

Characterizing rhizosphere microbiota of peanut (*Arachis hypogaea* L.) from pre-sowing to post-harvest of crop under field conditions

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Supplementary figures

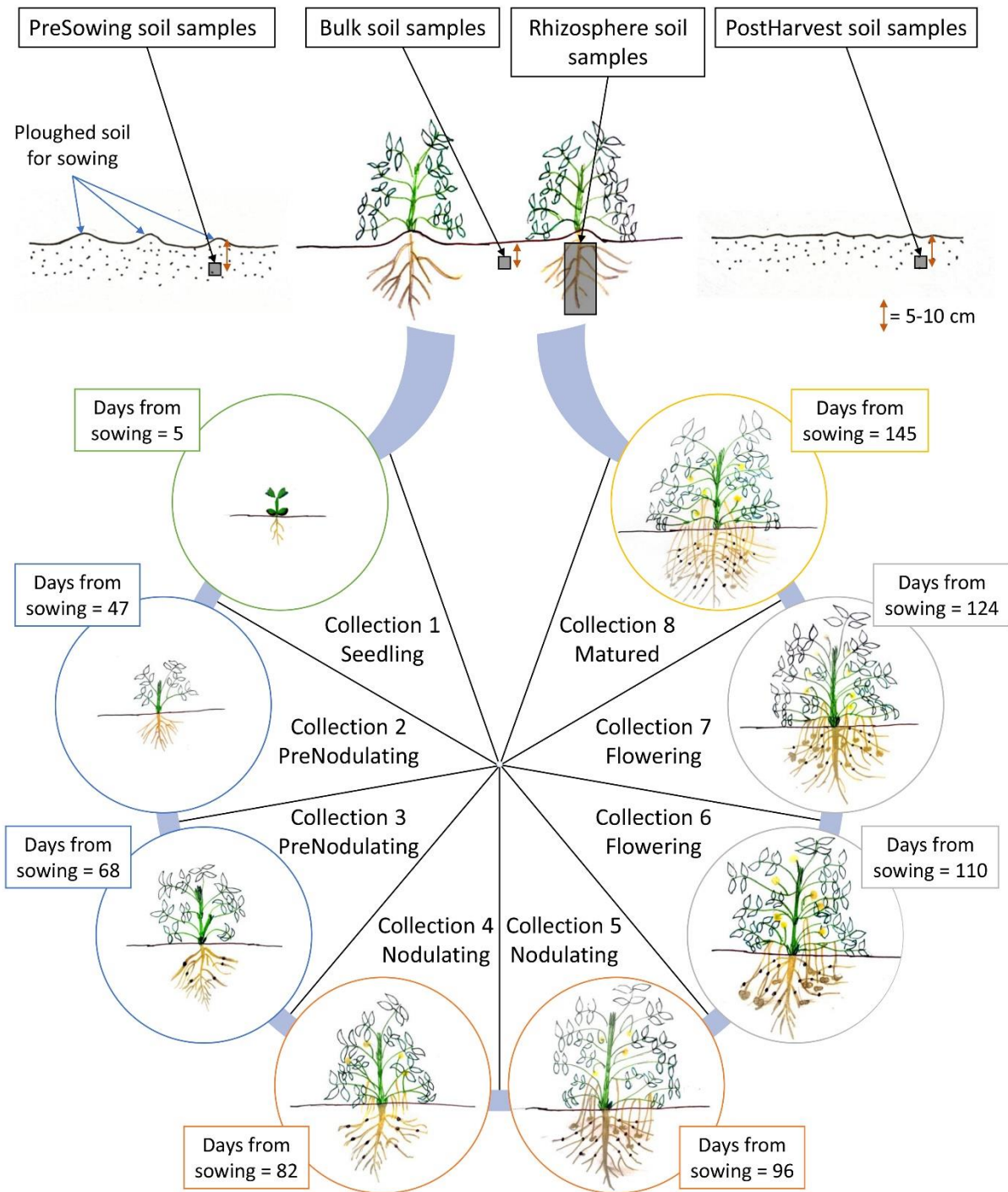


Figure S1: Schematic of experimental design.

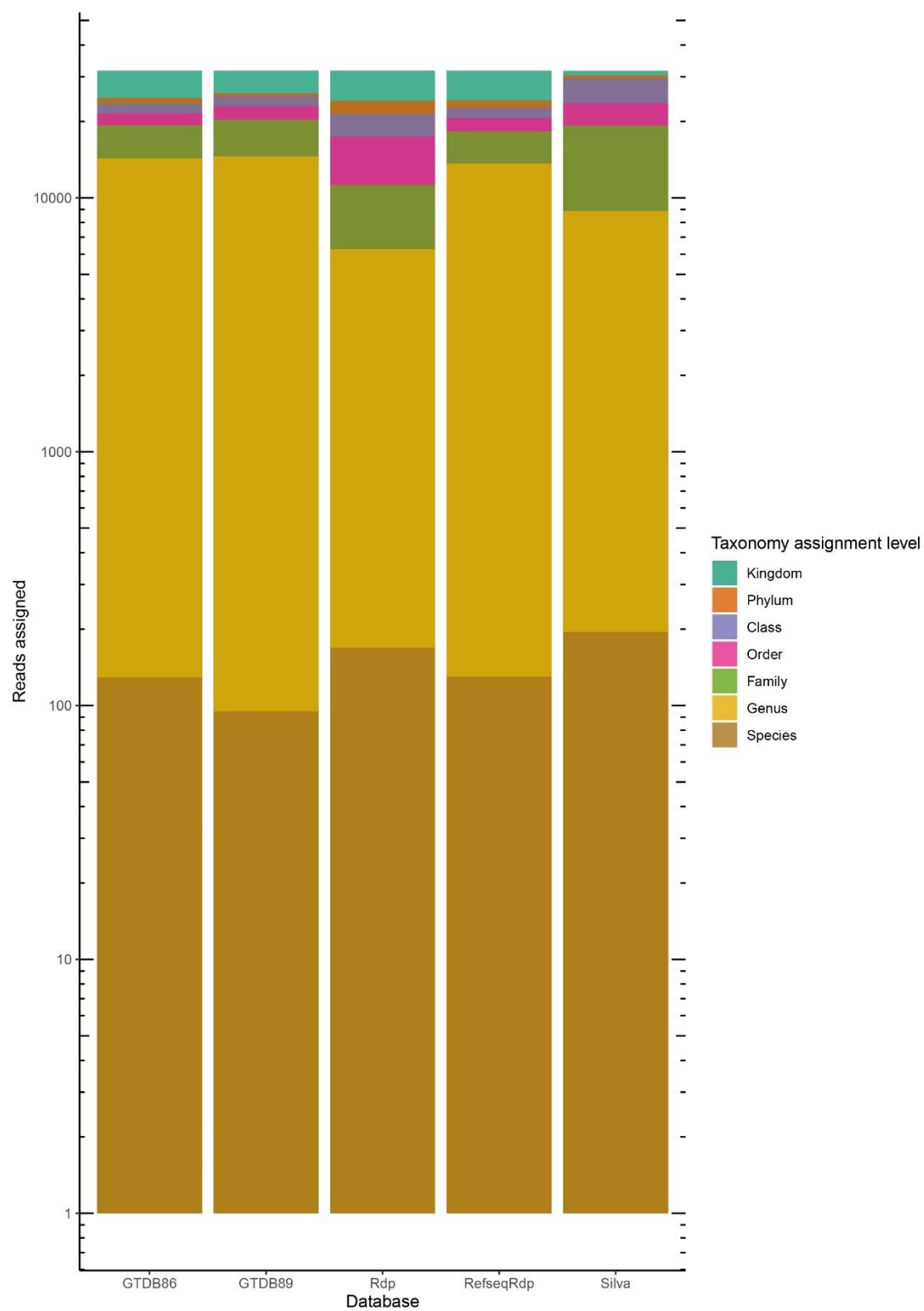


Figure S2: Read annotation distribution across taxonomic levels for five databases. The values on Y-axis is given as logarithmic scale. The plot is prepared as Stacked plot and represent actual value on Y-axis for each taxonomic levels.

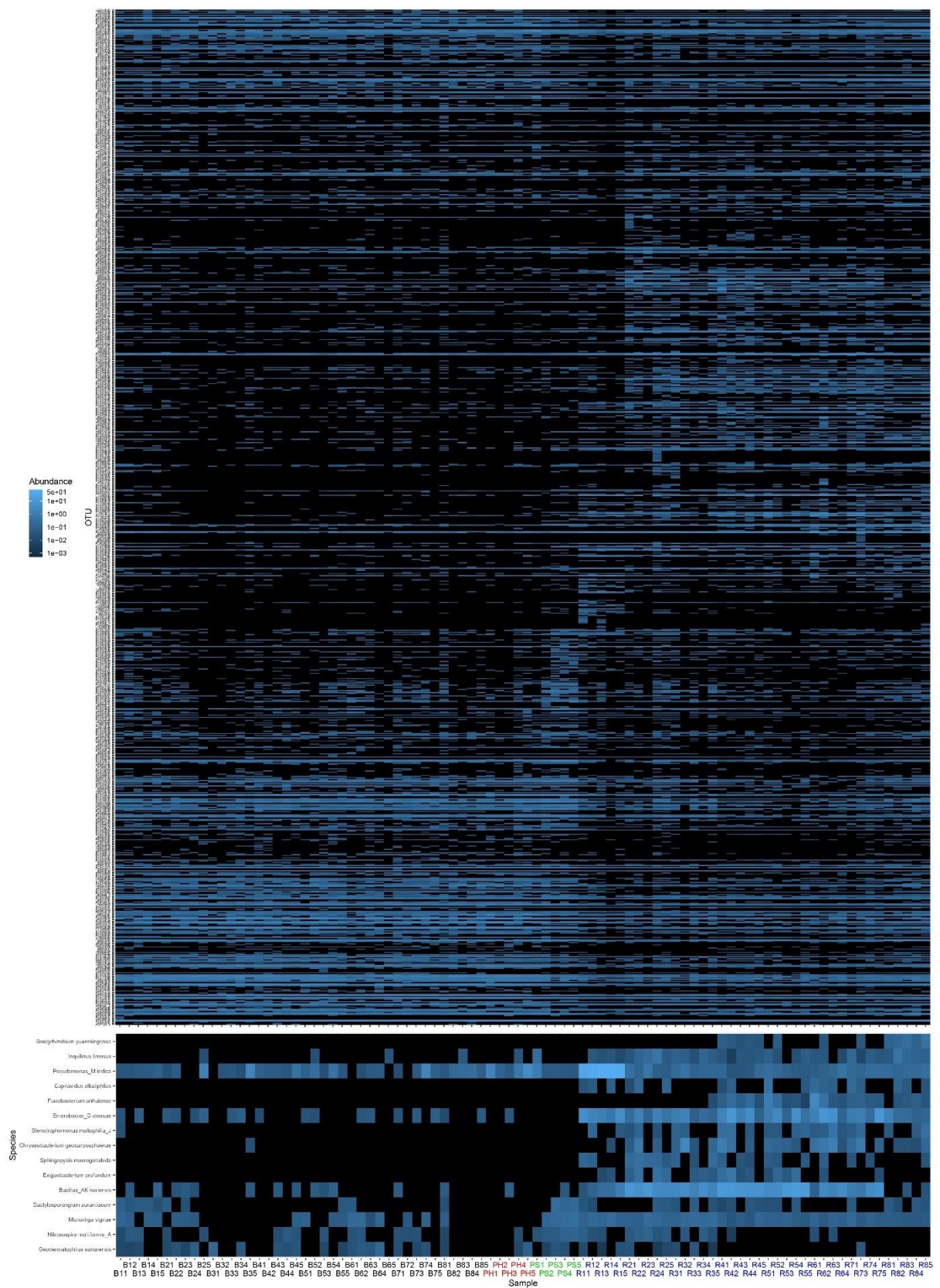


Figure S3: Heatmap representing abundance distribution for all ASV (top) and top ASVs annotated as species (bottom).

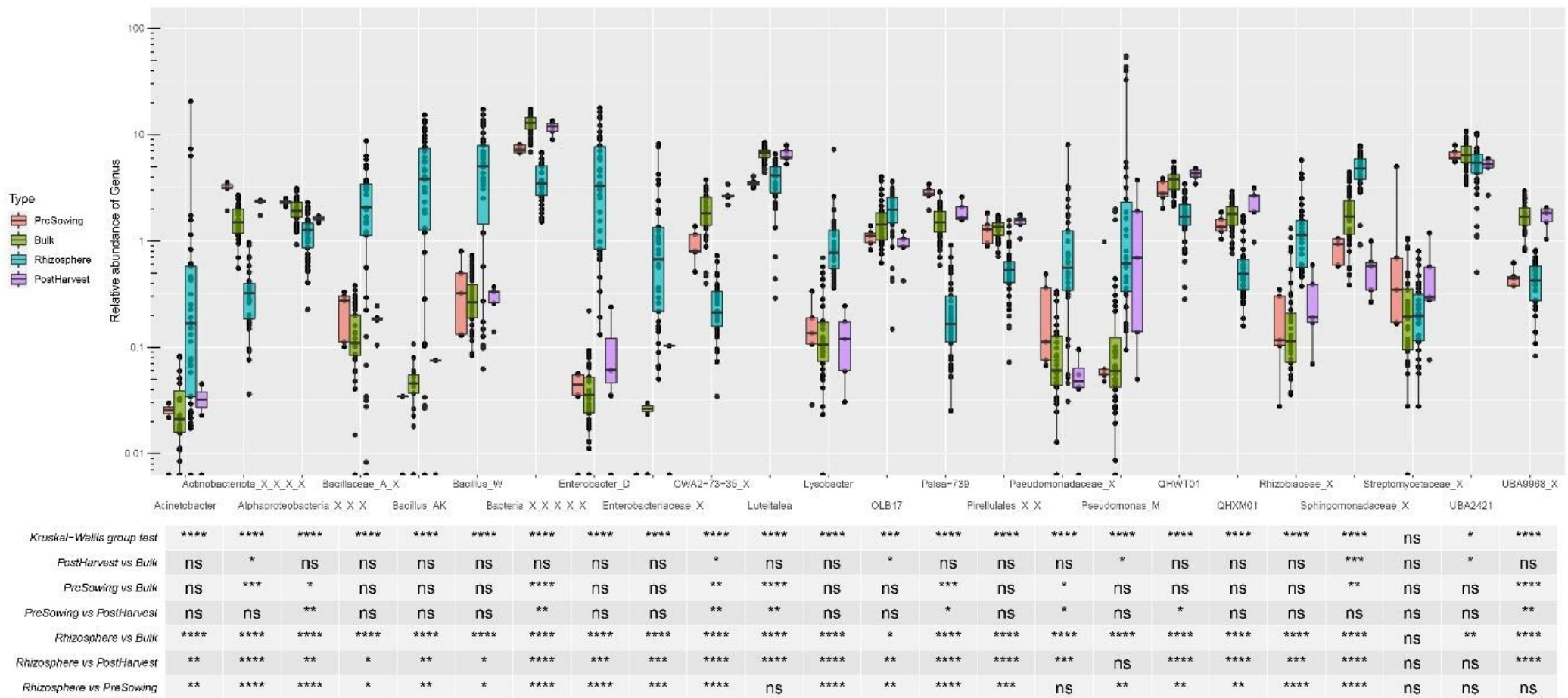


Figure S4: Box-plot distribution across four sample types for top genera. p-values from across-group comparison by Kruskal-Wallis test and each pair of groups by Wilcoxon-test is given in the table below for each genera plotted.

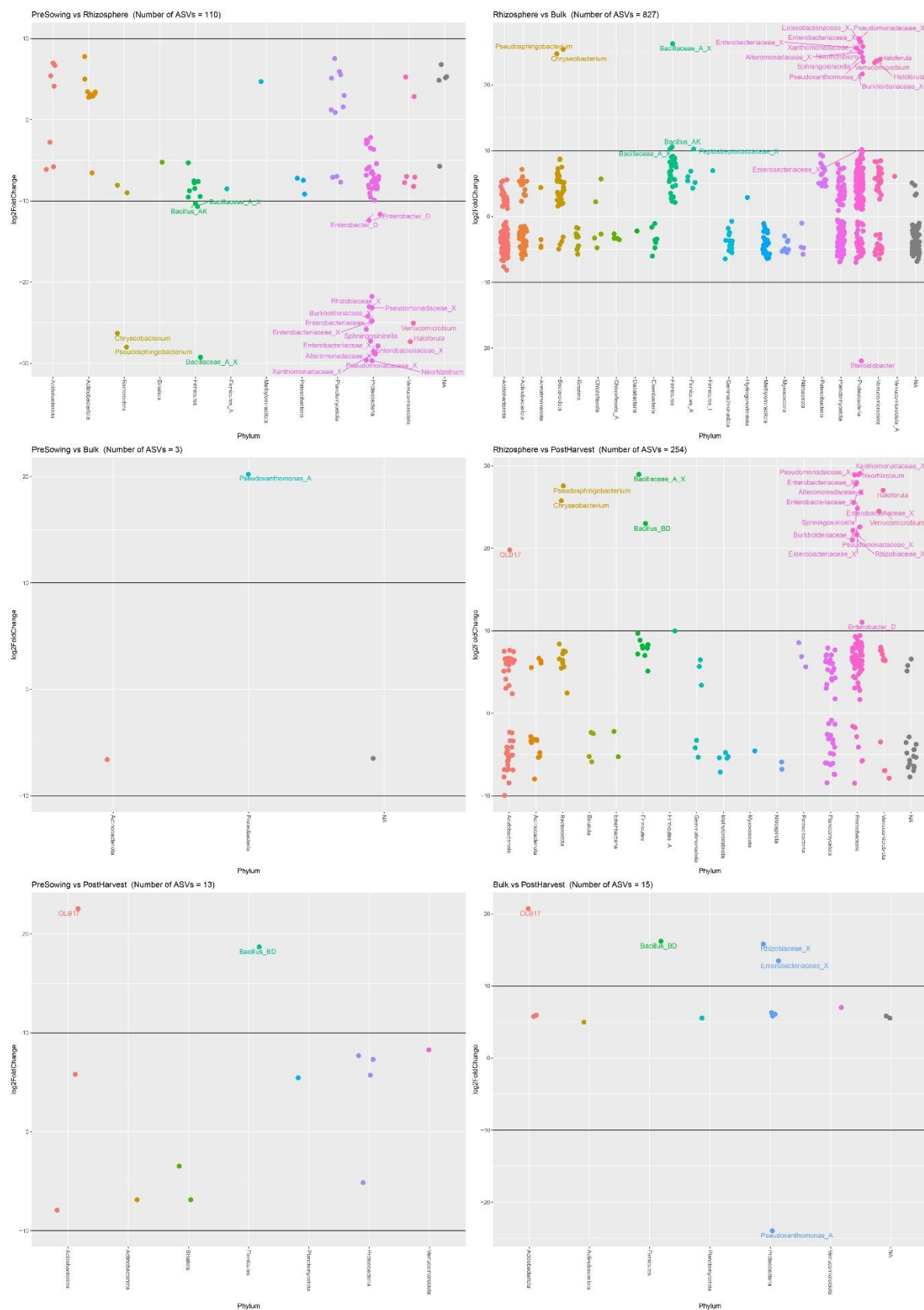


Figure S5: Distribution plot of DESeq2 based log2FoldChange values between all pairs of sample types. Only the significant (p -value < 0.01) changes are plotted. The points are coloured by phylum and labelled if fold change more than 10. Number of significant ASVs are written in the bracket in the title for each comparison.

