2	F68U_bin.32.fa	F68U_bin.32.fa	63.33	2.33	692
F6D7_bin.69	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s__	N/A	474	474_0	F6D7_bin.69.fa	F6D7_bin.69.fa	68.59	0	693
F68U_bin.11	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella parvirubra	GCF_000250875.1	472	472_1	F68U_bin.11.fa	F68U_bin.11.fa	98.14	1.55	693
F6DA_bin.82	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella parvirubra	GCF_000250875.1	472	472_2	F6DA_bin.82.fa	F6DA_bin.82.fa	98.14	1.55	693
F6DG_bin.66	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella parvirubra	GCF_000250875.1	472	472_3	F6DG_bin.66.fa	F6DG_bin.66.fa	98.14	1.55	693
F68H_bin.15	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_2	F68H_bin.15.fa	F68H_bin.15.fa	100	0.62	693
F68K_bin.92	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F68K_bin.92.fa	98.14	0.62	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.48	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F68N_bin.48.fa	98.14	1.24	693
F68R_bin.81	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F68R_bin.81.fa	98.14	0.62	693
F6D7_bin.101	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F6D7_bin.101.fa	81.03	2.59	693
F6DB_bin.20	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F6DB_bin.20.fa	53.1	1.72	693
F6DE_bin.48	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F6DE_bin.48.fa	80.43	2.93	693
F6MY_bin.59	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrella wadsworthensis_A	GCF_000297775.1	473	473_1	F68R_bin.81.fa	F6MY_bin.59.fa	58.39	0	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.93	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrellawadsworthensis_A	GCF_000297775.1	473	473_3	F6D9_bin.93.fa	F6D9_bin.93.fa	100	1.24	693
F6D7_bin.11	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrellawadsworthensis_B	GCF_000411515.1	470	470_1	F6D7_bin.11.fa	F6D7_bin.11.fa	91.93	0	693
F6DA_bin.86	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Burkholderiales	f_Burkholderiaceae	g_Suttrella	s_Suttrellawadsworthensis_B	GCF_000411515.1	470	470_2	F6DA_bin.86.fa	F6DA_bin.86.fa	91.3	0	693
F6MX_bin.138	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Aeromonadaceae	g_Aeromonas	s_Aeromonas enteropellogenes	GCF_000819845.1	597	597_0	F6MX_bin.138.fa	F6MX_bin.138.fa	72.4	4.7	693
F6D9_bin.31	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Citrobacter	s_Citrobacterfreundii	GCF_000759735.1	122	122_0	F6D9_bin.31.fa	F6D9_bin.31.fa	77.07	1.72	693
F68D_bin.82	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichiacoli	GCF_000690815.1	121	121_4	F68D_bin.82.fa	F68D_bin.82.fa	99.97	0.9	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68R_bin.13	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia coli	GCF_000690815.1	121	121_5	F68R_bin.13.fa	F68R_bin.13.fa	75.62	2.96	693
F6DH_bin.43	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia coli_D	GCF_000026325.1	121	121_1	F6DH_bin.43.fa	F6DH_bin.43.fa	97.49	2.42	693
F6MY_bin.111	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia coli_D	GCF_000026325.1	121	121_1	F6DH_bin.43.fa	F6MY_bin.111.fa	75.58	1.69	693
F68K_bin.94	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F68K_bin.94.fa	93.26	2.95	693
F68T_bin.15	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F68T_bin.15.fa	84.69	1.71	693
F68U_bin.48	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F68U_bin.48.fa	99.24	0.74	693
F6D8_bin.16	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F6D8_bin.16.fa	76.68	2.44	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.60	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F6D9_bin.60.fa	82.26	2.44	693
F6DA_bin.29	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_2	F6DA_bin.29.fa	F6DA_bin.29.fa	99.62	0.1	693
F68C_bin.110	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68C_bin.110.fa	86.43	3.66	693
F68F_bin.105	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68F_bin.105.fa	77	2.1	693
F68H_bin.78	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68H_bin.78.fa	99.67	0.12	693
F68J_bin.52	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68J_bin.52.fa	92.07	3.09	693
F68N_bin.13	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68N_bin.13.fa	99.85	1.36	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68V_bin.92	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F68V_bin.92.fa	99.47	0.04	693
F6D7_bin.65	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F6D7_bin.65.fa	62.93	1.72	693
F6DB_bin.17	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F6DB_bin.17.fa	61.94	2.51	693
F6DE_bin.51	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F6DE_bin.51.fa	99.97	0.07	693
F6MX_bin.52	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Escherichia	s_Escherichia flexneri	GCA_002950215.1	121	121_3	F6DE_bin.51.fa	F6MX_bin.52.fa	92.17	3.86	693
F68K_bin.12	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_3	F68K_bin.12.fa	F68K_bin.12.fa	56.03	3.45	693
F68R_bin.25	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_2	F68R_bin.25.fa	F68R_bin.25.fa	68.45	2.59	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.40	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F68D_bin.40.fa	70.33	2.59	693
F68G_bin.82	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F68G_bin.82.fa	87.66	1.65	693
F68H_bin.33	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F68H_bin.33.fa	56.54	1.72	693
F68P_bin.44	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F68P_bin.44.fa	98.01	1.6	693
F68T_bin.62	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F68T_bin.62.fa	96.58	0.75	693
F6D7_bin.20	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F6D7_bin.20.fa	52.76	0.86	693
F6DG_bin.38	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F6DG_bin.38.fa	79.46	4.14	693

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MY_bin.94	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Klebsiella	s_Klebsiella pneumoniae	GCF_000742135.1	120	120_1	F6MY_bin.94.fa	F6MY_bin.94.fa	98.05	0.23	693
F68T_bin.7	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Proteus	s_Proteus mirabilis	GCF_000160755.1	128	128_1	F6D9_bin.39.fa	F68T_bin.7.fa	96.27	0.54	693
F6D9_bin.39	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Proteus	s_Proteus mirabilis	GCF_000160755.1	128	128_1	F6D9_bin.39.fa	F6D9_bin.39.fa	98.92	0.27	693
F6D9_bin.5	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Enterobacteriaceae	g_Providencia	s_Providencia alcalifaciens_A	GCF_000527275.1	129	129_0	F6D9_bin.5.fa	F6D9_bin.5.fa	97.54	0.09	693
F68T_bin.73	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Pasteurellaceae	g_Haemophilus_D	s_Haemophilus_D parainfluenzae	GCF_000191405.1	149	149_0	F68T_bin.73.fa	F68T_bin.73.fa	96.55	1.02	693
F6D7_bin.26	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Succinivibrionaceae	g_Succinivibrio	s_	N/A	144	144_0	F6D7_bin.26.fa	F6D7_bin.26.fa	98.81	0.59	694
F68J_bin.3	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Succinivibrionaceae	g_Succinivibrio	s_Succinivibrio sp000431835	GCA_000431835.1	143	143_3	F68J_bin.3.fa	F68J_bin.3.fa	98.82	0.29	694

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68N_bin.32	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Succinivibrionaceae	g_Succinivibrio	s_Succinivibrio sp000431835	GCA_000431835.1	143	143_1	F68N_bin.32.fa	F68N_bin.32.fa	98.24	0.29	694
F6D7_bin.94	d_Bacteria	p_Proteobacteria	c_Gammaproteobacteria	o_Enterobacterales	f_Succinivibrionaceae	g_Succinivibrio	s_Succinivibrio sp000431835	GCA_000431835.1	143	143_2	F6D7_bin.94.fa	F6D7_bin.94.fa	99.08	0.07	694
F68K_bin.24	d_Bacteria	p_Spirochaetota	c_Brachyspirae	o_Brachyspirales	f_Brachyspiraceae	g_Brachyspira	s_Brachyspirapilosicoli	GCF_000325665.1	146	146_0	F68K_bin.24.fa	F68K_bin.24.fa	99.2	0	694
F6DB_bin.10	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Sphaerochaetales	f_Sphaerochaetaceae	g_RUG023	s__	N/A	13	13_0	F6DB_bin.10.fa	F6DB_bin.10.fa	97.63	3.45	695
F68U_bin.20	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Sphaerochaetales	f_Sphaerochaetaceae	g_UBA5920	s__	N/A	20	20_0	F68U_bin.20.fa	F68U_bin.20.fa	95.33	0	696
F68J_bin.13	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Treponematales	f_Treponemataceae	g_Treponema_D	s__	N/A	662	662_1	F68J_bin.13.fa	F68J_bin.13.fa	82.59	3.11	697
F6DG_bin.77	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Treponematales	f_Treponemataceae	g_Treponema_D	s__	N/A	662	662_2	F6DG_bin.77.fa	F6DG_bin.77.fa	97.44	1.63	698
F68J_bin.18	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Treponematales	f_Treponemataceae	g_Treponema_D	s_Treponema_D berlinense	GCF_900167025.1	260	260_0	F68J_bin.18.fa	F68J_bin.18.fa	74.55	0	698

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.90	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Treponematales	f_Treponemataceae	g_Treponema_D	s_Treponema_D_succinificiens	GCF_000195275.1	662	662_3	F68D_bin.90.fa	F68D_bin.90.fa	100	0.7	698
F6D9_bin.15	d_Bacteria	p_Spirochaetota	c_Spirochaetia	o_Treponematales	f_Treponemataceae	g_Treponema_D	s_Treponema_D_succinificiens	GCF_000195275.1	662	662_4	F6D9_bin.15.fa	F6D9_bin.15.fa	100	0.7	698
F68H_bin.35	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter_piscolenis	GCF_000177335.1	84	84_1	F68M_bin.68.fa	F68H_bin.35.fa	86.29	2.82	698
F68M_bin.68	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter_piscolenis	GCF_000177335.1	84	84_1	F68M_bin.68.fa	F68M_bin.68.fa	91.53	0	698
F6D8_bin.98	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter_piscolenis	GCF_000177335.1	84	84_3	F6D8_bin.98.fa	F6D8_bin.98.fa	58.32	1.85	698
F68N_bin.9	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter_piscolenis	GCF_000177335.1	84	84_2	F6D9_bin.79.fa	F68N_bin.9.fa	91.53	0	698

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6D9_bin.79	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter piscolen	GCF_000177335.1	84	84_2	F6D9_bin.79.fa	F6D9_bin.79.fa	100	0	698
F6DB_bin.63	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Dethiosulfovibrionaceae	g_Pyramidobacter	s_Pyramidobacter piscolen	GCF_000177335.1	84	84_2	F6D9_bin.79.fa	F6DB_bin.63.fa	94.92	0	698
F68D_bin.9	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_7	F68D_bin.9.fa	F68D_bin.9.fa	98.31	0	699
F68F_bin.32	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_5	F68F_bin.32.fa	F68F_bin.32.fa	81.76	4.24	700
F68H_bin.76	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_6	F68H_bin.76.fa	F68H_bin.76.fa	57.38	0	701
F68M_bin.79	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_1	F68M_bin.79.fa	F68M_bin.79.fa	75.27	0	702
F68R_bin.128	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_3	F68R_bin.128.fa	F68R_bin.128.fa	66.52	1.69	703
F68U_bin.79	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_4	F68U_bin.79.fa	F68U_bin.79.fa	99.69	0.15	704
F6D8_bin.71	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_An23	s__	N/A	404	404_2	F6D8_bin.71.fa	F6D8_bin.71.fa	81.9	1.85	705

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.46	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_Cloacibacillus	s_Cloacibacillus evryensis	GCF_000585335.1	402	402_0	F6DB_bin.46.fa	F6DB_bin.46.fa	77.31	1.72	705
F68M_bin.69	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_Cloacibacillus	s_Cloacibacillus porcorum	GCF_001701045.1	401	401_1	F68V_bin.109.fa	F68M_bin.69.fa	86.21	1.88	705
F68V_bin.109	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_Cloacibacillus	s_Cloacibacillus porcorum	GCF_001701045.1	401	401_1	F68V_bin.109.fa	F68V_bin.109.fa	98.28	0	705
F6DB_bin.13	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_Cloacibacillus	s_Cloacibacillus porcorum	GCF_001701045.1	401	401_2	F6DB_bin.13.fa	F6DB_bin.13.fa	99.14	1.88	705
F68M_bin.78	d_Bacteria	p_Synergistota	c_Synergistia	o_Synergistales	f_Synergistaceae	g_Synergistes	s_Synergistes jonesii	GCF_000712295.1	403	403_0	F68M_bin.78.fa	F68M_bin.78.fa	100	0	705
F68U_bin.73	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_UBA1407	f_UBA1407	g_UBA1724	s__	N/A	400	400_1	F68W_bin.93.fa	F68U_bin.73.fa	89.19	0.68	706
F68W_bin.93	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_UBA1407	f_UBA1407	g_UBA1724	s__	N/A	400	400_1	F68W_bin.93.fa	F68W_bin.93.fa	89.19	0.68	707

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DH_bin.58	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_UBA1407	f_UBA1407	g_UBA1724	s__	N/A	400	400_1	F68W_bin.93.fa	F6DH_bin.58.fa	89.19	0.68	708
F6MX_bin.29	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g__	s__	N/A	142	142_0	F6MX_bin.29.fa	F6MX_bin.29.fa	84.6	2.36	709
F68R_bin.104	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA11452	s_UBA11452 sp003526375	GCA_003526375.1	138	138_1	F6DA_bin.75.fa	F68R_bin.104.fa	84.99	3.38	709
F6DA_bin.75	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA11452	s_UBA11452 sp003526375	GCA_003526375.1	138	138_1	F6DA_bin.75.fa	F6DA_bin.75.fa	93.89	3.6	709
F6DH_bin.39	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA11452	s_UBA11452 sp003526375	GCA_003526375.1	138	138_2	F6DH_bin.39.fa	F6DH_bin.39.fa	81.7	3.32	709
F68J_bin.8	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA1829	s__	N/A	140	140_2	F68J_bin.8.fa	F68J_bin.8.fa	82.29	0.85	710
F68W_bin.32	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA1829	s__	N/A	140	140_1	F6DH_bin.40.fa	F68W_bin.32.fa	79.34	2.03	711
F6DH_bin.40	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA1829	s__	N/A	140	140_1	F6DH_bin.40.fa	F6DH_bin.40.fa	88.31	1.69	712
F6D7_bin.81	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_UBA1829	g_UBA1829	s__	N/A	141	141_0	F6D7_bin.81.fa	F6D7_bin.81.fa	93.89	2.48	713

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68D_bin.80	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	130	130_1	F68D_bin.80.fa	F68D_bin.80.fa	92.84	1.35	714
F68F_bin.116	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	130	130_1	F68D_bin.80.fa	F68F_bin.116.fa	56.82	2.03	715
F68J_bin.37	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	131	131_2	F68J_bin.37.fa	F68J_bin.37.fa	90.51	2.93	716
F68C_bin.33	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	131	131_1	F6DB_bin.87.fa	F68C_bin.33.fa	83.93	4.39	717
F68U_bin.114	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	131	131_1	F6DB_bin.87.fa	F68U_bin.114.fa	82.78	1.35	718
F6DB_bin.87	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	131	131_1	F6DB_bin.87.fa	F6DB_bin.87.fa	93.89	2.03	719
F6MX_bin.7	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	131	131_1	F6DB_bin.87.fa	F6MX_bin.7.fa	92.54	2.03	720
F6MX_bin.103	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	136	136_0	F6MX_bin.103.fa	F6MX_bin.103.fa	86.44	3.58	721
F6MX_bin.133	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g__	s__	N/A	428	428_0	F6MX_bin.133.fa	F6MX_bin.133.fa	65.48	0.68	722
F68D_bin.86	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s__	N/A	134	134_1	F68D_bin.86.fa	F68D_bin.86.fa	93.24	3.94	723

