

Supplementary Data 1 Top50 strains used in the study and general features of the metabolic models constructed for these strains.

	Species	ASV	Genome accession*	Reactions	Exchange reactions	Transport reactions	Biochemical reactions	Metabolites	Biomass* (mmol/g DW)	Time (s)	Source
1	<i>Comamonas thiooxydans</i>	ASV1	GCA_000964545.1	1431	77	95	1259	1541	137.8226	0.008	TC, OTC, TCs
2	<i>Brevundimonas vancouveriensis</i>	ASV2	GCA_003568665.1	1218	63	68	1087	1285	177.9518	0.008	TC, OTC, TCs
3	<i>Pseudomonas citronellolis</i>	ASV3	GCA_004745455.1	1666	115	135	1416	1697	213.9914	0.008	TC, OTC, TCs
4	<i>Elizabethkingia meningoseptica</i>	ASV4	GCA_900475375.1	1206	64	69	1073	1270	189.6203	0.008	TC, OTC, TCs
5	<i>Dysgonomonas mossii</i>	ASV5	GCA_000213575.1	1089	58	62	969	1202	79.8365	0.054	TC, OTC, TCs
6	<i>Stenotrophomonas nitritireducens</i>	ASV6	GCA_001431425.1	1297	72	79	1146	1394	179.283	0.008	TC, OTC, TCs
7	<i>Delftia tsuruhatensis</i>	ASV7	IMG_2675903019	1543	93	109	1341	1666	159.6958	0.006	TC, OTC, TCs
8	<i>Sphingobacterium daejeonense</i>	ASV8	GCA_002734235.1	1256	61	67	1128	1301	174.4804	0.008	TC, OTC, TCs
9	<i>Providencia stuartii</i>	ASV9	GCA_900455155.1	1259	100	109	1050	1321	178.8683	0.005	TC, OTC, TCs
10	<i>Pseudomonas citronellolis</i>	ASV10	GCA_004745455.1	1666	115	135	1416	1697	213.9914	0.008	TC, OTC, TCs
11	<i>Dysgonomonas gadei</i>	ASV11	GCA_000213555.1	1145	50	55	1040	1250	95.6267	0.008	TC, OTC, TCs

12	<i>Aquamicrobium lusatiense</i>	ASV12	GCA_0298 72115.1	1409	106	118	1185	1456	155.7246	0.009	TC, OTC, TCs
13	<i>Epilithonimonas pallida</i>	ASV13	IMG_26818 13503	1212	65	68	1079	1268	165.2149	0.004	TC, OTC, TCs
14	<i>Brevundimonas terrae</i>	ASV14	GCA_0117 61985.1	1173	75	83	1015	1265	83.1846	0.008	TC, OTC, TCs
15	<i>Stenotrophomonas pictorum</i>	ASV15	GCA_0014 31585.1	1254	68	78	1108	1378	119.7931	0.008	TC, OTC, TCs
16	<i>Alcaligenes aquatilis</i>	ASV16	GCA_0233 73785.1	1389	96	107	1186	1511	138.0096	0.008	TC, OTC, TCs
17	<i>Achromobacter deleyi</i>	ASV17	GCA_0006 33435.1	1533	107	121	1305	1638	161.4146	0.008	TC, OTC, TCs
18	<i>Methylobacillus methanolivorans</i>	ASV18	GCA_0447 51345.1	1037	68	74	895	1165	50.4943	0.008	TC, OTC, TCs
19	<i>Taibaiella koreensis</i>	ASV19	GCA_0035 45715.1	1109	54	61	994	1198	90.6838	0.008	TC, OTC, TCs
20	<i>Achromobacter xylosoxidans</i>	ASV20	GCA_0014 57475.1	1531	108	120	1303	1631	163.1341	0.008	TC, OTC, TCs
21	<i>Leucobacter denitrificans</i>	ASV21	GCA_0143 96385.1	1180	87	92	1001	1247	73.3996	0.005	TC, OTC, TCs
22	<i>Klebsiella pasteurii</i>	ASV22	GCA_0181 39045.1	1771	130	148	1493	1714	356.5305	0.008	TC, OTC, TCs
23	<i>Bdellovibrio bacteriovorus</i>	ASV23	GCA_0001 96175.1	1112	47	52	1013	1230	53.9922	0.007	TC, OTC, TCs
24	<i>Stenotrophomonas nitritireducens</i>	ASV24	GCA_0014 31425.1	1297	72	79	1146	1394	179.283	0.008	TC, OTC, TCs
25	<i>Achromobacter ruhlandii</i>	ASV25	GCA_0020 82135.1	1493	92	105	1296	1606	167.253	0.012	TC, OTC, TCs