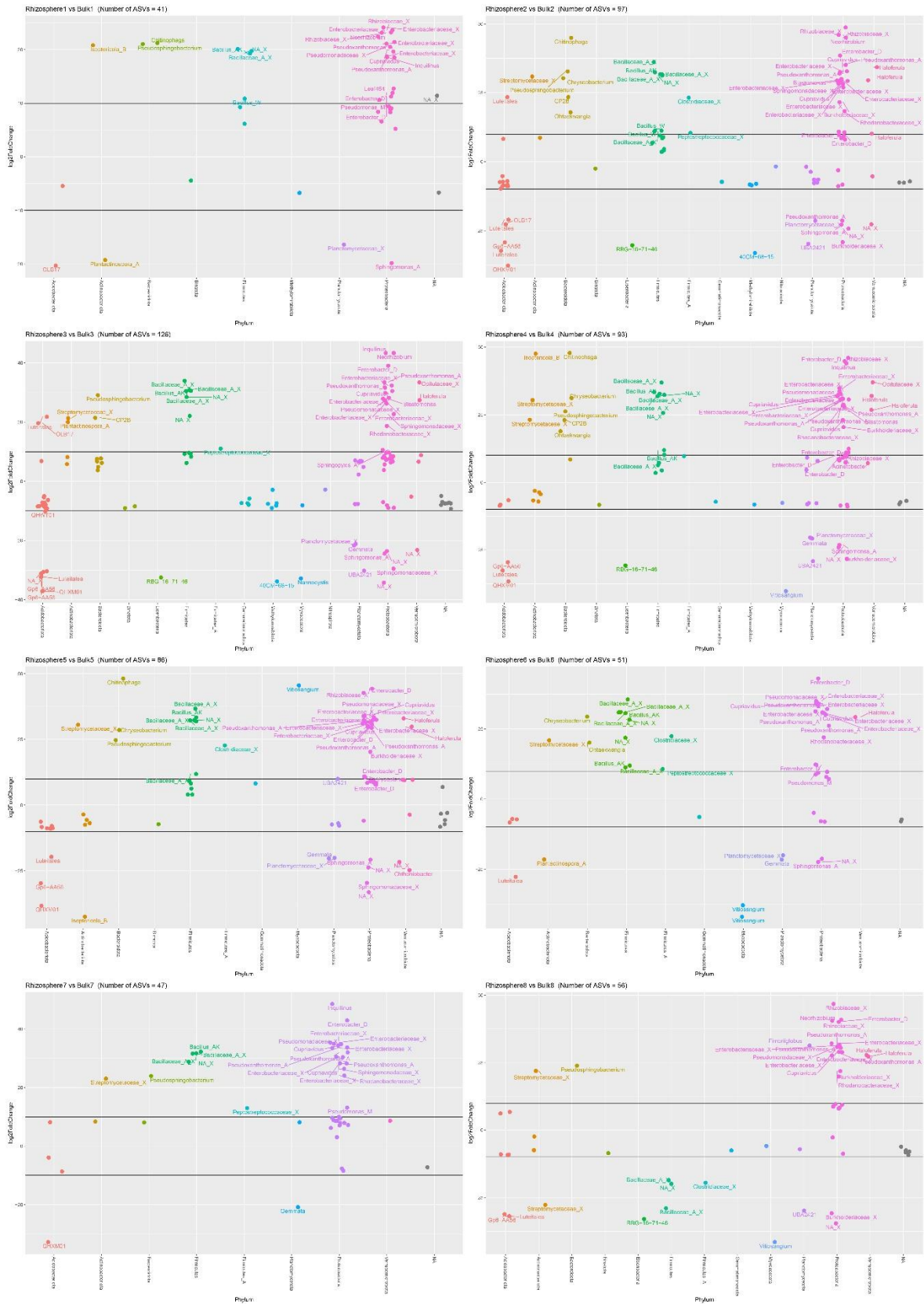


Figure S6: Distribution plot of DESeq2 based log2FoldChange values between rhizosphere and bulk samples of each collection. Only the significant (p-value < 0.01) changes are plotted. The points are coloured by phylum and labelled if fold change more than 10. Number of significant ASVs are written in the bracket in the title for each comparison.

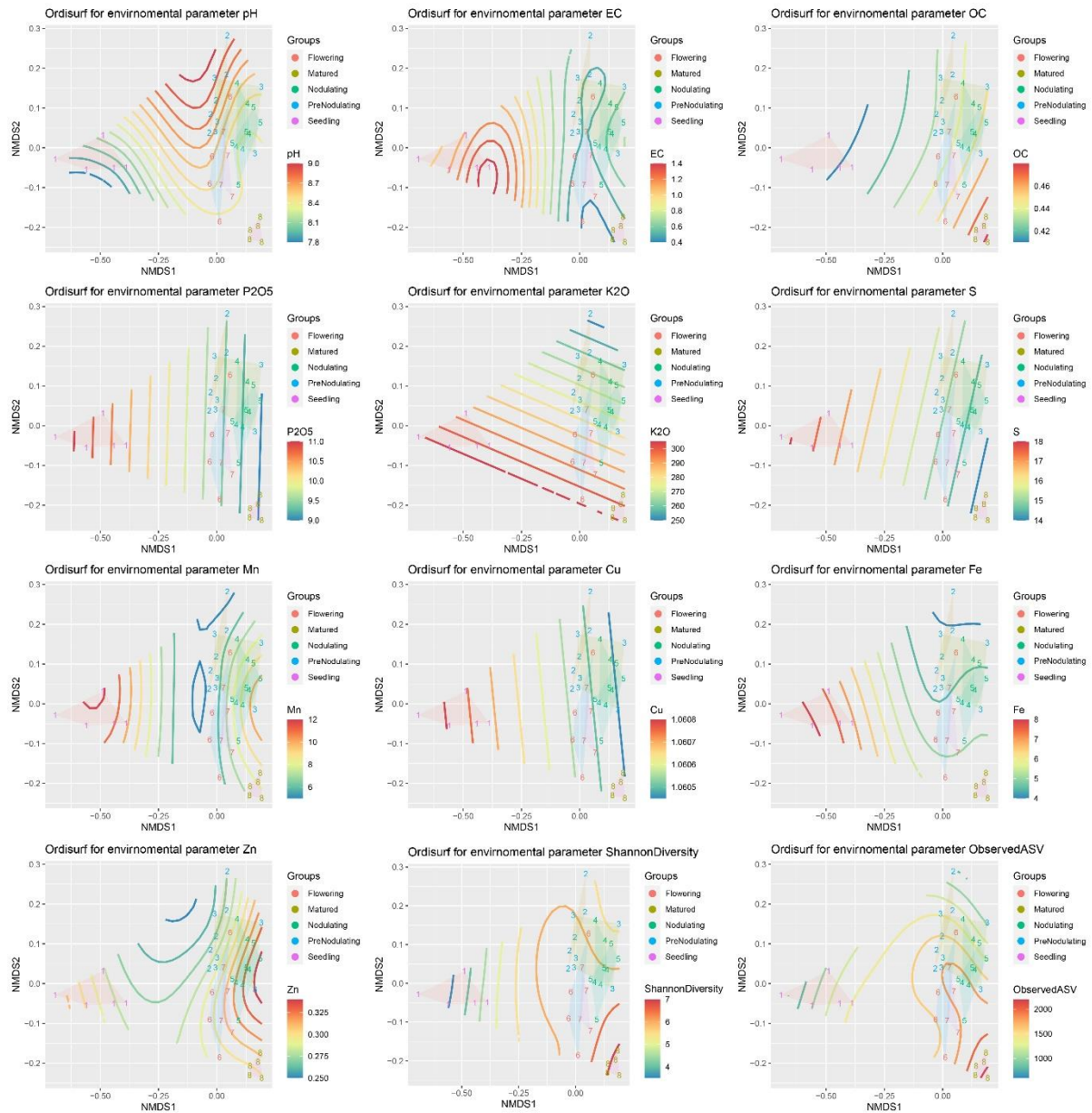


Figure S7: Ordisurf plots for all environmental variable and alpha diversity metrics overlapped on NMDS plot of all Rhizosphere samples.

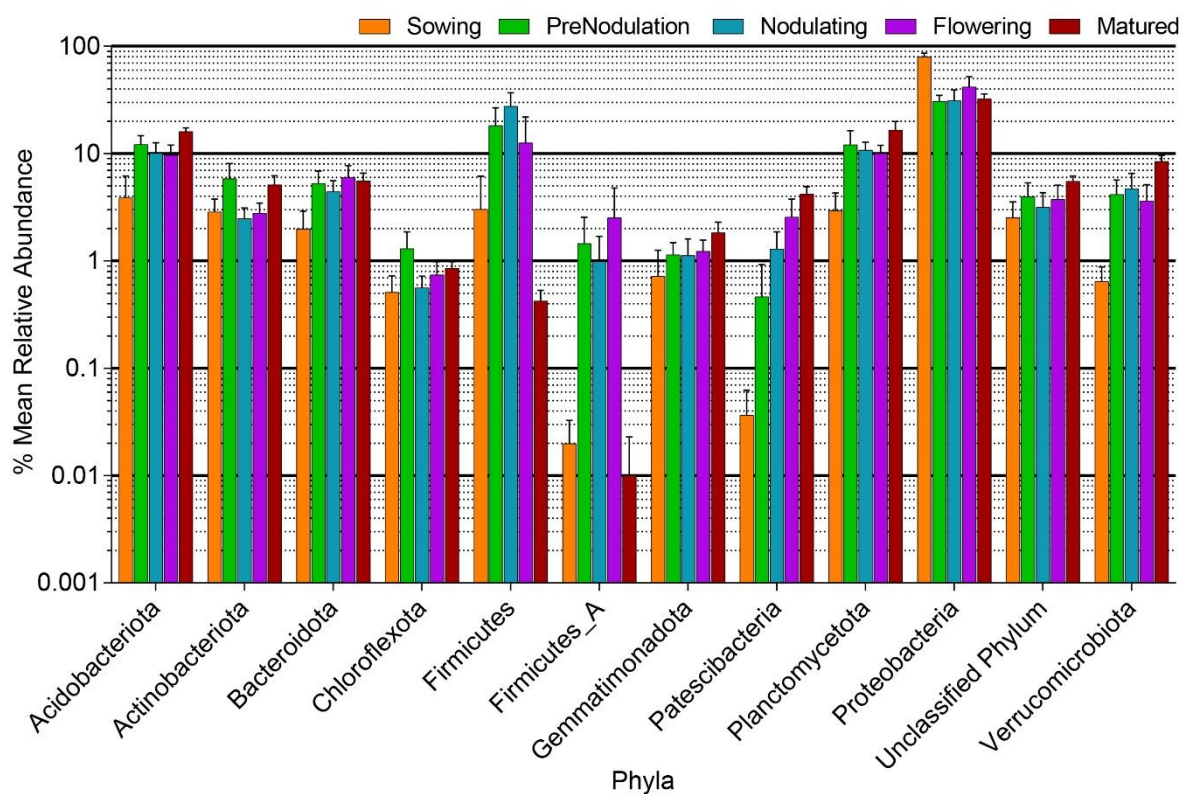


Figure S8: Phylum level distribution of rhizosphere samples across crop developmental stage. Phyla with abundance > 1% in at least one stage are plotted.

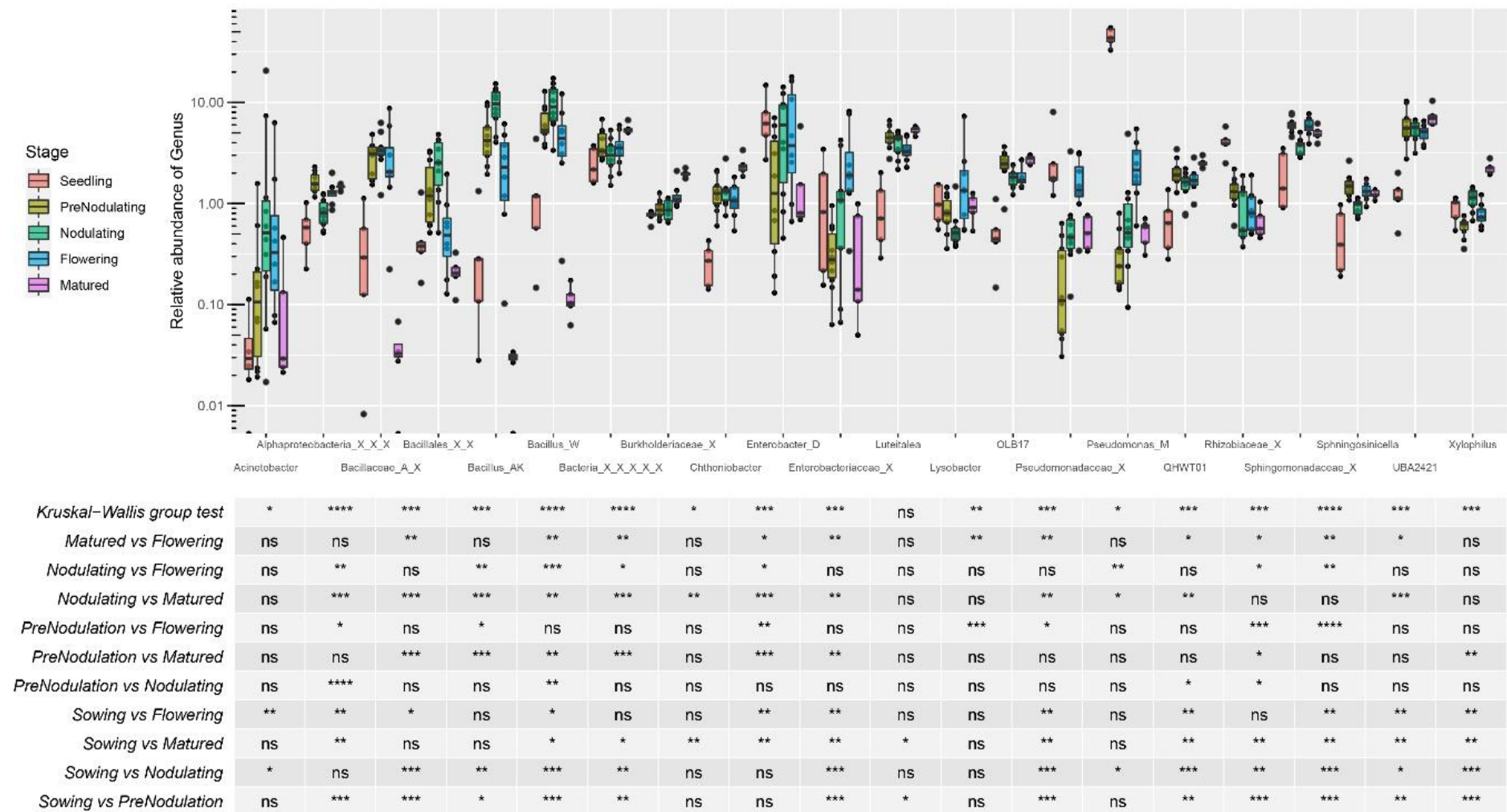


Figure S9: Box-plot distribution of rhizosphere samples across all crop developmental stages for top genera. p-values from across-group comparison by Kruskal-Wallis test and each pair of groups by Wilcoxon-test is given in the table below for each genera plotted.

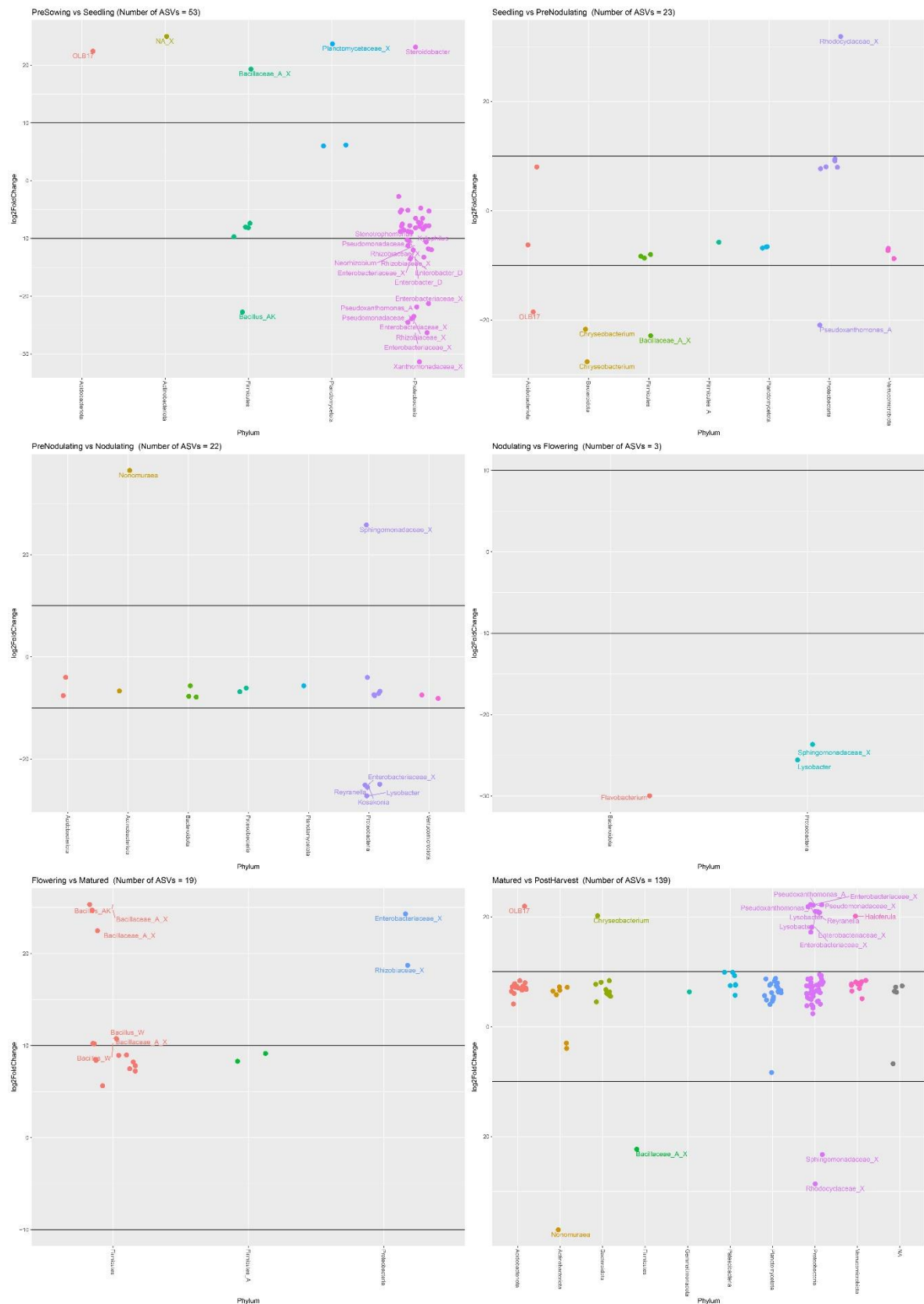


Figure S10: Distribution plot of DESeq2 based log2FoldChange values of rhizosphere samples between pairs of consecutive crop developmental stages. Only the significant (p -value < 0.01) changes are plotted. The points are coloured by phylum and labelled if fold change more than 10. Number of significant ASVs are written in the bracket in the title for each comparison.

Supplementary tables

Table S1: Comparisons of environmental parameters and nutrient concentration across multiple groups.

	Among types of samples (presowing, bulk, rhizosphere and postharvest), Kruskal- Wallis p-value	Between paired samples of bulk and rhizosphere, paired Wilcoxon p-value	Among different developmental stages within rhizosphere samples, Kruskal- Wallis p-value
pH	0.00003	0.00001	0.00001
EC, Electrical Conductivity	0.00352	0.02565	0.00005
OC, %Organic Carbon	0.65250	0.47706	0.00245
P2O5, Phosphate	0.08321	0.95868	0.17060
K2O, Potash	0.02439	0.90188	0.06741
S, Sulphur	0.00172	0.17666	0.00736
Mn, Manganese	0.00085	0.12216	0.00011
Cu, Copper	0.00783	0.60555	0.91301
Fe, Iron	0.00139	0.14659	0.00413
Zn, Zinc	0.03587	0.66338	0.86102

Table S2: Kruskal-Wallis test comparison of all genera across four sample types. BH = Benjamini-Hochberg. “_X” are used to represent unannotated taxa at a level, multiple suffixes indicate that many level was the last annotation.