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.105	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s__	N/A	135	135_0	F6DB_bin.105.fa	F6DB_bin.105.fa	93.24	2.36	724
F6DB_bin.93	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s__	N/A	137	137_0	F6DB_bin.93.fa	F6DB_bin.93.fa	92.23	2.73	725
F6MX_bin.128	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s__	N/A	134	134_2	F6MX_bin.128.fa	F6MX_bin.128.fa	92.49	2.4	726
F68R_bin.119	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis sp002998355	GCF_002998355.1	132	132_1	F6DH_bin.10.fa	F68R_bin.119.fa	92.84	3.42	726
F68W_bin.81	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis sp002998355	GCF_002998355.1	132	132_1	F6DH_bin.10.fa	F68W_bin.81.fa	93.58	2.07	726
F6D9_bin.57	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis sp002998355	GCF_002998355.1	132	132_1	F6DH_bin.10.fa	F6D9_bin.57.fa	93.92	2.7	726
F6DH_bin.10	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis sp002998355	GCF_002998355.1	132	132_1	F6DH_bin.10.fa	F6DH_bin.10.fa	94.26	2.03	726
F6MY_bin.42	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis sp002998355	GCF_002998355.1	132	132_1	F6DH_bin.10.fa	F6MY_bin.42.fa	92.57	2.03	726

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F68G_bin.18	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_2	F68G_bin.18.fa	F68G_bin.18.fa	89.86	4.08	726
F68C_bin.65	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_1	F68J_bin.26.fa	F68C_bin.65.fa	56.74	2.36	726
F68J_bin.26	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_1	F68J_bin.26.fa	F68J_bin.26.fa	80.16	2.93	726
F6D7_bin.23	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_1	F68J_bin.26.fa	F6D7_bin.23.fa	74.9	3.76	726
F68V_bin.113	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_3	F68V_bin.113.fa	F68V_bin.113.fa	93.92	2.93	726
F6DA_bin.20	d_Bacteria	p_Verrucomicrobiota	c_Lentisphaeria	o_Victivallales	f_Victivallaceae	g_Victivallis	s_Victivallis vadensis	GCA_003096415.1	133	133_4	F6DA_bin.20.fa	F6DA_bin.20.fa	66.18	2.4	726
F68M_bin.22	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g__	s__	N/A	502	502_1	F68M_bin.22.fa	F68M_bin.22.fa	96.58	1.35	727
F68V_bin.1	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g__	s__	N/A	502	502_1	F68M_bin.22.fa	F68V_bin.1.fa	90.61	4.05	728

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6DB_bin.114	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g__	s__	N/A	505	505_0	F6DB_bin.114.fa	F6DB_bin.114.fa	93.92	1.35	729
F68M_bin.37	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s__	N/A	503	503_1	F68M_bin.37.fa	F68M_bin.37.fa	91.22	0.68	730
F6MX_bin.55	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s__	N/A	503	503_1	F68M_bin.37.fa	F6MX_bin.55.fa	77.34	0.68	731
F6D7_bin.27	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s__	N/A	506	506_0	F6D7_bin.27.fa	F6D7_bin.27.fa	94.59	0.68	732
F68D_bin.52	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s_CAG-312 sp000438015	GCA_000438015.1	504	504_1	F6D7_bin.22.fa	F68D_bin.52.fa	93.2	2.03	732
F68H_bin.8	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s_CAG-312 sp000438015	GCA_000438015.1	504	504_1	F6D7_bin.22.fa	F68H_bin.8.fa	87.53	4.05	732
F6D7_bin.22	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s_CAG-312 sp000438015	GCA_000438015.1	504	504_1	F6D7_bin.22.fa	F6D7_bin.22.fa	93.88	1.35	732
F6MX_bin.84	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Opitutales	f_CAG-312	g_CAG-312	s_CAG-312 sp000438015	GCA_000438015.1	504	504_2	F6MX_bin.84.fa	F6MX_bin.84.fa	94.55	1.35	732
F6DE_bin.37	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s__	N/A	83	83_1	F6MX_bin.117.fa	F6DE_bin.37.fa	97.96	1.36	733

Table S3. Taxonomic classification of the 2,421 detected MAGs

	Domain	Phylum	Class	Order	Family	Genus	Species	RefGenome	primary_cluster	secondary_cluster	repr_genome	genome	CheckM_completeness	CheckM_contamination	
F6MX_bin.117	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s__	N/A	83	83_1	F6MX_bin.117.fa	F6MX_bin.117.fa	97.96	1.36	734
F68D_bin.93	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s_Akkermansia muciniphila	GCF_000020225.1	82	82_1	F68D_bin.93.fa	F68D_bin.93.fa	97.96	0	734
F68E_bin.21	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s_Akkermansia muciniphila	GCF_000020225.1	82	82_3	F68E_bin.21.fa	F68E_bin.21.fa	97.96	0	734
F6D7_bin.14	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s_Akkermansia muciniphila	GCF_000020225.1	82	82_2	F6D7_bin.14.fa	F6D7_bin.14.fa	97.96	0	734
F68M_bin.41	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s_Akkermansia muciniphila B	GCF_002885095.1	81	81_1	F68M_bin.41.fa	F68M_bin.41.fa	95.58	0.68	734
F68V_bin.22	d_Bacteria	p_Verrucomicrobiota	c_Verrucomicrobiae	o_Verrucomicrobiales	f_Akkermansiaceae	g_Akkermansia	s_Akkermansia muciniphila B	GCF_002885095.1	81	81_2	F68V_bin.22.fa	F68V_bin.22.fa	97.28	0	734

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
85	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
86	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
87	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
88	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
89	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
90	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
91	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Bifidobacteriales</i>	<i>Bifidobacteriaceae</i>	<i>Bifidobacterium</i>	<i>Bifidobacterium</i>
92	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Corynebacteriales</i>	<i>Corynebacteriaceae</i>	<i>Corynebacterium</i>	<i>Corynebacterium</i>
93	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Kocuria</i>	<i>Kocuria kristinae</i>
94	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Kocuria</i>	<i>Kocuria kristinae</i>
95	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Micrococcus</i>	<i>Micrococcus</i>
96	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Micrococcus</i>	<i>Micrococcus</i>
97	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Micrococcus</i>	<i>Micrococcus</i>
98	<i>Actinobacteria</i>	<i>Actinobacteria</i>	<i>Micrococcales</i>	<i>Micrococcaceae</i>	<i>Micrococcus</i>	<i>Micrococcus</i>
99	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
100	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
101	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
102	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
103	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
104	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
105	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
106	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
107	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
108	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
109	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
110	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
111	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Atopobiaceae</i>	<i>Olsenella</i>	<i>Olsenella</i>
112	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
169	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella</i>
170	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella</i>
171	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella</i>
172	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella tanakaei</i>
173	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella tanakaei</i>
174	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella tanakaei</i>
175	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella tanakaei</i>
176	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Collinsella</i>	<i>Collinsella tanakaei</i>
177	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Enorma</i>	<i>Enorma timonensis</i>
178	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Enorma</i>	<i>Enorma timonensis</i>
179	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Coriobacteriales</i>	<i>Coriobacteriaceae</i>	<i>Enorma</i>	<i>Enorma timonensis</i>
180	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
181	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
182	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
183	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
184	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
185	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
186	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
187	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
188	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
189	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
190	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
191	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
192	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
193	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
194	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
195	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
196	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
197	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
198	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
199	<i>Actinobacteria</i>	<i>Coriobacteriia</i>	<i>Eggerthellales</i>	<i>Eggerthellaceae</i>	<i>Eggerthella</i>	<i>Eggerthella lenta</i>
200	<i>Agaricomycotina</i>	<i>Tremellomycetes</i>	<i>Tremellales</i>	<i>Cryptococcaceae</i>	<i>Cryptococcus</i>	<i>Cryptococcus</i>
201	<i>Ascomycota</i>	<i>Eurotiomycetes</i>	<i>Eurotiales</i>	<i>Aspergillaceae</i>	<i>Penicillium</i>	<i>Penicillium</i>
202	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
203	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
204	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
205	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
206	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
207	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
208	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
209	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
210	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
211	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
212	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
213	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
214	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
215	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
216	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides caccae</i>
217	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
218	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
219	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
220	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
221	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
222	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
223	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
224	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
225	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides dorei</i>
226	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fluxus</i>
227	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
228	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
229	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
230	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
231	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
232	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
233	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
234	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
235	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
236	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
237	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
238	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
239	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
240	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
241	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
242	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
243	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
244	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
245	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
246	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
247	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
248	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
249	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
250	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
251	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>
252	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides fragilis</i>

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
309	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
310	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
311	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
312	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
313	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
314	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
315	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
316	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
317	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
318	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
319	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
320	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
321	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
322	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
323	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
324	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
325	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
326	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
327	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
328	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
329	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
330	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
331	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
332	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
333	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides nordii</i>
334	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
335	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
336	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
337	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
338	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
339	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
340	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
341	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
342	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
343	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
344	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
345	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
346	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides ovatus</i>
347	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
348	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
349	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
350	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
351	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
352	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
353	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
354	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
355	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
356	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
357	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
358	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
359	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
360	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
361	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
362	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
363	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
364	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
365	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
366	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
367	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
368	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
369	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
370	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
371	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
372	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
373	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
374	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
375	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
376	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
377	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
378	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
379	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
380	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
381	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
382	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
383	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
384	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
385	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
386	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
387	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
388	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
389	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
390	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
391	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
392	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
393	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
394	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
395	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
396	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
397	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
398	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
399	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
400	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
401	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
402	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
403	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
404	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
405	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
406	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
407	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
408	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
409	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
410	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
411	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
412	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
413	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
414	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
415	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
416	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
417	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
418	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
419	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
420	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
421	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
422	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
423	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
424	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
425	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
426	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
427	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
428	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
429	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
430	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
431	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
432	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
433	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
434	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
435	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
436	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
437	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
438	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
439	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
440	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
441	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
442	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
443	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
444	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
445	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
446	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
447	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
448	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
449	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
450	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
451	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
452	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
453	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
454	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
455	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
456	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
457	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
458	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
459	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
460	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
461	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
462	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
463	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
464	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
465	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
466	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
467	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
468	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
469	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
470	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
471	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
472	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
473	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
474	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
475	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
476	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
477	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
478	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
479	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
480	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
481	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
482	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
483	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
484	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
485	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Bacteroidaceae</i>	<i>Bacteroides</i>	<i>Bacteroides</i>
486	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Dysgonomonaceae</i>	<i>Dysgonomonas</i>	<i>Dysgonomonas</i>
487	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
488	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
489	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
490	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
491	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
492	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
493	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
494	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
495	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
496	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Prevotellaceae</i>	<i>Prevotella</i>	<i>Prevotella</i> sp.
497	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes finegoldii</i>
498	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
499	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
500	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
501	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
502	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
503	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes</i>
504	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Rikenellaceae</i>	<i>Alistipes</i>	<i>Alistipes shahii</i>