26	<i>Achromobacter insolitus</i>	ASV26	GCA_0019 71645.1	1513	90	103	1320	1640	171.8306	0.008	TC, OTC, TCs
27	<i>Pseudochrobactrum asaccharolyticum</i>	ASV27	GCA_0033 14995.1	1407	109	122	1176	1452	227.4055	0.008	TC, OTC, TCs
28	<i>Achromobacter animicus</i>	ASV28	GCA_9028 60125.1	1492	87	101	1304	1620	164.2228	0.024	TC, OTC, TCs
29	<i>Achromobacter xylosoxidans</i>	ASV29	GCA_0014 57475.1	1531	108	120	1303	1631	163.1341	0.008	TC, OTC, TCs
30	<i>Aquamicrobium defluvii</i>	ASV30	GCA_0043 63725.1	1394	89	102	1203	1474	197.758	0.013	TC, OTC, TCs
31	<i>Stenotrophomonas pictorum</i>	ASV31	GCA_0014 31585.1	1254	68	78	1108	1378	119.7931	0.008	OTC, TCs
32	<i>Elizabethkingia meningoseptica</i>	ASV32	GCA_9004 75375.1	1206	64	69	1073	1270	189.6203	0.008	TC, OTC
33	<i>Methylobacillus arboreus</i>	ASV33	GCA_0205 32725.1	1030	57	66	907	1164	74.7014	0.004	TC, OTC, TCs
34	<i>Sphingobacterium prati</i>	ASV34	GCA_0131 67215.1	1276	72	77	1127	1317	183.0856	0.008	TC, OTC, TCs
35	<i>Enterobacter asburiae</i>	ASV35	GCA_0009 52575.1	1598	115	132	1351	1579	335.1533	0.012	TC, OTC, TCs
36	<i>Achromobacter animicus</i>	ASV36	GCA_9028 60125.1	1492	87	101	1304	1620	164.2228	0.024	TC, OTC, TCs
37	<i>Elizabethkingia meningoseptica</i>	ASV37	GCA_9004 75375.1	1206	64	69	1073	1270	189.6203	0.008	TC, OTC
38	<i>Achromobacter anxifer</i>	ASV38	GCA_9036 52925.1	1548	106	119	1323	1656	166.5136	0.012	TC, OTC, TCs
39	<i>Alcaligenes aquatilis</i>	ASV39	GCA_0233 73785.1	1389	96	107	1186	1511	138.0096	0.008	OTC, TCs

40	<i>Bordetella hinzii</i>	ASV40	GCA_9006 37615.1	1450	86	96	1268	1579	163.8299	0.01	TC, OTC, TCs
41	<i>Chitinophaga alhagiae</i>	ASV41	GCA_0035 68665.1	1221	64	70	1087	1287	177.9518	0.008	TC, OTC, TCs
42	<i>Klebsiella aerogenes</i>	ASV42	GCA_0002 15745.1	1678	121	141	1416	1639	288.5965	0.008	TC, OTC, TCs
43	<i>Raoultella ornithinolytica</i>	ASV43	GCA_0015 98295.1	1765	133	156	1476	1699	333.9779	0.012	OTC, TCs
44	<i>Raoultella ornithinolytica</i>	ASV44	GCA_0015 98295.1	1765	133	156	1476	1699	333.9779	0.012	TC, OTC, TCs
45	<i>Bosea robiniae</i>	ASV45	IMG_26759 03146	1445	86	99	1260	1510	174.8173	0.024	TC, OTC, TCs
46	<i>Bordetella petrii</i>	ASV46	GCA_0000 67205.1	1362	84	93	1185	1470	158.9216	0.011	TC, OTC, TCs
47	<i>Leucobacter komagatae</i>	ASV47	GCA_0067 16085.1	1244	86	101	1057	1296	107.9772	0.004	OTC
48	<i>Bordetella petrii</i>	ASV48	GCA_0000 67205.1	1362	84	93	1185	1470	158.9216	0.011	OTC
49	<i>Raoultella ornithinolytica</i>	ASV49	GCA_0015 98295.1	1765	133	156	1476	1699	333.9779	0.012	OTC
50	<i>Leucobacter chromiireducens</i>	ASV50	GCA_0167 58195.1	1227	90	100	1037	1295	106.8899	0.008	OTC
51	<i>Bordetella trematum</i>	ASV51	GCA_9004 45945.1	1364	80	91	1193	1489	123.0272	0.008	TC, OTC, TCs
52	<i>Mycobacterium mageritense</i>	ASV52	GCA_0107 27475.1	1621	106	125	1390	1603	273.4657	0.012	TC, OTC
53	<i>Phytobacter ursingii</i>	ASV53	GCA_0010 22135.1	1680	112	128	1440	1670	303.1863	0.012	OTC, TCs