Genus	p-value	BH adjusted p-value
Pseudomonas_M	4.65E-09	3.50E-08
Acinetobacter	6.17E-10	5.80E-09
Enterobacter_D	9.64E-14	3.90E-12
Bacteria_X_X_X_X_X	1.06E-14	1.60E-12
Bacillus_W	1.63E-06	7.80E-06
Bacillus_AK	3.85E-11	4.70E-10
UBA2421	1.05E-02	2.50E-02
Bacillaceae_A_X	1.14E-06	5.50E-06
Luteitalea	6.62E-12	1.00E-10
Enterobacteriaceae_X	3.41E-16	2.40E-13
Pseudomonadaceae_X	3.63E-10	3.50E-09
Sphingomonadaceae_X	3.16E-11	4.00E-10
Lysobacter	1.60E-12	3.00E-11
Rhizobiaceae_X	2.68E-11	3.60E-10
QHWT01	1.01E-12	2.20E-11
Streptomycetaceae_X	9.68E-02	1.70E-01
Bacillales_X_X	5.70E-04	1.80E-03
OLB17	9.75E-04	2.80E-03
GWA2-73-35_X	2.64E-14	2.00E-12
Actinobacteriota_X_X_X_X	1.33E-14	1.70E-12
Peptostreptococcaceae_X	2.68E-10	2.70E-09
Palsa-739	1.69E-14	1.70E-12
Chthoniobacter	2.48E-04	8.30E-04
Opitutaceae_X	1.06E-02	2.50E-02
QHXM01	1.29E-11	1.90E-10
Alphaproteobacteria_X_X_X_X	2.36E-08	1.60E-07
Flavobacterium	2.10E-10	2.20E-09
Haloferula	5.45E-11	6.50E-10
UBA9968_X	4.73E-14	2.60E-12
Burkholderiales_X_X	9.28E-14	3.90E-12
Micromonosporaceae_X	1.19E-06	5.80E-06
Pseudosphingobacterium	1.21E-07	6.80E-07
Xylophilus	3.06E-05	1.20E-04
UBA11741	1.88E-13	5.60E-12
Sphingosinicella	3.13E-06	1.40E-05
Xanthomonadaceae_X	9.05E-07	4.50E-06
Verrucomicrobium	7.10E-12	1.10E-10
Microvirga	1.09E-02	2.50E-02
Chryseobacterium	5.08E-15	1.20E-12
Acidimicrobiia_X_X_X	2.37E-09	2.00E-08
Bacillus_Y	5.22E-10	4.90E-09
Burkholderiaceae_X	7.26E-08	4.30E-07
Pirellula	1.44E-11	2.10E-10
Gp6-AA56	4.58E-12	7.30E-11
Steroidobacter	2.10E-03	5.70E-03
Vitiosangium	1.21E-08	8.40E-08
Planctomycetaceae_X	1.47E-04	5.10E-04
Vicinamibacterales_X_X	4.58E-14	2.60E-12

Fimbriiglobus	2.57E-09	2.10E-08
Saccharimonadaceae_X	7.82E-06	3.30E-05
Sphingopyxis_A	1.93E-14	1.70E-12
UBA6082	4.10E-09	3.10E-08
Pontibacter	1.60E-08	1.10E-07
GCA-2746885	1.93E-07	1.10E-06
Sphingomonas_A	4.53E-05	1.70E-04
Clostridiaceae_X	2.07E-03	5.60E-03
Nonomuraea	5.17E-04	1.60E-03
Pirellulales_X_X	1.83E-11	2.50E-10
AR5	1.09E-12	2.20E-11
Neorhizobium	1.86E-14	1.70E-12
Pseudoxanthomonas_A	3.37E-10	3.30E-09
Clostridium	3.01E-09	2.40E-08
Gemmatimonadaceae_X	8.85E-12	1.30E-10
GWC2-73-18	1.59E-09	1.40E-08
Ohtaekwangia	4.80E-02	9.20E-02
UKL13-2	6.10E-02	1.10E-01
Geodermatophilus	3.26E-03	8.40E-03
FW-11	6.26E-06	2.70E-05
Dongia	5.00E-06	2.20E-05
JKG1	1.53E-03	4.30E-03
Pirellulaceae_X	9.05E-02	1.60E-01
Arboricoccus	5.82E-11	6.70E-10
Mycoplasma	1.26E-13	4.30E-12
Flavisolibacter	5.57E-08	3.40E-07
Leaf454	3.59E-07	1.90E-06
Sphingobacterium	4.35E-12	7.10E-11
Gemmata	1.11E-09	1.00E-08
Pedosphaerales_X_X	2.05E-01	3.20E-01
Clostridium_AD	8.88E-07	4.40E-06
Actinobacteria_X_X_X	1.00E-13	3.90E-12
Alteromonadaceae_X	7.55E-02	1.40E-01
Adhaeribacter	8.53E-03	2.10E-02
Nannocystis	8.64E-01	8.80E-01
QHVH01	6.94E-14	3.40E-12
Bryobacteraceae_X	3.17E-11	4.00E-10
Pedosphaeraceae_X	4.03E-02	8.00E-02
Rhodocyclaceae_X	1.72E-09	1.50E-08
UBA1161_X	1.88E-01	2.90E-01
Geminicoccaceae_X	4.53E-13	1.20E-11
SCN-69-37	1.11E-13	4.00E-12
Lysobacter_A	4.14E-12	6.80E-11
Solirubrobacter	9.98E-14	3.90E-12
AR19	1.40E-12	2.70E-11
Aromatoleum	1.76E-02	3.90E-02
Gemmataceae_X	5.72E-11	6.70E-10
UBA4664	7.81E-06	3.30E-05
Pedosphaera	2.95E-05	1.20E-04
Planobispora	2.35E-01	3.50E-01
Cellvibrio	1.49E-10	1.60E-09
Chitinophagaceae_X	7.63E-05	2.70E-04

SZUA-115	3.96E-07	2.10E-06
Planctomycetes_X_X_X	2.98E-13	8.60E-12
PALSA-1355	3.21E-12	5.60E-11
Stenotrophomonas	2.15E-14	1.70E-12
Gp7-AA10	7.02E-08	4.20E-07
Solirubrobacteraceae_X	1.01E-12	2.20E-11
Bacilli_X_X_X	5.28E-05	2.00E-04
ARS98	8.08E-14	3.80E-12
Rubrobacter_B	1.03E-11	1.50E-10
Bacillus_BD	5.92E-03	1.50E-02
Thauera	4.01E-02	8.00E-02
Catelliglobosipora	1.96E-03	5.40E-03
Steroidobacteraceae_X	1.72E-04	5.90E-04
Gemmatimonadales_X_X_X	1.48E-08	1.00E-07
Kosakonia	3.91E-02	7.90E-02
Cupriavidus	3.36E-14	2.30E-12
Oscillochloris	1.95E-01	3.00E-01
UBA4665_X	4.48E-08	2.80E-07
Pyrinomonadaceae_X	1.70E-12	3.20E-11
RBG-16-71-46	9.68E-13	2.20E-11
Opitutus	3.64E-05	1.40E-04
Thermomicrobiaceae_X	2.33E-06	1.10E-05
2-12-FULL-64-23	2.15E-09	1.80E-08
Chitinophaga	6.95E-10	6.50E-09
Isosphaeraceae_X	5.33E-07	2.70E-06
Myxococcus	6.86E-02	1.30E-01
Niastella	1.05E-02	2.50E-02
Mycobacteriales_X_X	2.54E-06	1.20E-05
Gammaproteobacteria_X_X_X	1.04E-05	4.30E-05
Polyangiales_X_X	8.50E-04	2.50E-03
UBA10511	2.96E-04	9.80E-04
Plantactinospora_A	8.23E-08	4.80E-07
Nitrospira_C	2.93E-11	3.80E-10
Thermoleophilia_X_X_X	3.76E-14	2.40E-12
Phenylobacterium	1.19E-03	3.40E-03
Bacillus_AA	2.13E-08	1.40E-07
Methylibium	1.86E-03	5.10E-03
AV2	1.99E-12	3.60E-11
40CM-3-62-11	2.22E-12	4.00E-11
Pararheinheimera	8.02E-01	8.40E-01
BOG-1338	2.89E-07	1.60E-06
Exiguobacterium	3.32E-07	1.80E-06
Methylophilaceae_X	8.12E-13	2.00E-11
Acidobacteriota_X_X_X_X	3.42E-11	4.20E-10
Gemmatirosa	1.65E-02	3.70E-02
SCN-70-22	8.91E-13	2.10E-11
Rhizobium	5.36E-16	2.40E-13
Erwinia	2.01E-02	4.30E-02
Nocardioidaceae_X	1.64E-02	3.70E-02
Arthrobacter_I	4.33E-09	3.30E-08
CP2B	2.83E-03	7.40E-03
Achromobacter	1.69E-10	1.80E-09

Flavobacterium_A	1.97E-02	4.30E-02
BOG-1460	5.30E-13	1.30E-11
40CM-68-15	2.63E-11	3.50E-10
Pseudoxanthomonas	4.30E-03	1.10E-02
Rubrobacteraceae_X	4.57E-08	2.80E-07
Zavarzinella	9.81E-02	1.70E-01
SM1A02_X	9.63E-13	2.20E-11
Paenibacillaceae_X	1.79E-01	2.80E-01
Byssovorax	1.05E-13	3.90E-12
Haliangium	4.19E-04	1.40E-03
Dactylosporangium	1.98E-07	1.10E-06
Inquilinus	3.27E-09	2.60E-08
Paramesorhizobium	9.69E-03	2.30E-02
Aeromonas	1.98E-04	6.70E-04
Terrimicrobium	2.96E-10	3.00E-09
Schlesneria	3.57E-13	9.60E-12
G233	9.95E-08	5.70E-07
Acidimicrobiales_X_X	1.45E-01	2.30E-01
Bacteroidia_X_X_X	4.91E-02	9.40E-02
Streptacidiphilus	1.36E-01	2.30E-01
Nevskiaceae_X	1.03E-04	3.60E-04
UBA6960_X	5.97E-14	3.10E-12
UBA2386	9.02E-08	5.20E-07
SZUA-42	5.50E-08	3.40E-07
Kouleothrix	5.59E-06	2.40E-05
SZUA-252	3.42E-11	4.20E-10
Pirellula_B	4.49E-04	1.40E-03
Jiangella	1.31E-12	2.60E-11
Bin18	7.72E-07	3.90E-06
Saprospiraceae_X	1.50E-02	3.40E-02
Palsa-1233	6.27E-03	1.60E-02
Phycisphaerae_X_X_X	2.94E-06	1.30E-05
Ilumatobacter_A	1.78E-03	4.90E-03
UBA11883	9.21E-11	1.00E-09
Dehalococcoidia_X_X_X	1.03E-10	1.10E-09
Rhizobiales_X_X	3.65E-02	7.50E-02
Polyangiaceae_X	1.07E-12	2.20E-11
UBA5946	3.29E-13	9.20E-12
Cyanobacteriia_X_X_X	1.48E-02	3.40E-02
Bordetella_A	1.50E-08	1.00E-07
Bradyrhizobium	1.98E-04	6.70E-04
Fictibacillus_B	1.21E-07	6.80E-07
Noviherbaspirillum	5.58E-06	2.40E-05
Citrobacter	7.25E-01	7.90E-01
Chthoniobacterales_X_X	7.07E-10	6.50E-09
Chitinophagales_X_X	4.03E-09	3.10E-08
PMNU01	1.59E-01	2.50E-01
QHBO01	5.73E-09	4.20E-08
P52-10	1.50E-02	3.40E-02
Burkholderia	5.90E-06	2.50E-05
Azospirillum	5.78E-03	1.40E-02
Alishewanella	5.69E-01	6.80E-01

Gemmatimonadetes_X_X_X	3.12E-09	2.50E-08
Novosphingobium	4.47E-01	5.60E-01
Dyadobacter	6.60E-15	1.20E-12
UBA1020	9.40E-07	4.70E-06
Acidobacteriales_X_X	2.47E-08	1.60E-07
MM2	6.72E-15	1.20E-12
SWB02	4.43E-07	2.30E-06
Geodermatophilaceae_X	7.62E-03	1.90E-02
Bin134	1.51E-03	4.20E-03
Saccharimonadales_X_X	8.08E-08	4.70E-07
Domibacillaceae_X	5.11E-01	6.20E-01
Roseimaritima	2.43E-01	3.60E-01
Aeromicrobium	1.49E-02	3.40E-02
Saccharibacillus	7.25E-01	7.90E-01
UBA4655	1.40E-09	1.20E-08
Coleofasciculus	1.79E-02	4.00E-02
Blastomonas	2.06E-09	1.70E-08
Palsa-89	1.23E-01	2.10E-01
Chloroflexota_X_X_X_X	1.58E-03	4.40E-03
Polymorphum	7.83E-01	8.20E-01
Blastococcus	2.05E-02	4.40E-02
SZUA-320	8.93E-09	6.30E-08
Nitrospira_A	2.42E-06	1.10E-05
Rhodobacteraceae_X	2.28E-01	3.40E-01
IMCC26207	2.82E-06	1.30E-05
55-13	1.13E-04	3.90E-04
GCA-2723275	1.31E-07	7.30E-07
LHW63021	3.66E-01	5.00E-01
Nocardioides	5.03E-04	1.60E-03
Isoptricola_B	3.34E-03	8.60E-03
ZC4RG30	5.64E-04	1.80E-03
Cyanobacteriales_X_X	1.14E-02	2.60E-02
Terrimonas	7.60E-04	2.30E-03
Planctomicrobium	3.46E-12	5.80E-11
Hyalangium	7.13E-03	1.70E-02
Acetobacteraceae_X	3.58E-08	2.30E-07
Reyranella	4.49E-01	5.60E-01
Arenimonas	3.65E-10	3.50E-09
Chthonomonas	2.64E-09	2.10E-08
Pseudomonas_A	7.88E-06	3.30E-05
Taibaiella_A	3.58E-05	1.40E-04
Azohydromonas	6.24E-04	1.90E-03
Sphingopyxis	3.32E-07	1.80E-06
Verrucomicrobiae_X_X_X	5.80E-01	6.90E-01
Rhizorhabdus	4.79E-02	9.20E-02
Devosia	7.65E-02	1.40E-01
Cryptosporangium	1.56E-03	4.30E-03
Chryseolinea_A	5.90E-06	2.50E-05
Prostheco bacter	9.85E-07	4.90E-06
Rhodospirillum_A	6.59E-02	1.20E-01
SZUA-318	1.48E-13	4.90E-12
Pseudomonas_F	2.98E-05	1.20E-04

Rubellimicrobium	2.32E-03	6.20E-03
Sorangium	2.72E-04	9.10E-04
GCA-002686595_X	5.07E-10	4.90E-09
Planctomyces_A	5.18E-05	1.90E-04
Pseudomonas_B	8.60E-01	8.80E-01
Chryseolinea	8.22E-02	1.50E-01
Bosea	1.90E-10	2.00E-09
Blastocatellia_X_X_X	7.17E-04	2.20E-03
Azoarcus_B	3.09E-05	1.20E-04
Herpetosiphon	6.19E-05	2.30E-04
NIC37A-2	2.05E-11	2.80E-10
Rhodanobacteraceae_X	2.00E-05	8.10E-05
Pseudonocardia	1.72E-04	5.90E-04
KBS-96	6.66E-05	2.40E-04
Xanthobacteraceae_X	5.11E-01	6.20E-01
GWC2-71-9_X	6.86E-04	2.10E-03
Cystobacter	1.72E-01	2.70E-01
NS-102	5.70E-01	6.80E-01
Pseudomonas_H	2.57E-01	3.70E-01
Flavisolibacter_B	3.08E-08	2.00E-07
GWC2-70-10	1.82E-11	2.50E-10
Aneurinibacillus_A	2.67E-02	5.60E-02
QKVK01	7.18E-02	1.30E-01
Anaeromyxobacter	3.23E-01	4.50E-01
67-14	3.33E-04	1.10E-03
Streptomyces_D	6.87E-02	1.30E-01
HRBIN30	9.12E-10	8.30E-09
Par-f-2	9.62E-09	6.70E-08
Myxococcaceae_X	3.20E-02	6.60E-02
UBA5793	1.56E-10	1.70E-09
Z2-YC6860	1.15E-02	2.70E-02
Proteobacteria_X_X_X_X	2.90E-02	6.00E-02
Cnuella	3.23E-02	6.60E-02
Euzebya	1.09E-12	2.20E-11
UBA4720	2.53E-03	6.70E-03
Isosphaera	7.33E-04	2.20E-03
Elioraea	8.83E-05	3.10E-04
Caulobacteraceae_X	8.93E-04	2.60E-03
GCA-2683825	1.82E-13	5.60E-12
Root149	3.91E-02	7.90E-02
Binatia_X_X_X	6.54E-09	4.70E-08
Anaerolineae_X_X_X	7.68E-08	4.60E-07
Caulobacter	2.28E-02	4.90E-02
Sandaracinus	6.47E-09	4.60E-08
URHD0088	2.97E-04	9.80E-04
UBA11740	5.74E-07	2.90E-06
BD2-11	3.67E-08	2.40E-07
IMCC26256	3.48E-12	5.80E-11
Agromyces	1.32E-06	6.30E-06
Singulisphaera	1.81E-02	4.00E-02
Mycolicibacterium	7.94E-08	4.70E-07
Ramlibacter	4.53E-04	1.50E-03

Fen-1342	6.38E-09	4.60E-08
UBA4093	8.69E-01	8.90E-01
Nitrospiraceae_X	3.20E-07	1.70E-06
Chloroflexales_X_X	1.02E-06	5.00E-06
Planctomycetota_X_X_X_X	1.30E-09	1.20E-08
Berkiella	3.08E-06	1.40E-05
Lentzea	1.10E-06	5.30E-06
Catenuloplanes	5.80E-05	2.10E-04
Domibacillus	4.21E-01	5.60E-01
Hermiimonas	8.53E-05	3.00E-04
Yuhushiella	2.98E-01	4.20E-01
Gp18-AA60	4.40E-11	5.30E-10
W-Chloroflexi-9	6.51E-08	3.90E-07
Tumebacillus_A	2.18E-02	4.70E-02
Paracoccus	8.43E-11	9.50E-10
Brevundimonas	1.28E-04	4.50E-04
Delftia	2.32E-01	3.50E-01
Hungatella	4.47E-01	5.60E-01
Fluviicola	2.14E-02	4.60E-02
Bog-159	2.29E-07	1.30E-06
Spirillospora	9.64E-02	1.70E-01
Geobacterales_X_X	1.39E-01	2.30E-01
Ralstonia	7.55E-02	1.40E-01
Blastococcus_A	2.13E-03	5.80E-03
Acidobacteriaceae_X	3.04E-01	4.30E-01
UBA6092	8.31E-05	3.00E-04
Idiomarina	2.57E-01	3.70E-01
UBA7805	2.06E-01	3.20E-01
CSP1-2_X	1.87E-10	2.00E-09
Rhodococcus	4.47E-01	5.60E-01
HGW-BRC1-1	3.38E-01	4.60E-01
Caldilineales_X_X	1.02E-01	1.80E-01
Bacillaceae_H_X	3.82E-01	5.20E-01
UBA1568	3.58E-01	4.90E-01
UBA1268_X	3.43E-05	1.30E-04
Acidimicrobiaceae_X	7.79E-02	1.40E-01
Minicystis	4.66E-03	1.20E-02
Litorilinea	2.56E-04	8.50E-04
UTCFX2	2.03E-06	9.60E-06
Luteimonas	1.92E-01	3.00E-01
Geobacteraceae_X	1.65E-01	2.60E-01
Azospirillaceae_X	1.75E-01	2.80E-01
Sphingobium	2.32E-06	1.10E-05
MEBICO9517	1.66E-08	1.10E-07
Methylophilus	2.65E-05	1.10E-04
Bacillus_X	7.25E-01	7.90E-01
Caldilinea	1.28E-03	3.60E-03
Zobellella_B	4.47E-01	5.60E-01
Mizugakiibacter	2.76E-03	7.20E-03
Mucilaginibacter	5.84E-04	1.80E-03
Shinella	4.47E-01	5.60E-01
Solitalea	1.00E-03	2.90E-03