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
617	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
618	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
619	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
620	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
621	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
622	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
623	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
624	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
625	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
626	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
627	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
628	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
629	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
630	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
631	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
632	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
633	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
634	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
635	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
636	<i>Bacteroidetes</i>	<i>Bacteroidia</i>	<i>Bacteroidales</i>	<i>Tannerellaceae</i>	<i>Parabacteroides</i>	<i>Parabacteroides</i>
637	<i>Bacteroidetes</i>	<i>Flavobacteriia</i>	<i>Flavobacteriales</i>	<i>Flavobacteriaceae</i>	<i>Seonamhaeicola</i>	<i>Seonamhaeicola</i>
638	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
639	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
640	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
641	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
642	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
643	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
644	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
645	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
646	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
647	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
648	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
649	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
650	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
651	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
652	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
653	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
654	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
655	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
656	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
657	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
658	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
659	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
660	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
661	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
662	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
663	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
664	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
665	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
666	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
667	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
668	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
669	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus altitudinis</i>
670	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
671	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
672	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
673	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
674	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
675	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
676	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
677	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
678	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
679	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
680	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
681	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
682	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
683	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
684	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
685	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
686	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
687	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
688	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
689	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
690	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
691	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
692	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
693	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
694	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
695	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
696	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
697	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
698	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
699	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus badius</i>
700	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
701	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
702	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
703	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
704	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
705	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
706	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
707	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
708	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
709	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
710	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
711	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
712	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
713	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
714	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
715	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
716	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
717	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
718	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
719	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
720	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
721	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
722	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
723	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
724	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
725	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
726	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
727	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
728	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
729	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
730	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
731	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
732	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
733	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
734	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
735	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
736	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
737	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
738	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
739	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
740	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
741	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
742	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
743	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
744	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
745	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
746	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
747	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
748	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
749	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
750	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
751	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
752	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
753	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
754	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
755	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
756	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
757	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
758	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
759	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
760	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
761	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
762	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
763	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
764	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
765	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
766	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
767	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
768	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
769	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
770	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
771	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
772	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
773	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
774	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
775	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
776	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
777	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
778	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
779	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
780	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
781	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
782	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
783	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
784	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
785	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
786	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
787	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
788	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
789	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
790	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
791	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
792	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
793	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus cereus</i>
794	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus coagulans</i>
795	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus firmus</i>
796	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus flexus</i>
797	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus flexus</i>
798	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus flexus</i>
799	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus infantis</i>
800	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
801	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
802	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
803	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
804	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
805	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
806	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
807	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
808	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
809	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
810	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
811	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
812	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
813	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
814	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
815	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
816	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
817	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
818	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
819	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
820	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
821	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
822	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
823	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
824	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
825	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
826	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
827	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
828	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
829	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
830	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
831	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
832	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
833	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
834	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
835	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
836	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
837	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
838	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
839	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
840	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
841	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
842	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
843	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
844	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
845	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
846	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
847	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
848	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
849	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
850	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
851	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
852	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
853	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
854	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
855	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
856	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
857	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
858	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
859	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
860	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
861	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
862	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
863	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
864	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus mojavenis</i>
865	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus mojavenis</i>
866	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus mojavenis</i>
867	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
868	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
869	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
870	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
871	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
872	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
873	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
874	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
875	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
876	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
877	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
878	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
879	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
880	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
881	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
882	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
883	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
884	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
885	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
886	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
887	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
888	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
889	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
890	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
891	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
892	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
893	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
894	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
895	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
896	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
897	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
898	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
899	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
900	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
901	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
902	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
903	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
904	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
905	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
906	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
907	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
908	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
909	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
910	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
911	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
912	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
913	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
914	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
915	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
916	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
917	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
918	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
919	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
920	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
921	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
922	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
923	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
924	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
925	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
926	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
927	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
928	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
929	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
930	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
931	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
932	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
933	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
934	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
935	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
936	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
937	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
938	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
939	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
940	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
941	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
942	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
943	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
944	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
945	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
946	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
947	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
948	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
949	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
950	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
951	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
952	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
953	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
954	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
955	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
956	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
957	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
958	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
959	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
960	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
961	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
962	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
963	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
964	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
965	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
966	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
967	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
968	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
969	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
970	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
971	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
972	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
973	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
974	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
975	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
976	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
977	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
978	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
979	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
980	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
981	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
982	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
983	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
984	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
985	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
986	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
987	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
988	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
989	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
990	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
991	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
992	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
993	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
994	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
995	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
996	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
997	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
998	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
999	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1000	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1001	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1002	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1003	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1004	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1005	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1006	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1007	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1008	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1009	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1010	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1011	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1012	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1013	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1014	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1015	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1016	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1017	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1018	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1019	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1020	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1021	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1022	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1023	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1024	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1025	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1026	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1027	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1028	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1029	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1030	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1031	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1032	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1033	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1034	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1035	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1036	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1037	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1038	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1039	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1040	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1041	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1042	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1043	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1044	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1045	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1046	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1047	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1048	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1049	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1050	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus pumilus</i>
1051	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1052	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1053	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1054	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1055	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1056	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1057	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1058	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1059	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1060	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1061	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1062	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1063	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1064	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1065	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1066	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1067	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1068	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1069	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1070	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1071	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1072	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1073	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1074	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1075	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1076	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1077	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1078	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1079	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1080	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1081	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1082	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1083	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1084	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1085	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1086	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1087	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1088	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1089	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1090	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1091	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1092	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1093	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1094	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1095	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1096	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1097	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1098	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1099	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1100	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1101	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1102	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1103	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1104	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1105	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1106	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1107	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1108	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1109	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1110	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1111	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1112	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1113	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1114	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1115	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1116	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1117	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1118	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1119	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1120	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1121	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1122	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1123	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1124	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1125	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1126	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1127	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1128	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1129	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1130	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1131	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1132	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1133	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1134	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1135	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1136	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1137	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1138	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1139	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1140	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1141	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1142	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1143	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1144	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1145	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1146	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1147	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1148	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1149	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1150	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1151	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1152	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1153	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1154	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1155	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1156	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1157	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1158	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1159	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1160	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1161	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1162	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1163	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1164	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1165	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1166	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1167	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1168	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1169	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1170	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1171	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1172	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1173	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1174	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1175	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1176	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1177	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1178	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1179	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1180	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1181	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1182	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1183	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1184	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1185	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1186	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1187	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1188	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1189	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1190	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1191	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1192	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1193	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1194	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1195	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1196	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1197	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1198	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1199	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1200	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1201	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1202	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1203	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1204	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1205	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1206	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1207	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1208	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1209	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1210	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1211	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1212	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus safensis</i>
1213	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sonorensis</i>
1214	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sonorensis</i>
1215	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp</i>
1216	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp</i>
1217	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp</i>
1218	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp.</i>
1219	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp.</i>
1220	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp.</i>
1221	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp.</i>
1222	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus sp.</i>
1223	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1224	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1225	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1226	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1227	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1228	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1229	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1230	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1231	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1232	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1233	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus subtilis</i>
1234	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus velezensis</i>
1235	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
1236	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
1237	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
1238	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
1239	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Bacillus</i>
1240	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Bacillus</i>	<i>Brevibacillus</i>
1241	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1242	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1243	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1244	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1245	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1246	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1247	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1248	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1249	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1250	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1251	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1252	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1253	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1254	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1255	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1256	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1257	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1258	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1259	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1260	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1261	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1262	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1263	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i> sp.
1264	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1265	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1266	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1267	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1268	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1269	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1270	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1271	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1272	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1273	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1274	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1275	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1276	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1277	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1278	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1279	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1280	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1281	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1282	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1283	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1284	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1285	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1286	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1287	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1288	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1289	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1290	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1291	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1292	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1293	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1294	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1295	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1296	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1297	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1298	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1299	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1300	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1301	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1302	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1303	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1304	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1305	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1306	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1307	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1308	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1309	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1310	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1311	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1312	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1313	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1314	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1315	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1316	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1317	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1318	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1319	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1320	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1321	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1322	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1323	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1324	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1325	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1326	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1327	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Lysinibacillus</i>	<i>Lysinibacillus</i>
1328	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillaceae</i>	<i>Oceanobacillus</i>	<i>Oceanobacillus</i>
1329	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Bacillales Family</i>	<i>Exiguobacterium</i>	<i>Exiguobacterium</i>
1330	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Aneurinibacillus</i>	<i>Aneurinibacillus</i>
1331	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1332	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1333	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1334	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1335	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1336	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1337	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1338	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1339	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1340	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1341	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1342	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1343	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1344	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1345	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1346	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1347	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1348	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1349	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1350	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1351	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1352	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1353	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1354	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1355	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1356	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1357	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1358	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1359	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1360	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1361	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1362	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1363	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1364	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1365	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1366	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1367	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1368	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1369	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1370	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1371	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1372	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1373	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1374	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1375	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1376	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1377	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1378	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1379	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1380	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1381	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1382	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1383	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1384	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Brevibacillus</i>	<i>Brevibacillus</i>
1385	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Paenibacillaceae</i>	<i>Paenibacillus</i>	<i>Paenibacillus</i>
1386	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1387	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1388	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1389	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1390	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1391	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1392	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1393	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1394	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1395	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1396	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1397	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1398	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1399	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>
1400	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Planococcaceae</i>	<i>Solibacillus</i>	<i>Solibacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1401	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1402	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1403	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1404	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1405	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1406	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1407	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1408	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1409	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1410	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1411	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Bacillales</i>	<i>Staphylococcaceae</i>	<i>Staphylococcus</i>	<i>Staphylococcus</i>
1412	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1413	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1414	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1415	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1416	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1417	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1418	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1419	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1420	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1421	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1422	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1423	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1424	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1425	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1426	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1427	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1428	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1429	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1430	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1431	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1432	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1433	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1434	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1435	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1436	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1437	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1438	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1439	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1440	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1441	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1442	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1443	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1444	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1445	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1446	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1447	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1448	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1449	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1450	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1451	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1452	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1453	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus asini</i>
1454	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1455	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1456	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1457	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1458	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1459	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1460	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1461	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1462	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1463	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1464	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1465	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1466	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1467	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1468	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1469	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1470	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1471	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1472	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1473	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1474	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1475	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1476	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1477	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1478	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1479	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1480	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1481	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1482	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1483	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>
1484	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus avium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1485	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1486	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1487	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1488	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1489	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1490	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1491	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1492	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1493	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1494	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1495	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1496	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1497	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1498	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1499	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1500	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1501	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1502	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1503	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1504	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1505	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1506	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1507	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1508	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1509	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1510	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1511	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1512	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1513	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1514	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1515	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1516	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1517	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1518	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1519	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1520	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1521	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1522	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1523	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1524	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1525	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1526	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1527	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1528	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1529	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1530	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1531	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1532	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1533	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1534	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1535	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1536	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1537	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1538	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1539	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1540	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
1541	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1542	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1543	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1544	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1545	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1546	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1547	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1548	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1549	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1550	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1551	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1552	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1553	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1554	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1555	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1556	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1557	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1558	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1559	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1560	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1561	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1562	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1563	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1564	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1565	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1566	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1567	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1568	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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bacteriald	phylum	class	order	family	genus	species
1569	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1570	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1571	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1572	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1573	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1574	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1575	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1576	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1577	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1578	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1579	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1580	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1581	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1582	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1583	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1584	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1585	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1586	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1587	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1588	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1589	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1590	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1591	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1592	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1593	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1594	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1595	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1596	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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bacteriald	phylum	class	order	family	genus	species
1597	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1598	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1599	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1600	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1601	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1602	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1603	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1604	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1605	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1606	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1607	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1608	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1609	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1610	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1611	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1612	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1613	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1614	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1615	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1616	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1617	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1618	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1619	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1620	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1621	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1622	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1623	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1624	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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bacteriald	phylum	class	order	family	genus	species
1625	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1626	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1627	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1628	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1629	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1630	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1631	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1632	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1633	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1634	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1635	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1636	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1637	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1638	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1639	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1640	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1641	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1642	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1643	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1644	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1645	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1646	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1647	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1648	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1649	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1650	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1651	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1652	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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1653	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1654	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1655	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1656	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1657	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1658	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1659	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1660	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1661	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1662	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1663	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1664	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1665	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1666	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1667	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1668	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1669	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1670	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1671	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1672	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1673	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1674	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1675	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1676	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1677	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1678	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1679	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1680	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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1681	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1682	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1683	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1684	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1685	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1686	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1687	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1688	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1689	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1690	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1691	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1692	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1693	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1694	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1695	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1696	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1697	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1698	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1699	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1700	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1701	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1702	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1703	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1704	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1705	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1706	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1707	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1708	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1709	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1710	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1711	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1712	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1713	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1714	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1715	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1716	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1717	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1718	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1719	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1720	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1721	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1722	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1723	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1724	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1725	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1726	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1727	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1728	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1729	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1730	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1731	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1732	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1733	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1734	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1735	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1736	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>

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bacteriald	phylum	class	order	family	genus	species
1737	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1738	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1739	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1740	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1741	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1742	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1743	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1744	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1745	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1746	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1747	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1748	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1749	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1750	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1751	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1752	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1753	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1754	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1755	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1756	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1757	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1758	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1759	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1760	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1761	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1762	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus dispar</i>
1763	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1764	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
1765	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1766	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1767	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1768	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1769	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1770	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1771	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1772	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1773	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1774	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1775	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1776	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1777	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1778	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1779	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1780	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1781	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1782	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1783	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1784	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1785	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1786	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1787	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1788	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1789	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1790	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1791	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1792	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
1793	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1794	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1795	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1796	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1797	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1798	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1799	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1800	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1801	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1802	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1803	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1804	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1805	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1806	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1807	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1808	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1809	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1810	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1811	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1812	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1813	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1814	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1815	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1816	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1817	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1818	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1819	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1820	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1821	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1822	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1823	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1824	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1825	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1826	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1827	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1828	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1829	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1830	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1831	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1832	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1833	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1834	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1835	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1836	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1837	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1838	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1839	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1840	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1841	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1842	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1843	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1844	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1845	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1846	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1847	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1848	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
1849	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1850	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1851	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1852	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1853	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1854	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1855	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1856	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1857	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1858	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1859	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1860	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1861	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1862	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1863	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1864	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1865	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1866	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1867	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1868	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1869	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1870	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1871	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1872	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1873	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1874	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1875	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1876	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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1877	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1878	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1879	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1880	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1881	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1882	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1883	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1884	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1885	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1886	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1887	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1888	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1889	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1890	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1891	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1892	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1893	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1894	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1895	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1896	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1897	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1898	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1899	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1900	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1901	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1902	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1903	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1904	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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1905	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1906	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1907	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1908	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1909	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1910	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1911	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1912	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1913	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1914	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1915	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1916	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1917	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1918	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1919	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1920	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1921	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1922	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1923	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1924	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1925	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1926	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1927	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1928	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1929	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1930	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1931	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1932	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1933	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1934	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1935	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1936	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1937	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1938	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1939	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1940	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1941	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1942	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1943	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1944	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1945	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1946	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1947	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1948	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1949	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1950	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1951	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1952	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1953	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1954	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1955	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1956	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1957	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1958	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1959	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1960	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1961	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1962	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1963	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1964	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1965	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1966	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1967	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1968	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1969	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1970	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1971	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1972	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1973	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1974	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1975	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1976	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1977	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1978	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1979	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1980	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1981	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1982	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1983	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1984	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1985	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1986	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1987	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1988	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
1989	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1990	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1991	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1992	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1993	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1994	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1995	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1996	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1997	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1998	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
1999	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2000	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2001	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2002	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2003	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2004	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2005	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2006	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2007	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2008	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2009	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2010	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2011	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2012	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2013	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2014	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2015	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2016	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
2017	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2018	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2019	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2020	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2021	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2022	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2023	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2024	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2025	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2026	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2027	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2028	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2029	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2030	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2031	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2032	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2033	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2034	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2035	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2036	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2037	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2038	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2039	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2040	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2041	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2042	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2043	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2044	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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2045	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2046	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2047	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2048	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2049	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2050	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2051	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2052	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2053	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2054	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2055	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2056	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2057	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2058	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2059	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2060	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2061	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2062	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2063	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2064	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2065	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2066	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2067	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2068	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2069	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2070	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2071	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2072	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2073	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2074	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2075	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2076	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2077	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2078	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2079	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2080	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2081	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2082	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2083	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2084	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2085	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2086	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2087	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2088	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2089	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2090	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2091	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2092	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2093	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2094	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2095	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2096	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2097	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2098	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2099	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2100	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
2101	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2102	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2103	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2104	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2105	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2106	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2107	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2108	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2109	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2110	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2111	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2112	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2113	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2114	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2115	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2116	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2117	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2118	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2119	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2120	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2121	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2122	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2123	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2124	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2125	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2126	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2127	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2128	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
2129	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2130	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2131	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2132	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2133	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2134	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2135	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2136	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2137	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2138	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2139	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2140	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2141	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2142	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2143	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2144	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2145	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2146	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2147	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2148	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2149	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2150	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2151	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2152	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2153	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2154	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2155	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2156	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
2157	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2158	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2159	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2160	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2161	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2162	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2163	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2164	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2165	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2166	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2167	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2168	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2169	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2170	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2171	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2172	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2173	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2174	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2175	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2176	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2177	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2178	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2179	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2180	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2181	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2182	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2183	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2184	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2185	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2186	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2187	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2188	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2189	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2190	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2191	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2192	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2193	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2194	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2195	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2196	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2197	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2198	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2199	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2200	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2201	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2202	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2203	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2204	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2205	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2206	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2207	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2208	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2209	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2210	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2211	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2212	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2213	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2214	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2215	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2216	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2217	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2218	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2219	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2220	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2221	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2222	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2223	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2224	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2225	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2226	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2227	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2228	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2229	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2230	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2231	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2232	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2233	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2234	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2235	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2236	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2237	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2238	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2239	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2240	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2241	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2242	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2243	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2244	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2245	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2246	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2247	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2248	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2249	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2250	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2251	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2252	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2253	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2254	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2255	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2256	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2257	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2258	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2259	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2260	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2261	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2262	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2263	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2264	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2265	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2266	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2267	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2268	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2269	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2270	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2271	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2272	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2273	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2274	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2275	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2276	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2277	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2278	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2279	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2280	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2281	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2282	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2283	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2284	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2285	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2286	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2287	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2288	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2289	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2290	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2291	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2292	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2293	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2294	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2295	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2296	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2297	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2298	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2299	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2300	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2301	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2302	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2303	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2304	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2305	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2306	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2307	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2308	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2309	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2310	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2311	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2312	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2313	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2314	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2315	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2316	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2317	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2318	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2319	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2320	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2321	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2322	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2323	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2324	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2325	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2326	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2327	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2328	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2329	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2330	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2331	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2332	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2333	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2334	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2335	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2336	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2337	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2338	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2339	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2340	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2341	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2342	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2343	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2344	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2345	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2346	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2347	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2348	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2349	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2350	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2351	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2352	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2353	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2354	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2355	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2356	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2357	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2358	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2359	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2360	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2361	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2362	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2363	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2364	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2365	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2366	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2367	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2368	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2369	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2370	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2371	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2372	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2373	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2374	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2375	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2376	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2377	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2378	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2379	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2380	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>