54	<i>Devosia equisanguinis</i>	ASV54	GCA_9006 31955.1	1320	86	97	1137	1388	117.4912	0.008	TC, OTC, TCs
55	<i>Methylobacillus methanolivorans</i>	ASV55	GCA_0447 51345.1	1037	68	74	895	1165	50.4943	0.008	TC, TCs
56	<i>Sheuella amnicola</i>	ASV56	GCA_0104 99255.1	1240	66	78	1096	1330	88.3359	0.009	TC, OTC, TCs
57	<i>Chitinophaga dinghuensis</i>	ASV57	GCA_0032 59435.1	1310	63	67	1180	1373	219.3401	0.012	TC, OTC, TCs
58	<i>Elizabethkingia anophelis</i> subsp <i>anophelis</i>	ASV58	GCA_0020 23665.2	1246	83	88	1075	1288	211.0822	0.008	OTC
59	<i>Chitinophaga niastensis</i>	ASV59	GCA_0030 14755.1	1303	65	72	1166	1389	191.3442	0.008	TC, OTC
60	<i>Pigmentiphaga humi</i>	ASV62	GCA_9006 06115.1	1398	84	92	1222	1535	132.9528	0.008	TC, OTC, TCs
61	<i>Pseudomonas paraeruginosa</i>	ASV68	GCA_9007 06985.1	1520	86	98	1336	1578	200.7092	0.008	TC
62	<i>Alcaligenes faecalis</i> subsp <i>faecalis</i>	ASV72	GCA_0024 43155.1	1365	96	107	1162	1472	138.0096	0.032	TCs
63	<i>Methylobacillus methanolivorans</i>	ASV75	GCA_0447 51345.1	1037	68	74	895	1165	50.4943	0.008	TC, TCs
64	<i>Stenotrophomonas pictorum</i>	ASV80	GCA_0014 31585.1	1254	68	78	1108	1378	119.7931	0.008	TCs
65	<i>Shinella granuli</i>	ASV82	GCA_0043 41885.1	1578	96	108	1374	1654	208.0796	0.012	TC, OTC, TCs
66	<i>Elizabethkingia meningoseptica</i>	ASV83	GCA_9004 75375.1	1206	64	69	1073	1270	189.6203	0.008	TC

67	<i>Dielma fastidiosa</i>	ASV86	GCA_0003 13565.2	986	82	82	822	1036	17.5905	0.008	TC, TCs
68	<i>Elizabethkingia meningoseptica</i>	ASV90	GCA_9004 75375.1	1206	64	69	1073	1270	189.6203	0.008	TC
69	<i>Pseudomonas schmalbachii</i>	ASV106	GCA_0175 89465.1	1481	90	105	1286	1539	200.1956	0.004	TC
70	<i>Raoultella ornithinolytica</i>	ASV108	GCA_0015 98295.1	1765	133	156	1476	1699	333.9779	0.012	TC

*Genomes of the mostly closely related species of each strain with available genome sequences were chosen for model construction.

*Biomass in complete medium.