Ferrovibrio	2.71E-03	7.10E-03
Cytophagales_X_X	5.23E-06	2.30E-05
Xanthomonadales_X_X	7.11E-05	2.60E-04
Anaerolineales_X_X	7.03E-04	2.20E-03
Massilia_B	2.17E-09	1.80E-08
A52C2	8.28E-08	4.80E-07
Flaviumibacter	5.50E-09	4.10E-08
R-RK-3	3.93E-02	7.90E-02
Altererythrobacter_A	1.93E-01	3.00E-01
Parapedobacter	2.57E-01	3.70E-01
Nitrospira	3.25E-03	8.40E-03
Arthrobacter_F	1.17E-03	3.30E-03
Frateuria_A	3.25E-04	1.10E-03
Nocardia	3.22E-01	4.50E-01
OLB7	1.32E-01	2.20E-01
EW11	3.85E-03	9.80E-03
Actinocorallia	1.37E-01	2.30E-01
Aquamicrobium	4.95E-01	6.00E-01
Labilithrix	6.36E-08	3.90E-07
Ga0074140	2.77E-09	2.20E-08
Frankia	2.57E-01	3.70E-01
Franconibacter	1.42E-01	2.30E-01
Microbacteriaceae_X	5.86E-07	3.00E-06
Sulfuricaulis	6.52E-04	2.00E-03
Pseudoduganella	8.19E-03	2.00E-02
Beijerinckiaceae_X	2.68E-02	5.60E-02
UBA12294	3.67E-01	5.00E-01
Paceibacteria_X_X_X	9.15E-03	2.20E-02
MFUC01	4.89E-01	5.90E-01
RBG-16-71-46_X_X_X	8.66E-03	2.10E-02
Mycobacteriaceae_X	3.45E-03	8.80E-03
Lacunisphaera	6.39E-02	1.20E-01
Glycomyces	1.02E-02	2.40E-02
Planococcaceae_X	3.14E-01	4.40E-01
UM-FILTER-40-16	1.15E-04	4.00E-04
2-12-FULL-35-15	3.09E-01	4.30E-01
Fen-1137	5.03E-04	1.60E-03
Algoriphagus	4.47E-01	5.60E-01
Chloroflexaceae_X	6.73E-02	1.20E-01
Roseomonas	2.77E-02	5.80E-02
UBA2475	7.48E-01	8.00E-01
Massilia	1.75E-02	3.90E-02
Fimbriimonadaceae_X	5.35E-06	2.40E-05
UTPRO1	1.84E-05	7.50E-05
Conexibacter_A	2.40E-03	6.40E-03
Ga0077550	1.93E-09	1.60E-08
Azoarcus_A	3.78E-07	2.00E-06
Bacillus_BE	4.47E-01	5.60E-01
Chamaesiphon	8.56E-02	1.50E-01
Paenibacillus_H	4.12E-01	5.50E-01
4572-78_X_X	4.17E-02	8.20E-02
Omniitrophales_X_X	3.24E-05	1.30E-04

Microbacterium	1.97E-02	4.30E-02
Myxococcota_X_X_X_X	4.02E-05	1.50E-04
GCA-2683135	1.01E-08	7.00E-08
Labrys	4.32E-08	2.70E-07
GCA-002840015	7.25E-01	7.90E-01
Chloroflexia_X_X_X	5.36E-09	4.00E-08
Cellulosimicrobium	8.28E-02	1.50E-01
HRBIN29	4.11E-01	5.50E-01
Pseudomonadales_X_X	2.81E-05	1.10E-04
Coriobacteriales_X_X	3.92E-05	1.50E-04
Palsa-1382	2.31E-06	1.10E-05
HRBIN33	7.28E-11	8.30E-10
Comamonas	8.02E-01	8.40E-01
Acidovorax_B	3.91E-02	7.90E-02
UTBCD1	4.57E-03	1.10E-02
GJ-E10	1.36E-02	3.10E-02
UBA12499	1.04E-05	4.30E-05
Symbiobacterium	1.34E-01	2.20E-01
Thermoactinospora	2.98E-01	4.20E-01
Cellulomonadaceae_X	6.98E-02	1.30E-01
Amantichitinum	7.25E-01	7.90E-01
Fimbriimonas	2.36E-02	5.00E-02
W-Firmicutes-14	8.45E-01	8.70E-01
Clostridiales_X_X	3.63E-05	1.40E-04
Stenotrophomonas_A	2.57E-01	3.70E-01
Cyclobacteriaceae_X	5.75E-05	2.10E-04
Afifella	4.69E-02	9.10E-02
UBA4722	5.91E-06	2.50E-05
Fuerstia	4.39E-02	8.60E-02
Azovibrio	2.32E-01	3.50E-01
Rubricoccus	6.20E-02	1.20E-01
PALSA-1448	5.91E-02	1.10E-01
Verrucomicrobiales_X_X	1.31E-01	2.20E-01
Abditibacterium	1.69E-13	5.40E-12
SZUA-309	2.20E-01	3.30E-01
Pseudonocardiaceae_X	1.02E-01	1.80E-01
Tistlia	2.66E-05	1.10E-04
HRBIN37	6.13E-09	4.50E-08
Ereboglobus	2.44E-01	3.60E-01
Nitrolancea	7.26E-01	7.90E-01
Phycisphaerales_X_X	1.20E-03	3.40E-03
Thermotalea	1.46E-01	2.30E-01
Bacillus_C	5.15E-01	6.20E-01
Roseiflexus	9.75E-01	9.70E-01
Marmoricola	4.60E-02	9.00E-02
Conexibacter	1.80E-02	4.00E-02
Rubrobacter	5.69E-05	2.10E-04
QHYU01	1.26E-05	5.20E-05
Mor1	4.77E-02	9.20E-02
UBA8087	3.90E-02	7.90E-02
Aquamicrobium_A	2.30E-04	7.70E-04
SG8-30	2.03E-01	3.10E-01

Saccharimonadia_X_X_X	2.64E-06	1.20E-05
Micrococcaceae_X	1.97E-02	4.30E-02
Hyphomicrobium	7.08E-01	7.90E-01
GR16-43	6.61E-03	1.60E-02
Kineosporia	2.75E-03	7.20E-03
Chloroploca	1.36E-01	2.30E-01
Fen-1247	1.12E-01	1.90E-01
Patescibacteria_X_X_X_X	2.57E-01	3.70E-01
Hymenobacteraceae_X	2.80E-01	4.00E-01
Bacilli_A_X_X_X	3.70E-01	5.00E-01
Arsukibacterium	4.47E-01	5.60E-01
Magnetospirillum_A	4.89E-01	5.90E-01
Tumebacillales_X_X	7.65E-01	8.00E-01
Vampirovibrionia_X_X_X	2.58E-05	1.00E-04
Methylocystis	3.06E-02	6.30E-02
Hydrogenedens	2.15E-03	5.80E-03
CG2-30-64-16	5.71E-02	1.10E-01
MED660	4.41E-04	1.40E-03
Vulgatibacter	6.75E-04	2.10E-03
Streptosporangiaceae_X	4.04E-01	5.40E-01
Bdellovibrio	1.37E-02	3.10E-02
Crossiella	8.54E-04	2.50E-03
Dermatophilaceae_X	5.91E-05	2.20E-04
2-12-FULL-57-22	1.29E-01	2.20E-01
Firmicutes_E_X_X_X_X	8.95E-02	1.60E-01
Alkaliphilus	1.42E-01	2.30E-01
ABY1_X_X_X	2.93E-03	7.60E-03
Methylobacillus	1.74E-01	2.70E-01
Blastochloris	8.25E-01	8.60E-01
Kribbella	4.06E-03	1.00E-02
Rhodomicrobiaceae_X	1.70E-01	2.70E-01
Brevibacillus	6.04E-01	7.20E-01
Pseudomonas	1.42E-01	2.30E-01
Lysinibacillus_B	7.53E-01	8.00E-01
Bdellovibrionales_X_X	5.63E-01	6.70E-01
UBA3495_X	2.67E-03	7.10E-03
Ga0077541	1.88E-04	6.40E-04
TOLSYN	1.25E-05	5.20E-05
Hydrogenophaga	1.21E-07	6.80E-07
HZ-65	9.69E-03	2.30E-02
Crocinitomicaceae_X	4.89E-01	5.90E-01
Bacillus_AJ	1.69E-03	4.60E-03
GCA-2725915	2.00E-04	6.70E-04
Cohnella	9.11E-01	9.20E-01
Zambryskibacteraceae_X	1.18E-04	4.10E-04
Bacteroidota_X_X_X_X	1.02E-05	4.20E-05
Enterobacterales_X_X	7.25E-01	7.90E-01
PALSA-1337	5.81E-04	1.80E-03
SCGC-AG-212-F23	6.96E-03	1.70E-02
Bacillus_F	2.57E-01	3.70E-01
Mariniblastus	2.22E-01	3.30E-01
Pseudorhodoferax	2.19E-03	5.90E-03

JJ-A5	2.19E-03	5.90E-03
Elizabethkingia	4.47E-01	5.60E-01
Obscuribacter	8.60E-01	8.80E-01
Bacillus_AG	6.40E-01	7.60E-01
Sporomusaceae_X	4.20E-01	5.60E-01
Sphingobacteriaceae_X	2.05E-02	4.40E-02
Pajaroellobacter	1.24E-01	2.10E-01
Clostridium_AK	1.97E-02	4.30E-02
Zhizhongheella	1.47E-02	3.40E-02
Microlunatus	4.42E-04	1.40E-03
Mycobacterium_A	1.12E-01	1.90E-01
Bacillus	4.16E-02	8.20E-02
Pseudorhodoplanes	2.87E-02	6.00E-02
OLB9	4.88E-01	5.90E-01
UBA10212_X	4.32E-08	2.70E-07
Planctopirus	5.09E-04	1.60E-03
Moranbacterales_X_X	2.16E-06	1.00E-05
C7867-001	8.40E-01	8.70E-01
Bin61	1.54E-02	3.50E-02
4572-78	9.67E-01	9.70E-01
HRBIN40	2.23E-05	9.00E-05
AG11	2.91E-01	4.20E-01
Filimonas	2.20E-02	4.70E-02
Asinibacterium	2.29E-03	6.10E-03
Rummeliibacillus	5.35E-01	6.40E-01
OLB13	5.50E-05	2.00E-04
Gp7-AA6	1.13E-01	1.90E-01
Ga0074140_X	4.02E-02	8.00E-02
Desulfuromonadales_X_X	8.56E-04	2.50E-03
Exiguobacterium_A	9.69E-03	2.30E-02
Clostridium_AM	2.14E-01	3.30E-01
Ilumatobacter	2.58E-01	3.70E-01
UBA4735	4.04E-02	8.00E-02
Elusimicrobia_X_X_X	5.45E-02	1.00E-01
Enhygromyxa	3.78E-02	7.70E-02
Feb-22	7.53E-01	8.00E-01
Leptolyngbyaceae_X	8.54E-04	2.50E-03
Rhizobacter	1.42E-01	2.30E-01
UBA2337	1.96E-01	3.00E-01
Propionibacteriaceae_X	8.54E-04	2.50E-03
GCA-2737725	9.69E-03	2.30E-02
Paenibacillus_G	4.89E-01	5.90E-01
Piscinibacter	3.84E-01	5.20E-01
Methylobacterium	4.56E-03	1.10E-02
GWA1-54-10	6.49E-01	7.60E-01
Solirubrobacterales_X_X	3.03E-02	6.30E-02
Nitrosomonas	4.85E-01	5.90E-01
Pseudomonas_D	4.47E-01	5.60E-01
Flavobacteriaceae_X	1.42E-01	2.30E-01
Pararhizobium	8.54E-04	2.50E-03
UBA4416	3.79E-01	5.20E-01
Palsa-465	3.79E-01	5.20E-01

SG-1	7.25E-01	7.90E-01
Lachnospiraceae_X	9.69E-03	2.30E-02
Actinomycetales_X_X	2.14E-01	3.30E-01
UBA4207	1.28E-01	2.20E-01
Fen-455	4.89E-01	5.90E-01
Acetivibrio	6.46E-01	7.60E-01
Gp1-AA17	2.59E-01	3.70E-01
Paludisphaera	9.48E-03	2.30E-02
21-14-0-10-47-8	3.10E-01	4.30E-01
Limnobacter	8.76E-01	8.90E-01
UBA6065	9.67E-01	9.70E-01
UKL13-3	2.15E-01	3.30E-01
AG29	4.89E-01	5.90E-01
Paenibacillus_C	4.47E-01	5.60E-01
UBA2396	1.37E-03	3.90E-03
Myxococcales_X_X	5.02E-01	6.10E-01
Sulfurifustaceae_X	1.67E-02	3.70E-02
Azotobacter	7.53E-01	8.00E-01
UBA9983_A_X_X	7.48E-02	1.40E-01
UBA4124	2.98E-01	4.20E-01
Asticcacaulis	1.00E-03	2.90E-03
Rickettsiaceae_X	6.28E-01	7.40E-01
Paenibacillus_E	8.49E-01	8.70E-01
Klebsiella_B	1.17E-01	2.00E-01
Vitreoscilla_A	9.83E-02	1.70E-01
Paracraurococcus	8.33E-06	3.50E-05
20-14-0-80-50-8	1.80E-05	7.40E-05
SZUA-46	7.53E-01	8.00E-01
Diaphorobacter	4.47E-01	5.60E-01
Caulobacterales_X_X	6.45E-01	7.60E-01
Mongoliimonas	2.57E-01	3.70E-01
Gimesia	1.90E-02	4.20E-02
Streptomyces	4.19E-01	5.60E-01
Nitrospira_D	2.22E-01	3.30E-01
Palsa-1315	4.89E-01	5.90E-01
Dyella	4.47E-01	5.60E-01
Nannocystaceae_X	1.35E-01	2.20E-01
Palsa-1392	1.06E-01	1.80E-01
Jidaibacter	1.97E-02	4.30E-02
Bog-1198	1.19E-01	2.00E-01
Promicromonospora	8.40E-01	8.70E-01
Rhodothermales_X_X	5.95E-02	1.10E-01
Enterococcaceae_X	4.47E-01	5.60E-01
UBA10190	2.45E-01	3.60E-01
GCA-002862325	2.69E-01	3.90E-01
Pseudobacteroides	8.54E-04	2.50E-03
Porphyrobacter	1.53E-01	2.40E-01
Fulvimonas	4.74E-02	9.20E-02
Peptostreptococcales_X_X	3.91E-02	7.90E-02
Bacteriovoracaceae_X	7.55E-03	1.80E-02
GCA-2770975	8.64E-03	2.10E-02
Bin94	1.54E-02	3.50E-02

Rubritepida	1.23E-02	2.80E-02
Obscuribacteraceae_X	7.96E-04	2.40E-03
Paracaedibacter	4.47E-01	5.60E-01
Elainella	6.15E-03	1.50E-02
Geminicoccus	4.21E-01	5.60E-01
SG8-24_X	4.89E-01	5.90E-01
Paenibacillus	7.55E-02	1.40E-01
A4b_X	6.10E-01	7.20E-01
UBA1268	4.89E-01	5.90E-01
UBA12115	1.40E-02	3.20E-02
GCA-002050365	2.28E-02	4.90E-02
Ga0077555	1.49E-01	2.40E-01
2013-40CM-41-45	3.15E-01	4.40E-01
ZC4RG24	3.03E-02	6.30E-02
Parachlamydiales_X_X	5.63E-01	6.70E-01
GCA-2699025	3.30E-01	4.60E-01
Clostridium_T	2.57E-01	3.70E-01
Moheibacter	3.91E-02	7.90E-02
Cronobacter	7.25E-01	7.90E-01
Gorillibacterium	1.02E-01	1.80E-01
Pelomonas	4.04E-01	5.40E-01
Hydrocarboniphaga	2.17E-01	3.30E-01
Gemmatimonas	1.66E-01	2.60E-01
Bacillus_BC	7.37E-01	8.00E-01
UBA1018_X_X	5.37E-02	1.00E-01
Spirosomaceae_X	2.57E-02	5.40E-02
Tatlockia	3.36E-01	4.60E-01
Pigmentiphaga	4.47E-01	5.60E-01
Micavibrio_B	8.83E-02	1.60E-01
GAS474	4.47E-01	5.60E-01
Hyphomicrobiaceae_X	7.73E-01	8.10E-01
Enterococcus	8.54E-04	2.50E-03
Saccharopolyspora	4.89E-01	5.90E-01
Tol-SR	3.49E-01	4.80E-01
Anaerobacillus	1.75E-01	2.80E-01
Weeksellaceae_X	2.57E-01	3.70E-01
Chryseomicrobium	7.55E-02	1.40E-01
Niabella	2.57E-01	3.70E-01
Bdellovibrionota_X_X_X_X	9.67E-01	9.70E-01
O2-12-FULL-42-9	2.98E-01	4.20E-01
HO2-45-11b	7.53E-01	8.00E-01
XYD1-FULL-53-11	2.32E-02	4.90E-02
GWC2-37-73_X	4.87E-02	9.30E-02
Angustibacter	7.25E-01	7.90E-01
Babeliales_X_X	2.38E-01	3.60E-01
Actinoplanes	7.36E-03	1.80E-02
Amycolatopsis	1.25E-01	2.10E-01
2-01-FULL-59-12	2.56E-01	3.70E-01
Nostocaceae_X	4.51E-01	5.60E-01
F0540	1.42E-01	2.30E-01
Desulfonisporea	2.63E-02	5.50E-02
2-12-FULL-44-17	1.74E-01	2.70E-01

SZUA-149	8.90E-02	1.60E-01
Bacillus_H	7.25E-01	7.90E-01
UBA10450_X	7.10E-01	7.90E-01
UBA920	1.47E-01	2.40E-01
Chitinibacteraceae_X	7.25E-01	7.90E-01
Xiphinematobacter	7.53E-01	8.00E-01
MPNL01	7.52E-01	8.00E-01
Sumerlaeaceae_X	2.43E-07	1.30E-06
Acidicaldus	8.54E-04	2.50E-03
1-14-0-10-56-10	8.49E-01	8.70E-01
PMMR1	4.66E-03	1.20E-02
Desulfitobacteriaceae_X	7.25E-01	7.90E-01
Herpetosiphonaceae_X	1.33E-01	2.20E-01
Mesorhizobium_A	7.25E-01	7.90E-01
Cesiribacter	4.47E-01	5.60E-01
OLB11	1.42E-01	2.30E-01
Uliginosibacterium	1.38E-01	2.30E-01
Propionibacteriales_X_X	4.26E-02	8.30E-02
Streptosporangium	1.94E-01	3.00E-01
Parachlamydiaceae_X	3.04E-01	4.30E-01
2-01-FULL-44-21	9.87E-02	1.70E-01
SZUA-47	7.53E-01	8.00E-01
UBA922_X	7.53E-01	8.00E-01
Sporichthya	3.41E-01	4.70E-01
Thermanaerothrix	9.49E-02	1.70E-01
Peribacteraceae_X	1.07E-01	1.80E-01
Ellin6529_X_X_X	1.29E-01	2.20E-01
UBA6164_X	7.53E-01	8.00E-01
AKYH767_X_X	4.26E-02	8.30E-02
Taibaiella_B	8.63E-01	8.80E-01
32-67-11	7.25E-01	7.90E-01
Enterobacter_B	2.57E-01	3.70E-01
Paeniclostridium	7.53E-01	8.00E-01
UBA6821	4.47E-01	5.60E-01
Mycolicibacillus	4.89E-01	5.90E-01
Legionellaceae_X	2.15E-01	3.30E-01
Methyloceanibacter	1.15E-01	2.00E-01
2-02-FULL-42-43	2.51E-01	3.70E-01
2-02-FULL-39-32	4.89E-01	5.90E-01
Koribacter	9.67E-01	9.70E-01
Kapabacteriales_X_X	3.67E-01	5.00E-01
Rickettsiella	7.25E-01	7.90E-01
Pseudescherichia	2.57E-01	3.70E-01
UBA9655	7.10E-01	7.90E-01
Geobacter_B	4.47E-01	5.60E-01
UBA9649	2.00E-01	3.10E-01
Lysinibacillus	1.04E-01	1.80E-01
Ga0074137	5.46E-01	6.50E-01
UBA9934	8.25E-01	8.60E-01
Melittangium	2.98E-01	4.20E-01
Rudanella	1.23E-02	2.80E-02
Solimonas	7.53E-01	8.00E-01