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bacteriald	phylum	class	order	family	genus	species
2381	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2382	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2383	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2384	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2385	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2386	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2387	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2388	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2389	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2390	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2391	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2392	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2393	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2394	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2395	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2396	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2397	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2398	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2399	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2400	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2401	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2402	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2403	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2404	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2405	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2406	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus gilvus</i>
2407	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus gilvus</i>
2408	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus gilvus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2409	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2410	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2411	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2412	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2413	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2414	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2415	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2416	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2417	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2418	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2419	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2420	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2421	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2422	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2423	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2424	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2425	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2426	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2427	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2428	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2429	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2430	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2431	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2432	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2433	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2434	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2435	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2436	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2437	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2438	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2439	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2440	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2441	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2442	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2443	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2444	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2445	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2446	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2447	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2448	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2449	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2450	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2451	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2452	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2453	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2454	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2455	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2456	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2457	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2458	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2459	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2460	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2461	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2462	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2463	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2464	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
2465	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2466	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2467	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2468	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2469	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2470	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2471	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2472	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2473	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2474	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2475	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2476	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2477	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2478	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2479	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2480	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2481	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2482	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2483	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2484	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2485	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2486	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2487	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2488	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2489	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2490	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2491	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2492	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2493	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2494	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2495	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2496	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2497	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2498	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2499	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2500	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2501	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2502	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2503	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2504	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2505	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2506	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2507	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2508	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2509	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2510	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2511	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2512	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2513	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2514	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2515	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2516	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2517	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2518	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2519	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2520	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2521	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2522	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2523	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2524	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2525	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2526	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2527	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2528	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2529	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2530	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2531	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2532	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2533	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2534	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2535	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2536	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2537	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2538	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2539	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2540	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2541	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2542	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2543	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2544	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2545	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2546	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2547	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2548	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2549	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2550	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2551	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2552	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2553	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2554	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2555	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2556	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2557	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2558	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2559	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2560	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2561	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2562	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2563	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2564	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2565	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2566	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2567	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2568	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2569	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2570	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2571	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2572	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2573	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2574	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2575	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2576	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2577	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2578	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2579	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2580	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2581	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2582	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2583	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2584	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2585	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2586	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2587	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2588	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2589	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2590	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2591	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2592	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2593	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2594	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2595	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2596	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2597	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2598	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2599	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2600	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2601	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2602	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2603	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2604	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2605	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2606	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2607	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2608	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2609	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2610	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2611	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2612	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2613	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2614	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2615	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2616	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2617	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2618	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2619	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2620	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus hirae</i>
2621	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2622	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2623	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2624	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2625	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Enterococcaceae</i>	<i>Enterococcus</i>	<i>Enterococcus</i>
2626	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2627	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2628	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2629	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2630	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2631	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2632	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2689	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2690	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2691	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2692	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2693	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2694	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2695	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2696	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2697	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2698	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2699	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2700	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2701	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus agilis</i>
2702	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2703	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2704	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2705	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2706	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2707	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2708	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus antri</i>
2709	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus antri</i>
2710	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus brevis</i>
2711	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus brevis</i>
2712	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus brevis</i>
2713	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus casei</i>
2714	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus casei</i>
2715	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus casei</i>
2716	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus casei</i>

Table S4. Isolated strains by culturomics

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[illegible]

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2773	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2774	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2775	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2776	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2777	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2778	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2779	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2780	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2781	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2782	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2783	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2784	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2785	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2786	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2787	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2788	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2789	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2790	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2791	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2792	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2793	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2794	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2795	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2796	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2797	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2798	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2799	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2800	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2801	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2802	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2803	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2804	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2805	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2806	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2807	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2808	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2809	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2810	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2811	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2812	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2813	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2814	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2815	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2816	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2817	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2818	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2819	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2820	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2821	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2822	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2823	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2824	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2825	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2826	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2827	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2828	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2829	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2830	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2831	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2832	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2833	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2834	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2835	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2836	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2837	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2838	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2839	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2840	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2841	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2842	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2843	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2844	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2845	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2846	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2847	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2848	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2849	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2850	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2851	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2852	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2853	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2854	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2855	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2856	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2857	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2858	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2859	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2860	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2861	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2862	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2863	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2864	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2865	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2866	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2867	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2868	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2869	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2870	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2871	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2872	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2873	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2874	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2875	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2876	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2877	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2878	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2879	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2880	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2881	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2882	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2883	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2884	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2885	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2886	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2887	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2888	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2889	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2890	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2891	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2892	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2893	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2894	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2895	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2896	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2897	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2898	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2899	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2900	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2901	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2902	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2903	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2904	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2905	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2906	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2907	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2908	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2909	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2910	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2911	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2912	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2913	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2914	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2915	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2916	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2917	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2918	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2919	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2920	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2921	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2922	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2923	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2924	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2925	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2926	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2927	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2928	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2929	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2930	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2931	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2932	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2933	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2934	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2935	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2936	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2937	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2938	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2939	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2940	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2941	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2942	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2943	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2944	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2945	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2946	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2947	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2948	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2949	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2950	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2951	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2952	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2953	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2954	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2955	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2956	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2957	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2958	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2959	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2960	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2961	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2962	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2963	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2964	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2965	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2966	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2967	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2968	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2969	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2970	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2971	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2972	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2973	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2974	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2975	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2976	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2977	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2978	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2979	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2980	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2981	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2982	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2983	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2984	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2985	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2986	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2987	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2988	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2989	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2990	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2991	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2992	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2993	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2994	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2995	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2996	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
2997	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2998	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
2999	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3000	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3001	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3002	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3003	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3004	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3005	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3006	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3007	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3008	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3009	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3010	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3011	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3012	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3013	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3014	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3015	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3016	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3017	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3018	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3019	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3020	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3021	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3022	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3023	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3024	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3025	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3026	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3027	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3028	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3029	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3030	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3031	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3032	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3033	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3034	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3035	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3036	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3037	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3038	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3039	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3040	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3041	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3042	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3043	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3044	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3045	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3046	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3047	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3048	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3049	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3050	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3051	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3052	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3053	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3054	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3055	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3056	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3057	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3058	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3059	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3060	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3061	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3062	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3063	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3064	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3065	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3066	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3067	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3068	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3069	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3070	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3071	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3072	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3073	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3074	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3075	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3076	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3077	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3078	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3079	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3080	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3081	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3082	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3083	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3084	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3085	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3086	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3087	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3088	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3089	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3090	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3091	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3092	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3093	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3094	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3095	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3096	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3097	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3098	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3099	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3100	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3101	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3102	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3103	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3104	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3105	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3106	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3107	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3108	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3109	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3110	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3111	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3112	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3113	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3114	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3115	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3116	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3117	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3118	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3119	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3120	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3121	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3122	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3123	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3124	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3125	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3126	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3127	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3128	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3129	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3130	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3131	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3132	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3133	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3134	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3135	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3136	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3137	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3138	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3139	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3140	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3141	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3142	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3143	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3144	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3145	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3146	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3147	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3148	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3149	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3150	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3151	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3152	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3153	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3154	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3155	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3156	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3157	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3158	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3159	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3160	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3161	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3162	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3163	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3164	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3165	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3166	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3167	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3168	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3169	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3170	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3171	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3172	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3173	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3174	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3175	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3176	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3177	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3178	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3179	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3180	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3181	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3182	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3183	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3184	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3185	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3186	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3187	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3188	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3189	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3190	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3191	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3192	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3193	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3194	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3195	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3196	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3197	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3198	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3199	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3200	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3201	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3202	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3203	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3204	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3205	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3206	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3207	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3208	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3209	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3210	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3211	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3212	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3213	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3214	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3215	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3216	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3217	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3218	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3219	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3220	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3221	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3222	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3223	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3224	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3225	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3226	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3227	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3228	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3229	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3230	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3231	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3232	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3233	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3234	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3235	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3236	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3237	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3238	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3239	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3240	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3241	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3242	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3243	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3244	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3245	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3246	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3247	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3248	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3249	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3250	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3251	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3252	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3253	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3254	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3255	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3256	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3257	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3258	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3259	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3260	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3261	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3262	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3263	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3264	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3265	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3266	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3267	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3268	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3269	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3270	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3271	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3272	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3273	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3274	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3275	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3276	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3277	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3278	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3279	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3280	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3281	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3282	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3283	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3284	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3285	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3286	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3287	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3288	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3289	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3290	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3291	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3292	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3293	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3294	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3295	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3296	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3297	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3298	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3299	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3300	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3301	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3302	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3303	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3304	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3305	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3306	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3307	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3308	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3309	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3310	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3311	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3312	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3313	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3314	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3315	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3316	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3317	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3318	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3319	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3320	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3321	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3322	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3323	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3324	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3325	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3326	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3327	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3328	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3329	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3330	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3331	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3332	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3333	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3334	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3335	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3336	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3337	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3338	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3339	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3340	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3341	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3342	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3343	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3344	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3345	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3346	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3347	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3348	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3349	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3350	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3351	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3352	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3353	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3354	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3355	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3356	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3357	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3358	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3359	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3360	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3361	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3362	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3363	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3364	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3365	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3366	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3367	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3368	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3369	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3370	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3371	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3372	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3373	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3374	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3375	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3376	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3377	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3378	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3379	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3380	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3381	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3382	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3383	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3384	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3385	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3386	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3387	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3388	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3389	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3390	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3391	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3392	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3393	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3394	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3395	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3396	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3397	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3398	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3399	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3400	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3401	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3402	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3403	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3404	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3405	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3406	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3407	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3408	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3409	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3410	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3411	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3412	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3413	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3414	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3415	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3416	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3417	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3418	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3419	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3420	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3421	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3422	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3423	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3424	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3425	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3426	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3427	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3428	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3429	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3430	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3431	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3432	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3433	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3434	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3435	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3436	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3437	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3438	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3439	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3440	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3441	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3442	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3443	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3444	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3445	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3446	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3447	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3448	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3449	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3450	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3451	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3452	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3453	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3454	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3455	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3456	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3457	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3458	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3459	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3460	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3461	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3462	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3463	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3464	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3465	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3466	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3467	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3468	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3469	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3470	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3471	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3472	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3473	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3474	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3475	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3476	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3477	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3478	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3479	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3480	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3481	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3482	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3483	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3484	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3485	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3486	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3487	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3488	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3489	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3490	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3491	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3492	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3493	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3494	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3495	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3496	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3497	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3498	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3499	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3500	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3529	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3530	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus oris</i>
3531	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3532	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3533	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3534	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3535	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3536	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3537	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3538	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3539	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3540	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3541	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3542	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3543	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3544	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3545	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3546	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3547	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3548	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3549	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3550	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3551	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3552	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3553	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3554	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3555	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3556	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3557	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3558	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3559	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3560	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3561	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3562	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3563	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3564	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3565	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3566	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3567	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3568	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3569	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3570	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3571	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3572	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3573	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3574	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3575	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3576	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3577	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3578	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3579	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3580	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3581	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3582	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3583	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3584	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3585	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3586	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3587	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3588	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3589	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3590	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3591	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3592	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3593	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3594	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3595	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3596	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3597	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3598	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3599	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3600	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3601	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3602	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3603	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3604	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3605	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3606	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3607	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3608	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3609	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3610	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3611	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3612	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3613	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3614	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3615	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3616	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3617	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3618	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3619	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3620	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3621	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3622	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3623	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3624	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3625	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3626	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3627	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3628	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3629	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3630	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3631	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3632	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3633	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3634	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3635	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3636	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3637	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3638	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3639	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3640	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3641	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3642	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3643	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3644	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3645	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3646	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3647	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3648	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3649	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3650	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3651	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3652	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3653	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3654	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3655	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3656	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3657	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3658	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3659	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3660	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3661	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3662	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3663	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3664	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3665	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3666	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3667	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3668	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3669	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3670	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3671	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3672	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3673	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3674	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3675	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3676	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3677	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3678	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3679	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3680	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3681	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3682	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3683	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3684	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3685	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3686	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3687	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3688	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3689	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3690	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3691	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3692	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3693	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3694	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3695	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3696	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3697	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3698	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3699	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3700	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3701	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3702	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3703	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3704	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3705	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3706	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3707	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3708	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3709	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3710	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3711	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3712	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3713	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3714	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3715	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3716	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3717	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3718	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3719	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3720	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3721	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3722	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3723	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3724	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3725	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3726	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3727	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3728	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3729	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3730	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3731	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3732	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3733	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3734	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3735	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3736	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3737	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3738	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3739	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3740	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3741	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3742	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3743	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3744	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3745	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3746	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3747	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3748	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3749	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3750	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3751	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3752	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3753	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3754	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3755	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3756	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3757	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3758	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3759	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3760	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3761	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3762	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3763	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3764	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3765	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3766	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3767	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3768	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3769	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3770	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3771	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3772	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3773	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3774	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3775	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3776	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3777	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3778	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3779	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3780	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3781	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3782	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3783	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3784	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3785	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3786	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3787	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3788	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3789	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3790	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3791	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3792	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3793	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3794	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3795	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3796	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3797	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3798	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3799	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3800	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3801	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3802	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3803	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3804	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3805	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3806	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3807	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3808	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3809	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3810	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3811	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3812	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3813	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3814	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3815	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3816	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3817	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3818	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3819	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3820	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3821	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3822	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3823	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3824	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3825	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3826	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3827	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3828	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3829	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3830	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3831	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3832	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3833	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3834	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3835	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3836	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3837	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3838	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3839	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3840	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3841	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3842	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3843	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3844	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3845	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3846	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3847	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3848	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3849	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3850	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3851	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3852	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3853	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3854	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3855	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3856	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3857	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3858	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3859	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3860	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3861	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3862	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3863	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus sakei</i>
3864	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3865	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3866	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3867	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3868	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3869	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3870	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3871	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3872	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3873	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3874	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3875	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3876	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3877	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3878	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3879	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3880	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3881	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3882	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3883	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3884	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3885	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3886	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3887	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3888	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3889	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3890	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3891	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3892	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3893	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3894	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3895	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3896	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3897	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3898	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3899	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3900	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3901	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3902	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3903	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3904	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3905	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3906	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3907	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3908	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3909	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3910	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3911	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3912	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3913	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3914	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3915	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3916	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3917	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3918	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3919	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3920	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3921	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3922	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3923	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3924	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3925	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3926	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3927	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3928	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3929	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3930	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3931	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3932	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3933	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3934	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3935	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3936	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3937	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3938	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3939	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3940	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3941	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3942	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3943	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3944	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3945	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3946	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3947	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3948	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3949	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3950	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3951	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3952	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3953	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3954	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3955	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3956	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3957	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3958	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3959	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3960	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3961	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3962	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3963	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3964	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3965	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3966	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3967	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3968	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3969	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3970	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3971	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3972	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3973	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3974	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3975	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3976	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
3977	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3978	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3979	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3980	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3981	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3982	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3983	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3984	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3985	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3986	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3987	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3988	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3989	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3990	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3991	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3992	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3993	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3994	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3995	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3996	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3997	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3998	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
3999	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4000	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4001	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4002	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4003	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4004	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
4005	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4006	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4007	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4008	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4009	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4010	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4011	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4012	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4013	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4014	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4015	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4016	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4017	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4018	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4019	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4020	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4021	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4022	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4023	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4024	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4025	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4026	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4027	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4028	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4029	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4030	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4031	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4032	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4033	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4034	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4035	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4036	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4037	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4038	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4039	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4040	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4041	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4042	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4043	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4044	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4045	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4046	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4047	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4048	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4049	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4050	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4051	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4052	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4053	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4054	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4055	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4056	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4057	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4058	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4059	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4060	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4061	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4062	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4063	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4064	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4065	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4066	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4067	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4068	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4069	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4070	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4071	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4072	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4073	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4074	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4075	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4076	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4077	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4078	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4079	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4080	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4081	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4082	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4083	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4084	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4085	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4086	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4087	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4088	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4089	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4090	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4091	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4092	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4093	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4094	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4095	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4096	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4097	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4098	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4099	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4100	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4101	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4102	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4103	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4104	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4105	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4106	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4107	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4108	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4109	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4110	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4111	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4112	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4113	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4114	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4115	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4116	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4117	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4118	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4119	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4120	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4121	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4122	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4123	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4124	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4125	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4126	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4127	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4128	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4129	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4130	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4131	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4132	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4133	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4134	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4135	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4136	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4137	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4138	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4139	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4140	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4141	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4142	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4143	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4144	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4145	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4146	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4147	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4148	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4149	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4150	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4151	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4152	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4153	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4154	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4155	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4156	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4157	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4158	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4159	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4160	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4161	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4162	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4163	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4164	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4165	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4166	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4167	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4168	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4169	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4170	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4171	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4172	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4173	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4174	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4175	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4176	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4177	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4178	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4179	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4180	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4181	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4182	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4183	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4184	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4185	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4186	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4187	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4188	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4189	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4190	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4191	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4192	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4193	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4194	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4195	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4196	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4197	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4198	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4199	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4200	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4201	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4202	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4203	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4204	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4205	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4206	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4207	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4208	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4209	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4210	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4211	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4212	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4213	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4214	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4215	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4216	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4217	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4218	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4219	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4220	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4221	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4222	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4223	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4224	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4225	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4226	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4227	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4228	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4229	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4230	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4231	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4232	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4233	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4234	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4235	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4236	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4237	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4238	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4239	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4240	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4241	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4242	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4243	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4244	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4245	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4246	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4247	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4248	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4249	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4250	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4251	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4252	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4253	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4254	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4255	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4256	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4257	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4258	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4259	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4260	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4261	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4262	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4263	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4264	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4265	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4266	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4267	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4268	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4269	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4270	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4271	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4272	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4273	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4274	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4275	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4276	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4277	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4278	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4279	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4280	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4281	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4282	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4283	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4284	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4285	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4286	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4287	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4288	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4289	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4290	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4291	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4292	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4293	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4294	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4295	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4296	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4297	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4298	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4299	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4300	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4301	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4302	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4303	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4304	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4305	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4306	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4307	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4308	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4309	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4310	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4311	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4312	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4313	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4314	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4315	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4316	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4317	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4318	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4319	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4320	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4321	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4322	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4323	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4324	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4325	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4326	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4327	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4328	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4329	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4330	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4331	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4332	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4333	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4334	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4335	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4336	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4337	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4338	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4339	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4340	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4341	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4342	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4343	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4344	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4345	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4346	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4347	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4348	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4349	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4350	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4351	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4352	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4353	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4354	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4355	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4356	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4357	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4358	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4359	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4360	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4361	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4362	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4363	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4364	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4365	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4366	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4367	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4368	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4369	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4370	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4371	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4372	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4373	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4374	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4375	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4376	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4377	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4378	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4379	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4380	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4381	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4382	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4383	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4384	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4385	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4386	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4387	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4388	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4389	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4390	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4391	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4392	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4393	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4394	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4395	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4396	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4397	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4398	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4399	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4400	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4401	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4402	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4403	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4404	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4405	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4406	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4407	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4408	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4409	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4410	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4411	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4412	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4413	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4414	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4415	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4416	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4417	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4418	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4419	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4420	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4421	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4422	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4423	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4424	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4425	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4426	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4427	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4428	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4429	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4430	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4431	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4432	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4433	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4434	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4435	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4436	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4437	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4438	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4439	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4440	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4441	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4442	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4443	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4444	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4445	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4446	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4447	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4448	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4449	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4450	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4451	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4452	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4453	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4454	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4455	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4456	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4457	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4458	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4459	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4460	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4461	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4462	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4463	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4464	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactobacillus</i>
4465	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Lactobacillus</i>	<i>Lactococcus lactis</i>
4466	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Pediococcus</i>	<i>Pediococcus</i>
4467	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Lactobacillaceae</i>	<i>Pediococcus</i>	<i>Pediococcus</i>
4468	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella cibaria</i>
4469	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4470	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4471	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4472	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4473	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4474	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4475	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4476	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4477	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4478	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4479	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4480	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4481	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4482	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4483	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4484	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4485	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4486	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4487	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4488	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4489	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4490	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4491	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4492	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4493	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Leuconostocaceae</i>	<i>Weissella</i>	<i>Weissella confusa</i>
4494	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4495	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4496	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4497	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4498	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4499	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4500	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4501	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4502	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4503	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4504	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4505	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus</i>
4506	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4507	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4508	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4509	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4510	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4511	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4512	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4513	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4514	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4515	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4516	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4517	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4518	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4519	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4520	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Lactococcus</i>	<i>Lactococcus lactis</i>
4521	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4522	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4523	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4524	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4525	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4526	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4527	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4528	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4529	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4530	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4531	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4532	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4533	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4534	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4535	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4536	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