Comamonas_E	7.25E-01	7.90E-01
Microtrichales_X_X	1.40E-01	2.30E-01
Sporomusa	4.16E-02	8.20E-02
Risunghinella	7.07E-02	1.30E-01
PALSA-555	7.53E-01	8.00E-01
Eubacterium_F	7.25E-01	7.90E-01
UBA11600	7.57E-01	8.00E-01
Acidisphaera	3.32E-01	4.60E-01
UBA9628	5.56E-02	1.00E-01
DDH964	9.67E-01	9.70E-01
Stackebrandtia	8.54E-04	2.50E-03
Methylococcoides_X_X	1.71E-02	3.80E-02
UBA11359_X	2.54E-01	3.70E-01
Brevibacillus_B	7.53E-01	8.00E-01
UBA12053	9.67E-01	9.70E-01
Oligoflexus	6.48E-01	7.60E-01
Phreatobacter	3.91E-02	7.90E-02
SG8-24_X_X	9.65E-05	3.40E-04
2-02-FULL-39-32_X_X	2.98E-01	4.20E-01
Altererythrobacter_B	3.94E-01	5.30E-01
Turcibacter	7.25E-01	7.90E-01
Actinotalea	7.25E-01	7.90E-01
UBA11704	4.47E-01	5.60E-01
Thermoanaerobaculum_X_X_X	6.48E-01	7.60E-01
SZUA-55	1.85E-01	2.90E-01
QKMZ01	9.12E-01	9.20E-01
Nucleicultrix	7.25E-01	7.90E-01
Sphaerospermopsis_A	5.00E-02	9.50E-02
Faecalicatena	7.53E-01	8.00E-01
Polyangia_X_X_X	4.15E-01	5.60E-01
Bacillus_L	4.47E-01	5.60E-01
OLB15	3.54E-03	9.10E-03
01-FULL-45-10b	8.46E-01	8.70E-01
UBA1931	7.55E-02	1.40E-01
GCA-2699585	3.27E-03	8.40E-03
UBA1547	2.57E-01	3.70E-01
2-12-FULL-60-19	8.54E-04	2.50E-03
Aquimonas	7.25E-01	7.90E-01
Bacillus_AX	4.47E-01	5.60E-01
Khelaifiella	7.25E-01	7.90E-01
OLB5	7.58E-02	1.40E-01
OLB20_X	7.69E-01	8.10E-01
OLB23	4.89E-01	5.90E-01
GCF-001939115	4.26E-02	8.30E-02
Paenibacillus_T	7.25E-01	7.90E-01
Vermiphilus	7.55E-02	1.40E-01
Nevskiales_X_X	4.89E-01	5.90E-01
HR-BB	1.15E-01	2.00E-01
Cyanobacteria_X_X_X_X	8.39E-02	1.50E-01
Tumebacillus	2.98E-01	4.20E-01
HdN1	8.46E-01	8.70E-01
2-02-FULL-49-12	7.25E-01	7.90E-01

Bacillus_Q	7.25E-01	7.90E-01
Sphingomonas	7.25E-01	7.90E-01
BOG-1112	2.10E-01	3.20E-01
UBA9973_X	7.53E-01	8.00E-01
SZUA-521	7.72E-01	8.10E-01
UBA9631	2.68E-01	3.80E-01
Algiphilus	7.55E-02	1.40E-01
Gastranaerophilales_X_X	1.42E-01	2.30E-01
UBA1844	8.76E-01	8.90E-01
Larkinella	2.02E-01	3.10E-01
Bdellovibrionaceae_X	4.16E-02	8.20E-02
UBA4658	7.63E-01	8.00E-01
PALSA-1347	7.25E-01	7.90E-01
Deinococcaceae_X	7.53E-01	8.00E-01
Serratia	7.25E-01	7.90E-01
Aquicola	7.25E-01	7.90E-01
Alsobacter	7.46E-07	3.80E-06
Chondromyces	4.24E-01	5.60E-01
UTPRO2	8.68E-01	8.90E-01
Bacillus_AT	2.98E-01	4.20E-01
UBA11063	4.47E-01	5.60E-01
Ancylobacter	7.25E-01	7.90E-01
GCA-2707205	4.47E-01	5.60E-01
Deinococcus_C	7.25E-01	7.90E-01
SZUA-359	7.25E-01	7.90E-01
RBG-16-40-8	4.43E-01	5.60E-01
Deinococcales_X_X	7.53E-01	8.00E-01
Paracaedibacteraceae_X	6.20E-01	7.30E-01
Thermoactinomycetaceae_X	9.12E-01	9.20E-01
Zoogloea	4.47E-01	5.60E-01
Paenibacillus_N	7.25E-01	7.90E-01
Oscillatoria	5.00E-02	9.50E-02
Segetibacter	4.89E-01	5.90E-01
Flavobacteriales_X_X	5.99E-01	7.10E-01
Ochrobactrum_A	7.25E-01	7.90E-01
Tistrella	4.89E-01	5.90E-01
BAL199	4.89E-01	5.90E-01
UBA1400_X_X	7.53E-01	8.00E-01
UBA1565_X	9.87E-02	1.70E-01
UBA920_X_X	8.60E-01	8.80E-01
Shewanella	7.25E-01	7.90E-01
Chelatococcus	7.25E-01	7.90E-01
Pedobacter	8.31E-01	8.60E-01
UBA1565_X_X	9.67E-01	9.70E-01
UBA1532	2.98E-01	4.20E-01
XYD2-FULL-39-9	7.53E-01	8.00E-01
UBA10212	7.53E-01	8.00E-01
Legionella_A	1.42E-01	2.30E-01
UBA11426	7.53E-01	8.00E-01
Aquabacterium	4.47E-01	5.60E-01
WO2-54-10	7.53E-01	8.00E-01
Terribacillus	8.02E-01	8.40E-01

Dehalobacterium	2.98E-01	4.20E-01
Vogesella	7.25E-01	7.90E-01
UBA1573	4.47E-01	5.60E-01
UBA6139	4.89E-01	5.90E-01
UBA1369_X_X	4.47E-01	5.60E-01
Dietzia	7.25E-01	7.90E-01
Bacteroidales_X_X	4.47E-01	5.60E-01
Thiobacillus	7.25E-01	7.90E-01
Amphiplicatus	8.54E-04	2.50E-03
Desulfovibrionales_X_X	4.16E-02	8.20E-02
Amphibacillaceae_X	8.54E-04	2.50E-03
Brevibacillaceae_X	8.54E-04	2.50E-03
Paenibacillus_L	2.39E-03	6.40E-03
GWA2-52-8	5.00E-02	9.50E-02
UBA10190_X	1.48E-01	2.40E-01
Elusimicrobiota_X_X_X_X	7.53E-01	8.00E-01
SZUA-592	9.67E-01	9.70E-01
Micavibrio	8.60E-01	8.80E-01
Odyssella	7.25E-01	7.90E-01
01-FULL-45-34b	7.25E-01	7.90E-01
Rubinisphaera	9.67E-01	9.70E-01
Simkania	7.25E-01	7.90E-01
Gracilibacteria_X_X_X	7.25E-01	7.90E-01
Sphingomonas_D	7.25E-01	7.90E-01
DSM-45891	7.25E-01	7.90E-01
Gracilibacillus	8.76E-01	8.90E-01
Siphonobacter	2.57E-01	3.70E-01
Caloramatoraceae_X	4.47E-01	5.60E-01
1NLA3E	7.53E-01	8.00E-01
Longispora	7.25E-01	7.90E-01
Opitutales_X_X	7.25E-01	7.90E-01
Salinimicrobium	4.26E-02	8.30E-02
Leptolyngbya_A	2.03E-01	3.10E-01
Xanthomonas_A	7.25E-01	7.90E-01
Deinococcus	4.47E-01	5.60E-01
VKM-B-2647	9.67E-01	9.70E-01
21-14-0-10-47-8-A	1.42E-01	2.30E-01
Bdellovibrio_A	7.25E-01	7.90E-01
Ruminococcus_A	4.47E-01	5.60E-01
Desulfotomaculum_H	3.84E-01	5.20E-01
UBA2163_X	2.47E-01	3.70E-01
Ktedonobacter	8.54E-04	2.50E-03
2-02-FULL-51-10	2.98E-01	4.20E-01
OLB19	1.42E-01	2.30E-01
28-YEA-48	7.25E-01	7.90E-01
Palsa-1150	7.25E-01	7.90E-01
Enterococcus_A	7.25E-01	7.90E-01
OLB8	4.47E-01	5.60E-01
Kroppenstedtia	1.07E-01	1.80E-01
Ketobacteraceae_X	4.87E-02	9.30E-02
Elainellaceae_X	7.53E-01	8.00E-01
Anaerocolumna	7.25E-01	7.90E-01

GCA-2686445	4.47E-01	5.60E-01
Bacteriovorax	4.47E-01	5.60E-01
Solirubrum	4.47E-01	5.60E-01
HO2-37-13b_X	9.67E-01	9.70E-01
Protochlamydia	4.47E-01	5.60E-01
Desulfobacterota_X_X_X_X	8.49E-01	8.70E-01
Diplorickettsia	4.89E-01	5.90E-01
Magnetospirillaceae_X	4.89E-01	5.90E-01
PALSA-968	4.47E-01	5.60E-01
GWA1-44-29	4.89E-01	5.90E-01
UBA10103	4.89E-01	5.90E-01

Table S3: Wilcoxon test comparison p-value of all genera between all pairs of four sample types. “_X” are used to represent unannotated taxa at a level, multiple suffixes indicate that many level was the last annotation. P-values < 0.05 are coloured as red.

	Bulk			PostHarvest		PreSowing
Genera	PostHarvest	PreSowing	Rhizosphere	PreSowing	Rhizosphere	Rhizosphere
Pseudomonas_M	0.016	0.527	0.000	0.222	0.593	0.004
Acinetobacter	0.969	0.875	0.000	0.906	0.004	0.003
Enterobacter_D	0.957	0.612	0.000	1.000	0.000	0.000
Bacteria_X_X_X_X_X	0.280	0.000	0.000	0.008	0.000	0.000
Bacillus_W	0.820	0.793	0.000	1.000	0.013	0.011
Bacillus_AK	0.741	0.495	0.000	1.000	0.002	0.002
UBA2421	0.042	0.930	0.003	0.056	0.672	0.149
Bacillaceae_A_X	0.154	0.080	0.000	0.548	0.021	0.029
Luteitalea	0.687	0.000	0.000	0.008	0.000	0.495
Enterobacteriaceae_X	0.196	0.649	0.000	0.424	0.001	0.000
Pseudomonadaceae_X	0.611	0.023	0.000	0.032	0.000	0.059
Sphingomonadaceae_X	0.001	0.007	0.000	0.151	0.000	0.000
Lysobacter	0.678	0.338	0.000	0.841	0.000	0.000
Rhizobiaceae_X	0.314	0.875	0.000	0.421	0.001	0.000
QHWT01	0.128	0.051	0.000	0.032	0.000	0.002
Streptomycetaceae_X	0.086	0.080	0.287	0.841	0.160	0.138
Bacillales_X_X	0.280	0.128	0.000	0.548	0.101	0.326
OLB17	0.020	0.170	0.010	0.421	0.004	0.008
GWA2-73-35_X	0.035	0.006	0.000	0.008	0.000	0.000
Actinobacteriota_X_X_X_X_X	0.018	0.000	0.000	0.095	0.000	0.000
Peptostreptococcaceae_X	0.375	0.123	0.000	0.180	0.003	0.011
Palsa-739	0.118	0.000	0.000	0.032	0.000	0.000
Chthoniobacter	0.110	0.148	0.000	0.841	0.149	0.109
Opitutaceae_X	0.011	0.144	0.776	0.548	0.001	0.040
QHXM01	0.137	0.102	0.000	0.151	0.000	0.001
Alphaproteobacteria_X_X_X_X	0.073	0.042	0.000	0.008	0.010	0.000
Flavobacterium	0.330	0.978	0.000	0.424	0.002	0.004
Haloferula	0.273	0.865	0.000	0.347	0.001	0.002
UBA9968_X	0.986	0.000	0.000	0.008	0.000	0.755
Burkholderiales_X_X	0.194	0.000	0.000	0.008	0.000	0.005
Micromonosporaceae_X	0.314	0.056	0.000	0.151	0.049	0.001
Pseudosphingobacterium			0.000		0.034	0.034
Xylophilus	0.023	0.930	0.000	0.056	0.000	0.071
UBA11741	0.067	0.016	0.000	0.016	0.000	0.002
Sphningosinicella	0.000	0.349	0.000	0.016	0.000	0.172
Xanthomonadaceae_X	0.249	0.028	0.000	0.032	0.345	0.000
Verrucomicrobium	0.980	0.901	0.000	1.000	0.001	0.001
Microvirga	0.349	0.002	0.207	0.016	0.149	0.007
Chryseobacterium	0.777	0.777	0.000		0.001	0.001
Acidimicrobiia_X_X_X_X	0.611	0.004	0.000	0.032	0.016	0.000
Bacillus_Y	0.330	0.301	0.000	0.180	0.003	0.010
Burkholderiaceae_X	0.958	0.687	0.000	0.690	0.006	0.016
Pirellula	0.636	0.562	0.000	0.690	0.000	0.008
Gp6-AA56	0.170	0.002	0.000	0.095	0.000	0.092
Steroidobacter	0.170	0.331	0.001	0.095	0.619	0.016
Vitiosangium	0.986	0.026	0.000	0.151	0.005	0.001
Planctomycetaceae_X	0.102	0.249	0.000	0.056	0.519	0.007

Vicinamibacterales_X_X	0.087	0.000	0.000	0.008	0.000	0.071
Fimbrigliobus	0.586	0.875	0.000	0.690	0.001	0.002
Saccharimonadaceae_X	0.643	0.751	0.000	0.526	0.035	0.014
Sphingopyxis_A	0.849	0.451	0.000	0.441	0.000	0.000
UBA6082	0.042	0.118	0.000	0.841	0.000	0.000
Pontibacter	0.038	0.504	0.000	0.690	0.000	0.000
GCA-2746885	0.748	0.968	0.000	0.906	0.008	0.013
Sphingomonas_A	0.000	0.000	0.105	0.548	0.000	0.000
Clostridiaceae_X	0.050	0.567	0.000	0.530	0.262	0.311
Nonomuraea	0.011	0.187	0.034	0.151	0.001	0.005
Pirellulales_X_X	0.118	0.611	0.000	0.310	0.000	0.000
AR5	0.539	0.001	0.000	0.016	0.000	0.172
Neorhizobium	0.427	0.691	0.000	0.424	0.000	0.000
Pseudoxanthomonas_A	0.262	0.432	0.000	0.675	0.167	0.000
Clostridium	0.649	0.196	0.000	0.424	0.009	0.032
Gemmatimonadaceae_X	0.661	0.207	0.000	0.151	0.000	0.000
GWC2-73-18	0.847	0.005	0.000	0.008	0.002	0.000
Ohtaekwangia	0.061	0.515	0.015	0.548	0.543	0.405
UKL13-2	1.000	0.264	0.024	0.421	0.257	0.092
Geodermatophilus	0.871	0.004	0.079	0.032	0.092	0.002
FW-11	0.139	0.783	0.000	0.373	0.001	0.011
Dongia	1.000	0.249	0.000	0.421	0.005	0.257
JKG1	0.108	0.013	0.037	0.095	0.032	0.001
Pirellulaceae_X	0.011	0.636	0.528	0.008	0.032	0.783
Arboricoccus	0.636	0.013	0.000	0.056	0.000	0.000
Mycoplana	0.766	1.000	0.000	1.000	0.004	0.001
Flavisolibacter	0.020	0.158	0.000	0.548	0.000	0.000
Leaf454	0.588	0.588	0.000	1.000	0.026	0.039
Sphingobacterium			0.000		0.004	0.004
Gemmata	0.001	0.739	0.000	0.056	0.000	0.002
Pedosphaerales_X_X	0.234	0.713	0.130	0.421	0.149	0.308
Clostridium_AD			0.000		0.050	0.050
Actinobacteria_X_X_X	0.067	0.004	0.000	0.310	0.000	0.000
Alteromonadaceae_X			0.019		0.414	0.414
Adhaeribacter	0.329	0.199	0.007	0.290	0.007	0.820
Nannocystis	0.494	0.698	0.852	0.607	0.555	0.607
QHVH01	0.793	0.001	0.000	0.056	0.000	0.005
Bryobacteraceae_X	0.249	0.137	0.000	0.548	0.000	0.000
Pedosphaeraceae_X	0.280	0.073	0.046	0.421	0.134	0.085
Rhodocyclaceae_X	0.067	0.035	0.000	0.690	0.007	0.040
UBA1161_X	0.713	0.042	0.116	0.690	0.927	0.385
Geminicoccaceae_X	0.128	0.011	0.000	0.151	0.000	0.000
SCN-69-37	0.047	0.073	0.000	0.032	0.000	0.000
Lysobacter_A	0.019	0.616	0.000	0.072	0.000	0.000
Solirubrobacter	0.067	0.000	0.000	0.016	0.000	0.000
AR19	0.958	0.005	0.000	0.032	0.000	0.012
Aromatoleum	0.038	0.704	0.046	0.095	0.006	0.761
Gemmataceae_X	0.006	0.847	0.000	0.056	0.000	0.002
UBA4664	0.375	0.797	0.000	0.424	0.023	0.060
Pedosphaera	0.314	0.006	0.000	0.032	0.008	0.004
Planobispora	0.265	0.130	0.864	0.106	0.177	0.147
Cellvibrio	0.559	0.559	0.000		0.003	0.003