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bacteriald	phylum	class	order	family	genus	species
4537	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4538	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4539	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4540	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4541	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4542	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4543	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4544	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4545	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4546	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4547	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4548	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4549	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4550	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4551	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4552	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4553	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4554	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4555	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4556	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4557	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4558	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4559	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4560	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4561	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4562	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4563	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4564	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4565	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4566	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4567	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4568	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4569	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4570	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4571	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4572	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4573	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4574	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4575	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4576	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4577	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4578	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4579	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4580	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4581	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4582	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4583	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4584	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4585	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4586	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4587	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4588	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4589	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4590	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4591	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4592	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4593	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4594	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4595	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4596	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4597	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4598	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4599	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4600	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4601	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4602	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4603	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4604	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4605	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4606	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4607	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4608	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4609	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4610	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4611	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4612	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4613	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4614	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4615	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4616	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4617	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4618	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4619	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4620	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4621	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4622	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4623	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4624	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4625	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4626	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4627	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4628	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4629	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4630	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4631	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4632	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4633	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4634	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4635	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4636	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4637	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4638	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4639	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4640	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4641	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4642	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4643	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4644	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4645	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4646	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4647	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4648	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

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bacteriald	phylum	class	order	family	genus	species
4649	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4650	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4651	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4652	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4653	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4654	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4655	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4656	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4657	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4658	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4659	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4660	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4661	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4662	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4663	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4664	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4665	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4666	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4667	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4668	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4669	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4670	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4671	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4672	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4673	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4674	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4675	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4676	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4677	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4678	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4679	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4680	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4681	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4682	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4683	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4684	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4685	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4686	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4687	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4688	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4689	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4690	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4691	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4692	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4693	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4694	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4695	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4696	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4697	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4698	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4699	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4700	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4701	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4702	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4703	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4704	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4705	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4706	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4707	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4708	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4709	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4710	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4711	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4712	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4713	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4714	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4715	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4716	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4717	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4718	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4719	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4720	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4721	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4722	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4723	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4724	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4725	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4726	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4727	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4728	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4729	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4730	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4731	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4732	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4733	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4734	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4735	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4736	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4737	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4738	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4739	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4740	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4741	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4742	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4743	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4744	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4745	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4746	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4747	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4748	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4749	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4750	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4751	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4752	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4753	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4754	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4755	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4756	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4757	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4758	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4759	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4760	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4761	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4762	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4763	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4764	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4765	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4766	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4767	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4768	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4769	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4770	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4771	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4772	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4773	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4774	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4775	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4776	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4777	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4778	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4779	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4780	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4781	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4782	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4783	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4784	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4785	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4786	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4787	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4788	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4789	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4790	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4791	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4792	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4793	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4794	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4795	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4796	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4797	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4798	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4799	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4800	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4801	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4802	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4803	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4804	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4805	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4806	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4807	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4808	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4809	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4810	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4811	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4812	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4813	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4814	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4815	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4816	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4817	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4818	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4819	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4820	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4821	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4822	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4823	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4824	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4825	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4826	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4827	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4828	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus oralis</i>
4829	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4830	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4831	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4832	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4833	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4834	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4835	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4836	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4837	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4838	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4839	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4840	<i>Firmicutes</i>	<i>Bacilli</i>	<i>Lactobacillales</i>	<i>Streptococcaceae</i>	<i>Streptococcus</i>	<i>Streptococcus</i>
4841	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4842	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4843	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4844	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4845	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4846	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4847	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4848	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4849	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4850	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4851	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4852	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4853	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4854	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4855	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4856	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4857	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4858	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4859	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4860	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4861	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4862	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4863	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4864	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4865	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4866	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4867	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4868	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4869	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4870	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4871	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4872	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4873	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4874	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4875	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4876	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4877	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4878	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4879	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4880	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4881	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4882	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4883	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4884	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4885	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4886	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4887	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4888	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4889	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4890	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4891	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4892	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4893	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4894	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4895	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4896	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4897	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4898	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4899	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4900	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4901	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4902	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4903	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4904	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4905	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4906	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4907	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4908	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4909	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4910	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4911	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4912	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4913	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4914	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4915	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4916	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4917	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4918	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4919	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4920	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4921	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4922	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4923	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4924	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4925	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4926	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4927	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4928	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4929	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4930	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4931	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4932	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4933	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4934	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4935	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4936	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4937	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4938	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4939	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4940	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4941	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4942	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4943	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4944	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4945	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4946	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4947	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4948	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4949	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4950	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4951	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4952	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4953	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4954	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4955	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4956	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4957	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4958	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4959	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4960	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4961	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4962	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4963	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4964	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4965	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4966	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4967	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4968	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4969	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4970	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4971	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4972	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4973	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4974	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4975	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4976	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4977	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4978	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4979	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4980	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4981	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4982	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4983	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4984	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
4985	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4986	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4987	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4988	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4989	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4990	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4991	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4992	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4993	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4994	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4995	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4996	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4997	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4998	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
4999	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5000	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5001	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5002	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5003	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5004	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5005	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5006	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5007	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5008	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5009	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5010	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5011	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5012	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5013	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5014	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5015	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5016	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5017	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5018	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5019	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5020	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5021	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5022	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5023	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5024	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5025	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5026	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5027	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5028	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5029	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5030	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5031	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5032	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5033	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5034	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5035	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5036	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5037	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5038	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5039	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5040	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5041	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5042	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5043	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5044	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5045	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5046	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5047	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5048	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5049	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5050	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5051	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5052	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5053	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5054	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5055	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5056	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5057	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5058	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5059	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5060	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5061	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5062	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5063	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5064	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5065	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5066	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5067	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5068	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5069	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5070	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5071	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5072	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5073	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5074	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5075	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5076	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5077	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5078	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5079	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5080	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5081	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5082	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5083	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5084	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5085	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5086	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5087	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5088	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5089	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5090	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5091	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5092	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5093	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5094	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5095	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5096	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5097	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5098	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5099	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5100	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5101	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5102	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5103	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5104	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5105	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5106	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5107	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5108	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5109	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5110	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5111	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5112	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5113	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5114	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5115	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5116	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5117	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5118	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5119	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5120	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5121	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5122	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5123	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5124	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5125	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5126	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5127	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5128	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5129	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5130	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5131	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5132	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5133	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5134	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5135	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5136	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5137	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5138	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5139	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5140	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5141	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5142	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5143	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5144	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5145	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5146	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5147	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5148	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5149	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5150	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5151	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5152	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5153	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5154	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5155	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5156	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5157	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5158	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5159	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5160	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5161	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5162	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5163	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5164	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5165	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5166	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5167	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5168	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5169	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5170	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5171	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5172	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5173	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5174	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5175	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5176	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5177	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5178	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5179	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5180	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5181	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5182	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5183	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5184	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5185	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5186	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5187	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5188	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5189	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5190	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5191	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5192	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5193	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5194	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5195	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5196	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5197	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5198	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5199	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5200	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5201	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5202	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5203	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5204	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5205	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5206	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5207	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5208	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5209	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5210	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5211	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5212	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5213	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5214	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5215	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5216	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5217	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5218	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5219	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5220	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5221	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5222	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5223	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5224	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5225	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5226	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5227	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5228	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5229	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5230	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5231	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5232	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5233	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5234	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5235	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5236	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5237	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5238	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5239	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5240	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5241	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5242	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5243	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5244	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5245	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5246	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5247	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5248	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5249	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5250	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5251	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5252	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5253	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5254	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5255	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5256	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5257	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5258	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium bolteae</i>
5259	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihmii</i>
5260	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5261	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5262	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5263	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5264	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5265	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5266	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_biferm</i>
5267	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_biferm</i>
5268	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_biferm</i>
5269	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_biferm</i>
5270	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5271	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5272	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5273	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5274	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5275	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5276	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5277	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5278	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridia</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_sp_7_2</i>
5279	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5280	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5281	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5282	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5283	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5284	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5285	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5286	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5287	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5288	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium_baratii</i>
5289	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5290	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5291	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5292	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5293	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5294	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5295	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5296	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5297	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5298	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5299	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5300	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5301	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5302	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5303	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5304	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5305	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5306	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5307	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5308	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5309	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5310	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5311	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5312	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5313	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5314	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5315	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5316	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5317	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5318	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5319	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5320	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5321	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5322	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5323	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5324	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5325	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5326	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5327	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5328	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5329	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5330	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5331	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5332	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5333	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5334	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5335	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5336	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5337	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5338	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5339	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5340	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5341	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5342	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5343	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5344	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5345	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5346	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5347	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5348	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5349	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5350	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5351	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5352	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5353	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5354	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5355	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5356	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5357	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5358	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5359	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5360	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5361	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5362	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5363	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5364	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5365	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5366	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5367	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5368	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5369	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5370	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5371	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5372	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5373	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5374	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium difficile</i>
5375	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium difficile</i>
5376	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium difficile</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5377	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5378	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5379	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5380	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5381	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5382	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5383	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5384	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5385	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5386	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5387	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5388	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5389	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5390	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5391	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5392	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5393	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5394	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5395	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5396	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5397	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5398	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5399	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5400	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5401	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5402	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5403	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5404	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5405	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium ihumii</i>
5406	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5407	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5408	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5409	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5410	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5411	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5412	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5413	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5414	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5415	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5416	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5417	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5418	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5419	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5420	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5421	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5422	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5423	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5424	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5425	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5426	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5427	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5428	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5429	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5430	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5431	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5432	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5433	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5434	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5435	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5436	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5437	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5438	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5439	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5440	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5441	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5442	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5443	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5444	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5445	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5446	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5447	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5448	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5449	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5450	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5451	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5452	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5453	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5454	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5455	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5456	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5457	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5458	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5459	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5460	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5461	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5462	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5463	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5464	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5465	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5466	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5467	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5468	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5469	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5470	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5471	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5472	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5473	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5474	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5475	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5476	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5477	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5478	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5479	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5480	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5481	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5482	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5483	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5484	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5485	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5486	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5487	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5488	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5489	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5490	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5491	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5492	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5493	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5494	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5495	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5496	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5497	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5498	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5499	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5500	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5501	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5502	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5503	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5504	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5505	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5506	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5507	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5508	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5509	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5510	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5511	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5512	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5513	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5514	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5515	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5516	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5517	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5518	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5519	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5520	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5521	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5522	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5523	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5524	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5525	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5526	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5527	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5528	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5529	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5530	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5531	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5532	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5533	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5534	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5535	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5536	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5537	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5538	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5539	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5540	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5541	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5542	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5543	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5544	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

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bacterialId	phylum	class	order	family	genus	species
5545	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5546	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5547	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5548	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5549	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5550	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5551	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5552	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5553	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5554	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5555	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5556	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5557	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5558	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5559	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5560	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5561	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5562	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5563	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5564	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5565	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5566	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5567	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5568	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5569	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5570	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5571	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5572	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5573	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5574	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5575	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5576	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5577	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5578	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5579	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5580	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5581	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5582	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5583	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5584	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5585	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5586	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5587	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5588	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5589	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5590	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5591	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5592	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5593	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5594	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5595	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5596	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5597	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5598	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5599	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5600	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

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bacterialId	phylum	class	order	family	genus	species
5601	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5602	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5603	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5604	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5605	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5606	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5607	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5608	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5609	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5610	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5611	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5612	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5613	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5614	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5615	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5616	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5617	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5618	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5619	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5620	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5621	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5622	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5623	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5624	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5625	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5626	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5627	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5628	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