Chitinophagaceae_X	0.249	0.428	0.000	0.151	0.003	0.149
SZUA-115	0.280	0.003	0.000	0.008	0.003	0.000
Planctomycetes_X_X_X	0.249	0.820	0.000	0.548	0.000	0.000
PALSA-1355	0.687	0.042	0.000	0.151	0.000	0.001
Stenotrophomonas	0.649	0.649	0.000		0.001	0.001
Gp7-AA10	0.148	0.000	0.000	0.095	0.023	0.927
Solirubrobacteraceae_X	0.047	0.000	0.000	0.032	0.000	0.000
Bacilli_X_X_X	0.706	0.936	0.000	1.000	0.064	0.042
ARS98	0.009	0.137	0.000	0.310	0.000	0.000
Rubrobacter_B	0.687	0.102	0.000	0.095	0.001	0.001
Bacillus_BD	0.676	0.839	0.001	0.797	0.227	0.124
Thauera	0.138	0.171	0.047	0.072	0.536	0.042
Catelliglobosipora	0.388	0.745	0.000	1.000	0.218	0.149
Steroidobacteraceae_X	0.137	0.006	0.000	0.690	0.956	0.543
Gemmatimonadales_X_X	0.000	0.023	0.000	0.095	0.118	0.519
Kosakonia			0.010		0.362	0.362
Cupriavidus	0.375	0.001	0.000	0.025	0.000	0.014
Oscillochloris	0.257	0.115	0.169	0.917	0.607	0.165
UBA4665_X	0.129	0.129	0.000		0.001	0.001
Pyrinomonadaceae_X	0.158	0.000	0.000	0.095	0.000	0.021
RBG-16-71-46	0.220	0.056	0.000	0.056	0.001	0.006
Opitutus	0.029	0.086	0.000	1.000	0.003	0.005
Thermomicrobiaceae_X	0.626	0.005	0.000	0.095	0.008	0.001
2-12-FULL-64-23	0.018	0.539	0.000	0.310	0.000	0.029
Chitinophaga	0.148	0.028	0.000	0.833	0.460	0.021
Isosphaeraceae_X	0.611	0.000	0.000	0.032	0.035	0.000
Myxococcus	0.597	0.012	0.817	0.067	0.498	0.016
Niastella	0.149	0.741	0.001	0.421	0.646	0.240
Mycobacteriales_X_X	0.626	0.020	0.000	0.151	0.007	0.004
Gammaproteobacteria_X_X_X	0.820	0.000	0.000	0.032	0.211	0.059
Polyangiales_X_X	0.176	0.009	0.003	0.008	0.676	0.007
UBA10511	0.713	0.515	0.000	0.841	0.044	0.211
Plantactinospora_A	0.928	0.004	0.000	0.056	0.007	0.001
Nitrospira_C	0.002	0.000	0.000	0.008	0.044	0.040
Thermoleophilia_X_X_X	0.018	0.000	0.000	0.548	0.000	0.000
Phenylobacterium	0.011	0.713	0.015	0.095	0.000	0.149
Bacillus_AA	0.603	0.691	0.000	1.000	0.018	0.014
Methylibium	0.086	0.015	0.001	0.310	0.727	0.241
AV2	0.000	0.875	0.000	0.008	0.000	0.001
40CM-3-62-11	0.148	0.000	0.000	0.008	0.000	0.790
Pararheinheimera	0.330	0.935	0.969	0.424	0.362	0.930
BOG-1338	0.980	0.747	0.000	1.000	0.020	0.013
Exiguobacterium			0.000		0.042	0.042
Methylophilaceae_X	0.777	0.777	0.000		0.002	0.002
Acidobacteriota_X_X_X_X	0.176	0.018	0.000	0.421	0.001	0.015
Gemmatirosa	0.003	0.428	0.059	0.095	0.026	0.956
SCN-70-22	0.428	0.023	0.000	0.056	0.000	0.002
Rhizobium		0.006	0.000	0.424	0.000	0.001
Erwinia	0.777	0.777	0.006		0.241	0.241
Nocardiodaceae_X	0.455	0.022	0.050	0.106	0.074	0.044
Arthrobacter_I	0.211	0.116	0.000	0.158	0.001	0.583
CP2B	0.487	0.487	0.001		0.099	0.099

Achromobacter			0.000		0.009	0.009
Flavobacterium_A			0.005		0.316	0.316
BOG-1460	0.181	0.958	0.000	0.690	0.000	0.001
40CM-68-15	0.240	0.226	0.000	0.059	0.000	0.030
Pseudoxanthomonas	0.777	0.777	0.001		0.182	0.182
Rubrobacteraceae_X	0.759	0.143	0.000	0.222	0.001	0.001
Zavarzinella	0.471	0.264	0.064	0.421	0.925	0.039
SM1A02_X	0.039	0.713	0.000	0.421	0.000	0.002
Paenibacillaceae_X	0.124	0.408	0.053	1.000	0.803	0.576
Byssovorax	0.181	0.220	0.000	1.000	0.000	0.000
Haliangium	0.342	0.028	0.009	0.398	0.003	0.000
Dactylosporangium	0.220	0.104	0.000	0.151	0.016	0.026
Inquilinus	0.835	0.140	0.000	0.347	0.004	0.099
Paramesorhizobium			0.002		0.276	0.276
Aeromonas			0.000		0.136	0.136
Terrimicrobium	0.034	0.361	0.000	0.607	0.012	0.008
Schlesneria	0.110	0.181	0.000	0.008	0.000	0.000
G233	0.004	0.045	0.000	1.000	0.878	0.939
Acidimicrobiales_X_X	0.678	0.024	0.948	0.056	0.718	0.042
Bacteroidia_X_X_X	0.871	0.053	0.027	0.095	0.145	0.557
Streptacidiphilus	0.109	0.473	0.395	0.824	0.024	0.209
Nevskiaceae_X	0.376	0.074	0.000	0.421	0.023	0.011
UBA6960_X	0.001	0.000	0.000	0.008	0.000	0.238
UBA2386	0.471	0.220	0.000	0.548	0.004	0.118
SZUA-42	0.303	0.092	0.000	0.032	0.000	0.139
Kouleothrix	0.958	0.031	0.000	0.151	0.020	0.002
SZUA-252	1.000	0.006	0.000	0.032	0.000	0.085
Pirellula_B	0.070	0.335	0.001	0.161	0.001	0.910
Jiangella	0.006	0.000	0.000	0.690	0.000	0.000
Bin18	0.586	0.102	0.000	0.421	0.040	0.211
Saprospiraceae_X	0.058	0.705	0.030	0.151	0.006	0.495
Palsa-1233	0.611	0.449	0.001	0.690	0.138	0.241
Phycisphaerae_X_X_X	0.611	0.249	0.000	0.548	0.001	0.000
Ilumatobacter_A	0.039	0.031	0.006	0.056	0.543	0.006
UBA11883	0.875	0.005	0.000	0.008	0.000	0.138
Dehalococcoidia_X_X_X	0.793	0.000	0.000	0.010	0.002	0.067
Rhizobiales_X_X	0.181	0.003	0.925	0.095	0.364	0.016
Polyangiaceae_X	0.739	0.449	0.000	0.310	0.000	0.001
UBA5946			0.000		0.002	0.002
Cyanobacteriia_X_X_X	0.610	0.076	0.025	0.389	0.043	0.011
Bordetella_A			0.000		0.023	0.023
Bradyrhizobium			0.000		0.136	0.136
Fictibacillus_B			0.000		0.034	0.034
Noviherbaspirillum	0.305	0.299	0.000	0.158	0.003	0.204
Citrobacter			0.317		0.772	0.772
Chthoniobacterales_X_X	0.587	0.433	0.000	1.000	0.004	0.005
Chitinophagales_X_X	0.199	0.625	0.000	0.222	0.000	0.029
PMNU01	0.121	0.170	0.115	1.000	0.425	0.423
QHBO01	0.428	0.002	0.000	0.151	0.002	0.000
P52-10	0.449	0.170	0.006	0.151	0.029	0.985
Burkholderia			0.000		0.071	0.071
Azospirillum	0.501	0.001	0.188	0.034	0.425	0.003

Alishewanella	0.330	0.438	0.908	0.180	0.362	0.357
Gemmatimonadetes_X_X_X	0.068	0.053	0.000	1.000	0.011	0.037
Novosphingobium			0.149		0.640	0.640
Dyadobacter	0.777	0.077	0.000	0.424	0.000	0.006
UBA1020	0.649	0.649	0.000		0.028	0.028
Acidobacteriales_X_X	0.652	0.134	0.000	0.222	0.001	0.134
MM2	0.559	0.559	0.000		0.000	0.000
SWB02	0.428	0.428	0.000	1.000	0.001	0.001
Geodermatophilaceae_X	0.226	0.017	0.066	0.045	0.649	0.003
Bin134	0.530	0.000	0.144	0.012	0.985	0.001
Saccharimonadales_X_X	0.086	0.329	0.000	0.034	0.003	0.018
Domibacillaceae_X	0.363	0.312	0.635	0.236	0.437	0.280
Roseimaritima	0.244	0.886	0.284	0.607	0.035	0.387
Aeromicrobium	0.162	0.003	0.020	0.290	0.984	0.263
Saccharibacillus			0.317		0.772	0.772
UBA4655	0.011	0.376	0.000	0.142	0.000	0.223
Coleofasciculus	0.978	0.014	0.302	0.158	0.518	0.002
Blastomonas	0.649	0.008	0.000	0.180	0.006	0.146
Palsa-89	0.407	0.042	0.157	0.421	0.747	0.103
Chloroflexota_X_X_X_X	0.005	0.611	0.010	0.008	0.032	0.016
Polymorphum	0.413	0.818	0.702	0.373	0.420	0.677
Blastococcus	0.241	0.025	0.089	0.075	0.381	0.013
SZUA-320	0.116	0.303	0.000	0.095	0.000	0.018
Nitrospira_A	0.006	0.000	0.000	0.548	0.719	0.663
Rhodobacteraceae_X	0.232	0.447	0.538	0.173	0.032	0.297
IMCC26207	0.319	0.019	0.000	0.548	0.009	0.000
55-13	0.212	0.073	0.001	0.008	0.155	0.000
GCA-2723275	0.240	0.011	0.000	0.008	0.000	0.437
LHW63021	0.668	0.175	0.669	0.347	0.829	0.072
Nocardioides	0.142	0.000	0.033	0.032	0.609	0.001
Isoptericola_B	0.323	0.002	0.008	0.142	0.893	0.041
ZC4RG30	0.713	0.515	0.000	0.548	0.026	0.042
Cyanobacteriales_X_X	0.644	0.184	0.009	0.239	0.475	0.002
Terrimonas	0.012	0.649	0.000	0.180	0.784	0.085
Planctomicrobium	0.986	0.148	0.000	0.310	0.000	0.005
Hyalangium	0.823	0.214	0.001	0.265	0.471	0.068
Acetobacteraceae_X	0.056	0.062	0.000	0.067	0.001	0.405
Reyranella	0.666	0.639	0.238	1.000	0.269	0.269
Arenimonas	0.649	0.260	0.000	0.424	0.004	0.012
Chthonomonas	0.240	0.871	0.000	0.095	0.000	0.000
Pseudomonas_A	0.559	0.559	0.000		0.042	0.042
Taibaiella_A			0.000		0.099	0.099
Azohydromonas	0.941	0.002	0.001	0.075	0.140	0.066
Sphingopyxis			0.000		0.042	0.042
Verrucomicrobiae_X_X_X	0.416	0.759	0.278	0.310	1.000	0.394
Rhizorhabdus	0.042	0.095	0.431	1.000	0.049	0.059
Devosia	0.501	0.011	0.123	0.056	0.834	0.216
Cryptosporangium	0.441	0.000	0.930	0.010	0.490	0.000
Chryseolinea_A			0.000		0.071	0.071
Prostheco bacter	0.143	0.668	0.000	0.398	0.029	0.009
Rhodospirillum_A	0.883	0.102	0.100	0.265	0.271	0.017
SZUA-318	0.031	0.008	0.000	0.310	0.000	0.000

Pseudomonas_F	0.487	0.487	0.000		0.042	0.042
Rubellimicrobium	0.492	0.003	0.009	0.032	0.109	0.042
Sorangium	0.540	0.041	0.000	0.067	0.481	0.003
GCA-002686595_X	0.074	0.148	0.000	0.032	0.000	0.102
Planctomyces_A	0.385	0.015	0.000	0.034	0.006	0.955
Pseudomonas_B	0.649	0.649	0.579		0.772	0.772
Chryseolinea	0.095	0.095	0.113	1.000	0.245	0.245
Bosea	0.777	0.777	0.000		0.007	0.007
Blastocatellia_X_X_X	0.011	0.376	0.000	0.290	0.125	0.405
Azoarcus_B	0.099	0.160	0.000	0.106	0.002	0.601
Herpetosiphon	0.797	0.151	0.000	0.607	0.065	0.254
NIC37A-2	0.213	0.957	0.000	0.222	0.000	0.001
Rhodanobacteraceae_X	0.839	0.200	0.000	0.265	0.092	0.003
Pseudonocardia	0.164	0.026	0.001	0.310	0.012	0.004
KBS-96	0.286	0.045	0.000	0.222	0.008	0.003
Xanthobacteraceae_X	0.759	0.154	0.940	0.310	0.811	0.172
GWC2-71-9_X	0.108	0.426	0.001	0.075	0.000	0.593
Cystobacter	0.375	0.151	0.149	0.180	0.158	0.375
NS-102	0.839	0.619	0.244	0.833	0.830	0.276
Pseudomonas_H			0.074		0.548	0.548
Flavisolibacter_B	0.224	0.649	0.000	0.424	0.002	0.003
GWC2-70-10	0.097	0.003	0.000	0.067	0.004	0.570
Aneurinibacillus_A	0.786	0.320	0.010	0.530	0.573	0.024
QKVK01	0.034	0.493	0.056	0.398	0.133	0.801
Anaeromyxobacter	0.159	0.596	0.455	0.753	0.105	0.355
67-14	0.181	0.089	0.001	0.045	0.936	0.001
Streptomyces_D	0.291	0.897	0.015	0.424	0.772	0.087
HRBIN30	0.504	0.871	0.000	0.548	0.001	0.005
Par-f-2	0.899	0.576	0.000	0.690	0.010	0.001
Myxococcaceae_X	0.985	0.021	0.051	0.139	0.347	0.051
UBA5793	0.626	0.154	0.000	0.142	0.000	0.175
Z2-YC6860	0.246	0.985	0.002	0.236	0.762	0.050
Proteobacteria_X_X_X_X	0.192	0.926	0.011	0.239	0.049	0.457
Cnuella	0.511	0.695	0.006	0.656	0.069	0.663
Euzebya	0.005	0.011	0.000	0.548	0.000	0.000
UBA4720	0.023	0.001	0.465	0.421	0.029	0.002
Isosphaera	0.796	0.003	0.018	0.032	0.177	0.000
Elioraea	0.305	0.037	0.000	0.724	0.449	1.000
Caulobacteraceae_X	0.258	0.522	0.000	0.158	0.004	0.663
GCA-2683825	0.002	0.386	0.000	0.095	0.000	0.005
Root149			0.010		0.362	0.362
Binatia_X_X_X	0.857	0.001	0.000	0.205	0.208	0.330
Anaerolineae_X_X_X	0.249	0.611	0.000	0.310	0.001	0.007
Caulobacter	0.777	0.777	0.007		0.241	0.241
Sandaracinus	0.903	0.857	0.000	1.000	0.001	0.041
URHD0088	0.279	0.033	0.000	0.600	0.634	0.689
UBA11740	0.130	0.088	0.000	0.075	0.000	0.387
BD2-11	0.118	0.177	0.000	0.914	0.001	0.112
IMCC26256	0.255	0.026	0.000	1.000	0.000	0.000
Agromyces	0.554	0.006	0.000	0.045	0.019	0.470
Singulisphaera	0.666	0.607	0.004	0.451	0.023	0.563
Mycolicibacterium	0.361	0.442	0.000	1.000	0.043	0.032

Ramlibacter	0.006		0.000	0.424	0.426	0.136
Fen-1342	0.005	0.175	0.000	0.021	0.000	0.239
UBA4093	0.499	0.855	0.502	1.000	0.833	0.834
Nitrospiraceae_X	0.571	0.029	0.000	0.239	0.005	0.637
Chloroflexales_X_X	0.676	0.006	0.000	0.205	0.471	0.000
Planctomycetota_X_X_X_X	0.093	0.009	0.000	0.008	0.000	0.216
Berkiella	0.649	0.649	0.000		0.042	0.042
Lentzea	0.684	0.029	0.000	0.158	0.005	0.635
Catenuloplanes		0.000	0.317	0.180	0.772	0.002
Domibacillus	1.000	0.114	0.499	0.265	0.731	0.213
Herminiimonas	0.559	0.442	0.000	0.424	0.042	0.127
Yuhushiella	0.559	0.559	0.090			
Gp18-AA60	0.338	0.004	0.000	0.011	0.000	0.400
W-Chloroflexi-9	0.226	0.086	0.000	0.690	0.004	0.107
Tumebacillus_A	0.338	0.003	0.772	0.295	0.469	0.005
Paracoccus	0.649	0.000	0.000	0.072	0.003	0.262
Brevundimonas	0.361	0.040	0.000	0.797	0.204	0.281
Delftia	0.777	0.777	0.080		0.414	0.414
Hungatella			0.149		0.640	0.640
Fluviicola	0.021	0.559	0.012	0.180	0.375	0.158
Bog-159	0.030	0.207	0.000	0.021	0.000	0.079
Spirillospora	0.573	0.175	0.118	0.158	0.930	0.018
Geobacterales_X_X	0.065	0.897	0.637	0.239	0.017	0.933
Ralstonia			0.019		0.414	0.414
Blastococcus_A	0.252	0.004	0.146	0.010	0.560	0.000
Acidobacteriaceae_X	0.460	0.378	0.119	0.441	0.281	0.675
UBA6092	0.828	0.480	0.000	0.548	0.030	0.001
Idiomarina			0.074		0.548	0.548
UBA7805	0.091	0.780	0.383	0.290	0.045	0.590
CSP1-2_X	0.986	0.009	0.000	0.008	0.001	0.022
Rhodococcus			0.149		0.640	0.640
HGW-BRC1-1	1.000	0.226	0.140	0.249	0.460	0.557
Caldilineales_X_X	0.391	0.542	0.031	0.441	0.064	0.563
Bacillaceae_H_X	0.096	0.951	0.933	0.180	0.085	1.000
UBA1568	0.323	0.323	0.087	1.000	0.894	0.936
UBA1268_X	0.596	0.351	0.000	0.421	0.001	0.000
Acidimicrobiaceae_X	0.255	0.980	0.043	0.424	0.071	0.386
Minicystis	0.395	0.297	0.004	0.139	0.935	0.003
Litorilinea	0.086	0.001	0.062	0.016	0.018	0.001
UTCFX2	0.650	0.001	0.000	0.094	0.127	0.000
Luteimonas	0.427	0.603	0.068	0.424	0.182	0.756
Geobacteraceae_X	0.271	0.255	0.129	0.180	0.607	0.099
Azospirillaceae_X	0.801	0.042	0.674	0.161	0.669	0.037
Sphingobium			0.000		0.060	0.060
MEBICO9517	0.000	0.002	0.000	0.180	0.009	0.190
Methylophilus	0.027	0.194	0.000	0.010	0.499	0.000
Bacillus_X			0.317		0.772	0.772
Caldilinea	0.626	0.001	0.090	0.008	0.099	0.001
Zobellella_B			0.149		0.640	0.640
Mizugakiibacter	0.598	0.621	0.000	0.607	0.002	0.087
Mucilaginibacter	0.777	0.777	0.000		0.116	0.116
Shinella			0.149		0.640	0.640