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bacterialId	phylum	class	order	family	genus	species
5629	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5630	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5631	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5632	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5633	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5634	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5635	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5636	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5637	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5638	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5639	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5640	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5641	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5642	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5643	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5644	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5645	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5646	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5647	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5648	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5649	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5650	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5651	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5652	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5653	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5654	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5655	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5656	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5657	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5658	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5659	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5660	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5661	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5662	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5663	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5664	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5665	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5666	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5667	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5668	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5669	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5670	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5671	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5672	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5673	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5674	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5675	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5676	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5677	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5678	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5679	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5680	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5681	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5682	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5683	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5684	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5685	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5686	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5687	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5688	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5689	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5690	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5691	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5692	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5693	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5694	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5695	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5696	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5697	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5698	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5699	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5700	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5701	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5702	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5703	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5704	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5705	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5706	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5707	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5708	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5709	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5710	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5711	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5712	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5713	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5714	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5715	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5716	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5717	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5718	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5719	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5720	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5721	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5722	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5723	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5724	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5725	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5726	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5727	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5728	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5729	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5730	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5731	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5732	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5733	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5734	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5735	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5736	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5737	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5738	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5739	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5740	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

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bacteriald	phylum	class	order	family	genus	species
5741	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5742	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5743	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5744	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5745	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5746	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5747	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5748	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5749	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5750	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5751	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5752	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5753	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5754	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5755	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5756	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5757	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5758	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5759	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5760	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5761	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5762	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5763	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5764	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5765	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5766	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5767	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5768	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5769	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5770	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5771	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5772	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5773	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5774	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5775	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5776	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5777	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5778	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5779	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5780	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5781	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5782	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5783	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5784	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5785	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5786	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5787	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5788	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5789	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium</i>
5790	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5791	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5792	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5793	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5794	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5795	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5796	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
5797	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5798	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5799	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5800	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5801	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5802	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5803	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5804	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5805	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5806	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5807	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5808	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5809	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5810	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5811	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5812	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5813	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5814	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5815	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5816	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5817	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5818	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5819	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5820	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5821	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5822	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5823	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5824	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5881	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5882	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5883	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5884	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5885	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5886	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5887	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5888	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5889	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5890	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5891	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5892	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5893	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5894	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5895	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5896	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5897	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5898	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5899	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5900	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5901	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5902	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5903	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5904	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5905	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5906	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5907	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5908	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>

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bacteriald	phylum	class	order	family	genus	species
5937	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5938	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5939	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5940	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5941	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5942	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5943	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5944	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5945	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5946	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5947	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5948	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Clostridium tertium</i>
5949	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Clostridiaceae</i>	<i>Clostridium</i>	<i>Hungatella</i>
5950	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5951	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5952	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5953	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5954	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5955	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5956	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5957	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5958	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Eubacteriaceae</i>	<i>Eubacterium</i>	<i>Eubacterium</i>
5959	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Anaerostipes</i>	<i>Anaerostipes caccae</i>
5960	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5961	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5962	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5963	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5964	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5965	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5966	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5967	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5968	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5969	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5970	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5971	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5972	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5973	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5974	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5975	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5976	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnoclostridium</i>	<i>Clostridium</i>
5977	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Paeniclostridium</i>	<i>Paeniclostridium</i>
5978	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Paeniclostridium</i>	<i>Paeniclostridium</i>
5979	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5980	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5981	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5982	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5983	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5984	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>	<i>Peptostreptococcac</i>
5985	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Peptostreptococcac</i>	<i>Terrisporobacter</i>	<i>Terrisporobacter</i>
5986	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Ruminococcaceae</i>	<i>Flavonifractor</i>	<i>Flavonifractor</i>
5987	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnospiraceae</i>	<i>Lachnospiraceae</i>
5988	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Clostridiales</i>	<i>Lachnospiraceae</i>	<i>Lachnospiraceae</i>	<i>Lachnospiraceae</i>
5989	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Peptostreptococcale</i>	<i>Peptostreptococcac</i>	<i>Paraclostridium</i>	<i>Paraclostridium</i>
5990	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Peptostreptococcale</i>	<i>Peptostreptococcac</i>	<i>Paraclostridium</i>	<i>Paraclostridium</i>
5991	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Peptostreptococcale</i>	<i>Peptostreptococcac</i>	<i>Paraclostridium</i>	<i>Paraclostridium</i>
5992	<i>Firmicutes</i>	<i>Clostridia</i>	<i>Peptostreptococcale</i>	<i>Peptostreptococcac</i>	<i>Paraclostridium</i>	<i>Paraclostridium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
5993	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Dielma</i>	<i>Dielma fastidiosa</i>
5994	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
5995	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
5996	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
5997	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
5998	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
5999	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6000	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6001	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6002	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6003	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6004	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6005	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6006	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Clostridium</i>
6007	<i>Firmicutes</i>	<i>Erysipelotrichia</i>	<i>Erysipelotrichales</i>	<i>Erysipelotrichaceae</i>	<i>Erysipelatoclostridi</i>	<i>Erysipelatoclostridi</i>
6008	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6009	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6010	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6011	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6012	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6013	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6014	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6015	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6016	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6017	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6018	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6019	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6020	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6021	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6022	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6023	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6024	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6025	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6026	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6027	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6028	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6029	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6030	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6031	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6032	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6033	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6034	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6035	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6036	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6037	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6038	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6039	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6040	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6041	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6042	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6043	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Acidaminococcales</i>	<i>Acidaminococcaceae</i>	<i>Acidaminococcus</i>	<i>Acidaminococcus</i>
6044	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Megamonas</i>	<i>Megamonas</i> sp.
6045	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6046	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6047	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6048	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6049	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6050	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6051	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6052	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6053	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6054	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6055	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6056	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6057	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6058	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6059	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6060	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6061	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6062	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6063	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6064	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6065	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6066	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6067	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6068	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6069	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6070	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6071	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6072	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6073	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6074	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6075	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6076	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
6077	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6078	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6079	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6080	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6081	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6082	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6083	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6084	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6085	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6086	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6087	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6088	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6089	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6090	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6091	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6092	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6093	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6094	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6095	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6096	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6097	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6098	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6099	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6100	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6101	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6102	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6103	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6104	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>

Table S4. Isolated strains by culturomics

bacterialid	phylum	class	order	family	genus	species
6105	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6106	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6107	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6108	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6109	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6110	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6111	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6112	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6113	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6114	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6115	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6116	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6117	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6118	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	<i>Mitsuokella</i>
6119	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Selenomonadales</i>	<i>Selenomonadaceae</i>	<i>Mitsuokella</i>	unknown BDW2
6120	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Megasphaera</i>	<i>Megasphaera</i>
6121	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Megasphaera</i>	unknown B14W6
6122	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella atypica</i>
6123	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella atypica</i>
6124	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella atypica</i>
6125	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella atypica</i>
6126	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella magna</i>
6127	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella magna</i>
6128	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella magna</i>
6129	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella magna</i>
6130	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella parvula</i>
6131	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella parvula</i>
6132	<i>Firmicutes</i>	<i>Negativicutes</i>	<i>Veillonellales</i>	<i>Veillonellaceae</i>	<i>Veillonella</i>	<i>Veillonella parvula</i>

Table S4. Isolated strains by culturomics

bacterialId	phylum	class	order	family	genus	species
6133	<i>Firmicutes</i>	<i>Tissierellia</i>	<i>Tissierellales</i>	<i>Peptoniphilaceae</i>	<i>Anaerococcus</i>	<i>Anaerococcus</i>
6134	<i>Firmicutes</i>	<i>Tissierellia</i>	<i>Tissierellales</i>	<i>Peptoniphilaceae</i>	<i>Finegoldia</i>	<i>Finegoldia magna</i>
6135	<i>Firmicutes</i>	<i>Tissierellia</i>	<i>Tissierellales</i>	<i>Peptoniphilaceae</i>	<i>Finegoldia</i>	<i>Finegoldia magna</i>
6136	<i>Firmicutes</i>	<i>Tissierellia</i>	<i>Tissierellales</i>	<i>Peptoniphilaceae</i>	<i>Finegoldia</i>	<i>Finegoldia magna</i>
6137	<i>Firmicutes</i>	<i>Tissierellia</i>	<i>Tissierellales</i>	<i>Peptoniphilaceae</i>	<i>Finegoldia</i>	<i>Finegoldia magna</i>
6138	<i>Firmicutes</i>	unknown	unknown	unknown	unknown	unknown B13BH
6139	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6140	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6141	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6142	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6143	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6144	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6145	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6146	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6147	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6148	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6149	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6150	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6151	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6152	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6153	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6154	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6155	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6156	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6157	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6158	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6159	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6160	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6161	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6162	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6163	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6164	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6165	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6166	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6167	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6168	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6169	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6170	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6171	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6172	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6173	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6174	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6175	<i>Fusobacteria</i>	<i>Fusobacteriia</i>	<i>Fusobacteriales</i>	<i>Fusobacteriaceae</i>	<i>Fusobacterium</i>	<i>Fusobacterium</i>
6176	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Burkholderiaceae</i>	<i>Ralstonia</i>	<i>Ralstonia insidiosa</i>
6177	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6178	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6179	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6180	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6181	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6182	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6183	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6184	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6185	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6186	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6187	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6188	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6217	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6218	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6219	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6220	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6221	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6222	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6223	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6224	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6225	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6226	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6227	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6228	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6229	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6230	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6231	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6232	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6233	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6234	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6235	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6236	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6237	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6238	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6239	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6240	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6241	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6242	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6243	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Burkholderiales</i>	<i>Comamonadaceae</i>	<i>Comamonas</i>	<i>Comamonas</i>
6244	<i>Proteobacteria</i>	<i>Deltaproteobacteria</i>	<i>Myxococcales</i>	<i>Cystobacterineae</i>	<i>Myxococcaceae</i>	<i>Corallococcus</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6329	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Citrobacter</i>	<i>Citrobacter koseri</i>
6330	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Citrobacter</i>	<i>Citrobacter koseri</i>
6331	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Citrobacter</i>	<i>Citrobacter koseri</i>
6332	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Citrobacter</i>	<i>Citrobacter</i>
6333	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Cronobacter</i>	<i>Cronobacter</i>
6334	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Cronobacter</i>	<i>Cronobacter</i>
6335	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6336	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6337	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6338	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6339	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6340	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6341	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6342	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6343	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6344	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6345	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6346	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6347	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6348	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6349	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6350	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6351	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6352	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6353	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6354	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6355	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6356	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
6385	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6386	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6387	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6388	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter</i>
6389	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter_cloac</i>
6390	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter_cloac</i>
6391	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter_cloac</i>
6392	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter_cloac</i>
6393	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacter</i>	<i>Enterobacter_cloac</i>
6394	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Enterobacteriaceae</i>	<i>Enterobacteriaceae</i>
6395	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6396	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6397	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6398	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6399	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6400	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6401	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6402	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6403	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6404	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6405	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6406	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6407	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6408	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6409	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6410	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6411	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>
6412	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Escherichia</i>	<i>Escherichia coli</i>

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

[illegible]

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bacteriald	phylum	class	order	family	genus	species
7393	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella oxytoca</i>
7394	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella oxytoca</i>
7395	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella oxytoca</i>
7396	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7397	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7398	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7399	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7400	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7401	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7402	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7403	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7404	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7405	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7406	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7407	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7408	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7409	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7410	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7411	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7412	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7413	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7414	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7415	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7416	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7417	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7418	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7419	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7420	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7449	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7450	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7451	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7452	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7453	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7454	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7455	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7456	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7457	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7458	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7459	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7460	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7461	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7462	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7463	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7464	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7465	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7466	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7467	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7468	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7469	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella</i>
7470	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Klebsiella</i>	<i>Klebsiella variicola</i>
7471	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Raoultella</i>	<i>Raoultella</i>
7472	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella sp.</i>
7473	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella sp.</i>
7474	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella sp.</i>
7475	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella sp.</i>
7476	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella sp.</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7477	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella</i> sp.
7478	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella</i> sp.
7479	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella</i> sp.
7480	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Salmonella</i>	<i>Salmonella</i> sp.
7481	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Enterobacteriaceae</i>	<i>Trabulsiella</i>	<i>Trabulsiella</i>
7482	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7483	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7484	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7485	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7486	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7487	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7488	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7489	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7490	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7491	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7492	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7493	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7494	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7495	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7496	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7497	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7498	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7499	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7500	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7501	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7502	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7503	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7504	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7505	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7506	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7507	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7508	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7509	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7510	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7511	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7512	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7513	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7514	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7515	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7516	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7517	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7518	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7519	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7520	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7521	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7522	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7523	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7524	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7525	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7526	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7527	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7528	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7529	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7530	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7531	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7532	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7533	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7534	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7535	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7536	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7537	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7538	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7539	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7540	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7541	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7542	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7543	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7544	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7545	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7546	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7547	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7548	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7549	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7550	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7551	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7552	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7553	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7554	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7555	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7556	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7557	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7558	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7559	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7560	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7561	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7562	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7563	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7564	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7565	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7566	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7567	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7568	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7569	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7570	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7571	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7572	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7573	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7574	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7575	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7576	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7577	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7578	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7579	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7580	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7581	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7582	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7583	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7584	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7585	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7586	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7587	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7588	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7589	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7590	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7591	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7592	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7593	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7594	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7595	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7596	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7597	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7598	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7599	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7600	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7601	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7602	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7603	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7604	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7605	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7606	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7607	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7608	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7609	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7610	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7611	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7612	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7613	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7614	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7615	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7616	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7617	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7618	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7619	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7620	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7621	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7622	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7623	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7624	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7625	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7626	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7627	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7628	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7629	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7630	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7631	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7632	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7633	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7634	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7635	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7636	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7637	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7638	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7639	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7640	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7641	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7642	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7643	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Hafniaceae</i>	<i>Hafnia</i>	<i>Hafnia alvei</i>
7644	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Morganella</i>	<i>Morganella</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7645	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Morganella</i>	<i>Morganella</i>
7646	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Morganella</i>	<i>Morganella</i>
7647	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7648	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7649	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7650	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7651	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7652	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7653	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7654	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7655	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7656	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7657	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7658	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7659	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7660	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7661	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7662	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7663	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7664	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7665	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7666	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7667	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7668	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7669	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7670	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7671	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7672	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7757	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7758	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7759	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7760	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7761	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7762	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7763	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7764	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7765	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7766	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7767	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7768	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus mirabilis</i>
7769	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus penneri</i>
7770	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus penneri</i>
7771	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus penneri</i>
7772	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus vulgaris</i>
7773	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus vulgaris</i>
7774	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Proteus</i>	<i>Proteus vulgaris</i>
7775	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia</i>
7776	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7777	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7778	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7779	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7780	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7781	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7782	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7783	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7784	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>

Table S4. Isolated strains by culturomics

bacteriald	phylum	class	order	family	genus	species
7785	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7786	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia rettgeri</i>
7787	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia stuartii</i>
7788	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia stuartii</i>
7789	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia stuartii</i>
7790	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Enterobacterales</i>	<i>Morganellaceae</i>	<i>Providencia</i>	<i>Providencia stuartii</i>
7791	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Moraxellaceae</i>	<i>Acinetobacter</i>	<i>Acinetobacter</i>
7792	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Moraxellaceae</i>	<i>Acinetobacter</i>	<i>Acinetobacter</i>
7793	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Moraxellaceae</i>	<i>Moraxella</i>	<i>Moraxella sg</i>
7794	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7795	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7796	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7797	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7798	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7799	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7800	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7801	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7802	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7803	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7804	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7805	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7806	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7807	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7808	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7809	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7810	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7811	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>
7812	<i>Proteobacteria</i>	<i>Gammaproteobacte</i>	<i>Pseudomonadales</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>	<i>Pseudomonas</i>

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

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Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S4. Isolated strains by culturomics

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides vulgatus</i>
anaerobic/42 degree	<i>Bacteroides vulgatus</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bacteroides xylanisolvens</i>
anaerobic/37 degree	<i>Bifidobacterium adolescentis</i>
anaerobic/37 degree	<i>Bifidobacterium animalis</i>
anaerobic/37 degree	<i>Bifidobacterium bifidum</i>
anaerobic/37 degree	<i>Bifidobacterium bifidum</i>
anaerobic/37 degree	<i>Bifidobacterium bifidum</i>
anaerobic/37 degree	<i>Bifidobacterium breve</i>
anaerobic/37 degree	<i>Bifidobacterium breve</i>
anaerobic/40-50 degree	<i>Bifidobacterium breve</i>
anaerobic/40-50 degree	<i>Bifidobacterium breve</i>
anaerobic/37 degree	<i>Bifidobacterium catenulatum</i>
anaerobic/40-50 degree	<i>Bifidobacterium catenulatum</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/37 degree	<i>Bifidobacterium dentium</i>
anaerobic/42 degree	<i>Bifidobacterium dentium</i>
anaerobic/42 degree	<i>Bifidobacterium dentium</i>

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/37 degree	<i>Comamonas kerstersii</i>
anaerobic/42 degree	<i>Corynebacterium kroppenstedtii</i>
anaerobic/37 degree	<i>Cronobacter sakazakii</i>
anaerobic/42 degree	<i>Cronobacter sakazakii</i>
anaerobic/42 degree	<i>Cryptococcus gattii</i> (<i>Filobasidiella bacillispora</i>)
anaerobic/37 degree	<i>Dielma fastidiosa</i>
anaerobic/37 degree	<i>Dysgonomonas unclassified</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/37 degree	<i>Eggerthella lenta</i>
anaerobic/42 degree	<i>Enorma timonensis</i>
anaerobic/42 degree	<i>Enorma timonensis</i>
anaerobic/42 degree	<i>Enorma timonensis</i>
anaerobic/37 degree	<i>Enterobacter aerogenes</i>
anaerobic/35 degree	<i>Enterobacter cloacae</i>
anaerobic/35 degree	<i>Enterobacter cloacae</i>
anaerobic/35 degree	<i>Enterobacter cloacae</i>
anaerobic/35 degree	<i>Enterobacter cloacae</i>
anaerobic/37 degree	<i>Enterobacter cloacae</i>
anaerobic/37 degree	<i>Enterobacter cloacae</i>
anaerobic/37 degree	<i>Enterobacter cloacae</i>
anaerobic/37 degree	<i>Enterobacter cloacae</i>

Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/37 degree	<i>Enterobacter cowanii</i>
anaerobic/37 degree	<i>Enterobacter kobei</i>
anaerobic/37 degree	<i>Enterobacter kobei</i>
anaerobic/35 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter ludwigii</i>
anaerobic/42 degree	<i>Enterobacter ludwigii</i>
anaerobic/42 degree	<i>Enterobacter ludwigii</i>
anaerobic/37 degree	<i>Enterobacter roggenkampii</i>
anaerobic/37 degree	<i>Enterobacter_cloacae</i>
anaerobic/37 degree	<i>Enterobacter_cloacae</i>
anaerobic/37 degree	<i>Enterobacter_cloacae</i>
anaerobic/37 degree	<i>Enterobacter_cloacae</i>
anaerobic/42 degree	<i>Enterobacteriaceae bacterium 9_2_54FAA</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus asini</i>
anaerobic/42 degree	<i>Enterococcus asini</i>
anaerobic/42 degree	<i>Enterococcus asini</i>
anaerobic/42 degree	<i>Enterococcus asini</i>
anaerobic/37 degree	<i>Enterococcus avium</i>
anaerobic/37 degree	<i>Enterococcus avium</i>
anaerobic/37 degree	<i>Enterococcus avium</i>
anaerobic/37 degree	<i>Enterococcus avium</i>
anaerobic/37 degree	<i>Enterococcus avium</i>

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/35 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/37 degree	Hafnia alvei
anaerobic/40-50 degree	Hafnia alvei
anaerobic/40-50 degree	Hafnia alvei

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/42 degree	<i>Parabacteroides distasonis</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides goldsteinii</i>
anaerobic/37 degree	<i>Parabacteroides gordonii</i>
anaerobic/37 degree	<i>Parabacteroides johnsonii</i>
anaerobic/37 degree	<i>Parabacteroides johnsonii</i>
anaerobic/42 degree	<i>Parabacteroides johnsonii</i>
anaerobic/42 degree	<i>Parabacteroides johnsonii</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides merdae</i>
anaerobic/42 degree	<i>Parabacteroides merdae</i>
anaerobic/42 degree	<i>Parabacteroides merdae</i>
anaerobic/37 degree	<i>Parabacteroides unclassified</i>
anaerobic/42 degree	<i>Parabacteroides unclassified</i>
anaerobic/37 degree	<i>Paraclostridium benzoelyticum</i>
anaerobic/37 degree	<i>Paraclostridium benzoelyticum</i>
anaerobic/37 degree	<i>Paraclostridium benzoelyticum</i>
anaerobic/37 degree	<i>Paraclostridium benzoelyticum</i>
anaerobic/37 degree	<i>Pediococcus pentosaceus</i>
anaerobic/37 degree	<i>Pediococcus pentosaceus</i>
anaerobic/37 degree	<i>Penicillium citrinum</i>
anaerobic/37 degree	<i>Peptostreptococcaceae sp.</i>
anaerobic/37 degree	<i>Peptostreptococcaceae sp.</i>
anaerobic/37 degree	<i>Peptostreptococcaceae sp.</i>

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus anginosus</i>
anaerobic/42 degree	<i>Streptococcus anginosus</i>
anaerobic/42 degree	<i>Streptococcus anginosus</i>
anaerobic/42 degree	<i>Streptococcus anginosus</i>
anaerobic/42 degree	<i>Streptococcus anginosus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/37 degree	<i>Streptococcus constellatus</i>
anaerobic/42 degree	<i>Streptococcus constellatus</i>
anaerobic/42 degree	<i>Streptococcus cristatus</i>
anaerobic/37 degree	<i>Streptococcus equinus</i>
anaerobic/37 degree	<i>Streptococcus equinus</i>
anaerobic/37 degree	<i>Streptococcus equinus</i>
anaerobic/37 degree	<i>Streptococcus equinus</i>
anaerobic/42 degree	<i>Streptococcus equinus</i>

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus lutetiensis</i>
anaerobic/42 degree	<i>Streptococcus lutetiensis</i>
anaerobic/42 degree	<i>Streptococcus lutetiensis</i>
anaerobic/42 degree	<i>Streptococcus lutetiensis</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus mutans</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus oralis</i>
anaerobic/42 degree	<i>Streptococcus oralis</i>
anaerobic/37 degree	<i>Streptococcus parasanguinis</i>
anaerobic/37 degree	<i>Streptococcus parasanguinis</i>
anaerobic/37 degree	<i>Streptococcus pleomorphus</i>
anaerobic/37 degree	<i>Streptococcus salivarius</i>
anaerobic/37 degree	<i>Streptococcus salivarius</i>
anaerobic/42 degree	<i>Terrisporobacter glycolicus</i>
anaerobic/37 degree	<i>Trabulsiella guamensis</i>
anaerobic/37 degree	unknown
anaerobic/37 degree	unknown
anaerobic/42 degree	unknown

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Atmosphere	<i>species</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/42 degree	<i>unknown</i>
anaerobic/37 degree	<i>unknown</i>
anaerobic/42 degree	<i>Veillonella atypica</i>
anaerobic/37 degree	<i>Veillonella atypica</i>
anaerobic/42 degree	<i>Veillonella magna</i>
anaerobic/42 degree	<i>Veillonella magna</i>
anaerobic/42 degree	<i>Veillonella magna</i>
anaerobic/42 degree	<i>Veillonella magna</i>

Table S5. The cultured strains and their culture atmospheres

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Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus safensis</i>
microaerobic/37 degree	<i>Bacillus sonorensis</i>
microaerobic/37 degree	<i>Bacillus sp.</i>
microaerobic/37 degree	<i>Bacillus subtilis</i>
microaerobic/37 degree	<i>Bacillus subtilis</i>

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
microaerobic/37 degree	<i>Citrobacter koseri</i>
microaerobic/37 degree	<i>Citrobacter koseri</i>
microaerobic/37 degree	<i>Citrobacter koseri</i>
microaerobic/37 degree	<i>Citrobacter koseri</i>
microaerobic/37 degree	<i>Citrobacter koseri</i>
microaerobic/37 degree	<i>Clostridium bifermentans</i>
microaerobic/37 degree	<i>Clostridium bifermentans</i>
microaerobic/37 degree	<i>Clostridium bifermentans</i>
microaerobic/37 degree	<i>Clostridium butyricum</i>
microaerobic/37 degree	<i>Clostridium difficile</i>
microaerobic/37 degree	<i>Clostridium ihumii</i>
microaerobic/28 degree	<i>Clostridium innocuum</i>
microaerobic/37 degree	<i>Clostridium perfringens</i>
microaerobic/37 degree	<i>Clostridium sordellii</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Clostridium tertium</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Comamonas kerstersii</i>
microaerobic/37 degree	<i>Corallococcus coralloides</i>
microaerobic/37 degree	<i>Enterobacter aerogenes</i>
microaerobic/37 degree	<i>Enterobacter cloacae</i>
microaerobic/37 degree	<i>Enterobacter cloacae</i>

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

[illegible]

Table S5. The cultured strains and their culture atmospheres

Atmosphere	species
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus gallolyticus</i>
microaerobic/37 degree	<i>Streptococcus pneumoniae</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Streptococcus salivarius</i>
microaerobic/37 degree	<i>Veillonella atypica</i>
microaerobic/37 degree	<i>Veillonella atypica</i>
microaerobic/37 degree	<i>Weissella confusa</i>
microaerobic/37 degree	<i>Weissella confusa</i>
microaerobic/37 degree	<i>unkown</i>

Table S6. Isolated strains from each subject

SubjectID	Subject age	Isolated stain number	Species number
I41U	60	219	35
I41X	50	83	27
I424	77	123	29
I425	95	939	87
I426	92	504	121
I427	88	646	69
I428	88	86	26
I429	88	81	22
I42A	85	372	58
I42B	82	159	39
I42C	78	147	42
I42D	77	431	79
I4JX	98	341	63
I41M	101	333	42
I41N	103	888	74
I41P	106	79	17
I41T	105	213	33
I41V	104	72	27
I41W	105	156	29
I41Y	104	499	66
I420	105	388	61
I421	104	562	76
I422	103	265	55
I423	108	271	73
I4H4	104	149	23

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium adolescentis	1	0	0.083333333	0
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium animalis	0	1	0	0.076923077
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium bifidum	2	1	0.166666667	0.076923077
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium breve	0	4	0	0.307692308
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium catenulatum	0	2	0	0.153846154
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium dentium	11	3	0.916666667	0.230769231
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium longum	11	13	0.916666667	1
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium pseudocatenulatum	3	3	0.25	0.230769231
p__Actinobacteria c__Actinobacteria o__Bifidobacteriales f__Bifidobacteriaceae g__Bifidobacterium s__Bifidobacterium pseudolongum	3	33	0.25	2.538461538
p__Actinobacteria c__Actinobacteria o__Corynebacteriales f__Corynebacteriaceae g__Corynebacterium s__Corynebacterium kroppenstedtii	0	1	0	0.076923077
p__Actinobacteria c__Actinobacteria o__Micrococcales f__Micrococcaceae g__Micrococcus s__Micrococcus endophyticus	4	0	0.333333333	0
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Atopobiaceae g__Olsenella s__Olsenella provencensis	0	1	0	0.076923077
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Atopobiaceae g__Olsenella s__Olsenella unclassified	7	5	0.583333333	0.384615385
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Coriobacteriaceae g__Collinsella s__Collinsella aerofaciens	36	23	3	1.769230769
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Coriobacteriaceae g__Collinsella s__Collinsella massiliensis	1	0	0.083333333	0
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Coriobacteriaceae g__Collinsella s__Collinsella tanakaei	1	4	0.083333333	0.307692308

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Actinobacteria c__Coriobacteriia o__Coriobacteriales f__Coriobacteriaceae g__Enorma s__Enorma timonensis	0	3	0	0.230769231
p__Actinobacteria c__Coriobacteriia o__Eggerthellales f__Eggerthellaceae g__Eggerthella s__Eggerthella lenta	13	7	1.083333333	0.538461538
p__Agaricomycotina c__Tremellomycetes o__Tremellales f__Cryptococcaceae g__Cryptococcus s__Cryptococcus gattii(Filobasidiella bacillispora)	1	0	0.083333333	0
p__Ascomycota c__Eurotiomycetes o__Eurotiales f__Aspergillaceae g__Penicillium s__Penicillium citrinum	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides caccae	7	7	0.583333333	0.538461538
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides caccae CAG:21	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides coagulans	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides dorei	5	3	0.416666667	0.230769231
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides fluxus	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides fragilis	33	46	2.75	3.538461538
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides intestinalis	0	7	0	0.538461538
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides nordii	10	10	0.833333333	0.769230769
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides ovatus	3	8	0.25	0.615384615
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides salyersiae	0	3	0	0.230769231
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides stercoris	2	8	0.166666667	0.615384615
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides thetaiotaomicron	0	8	0	0.615384615

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides uniformis	23	39	1.916666667	3
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides vulgatus	10	32	0.833333333	2.461538462
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Bacteroidaceae g__Bacteroides s__Bacteroides xylanisolvens	1	5	0.083333333	0.384615385
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Dysgonomonadaceae g__Dysgonomonas s__Dysgonomonas unclassified	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Prevotellaceae g__Prevotella s__Prevotella sp. CAG:487	9	1	0.75	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Rikenellaceae g__Alistipes s__Alistipes finegoldii	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Rikenellaceae g__Alistipes s__Alistipes onderdonkii	3	3	0.25	0.230769231
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Rikenellaceae g__Alistipes s__Alistipes shahii	0	1	0	0.076923077
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Tannerellaceae g__Parabacteroides s__Parabacteroides distasonis	47	47	3.916666667	3.615384615
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Tannerellaceae g__Parabacteroides s__Parabacteroides goldsteinii	8	6	0.666666667	0.461538462
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Tannerellaceae g__Parabacteroides s__Parabacteroides johnsonii	2	2	0.166666667	0.153846154
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Tannerellaceae g__Parabacteroides s__Parabacteroides merdae	7	6	0.583333333	0.461538462
p__Bacteroidetes c__Bacteroidia o__Bacteroidales f__Tannerellaceae g__Parabacteroides s__Parabacteroides unclassified	1	2	0.083333333	0.153846154
p__Bacteroidetes c__Flavobacteriia o__Flavobacteriales f__Flavobacteriaceae g__Seonamhaeicola s__Seonamhaeicola aphaedonensis	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus altitudinis	14	18	1.166666667	1.384615385
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus amyloliquefaciens	1	3	0.083333333	0.230769231