Solitalea			0.000		0.182	0.182
Ferrovibrio	0.412	0.867	0.001	0.504	0.024	0.046
Cytophagales_X_X	0.401	0.221	0.000	0.158	0.003	0.166
Xanthomonadales_X_X	0.082	0.197	0.000	0.072	0.002	0.894
Anaerolineales_X_X	0.800	0.092	0.000	0.290	0.031	0.605
Massilia_B	0.224	0.799	0.000	0.180	0.001	0.001
A52C2	0.164	0.016	0.000	0.032	0.044	0.001
Flaviumibacter	0.777	0.777	0.000		0.015	0.015
R-RK-3	0.501	0.008	0.883	0.161	0.545	0.009
Altererythrobacter_A	0.171	0.875	0.228	0.424	0.050	0.446
Parapedobacter			0.074		0.548	0.548
Nitrospira	0.280	0.001	0.888	0.010	0.338	0.002
Arthrobacter_F	0.427	0.003	0.309	0.072	0.640	0.000
Frateuria_A	0.291	0.897	0.000	0.424	0.023	0.184
Nocardia	0.777	0.077	0.296	0.424	0.548	0.347
OLB7	0.744	0.163	0.058	0.526	0.648	0.114
EW11	0.603	0.097	0.000	0.797	0.446	0.745
Actinocorallia	0.890	0.305	0.073	0.607	0.405	0.077
Aquamicrobium	0.620	0.487	0.242	0.424	1.000	0.276
Labilithrix	1.000	0.677	0.000	0.833	0.034	0.002
Ga0074140	0.055	0.034	0.000	0.906	0.019	0.046
Frankia			0.074		0.548	0.548
Franconibacter			0.038		0.475	0.475
Microbacteriaceae_X		0.000	0.000	0.180	0.034	0.576
Sulfuricaulis	0.346	0.399	0.000	0.347	0.004	0.593
Pseudoduganella	0.941	0.157	0.001	0.480	0.233	0.628
Beijerinckiaceae_X	0.396	0.008	0.541	0.045	0.534	0.006
UBA12294	0.699	0.544	0.119	0.518	0.831	0.270
Paceibacteria_X_X_X	0.224	0.938	0.004	0.441	0.000	0.007
MFUC01	0.649	0.649	0.171			
RBG-16-71-46_X_X_X	0.171	0.171	0.003		0.640	0.640
Mycobacteriaceae_X	0.710	0.000	0.460	0.075	1.000	0.003
Lacunisphaera	0.024	0.559	0.043	0.180	0.459	0.241
Glycomyces	0.427	0.647	0.003	0.424	0.085	0.379
Planococcaceae_X	0.747	0.255	0.262	0.424	0.400	0.136
UM-FILTER-40-16	0.854	0.644	0.000	0.824	0.000	0.000
2-12-FULL-35-15	0.183	0.416	0.709	0.600	0.103	0.212
Fen-1137	0.007	0.375	0.054	0.072	0.000	0.772
Algoriphagus			0.149		0.640	0.640
Chloroflexaceae_X	0.100	0.029	0.301	0.389	0.238	0.068
Roseomonas	0.006		0.005	0.424	0.845	0.316
UBA2475	0.594	0.449	0.580	0.398	0.399	0.863
Massilia	0.559	0.442	0.004	0.424	0.116	0.548
Fimbriimonadaceae_X	0.870	0.956	0.000	1.000	0.001	0.009
UTPRO1	0.504	0.842	0.000	0.675	0.001	0.249
Conexibacter_A	0.857	0.001	0.218	0.067	0.338	0.000
Ga0077550	0.004	0.320	0.000	0.373	0.601	0.053
Azoarcus_A	0.777	0.777	0.000		0.028	0.028
Bacillus_BE			0.149		0.640	0.640
Chamaesiphon	0.427	0.561	0.026	0.424		0.007
Paenibacillus_H	0.559	0.559	0.231		0.362	0.362
4572-78_X_X	0.521	0.013	0.229	0.052	0.294	0.032

Omnitrophales_X_X	0.127	0.279	0.000	0.824	0.326	0.059
Microbacterium			0.005		0.316	0.316
Myxococcota_X_X_X_X	0.897	0.971	0.000	1.000	0.007	0.001
GCA-2683135	0.001	0.956	0.000	0.016	0.000	0.003
Labrys			0.000		0.028	0.028
GCA-002840015			0.317		0.772	0.772
Chloroflexia_X_X_X	0.759	0.053	0.000	0.421	0.001	0.000
Cellulosimicrobium	0.649	0.226	0.019	0.424	0.241	0.939
HRBIN29	0.196	0.588	0.584	0.180	0.099	0.764
Pseudomonadales_X_X	0.559	0.559	0.000		0.042	0.042
Coriobacteriales_X_X	0.398	0.171	0.000	0.045	0.000	0.284
Palsa-1382	0.777	0.777	0.000		0.042	0.042
HRBIN33	0.448	0.041	0.000	0.398	0.000	0.007
Comamonas	0.649	0.649	0.596		0.548	0.548
Acidovorax_B			0.010		0.362	0.362
UTBCD1	0.001	0.257	0.902	0.056	0.001	0.204
GJ-E10	0.866	0.940	0.002	1.000	0.152	0.267
UBA12499	0.867	0.023	0.000	0.072	0.005	0.414
Symbiobacterium	0.246	0.068	0.870	0.672	0.197	0.037
Thermoactinospira	0.559	0.559	0.090			
Cellulomonadaceae_X	0.006	0.006	0.149	1.000	0.284	0.284
Amantichitinum			0.317		0.772	0.772
Fimbriimonas	0.121	0.090	0.108	0.045	0.011	0.237
W-Firmicutes-14	0.559	0.559	0.965		0.548	0.548
Clostridiales_X_X		0.006	0.000	0.424	0.085	0.255
Stenotrophomonas_A			0.074		0.548	0.548
Cyclobacteriaceae_X	0.004	0.075	0.000	0.526	0.818	0.659
Afifella	0.082	0.137	0.137	0.072	0.116	0.068
UBA4722	0.224	1.000	0.000	0.424	0.009	0.136
Fuerstia	0.777	0.777	0.014		0.276	0.276
Azovibrio	0.777	0.777	0.080		0.414	0.414
Rubricoccus	0.218	0.898	0.053	0.236	0.026	0.315
PALSA-1448	0.255	0.255	0.021		0.640	0.640
Verrucomicrobiales_X_X	0.224	0.867	0.096	0.424	0.071	0.386
Abditibacterium	0.291	0.291	0.000		0.001	0.001
SZUA-309	0.756	0.981	0.037	1.000	0.387	0.347
Pseudonocardiaceae_X	0.565	0.028	0.777	0.205	0.393	0.020
Tistlia	0.389	0.869	0.000	0.829	0.037	0.042
HRBIN37	0.563	0.133	0.000	0.672	0.001	0.026
Ereboglobus	0.077	0.077	0.168	1.000	0.475	0.475
Nitrolancea	0.897	0.286	0.477	0.797	0.786	0.549
Phycisphaerales_X_X	0.114	0.771	0.001	0.236	0.001	0.229
Thermotalea	0.427	0.427	0.090		0.210	0.210
Bacillus_C	0.167	0.710	0.319	0.797	0.401	0.980
Roseiflexus	0.980	0.980	0.681	1.000	0.845	0.802
Marmoricola	0.769	0.055	0.233	0.181	0.936	0.004
Conexibacter	0.487	0.041	0.183	0.180	0.772	0.002
Rubrobacter	0.375	0.000	0.276	0.025	0.548	0.000
QHYU01	0.023	0.904	0.000	0.332	0.000	0.002
Mor1	0.632	0.255	0.023	0.180	0.015	0.640
UBA8087	0.621	0.752	0.006	0.607	0.475	0.048
Aquamicrobium_A		0.006	0.000	0.424	0.116	0.490

SG8-30	0.226	0.226	0.600	1.000	0.087	0.087
Saccharimonadia_X_X_X	0.278	0.978	0.000	0.441	0.055	0.023
Micrococcaceae_X	0.503	0.019	0.010	0.265	0.541	0.153
Hyphomicrobium	0.829	0.472	0.362	0.607	0.490	0.810
GR16-43	0.171	0.116	0.011	0.072	0.007	0.432
Kineosporia	0.375	0.009	0.181	0.072	0.640	0.000
Chloroploca	0.323	0.021	0.180	0.607	0.802	0.150
Fen-1247		0.006	0.074	0.424	0.548	0.347
Patescibacteria_X_X_X_X	0.294	0.544	0.244	0.917	0.111	0.190
Hymenobacteraceae_X	0.196	0.196	0.995		0.158	0.158
Bacilli_A_X_X_X	0.777	0.095	0.539	0.424	0.640	0.284
Arsukibacterium			0.149		0.640	0.640
Magnetospirillum_A	0.649	0.649	0.171			
Tumebacillales_X_X	0.559	0.559	0.694		0.475	0.475
Vampirovibrionia_X_X_X	0.095	0.777	0.000	0.424	0.275	0.050
Methylocystis	0.291	0.018	0.146	0.072	0.136	0.057
Hydrogenedens	0.070	0.766	0.002	0.180	0.007	0.387
CG2-30-64-16	0.978	0.978	0.008	1.000	0.007	0.007
MED660	0.205	0.252	0.000	1.000	0.247	0.214
Vulgatibacter	0.649	0.649	0.000		0.099	0.099
Streptosporangiaceae_X	0.442	0.559	0.320	0.424	0.108	0.772
Bdellovibrio	0.100	0.255	0.012	0.072	0.491	0.028
Crossiella		0.006		0.424		0.007
Dermatophilaceae_X	0.777	0.002	0.343	0.180		0.000
2-12-FULL-57-22	0.620	0.487	0.048	0.424	0.007	
Firmicutes_E_X_X_X_X	0.077	0.077	1.000	1.000	0.087	0.087
Alkaliphilus			0.038		0.475	0.475
ABY1_X_X_X	0.444	0.224	0.001	0.180	0.000	
Methyloligella	0.487	0.487	0.048			
Blastochloris	0.574	0.447	0.962	1.000	0.658	0.475
Kribbella	0.016	0.002	0.010	0.672	0.446	0.132
Rhodomicrobiaceae_X	0.224	0.224	0.105		0.475	0.475
Brevibacillus	0.777	0.777	0.284		0.548	0.548
Pseudomonas			0.038		0.475	0.475
Lysinibacillus_B	0.777	0.777	0.343			
Bdellovibrionales_X_X	0.839	0.171	0.646	0.424	0.980	0.210
UBA3495_X	0.648	0.082	0.002	0.072	0.007	0.362
Ga0077541	0.862	0.000	0.989	0.010	0.980	0.000
TOLSYN	0.026	0.082	0.001	0.007	0.000	0.548
Hydrogenophaga			0.000		0.034	0.034
HZ-65			0.002		0.276	0.276
Crocinitomicaceae_X	0.649	0.649	0.171			
Bacillus_AJ	0.000	0.000	0.019	1.000	0.112	0.087
GCA-2725915	0.760	0.002	0.027	0.091	0.192	0.000
Cohnella	0.649	0.649	0.969		0.640	0.640
Zambryskibacteraceae_X	0.070	0.070	0.000		0.640	0.640
Bacteroidota_X_X_X_X	0.255	0.255	0.000		0.009	0.009
Enterobacterales_X_X			0.317		0.772	0.772
PALSA-1337	0.059	0.375	0.014	0.072	0.000	
SCGC-AG-212-F23	0.559	0.442	0.001	0.424	0.116	0.361
Bacillus_F			0.074		0.548	0.548
Mariniblastus	0.224	0.444	0.205	0.180	0.362	0.125

Pseudorhodoferax			0.001		0.210	0.210
JJ-A5			0.001		0.210	0.210
Elizabethkingia			0.149		0.640	0.640
Obscuribacter	0.649	0.649	0.579		0.772	0.772
Bacillus_AG	0.668	0.355	0.392	0.480	0.479	0.632
Sporomusaceae_X	0.196	0.196	0.646	1.000	0.347	0.347
Sphingobacteriaceae_X	0.785	0.255	0.013	0.424	0.150	0.060
Pajaroellobacter	0.777	0.777	0.039		0.362	0.362
Clostridium_AK			0.005		0.316	0.316
Zhizhongheella	0.196	0.649	0.003	0.424	0.762	0.158
Microlunatus	0.054	0.002	0.393	0.265	0.010	0.000
Mycobacterium_A	0.487	0.447	0.048	0.424		0.007
Bacillus		0.006	0.317	0.424	0.772	0.087
Pseudorhodoplanes	0.649	0.649	0.011		0.210	0.210
OLB9	0.487	0.620	0.242	0.424	0.276	0.811
UBA10212_X			0.000		0.028	0.028
Planctopirus	0.932	0.151	0.000	0.441	0.036	0.815
Moranbacterales_X_X		0.006	0.000	0.424	0.050	0.133
C7867-001	0.777	0.777	0.539		0.640	0.640
Bin61	0.173	0.034	0.013	0.424	0.658	0.158
4572-78	0.777	0.777	1.000		0.772	0.772
HRBIN40	0.366	0.002	0.002	0.018	0.637	0.000
AG11	0.983	0.129	0.436	0.180	0.758	0.060
Filimonas	0.122	0.076	0.238	0.906	0.012	0.010
Asinibacterium	0.649	0.649	0.001		0.136	0.136
Rummeliibacillus	0.330	0.330	0.754		0.316	0.316
OLB13	1.000	0.001	0.003	0.091	0.375	0.000
Gp7-AA6	1.000	0.330	0.028	0.424	0.087	0.772
Ga0074140_X	0.224	0.224	0.015		0.640	0.640
Desulfuromonadales_X_X	0.000	0.649	0.358	0.072	0.003	0.475
Exiguobacterium_A			0.002		0.276	0.276
Clostridium_AM	0.777	0.077	0.076	0.424	0.414	0.777
Ilumatobacter	0.427	0.097	0.650	0.180	0.362	0.155
UBA4735	0.978	0.330	0.008	0.424	0.007	
Elusimicrobia_X_X_X	0.439	0.197	0.009	1.000	0.980	0.863
Enhygromyxa	0.463	0.345	0.005	0.797	0.236	0.980
Feb-22	0.777	0.777	0.343			
Leptolyngbyaceae_X		0.006		0.424		0.007
Rhizobacter			0.038		0.475	0.475
UBA2337	0.783	0.427	0.077	0.424	0.518	0.182
Propionibacteriaceae_X		0.006		0.424		0.007
GCA-2737725	0.559	0.559	0.004		0.158	0.158
Paenibacillus_G	0.649	0.649	0.171			
Piscinibacter	0.649	0.260	0.600	0.424	0.772	0.108
Methylobacterium		0.000	0.038	0.180	0.475	0.064
GWA1-54-10	0.978	0.330	0.604	0.424	0.863	0.210
Solirubrobacterales_X_X	0.179	0.215	0.082	1.000	0.010	0.012
Nitrosomonas	0.442	0.323	0.144	1.000	0.933	0.889
Pseudomonas_D			0.149		0.640	0.640
Flavobacteriaceae_X			0.038		0.475	0.475
Pararhizobium		0.006		0.424		0.007
UBA4416	0.566	0.534	0.289	0.724	0.157	0.157

Palsa-465	0.753	0.753	0.131	1.000	0.214	0.214
SG-1			0.317		0.772	0.772
Lachnospiraceae_X			0.002		0.276	0.276
Actinomycetales_X_X	0.260	0.196	0.600	1.000	0.108	0.087
UBA4207	0.513	0.171	0.158	0.424	0.213	0.071
Fen-455	0.649	0.649	0.171			
Acetivibrio	0.559	0.559	0.320		0.772	0.772
Gp1-AA17	0.255	0.255	0.470		0.158	0.158
Paludisphaera	0.330	0.016	0.012	0.072	0.085	0.252
21-14-0-10-47-8	0.561	0.427	0.133	0.424	0.863	0.210
Limnobacter	0.649	0.649	0.621		0.772	0.772
UBA6065	0.777	0.777	1.000		0.772	0.772
UKL13-3	0.109	0.427	0.794	0.180	0.073	0.475
AG29	0.649	0.649	0.171			
Paenibacillus_C			0.149		0.640	0.640
UBA2396	0.196	0.008	0.171	0.797	0.007	0.000
Myxococcales_X_X	0.829	0.224	0.292	0.424	0.826	0.414
Sulfurifustaceae_X	0.196	0.196	0.006		0.640	0.640
Azotobacter	0.777	0.777	0.343			
UBA9983_A_X_X	0.149	0.149	0.057		0.362	0.362
UBA4124	0.559	0.559	0.090			
Asticcacaulis			0.000		0.182	0.182
Rickettsiaceae_X	0.777	0.777	0.308		0.548	0.548
Paenibacillus_E	0.777	0.777	0.559		0.640	0.640
Klebsiella_B		0.006	0.149	0.424	0.640	0.284
Vitreoscilla_A		0.006	0.038	0.424	0.475	0.518
Paracraurococcus	0.799	0.000	0.054	0.010	0.518	0.000
20-14-0-80-50-8	0.178	0.070	0.000	0.424	0.007	
SZUA-46	0.777	0.777	0.343			
Diaphorobacter			0.149		0.640	0.640
Caulobacteriales_X_X	0.649	0.649	0.393		0.475	0.475
Mongoliimonas			0.074		0.548	0.548
Gimesia	0.839	0.171	0.003	0.424	0.214	0.640
Streptomyces	0.196	0.196	0.564	1.000	0.347	0.387
Nitrospira_D	0.649	0.226	0.070	0.424	0.316	0.845
Palsa-1315	0.649	0.649	0.171			
Dyella			0.149		0.640	0.640
Nannocystaceae_X	0.111	0.934	0.073	0.180	0.276	0.318
Palsa-1392	0.649	0.260	0.026	0.424	0.241	0.818
Jidaibacter			0.005		0.316	0.316
Bog-1198	0.559	0.040	0.094	0.180	0.276	0.428
Promicromonospora	0.777	0.777	0.539		0.640	0.640
Rhodothermales_X_X	0.149	0.775	0.056	0.424	0.034	0.344
Enterococcaceae_X			0.149		0.640	0.640
UBA10190	0.850	0.330	0.082	0.424	0.214	0.640
GCA-002862325	0.255	0.338	0.364	0.180	0.362	0.112
Pseudobacteroides	0.006			0.424	0.007	
Porphyrobacter	0.559	0.323	0.043	0.424	0.241	0.939
Fulvimonas		0.006	0.010	0.424	0.362	0.883
Peptostreptococcales_X_X			0.010		0.362	0.362
Bacteriovoracaceae_X	0.777	0.002	0.003	0.180	0.210	0.684
GCA-2770975	0.905	0.224	0.004	0.424	0.230	0.042

Bin94	0.291	0.291	0.004			
Rubritepida	0.487	0.574	0.003	0.424	0.085	0.534
Obscuribacteraceae_X	0.378	0.070	0.001	0.072	0.004	0.414
Paracaedibacter			0.149		0.640	0.640
Elainella	0.427	0.076	0.026	0.180		0.000
Geminicoccus	0.649	0.196	0.238	0.424	0.414	0.593
SG8-24_X	0.649	0.649	0.171			
Paenibacillus			0.019		0.414	0.414
A4b_X	0.472	0.938	0.442	0.607	0.190	0.702
UBA1268	0.649	0.649	0.171			
UBA12115	0.980	0.255	0.002	0.424	0.007	
GCA-002050365	0.777	0.777	0.007		0.241	0.241
Ga0077555	0.938	0.291	0.040	0.424	0.214	0.640
2013-40CM-41-45	0.561	0.097	0.151	0.607	0.980	0.459
ZC4RG24	0.487	0.487	0.015		0.158	0.158
Parachlamydiales_X_X	0.330	0.330	0.610		0.414	0.414
GCA-2699025	0.196	0.196	0.903		0.210	0.210
Clostridium_T			0.074		0.548	0.548
Moheibacter			0.010		0.362	0.362
Cronobacter			0.317		0.772	0.772
Gorillibacterium		0.006	0.038	0.424	0.475	0.563
Pelomonas	0.777	0.777	0.161		0.475	0.475
Hydrocarboniphaga	0.777	0.777	0.073		0.414	0.414
Gemmatimonas	0.559	0.323	0.048	0.424	0.241	1.000
Bacillus_BC	0.916	0.396	0.541	0.656	0.918	0.299
UBA1018_X_X	0.224	0.649	0.012	0.424	0.640	0.247
Spirosomaceae_X	0.649	0.649	0.009		0.210	0.210
Tatlockia	0.323	0.559	0.320	0.424	0.087	0.772
Pigmentiphaga			0.149		0.640	0.640
Micavibrio_B	0.196	0.330	0.042	0.180	0.879	0.116
GAS474			0.149		0.640	0.640
Hyphomicrobiaceae_X	0.427	0.737	0.725	0.424	0.475	0.518
Enterococcus	0.006			0.424	0.007	
Saccharopolyspora	0.649	0.649	0.171			
Tol-SR	0.095	0.777	0.308	0.424	0.347	0.548
Anaerobacillus	0.196	0.557	0.113	0.180	0.414	0.141
Weeksellaceae_X			0.074		0.548	0.548
Chryseomicrobium			0.019		0.414	0.414
Niabella			0.074		0.548	0.548
Bdellovibrionota_X_X_X_X	0.777	0.777	1.000		0.772	0.772
O2-12-FULL-42-9	0.559	0.559	0.090			
HO2-45-11b	0.777	0.777	0.343			
XYD1-FULL-53-11	0.649	0.012	0.969	0.180	0.640	0.012
GWC2-37-73_X	0.006		0.317	0.424	0.108	0.772
Angustibacter			0.317		0.772	0.772
Babeliales_X_X	0.980	0.255	0.142	0.424	0.609	0.116
Actinoplanes		0.000	0.038	0.180	0.475	0.123
Amycolatopsis	0.649	0.260	0.171	0.424		0.007
2-01-FULL-59-12	0.912	0.060	0.518	0.106	0.849	0.104
Nostocaceae_X	0.886	0.668	0.169	1.000	0.284	0.214
F0540			0.038		0.475	0.475
Desulfonispora	0.574	0.487	0.007	0.424	0.375	0.136