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus badius	2	24	0.166666667	1.846153846
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus cereus	51	43	4.25	3.307692308
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus coagulans	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus firmus	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus flexus	0	3	0	0.230769231
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus infantis	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus licheniformis	48	14	4	1.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus megaterium	2	0	0.166666667	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus mojavenis	3	0	0.25	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus oceanisediminis	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus pumilus	62	121	5.166666667	9.307692308
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus safensis	40	122	3.333333333	9.384615385
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus sonorensis	1	1	0.083333333	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus sp.	5	3	0.416666667	0.230769231
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus subtilis	6	2	0.5	0.153846154
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus subtilis subsp.subtilis	3	0	0.25	0

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus velezensis	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Bacillus xiamenensis	5	0	0.416666667	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Bacillus s__Brevibacillus borstelensis	0	53	0	4.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Lysinibacillus s__Lysinibacillus boronitolerans	1	9	0.083333333	0.692307692
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Lysinibacillus s__Lysinibacillus fusiformis	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Lysinibacillus s__Lysinibacillus macroides	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Lysinibacillus s__Lysinibacillus sp.	4	7	0.333333333	0.538461538
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Lysinibacillus s__Lysinibacillus sphaericus	41	22	3.416666667	1.692307692
p__Firmicutes c__Bacilli o__Bacillales f__Bacillaceae g__Oceanobacillus s__Oceanobacillus kimchii	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Bacillales Family XII. Incertae Sedis g__Exiguobacterium s__Exiguobacterium aurantiacum	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Paenibacillaceae g__Aneurinibacillus s__Aneurinibacillus aneurinilyticus	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Paenibacillaceae g__Paenibacillus s__Paenibacillus thiaminolyticus	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Planococcaceae g__Solibacillus s__Solibacillus silvestris	0	15	0	1.153846154
p__Firmicutes c__Bacilli o__Bacillales f__Staphylococcaceae g__Staphylococcus s__Staphylococcus aureus	3	3	0.25	0.230769231
p__Firmicutes c__Bacilli o__Bacillales f__Staphylococcaceae g__Staphylococcus s__Staphylococcus cohnii	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Staphylococcaceae g__Staphylococcus s__Staphylococcus epidermidis	1	0	0.083333333	0

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Bacillales f__Staphylococcaceae g__Staphylococcus s__Staphylococcus equorum	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Bacillales f__Staphylococcaceae g__Staphylococcus s__Staphylococcus hominis	0	2	0	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus asini	3	39	0.25	3
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus avium	15	16	1.25	1.230769231
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus canintestini	1	1	0.083333333	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus casseliflavus	14	17	1.166666667	1.307692308
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus cecorum	1	36	0.083333333	2.769230769
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus dispar	182	25	15.16666667	1.923076923
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus durans	0	3	0	0.230769231
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus faecalis	53	56	4.416666667	4.307692308
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus faecium	311	123	25.91666667	9.461538462
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus gallinarum	48	31	4	2.384615385
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus gilvus	0	3	0	0.230769231
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus hirae	133	78	11.08333333	6
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus mundtii	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus raffinosus	0	2	0	0.153846154

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Lactobacillales f__Enterococcaceae g__Enterococcus s__Enterococcus thailandicus	1	1	0.083333333	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus agilis	68	8	5.666666667	0.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus amylovorus	2	4	0.166666667	0.307692308
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus antri	1	1	0.083333333	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus brevis	1	2	0.083333333	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus casei paracasei	30	28	2.5	2.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus crispatus	17	0	1.416666667	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus delbrueckii	4	0	0.333333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus fermentum	81	89	6.75	6.846153846
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus gasseri	53	7	4.416666667	0.538461538
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus gastricus	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus johnsonii	37	1	3.083333333	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus kalixensis	55	2	4.583333333	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus kitasatonis	4	0	0.333333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus mucosae	151	186	12.58333333	14.30769231
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus oris	33	3	2.75	0.230769231

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus paracasei	11	5	0.916666667	0.384615385
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus paracasei subsp.paracasei	23	47	1.916666667	3.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus pentosus	2	79	0.166666667	6.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus plantarum	17	14	1.416666667	1.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus plantarum subsp.plantarum	2	0	0.166666667	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus reuteri	16	107	1.333333333	8.230769231
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus rhamnosus	3	2	0.25	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus sakei	0	1	0	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus salivarius	255	340	21.25	26.15384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactobacillus vaginalis	4	0	0.333333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Lactobacillus s__Lactococcus lactis	5	8	0.416666667	0.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Lactobacillaceae g__Pediococcus s__Pediococcus pentosaceus	0	2	0	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Leuconostocaceae g__Weissella s__Weissella cibaria	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Leuconostocaceae g__Weissella s__Weissella confusa	14	9	1.166666667	0.692307692
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Lactococcus s__Lactococcus garvieae	1	11	0.083333333	0.846153846
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Lactococcus s__Lactococcus lactis subsp.cremoris	2	2	0.166666667	0.153846154

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus anginosus	22	24	1.833333333	1.846153846
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus constellatus	2	13	0.166666667	1
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus cristatus	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus equinus	8	8	0.666666667	0.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus gallolyticus	93	86	7.75	6.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus infantarius	3	1	0.25	0.076923077
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus lutetiensis	1	22	0.083333333	1.692307692
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus mutans	8	0	0.666666667	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus oralis	1	8	0.083333333	0.615384615
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus parasanguinis	0	2	0	0.153846154
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus pleomorphus	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus pneumoniae	1	0	0.083333333	0
p__Firmicutes c__Bacilli o__Lactobacillales f__Streptococcaceae g__Streptococcus s__Streptococcus salivarius	1	7	0.083333333	0.538461538
p__Firmicutes c__Clostridia o__Clostridia f__Clostridiaceae g__Clostridium s__Clostridium bifermentans	3	1	0.25	0.076923077
p__Firmicutes c__Clostridia o__Clostridia f__Clostridiaceae g__Clostridium s__Clostridium bifermentans	218	197	18.16666667	15.15384615
p__Firmicutes c__Clostridia o__Clostridia f__Clostridiaceae g__Clostridium s__Clostridium sp 7 2 43FAA	7	2	0.583333333	0.153846154

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium baratii	6	4	0.5	0.307692308
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium bolteae	1	0	0.083333333	0
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium butyricum	13	31	1.083333333	2.384615385
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium cadaveris	4	33	0.333333333	2.538461538
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium difficile	1	2	0.083333333	0.153846154
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium disporicum	7	0	0.583333333	0
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium hathewayi	7	4	0.583333333	0.307692308
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium ihumii	3	9	0.25	0.692307692
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium innocuum	4	9	0.333333333	0.692307692
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium paraputrificum	8	14	0.666666667	1.076923077
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium perfringens	138	165	11.5	12.69230769
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium ramosum	2	2	0.166666667	0.153846154
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium sordellii	35	24	2.916666667	1.846153846
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Clostridium tertium	76	82	6.333333333	6.307692308
p__Firmicutes c__Clostridia o__Clostridiales f__Clostridiaceae g__Clostridium s__Hungatella hathewayi	0	1	0	0.076923077
p__Firmicutes c__Clostridia o__Clostridiales f__Eubacteriaceae g__Eubacterium s__Eubacterium limosum	7	2	0.583333333	0.153846154

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Clostridia o__Clostridiales f__Lachnospiraceae g__Anaerostipes s__Anaerostipes caccae	1	0	0.083333333	0
p__Firmicutes c__Clostridia o__Clostridiales f__Lachnospiraceae g__Lachnoclostridium s__Clostridium scindens	5	4	0.416666667	0.307692308
p__Firmicutes c__Clostridia o__Clostridiales f__Lachnospiraceae g__Lachnoclostridium s__Clostridium symbiosum	8	2	0.666666667	0.153846154
p__Firmicutes c__Clostridia o__Clostridiales f__Peptostreptococcaceae g__Paeniclostridium s__Paeniclostridium sordellii	1	1	0.083333333	0.076923077
p__Firmicutes c__Clostridia o__Clostridiales f__Peptostreptococcaceae g__Peptostreptococcaceae s__Peptostreptococcaceae sp.	2	4	0.166666667	0.307692308
p__Firmicutes c__Clostridia o__Clostridiales f__Peptostreptococcaceae g__Terrisporobacter s__Terrisporobacter glycolicus	1	0	0.083333333	0
p__Firmicutes c__Clostridia o__Clostridiales f__Ruminococcaceae g__Flavonifractor s__Flavonifractor plautii	1	0	0.083333333	0
p__Firmicutes c__Clostridia o__Clostridiales f__Lachnospiraceae g__Lachnospiraceae bacterium s__Lachnospiraceae bacterium 3_1_57FAA_CT1	0	2	0	0.153846154
p__Firmicutes c__Clostridia o__Peptostreptococcaleae f__Peptostreptococcaceae g__Paraclostridium s__Paraclostridium benzoelyticum	2	2	0.166666667	0.153846154
p__Firmicutes c__Erysipelotrichia o__Erysipelotrichales f__Erysipelotrichaceae g__Dielma s__Dielma fastidiosa	1	0	0.083333333	0
p__Firmicutes c__Negativicutes o__Acidaminococcales f__Acidaminococcaceae g__Acidaminococcus s__Acidaminococcus fermentans	0	2	0	0.153846154
p__Firmicutes c__Negativicutes o__Acidaminococcales f__Acidaminococcaceae g__Acidaminococcus s__Acidaminococcus intestini	2	32	0.166666667	2.461538462
p__Firmicutes c__Negativicutes o__Selenomonadales f__Selenomonadaceae g__Megamonas s__Megamonas sp.	0	1	0	0.076923077
p__Firmicutes c__Negativicutes o__Selenomonadales f__Selenomonadaceae g__Mitsuokella s__Mitsuokella jalaludinii	0	6	0	0.461538462
p__Firmicutes c__Negativicutes o__Selenomonadales f__Selenomonadaceae g__Mitsuokella s__Mitsuokella multacida	4	60	0.333333333	4.615384615
p__Firmicutes c__Negativicutes o__Selenomonadales f__Selenomonadaceae g__Mitsuokella s__Mitsuokella unclassified	1	3	0.083333333	0.230769231

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Firmicutes c__Negativicutes o__Veillonellales f__Veillonellaceae g__Megasphaera s__Megasphaera elsdenii	0	1	0	0.076923077
p__Firmicutes c__Negativicutes o__Veillonellales f__Veillonellaceae g__Veillonella s__Veillonella atypica	0	4	0	0.307692308
p__Firmicutes c__Negativicutes o__Veillonellales f__Veillonellaceae g__Veillonella s__Veillonella magna	1	3	0.083333333	0.230769231
p__Firmicutes c__Negativicutes o__Veillonellales f__Veillonellaceae g__Veillonella s__Veillonella parvula	1	2	0.083333333	0.153846154
p__Firmicutes c__Tissierellia o__Tissierellales f__Peptoniphilaceae g__Anaerococcus s__Anaerococcus vaginalis	0	1	0	0.076923077
p__Firmicutes c__Tissierellia o__Tissierellales f__Peptoniphilaceae g__Finegoldia s__Finegoldia magna	3	1	0.25	0.076923077
p__Fusobacteria c__Fusobacteriia o__Fusobacteriales f__Fusobacteriaceae g__Fusobacterium s__Fusobacterium mortiferum	7	27	0.583333333	2.076923077
p__Fusobacteria c__Fusobacteriia o__Fusobacteriales f__Fusobacteriaceae g__Fusobacterium s__Fusobacterium varium	2	1	0.166666667	0.076923077
p__Proteobacteria c__Betaproteobacteria o__Burkholderiales f__Burkholderiaceae g__Ralstonia s__Ralstonia insidiosa	0	1	0	0.076923077
p__Proteobacteria c__Betaproteobacteria o__Burkholderiales f__Comamonadaeae g__Comamonas s__Comamonas kerstersii	15	52	1.25	4
p__Proteobacteria c__Deltaproteobacteria o__Myxococcales f__Cystobacterineae g__Myxococcaceae s__Coralococcus coralloides	0	1	0	0.076923077
p__Proteobacteria c__Epsilonproteobacteria o__Campylobacteriales f__Campylobacteraceae g__Campylobacter s__Campylobacter ureolyticus	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Citrobacter s__Citrobacter braakii	3	1	0.25	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Citrobacter s__Citrobacter freundii	22	14	1.833333333	1.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Citrobacter s__Citrobacter koseri	33	11	2.75	0.846153846
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Citrobacter s__Citrobacter werkmanii	1	0	0.083333333	0

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Cronobacter s__Cronobacter sakazakii	1	1	0.083333333	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacter s__Enterobacter cloacae	8	24	0.666666667	1.846153846
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacter s__Enterobacter kobei	1	1	0.083333333	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacter s__Enterobacter ludwigii	4	13	0.333333333	1
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacter s__Enterobacter aerogenes	2	0	0.166666667	0
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacter s__Enterobacter cowanii	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Enterobacteriaceae s__Enterobacteriaceae bacterium 9 2 54FAA	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Escherichia s__Escherichia coli	491	452	40.91666667	34.76923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Klebsiella s__Klebsiella oxytoca	1	2	0.083333333	0.153846154
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Klebsiella s__Klebsiella pneumoniae	36	33	3	2.538461538
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Klebsiella s__Klebsiella pneumoniae subsp.ozaenae	0	1	0	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Klebsiella s__Klebsiella quasipneumoniae	2	1	0.166666667	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Klebsiella s__Klebsiella variicola	1	2	0.083333333	0.153846154
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Raoultella s__Raoultella ornithinolytica	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Salmonella s__Salmonella sp.	1	7	0.083333333	0.538461538
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Enterobacteriaceae g__Trabulsiella s__Trabulsiella guamensis	1	0	0.083333333	0

Table S7. Isolated strains from centenarians and non-centenarians

taxonomy	centenarians nums	non- centenarians nums	centenarians avg	non-centenarians avg
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Hafniaceae g__Hafnia s__Hafnia alvei	76	76	6.333333333	5.846153846
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Morganella s__Morganella morganii	1	2	0.083333333	0.153846154
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Proteus s__Proteus mirabilis	23	83	1.916666667	6.384615385
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Proteus s__Proteus penneri	1	2	0.083333333	0.153846154
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Proteus s__Proteus vulgaris	2	1	0.166666667	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Providencia s__Providencia alcalifaciens	0	1	0	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Providencia s__Providencia rettgeri	7	4	0.583333333	0.307692308
p__Proteobacteria c__Gammaproteobacteria o__Enterobacterales f__Morganellaceae g__Providencia s__Providencia stuartii	1	3	0.083333333	0.230769231
p__Proteobacteria c__Gammaproteobacteria o__Pseudomonadales f__Moraxellaceae g__Acinetobacter s__Acinetobacter baumannii	0	1	0	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Pseudomonadales f__Moraxellaceae g__Acinetobacter s__Acinetobacter radioresistens	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Pseudomonadales f__Moraxellaceae g__Moraxella s__Moraxella sg Branhamella catarrhalis	1	0	0.083333333	0
p__Proteobacteria c__Gammaproteobacteria o__Pseudomonadales f__Pseudomonadaceae g__Pseudomonas s__Pseudomonas aeruginosa	161	157	13.41666667	12.07692308
p__Proteobacteria c__Gammaproteobacteria o__Pseudomonadales f__Pseudomonadaceae g__Pseudomonas s__Pseudomonas monteilii	0	1	0	0.076923077
p__Proteobacteria c__Gammaproteobacteria o__Xanthomonadales f__Xanthomonadaceae g__Stenotrophomonas s__Stenotrophomonas maltophilia	0	1	0	0.076923077