2-12-FULL-44-17	0.487	0.487	0.048			
SZUA-149	0.070	0.252	0.075	0.424	0.182	0.792
Bacillus_H			0.317		0.772	0.772
UBA10450_X	0.487	0.447	0.583	0.424	0.414	0.729
UBA920	0.777	0.777	0.049		0.362	0.362
Chitinibacteraceae_X			0.317		0.772	0.772
Xiphinematobacter	0.559	0.442	1.000	0.424	0.548	0.475
MPNL01	0.559	0.559	0.650		0.475	0.475
Sumerlaeaceae_X		0.000		0.180		0.000
Acidicaldus		0.006		0.424		0.007
1-14-0-10-56-10	0.777	0.777	0.559		0.640	0.640
PMMR1			0.001		0.241	0.241
Desulfitobacteriaceae_X			0.317		0.772	0.772
Herpetosiphonaceae_X	0.777	0.077	0.037	0.424	0.362	0.791
Mesorhizobium_A			0.317		0.772	0.772
Cesiribacter			0.149		0.640	0.640
OLB11			0.038		0.475	0.475
Uliginosibacterium	0.777	0.777	0.045		0.362	0.362
Propionibacteriales_X_X	0.777	0.077	0.343	0.424		0.007
Streptosporangium	0.777	0.077	0.971	0.424	0.772	0.087
Parachlamydiaceae_X	0.777	0.077	0.539	0.424	0.640	0.214
2-01-FULL-44-21	0.427	0.427	0.026			
SZUA-47	0.777	0.777	0.343			
UBA922_X	0.777	0.777	0.343			
Sporichthya	0.649	0.260	0.131	0.424	0.362	0.791
Thermanaerothrix	0.330	0.330	0.030		0.772	0.772
Peribacteraceae_X	0.291	0.291	0.040		0.640	0.640
Ellin6529_X_X_X	0.487	0.620	0.048	0.424		0.007
UBA6164_X	0.777	0.777	0.343			
AKYH767_X_X	0.077	0.777	0.343	0.424	0.007	
Taibaiella_B	0.561	0.783	0.753	1.000	0.475	0.610
32-67-11			0.317		0.772	0.772
Enterobacter_B			0.074		0.548	0.548
Paeniclostridium	0.777	0.777	0.343			
UBA6821			0.149		0.640	0.640
Mycolicibacillus	0.649	0.649	0.171			
Legionellaceae_X	0.777	0.095	1.000	0.424	0.772	0.087
Methyloceanibacter	0.649	0.226	0.171	0.424		0.007
2-02-FULL-42-43	0.850	0.330	0.085	0.424	0.214	0.640
2-02-FULL-39-32	0.649	0.649	0.171			
Koribacter	0.777	0.777	1.000		0.772	0.772
Kapabacteriales_X_X	0.224	0.224	0.565		0.276	0.276
Rickettsiella			0.317		0.772	0.772
Pseudescherichia			0.074		0.548	0.548
UBA9655	0.487	0.487	0.766		0.414	0.414
Geobacter_B			0.149		0.640	0.640
UBA9649	0.330	0.330	0.082		0.640	0.640
Lysinibacillus	0.323	0.559	0.027	0.424	0.863	0.210
Ga0074137	0.753	0.167	0.469	0.607	0.936	0.318
UBA9934	0.649	0.649	0.663		0.548	0.548
Melittangium	0.559	0.559	0.090			
Rudanella	0.777	0.002	0.284	0.180	0.548	0.029

Solimonas	0.777	0.777	0.343			
Comamonas_E			0.317		0.772	0.772
Microtrichales_X_X	0.559	0.400	0.090	0.424		0.007
Sporomusa		0.006	0.317	0.424	0.772	0.087
Risungbinella	0.361	0.034	0.698	0.607	0.247	0.018
PALSA-555	0.777	0.777	0.343			
Eubacterium_F			0.317		0.772	0.772
UBA11600	0.559	0.559	0.665		0.475	0.475
Acidisphaera	0.095	0.777	0.559	0.424	0.214	0.640
UBA9628	0.892	0.196	0.020	0.180	0.057	0.548
DDH964	0.777	0.777	1.000		0.772	0.772
Stackebrandtia		0.006		0.424		0.007
Methylophilales_X_X	0.444	0.255	0.009	0.180	0.003	0.772
UBA11359_X	0.777	0.777	0.091		0.414	0.414
Brevibacillus_B	0.777	0.777	0.343			
UBA12053	0.777	0.777	1.000		0.772	0.772
Oligoflexus	0.559	0.323	1.000	0.424	0.548	0.347
Phreatobacter			0.010		0.362	0.362
SG8-24_X_X	0.003	0.777	0.343	0.180	0.000	
2-02-FULL-39-32_X_X	0.559	0.559	0.090			
Altererythrobacter_B	0.777	0.777	0.154		0.475	0.475
Turicibacter			0.317		0.772	0.772
Actinotalea			0.317		0.772	0.772
UBA11704			0.149		0.640	0.640
Thermoanaerobaculia_X_X_X	0.323	0.559	1.000	0.424	0.347	0.548
SZUA-55	0.167	0.375	0.444	0.180	0.048	0.475
QKMZ01	0.649	0.649	0.990		0.640	0.640
Nucleicultrix			0.317		0.772	0.772
Sphaerospermopsis_A	0.777	0.095	0.343	0.424		0.007
Faecalicatena	0.777	0.777	0.343			
Polyangia_X_X_X	0.777	0.777	0.168		0.475	0.475
Bacillus_L			0.149		0.640	0.640
OLB15	0.649	0.649	0.001		0.136	0.136
01-FULL-45-10b	0.559	0.559	0.983		0.548	0.548
UBA1931			0.019		0.414	0.414
GCA-2699585	0.649	0.000	0.034	0.072	0.276	0.057
UBA1547			0.074		0.548	0.548
2-12-FULL-60-19	0.006			0.424	0.007	
Aquimonas			0.317		0.772	0.772
Bacillus_AX			0.149		0.640	0.640
Khelaifiella			0.317		0.772	0.772
OLB5	0.856	0.291	0.016	0.424	0.108	0.772
OLB20_X	0.487	0.487	0.694		0.548	0.548
OLB23	0.649	0.649	0.171			
GCF-001939115	0.777	0.077	0.343	0.424		0.007
Paenibacillus_T			0.317		0.772	0.772
Vermiphilus			0.019		0.414	0.414
Nevskiales_X_X	0.649	0.649	0.171			
HR-BB	0.649	0.226	0.171	0.424		0.007
Cyanobacteria_X_X_X_X	0.427	0.137	0.255	0.180	0.640	0.012
Tumebacillus	0.559	0.559	0.090			
HdN1	0.559	0.559	0.983		0.548	0.548

2-02-FULL-49-12			0.317		0.772	0.772
Bacillus_Q			0.317		0.772	0.772
Sphingomonas			0.317		0.772	0.772
BOG-1112	0.559	0.559	0.107		0.276	0.276
UBA9973_X	0.777	0.777	0.343			
SZUA-521	0.487	0.487	0.709		0.548	0.548
UBA9631	0.427	0.737	0.100	0.424	0.772	0.108
Algiphilus			0.019		0.414	0.414
Gastranaerophilales_X_X			0.038		0.475	0.475
UBA1844	0.649	0.649	0.621		0.772	0.772
Larkinella	0.777	0.077	0.076	0.424	0.414	0.637
Bdellovibrionaceae_X	0.006		0.317	0.424	0.087	0.772
UBA4658	0.447	0.487	0.947	1.000	0.475	0.475
PALSA-1347			0.317		0.772	0.772
Deinococcaceae_X	0.777	0.777	0.343			
Serratia			0.317		0.772	0.772
Aquicola			0.317		0.772	0.772
Alsobacter		0.000	0.149	0.072	0.640	0.000
Chondromyces	0.559	0.442	0.360	0.424	0.772	0.108
UTPRO2	0.649	0.649	0.600		0.772	0.772
Bacillus_AT	0.559	0.559	0.090			
UBA11063			0.149		0.640	0.640
Ancylobacter			0.317		0.772	0.772
GCA-2707205			0.149		0.640	0.640
Deinococcus_C			0.317		0.772	0.772
SZUA-359			0.317		0.772	0.772
RBG-16-40-8	0.487	0.487	0.183		0.772	0.772
Deinococcales_X_X	0.777	0.777	0.343			
Paracaedibacteraceae_X	0.649	0.649	0.358		0.475	0.475
Thermoactinomycetaceae_X	0.649	0.649	0.990		0.640	0.640
Zoogloea			0.149		0.640	0.640
Paenibacillus_N			0.317		0.772	0.772
Oscillatoria	0.095	0.777	0.343	0.424	0.007	
Segetibacter	0.649	0.649	0.171			
Flavobacteriales_X_X	0.559	0.559	0.414		0.414	0.414
Ochrobactrum_A			0.317		0.772	0.772
Tistrella	0.649	0.649	0.171			
BAL199	0.649	0.649	0.171			
UBA1400_X_X	0.777	0.777	0.343			
UBA1565_X	0.427	0.427	0.026			
UBA920_X_X	0.649	0.649	0.579		0.772	0.772
Shewanella			0.317		0.772	0.772
Chelatococcus			0.317		0.772	0.772
Pedobacter	0.777	0.777	0.519		0.640	0.640
UBA1565_X_X	0.777	0.777	1.000		0.772	0.772
UBA1532	0.559	0.559	0.090			
XYD2-FULL-39-9	0.777	0.777	0.343			
UBA10212	0.777	0.777	0.343			
Legionella_A			0.038		0.475	0.475
UBA11426	0.777	0.777	0.343			
Aquabacterium			0.149		0.640	0.640
WO2-54-10	0.777	0.777	0.343			

Terribacillus	0.649	0.649	0.596		0.548	0.548
Dehalobacterium	0.559	0.559	0.090			
Vogesella			0.317		0.772	0.772
UBA1573			0.149		0.640	0.640
UBA6139	0.649	0.649	0.171			
UBA1369_X_X			0.149		0.640	0.640
Dietzia			0.317		0.772	0.772
Bacteroidales_X_X			0.149		0.640	0.640
Thiobacillus			0.317		0.772	0.772
Amphiplicatus		0.006		0.424		0.007
Desulfovibrionales_X_X		0.006	0.317	0.424	0.772	0.087
Amphibacillaceae_X		0.006		0.424		0.007
Brevibacillaceae_X		0.006		0.424		0.007
Paenibacillus_L		0.000	0.074	0.180	0.548	0.029
GWA2-52-8	0.095	0.777	0.343	0.424	0.007	
UBA10190_X	0.442	0.559	0.090	0.424	0.007	
Elusimicrobiota_X_X_X_X	0.777	0.777	0.343			
SZUA-592	0.777	0.777	1.000		0.772	0.772
Micavibrio	0.649	0.649	0.579		0.772	0.772
Odyssella			0.317		0.772	0.772
01-FULL-45-34b			0.317		0.772	0.772
Rubinisphaera	0.777	0.777	0.971		0.772	0.772
Simkania			0.317		0.772	0.772
Gracilibacteria_X_X_X			0.317		0.772	0.772
Sphingomonas_D			0.317		0.772	0.772
DSM-45891			0.317		0.772	0.772
Gracilibacillus	0.649	0.649	0.621		0.772	0.772
Siphonobacter			0.074		0.548	0.548
Caloramatoraceae_X			0.149		0.640	0.640
1NLA3E	0.777	0.777	0.343			
Longispora			0.317		0.772	0.772
Opitutales_X_X			0.317		0.772	0.772
Salinimicrobium	0.777	0.077	0.343	0.424		0.007
Leptolyngbya_A	0.226	0.226	0.600	1.000	0.087	0.087
Xanthomonas_A			0.317		0.772	0.772
Deinococcus			0.149		0.640	0.640
VKM-B-2647	0.777	0.777	0.971		0.772	0.772
21-14-0-10-47-8-A			0.038		0.475	0.475
Bdellovibrio_A			0.317		0.772	0.772
Ruminococcus_A			0.149		0.640	0.640
Desulfotomaculum_H	0.777	0.777	0.148		0.475	0.475
UBA2163_X	0.777	0.777	0.087		0.414	0.414
Ktedonobacter	0.006			0.424	0.007	
2-02-FULL-51-10	0.559	0.559	0.090			
OLB19			0.038		0.475	0.475
28-YEA-48			0.317		0.772	0.772
Palsa-1150			0.317		0.772	0.772
Enterococcus_A			0.317		0.772	0.772
OLB8			0.149		0.640	0.640
Kroppenstedtia		0.006	0.149	0.424	0.640	0.247
Ketobacteraceae_X		0.006	0.317	0.424	0.772	0.108
Elainellaceae_X	0.777	0.777	0.343			

Anaerocolumna			0.317		0.772	0.772
GCA-2686445			0.149		0.640	0.640
Bacteriovorax			0.149		0.640	0.640
Solirubrum			0.149		0.640	0.640
HO2-37-13b_X	0.777	0.777	0.971		0.772	0.772
Protochlamydia			0.149		0.640	0.640
Desulfobacterota_X_X_X_X	0.777	0.777	0.559		0.640	0.640
Diplorickettsia	0.649	0.649	0.171			
Magnetospirillaceae_X	0.649	0.649	0.171			
PALSA-968			0.149		0.640	0.640
GWA1-44-29	0.649	0.649	0.171			
UBA10103	0.649	0.649	0.171			

Table S4: p-values from pairwise adonis between all collections of rhizosphere samples. The grey shaded boxes represent collections from same crop developmental stage.

	Collection-2	Collection-3	Collection-4	Collection-5	Collection-6	Collection-7	Collection-8
Collection-1	0.003	0.012	0.012	0.009	0.013	0.009	0.006
Collection-2		0.057	0.009	0.013	0.013	0.01	0.015
Collection-3			0.013	0.004	0.005	0.006	0.006
Collection-4				0.215	0.011	0.018	0.012
Collection-5					0.039	0.028	0.009
Collection-6						0.557	0.013
Collection-7							0.008

Table S5: p-values from Phylum abundance comparison of rhizosphere samples across crop development stages using Kruskal-Wallis test. BH = Benjamini Hochberg. The comparisons are made with and without R1 group.

Phyla	Rhizosphere samples		Rhizosphere samples (except R1)	
	p-value	BH adjusted p-value	p-value	BH adjusted p-value
Proteobacteria	0.00123	0.00230	0.07163	0.08000
Firmicutes	0.00002	0.00013	0.00018	0.00090
Planctomycetota	0.00043	0.00110	0.01768	0.02500
Acidobacteriota	0.00014	0.00051	0.00251	0.00610
Verrucomicrobiota	0.00017	0.00056	0.00514	0.01000
Actinobacteriota	0.00010	0.00046	0.00006	0.00038
Bacteroidota	0.00252	0.00400	0.15079	0.16000
Unclassified Phylum	0.02618	0.03000	0.04105	0.05400
Firmicutes_A	0.00011	0.00046	0.00220	0.00610
Patescibacteria	0.00000	0.00009	0.00003	0.00020
Gemmatimonadota	0.02247	0.02700	0.06004	0.07200
Chloroflexota	0.00161	0.00280	0.00256	0.00610
Myxococcota	0.00432	0.00590	0.01015	0.01700
Methylomirabilota	0.08080	0.08400	0.39593	0.40000
Binatota	0.00047	0.00110	0.00263	0.00610
Chloroflexota_A	0.00001	0.00009	0.00002	0.00020
Firmicutes_I	0.00057	0.00110	0.00071	0.00270
Nitrospirota	0.02021	0.02500	0.00566	0.01100
Eisenbacteria	0.03323	0.03600	0.04916	0.06100
Armatimonadota	0.00240	0.00400	0.16852	0.17000
Bdellovibrionota	0.00411	0.00590	0.01310	0.02000
Sumerlaeota	0.00001	0.00009	0.00002	0.00020
Verrucomicrobiota_A	0.00051	0.00110	0.00727	0.01300
Firmicutes_K	0.00654	0.00850	0.00394	0.00840
Cyanobacteria	0.02812	0.03100	0.02793	0.03800
Desulfuromonadota	0.00035	0.00094	0.00089	0.00300
Dadabacteria	0.11305	0.11000	0.06649	0.07700
Hydrogenedentota	0.00419	0.00590	0.01271	0.02000
Omnitrophota	0.00002	0.00012	0.00001	0.00020
Elusimicrobiota	0.00025	0.00074	0.00044	0.00190

Table S6: p-values from Genus abundance comparison of rhizosphere samples across crop development stages using Kruskal-Wallis test. BH = Benjamini Hochberg. The comparisons are made with and without R1 group.

Genus	Rhizosphere samples		Rhizosphere samples (except R1)	
	p-value	BH adjusted p-value	p-value	BH adjusted p-value
Pseudomonas_M	0.00004	0.00062	0.00073	0.00540
Acinetobacter	0.01698	0.03600	0.08592	0.15000
Enterobacter_D	0.06747	0.11000	0.10919	0.18000
Bacillus_W	0.00008	0.00097	0.00051	0.00450
Bacillus_AK	0.00001	0.00031	0.00006	0.00170
UBA2421	0.00128	0.00520	0.07523	0.14000
Bacillaceae_A_X	0.00020	0.00160	0.00342	0.01400
Enterobacteriaceae_X	0.00670	0.01800	0.00279	0.01300
Pseudomonadaceae_X	0.00014	0.00130	0.00081	0.00580
Sphingomonadaceae_X	0.00003	0.00060	0.00027	0.00320
Lysobacter	0.02530	0.05000	0.02267	0.05600
Bacteria_X_X_X_X_X	0.02618	0.05200	0.04105	0.08800
Luteitalea	0.00032	0.00210	0.01199	0.03500
Rhizobiaceae_X	0.00080	0.00380	0.04073	0.08800
Bacillales_X_X	0.00014	0.00130	0.00028	0.00330
OLB17	0.00026	0.00190	0.00720	0.02400
Peptostreptococcaceae_X	0.00009	0.00110	0.00181	0.00990
QHWT01	0.00051	0.00270	0.00849	0.02700
Chthoniobacter	0.00032	0.00210	0.01220	0.03500
Flavobacterium	0.00184	0.00680	0.00298	0.01300
Haloferula	0.00170	0.00640	0.10821	0.18000
Pseudosphingobacterium	0.00037	0.00230	0.00039	0.00380
Xylophilus	0.00004	0.00064	0.00003	0.00099
Sphingosinicella	0.00005	0.00067	0.00043	0.00410
Xanthomonadaceae_X	0.00014	0.00130	0.00089	0.00600
Verrucomicrobium	0.00647	0.01700	0.55587	0.62000
Chryseobacterium	0.01300	0.02900	0.11021	0.18000
Bacillus_Y	0.00011	0.00120	0.00125	0.00750
Alphaproteobacteria_X_X_X	0.00003	0.00060	0.00013	0.00200
Burkholderiaceae_X	0.00031	0.00210	0.00070	0.00530
Saccharimonadaceae_X	0.00004	0.00064	0.00021	0.00280
Sphingopyxis_A	0.00272	0.00920	0.00878	0.02800
Pontibacter	0.00010	0.00110	0.00024	0.00300
GCA-2746885	0.00001	0.00031	0.00008	0.00170
Fimbriiglobus	0.00013	0.00130	0.00196	0.01000
Clostridiaceae_X	0.00090	0.00410	0.00947	0.02900
Acidimicrobiia_X_X_X	0.00203	0.00730	0.00809	0.02600
Planctomycetaceae_X	0.00006	0.00078	0.00049	0.00440
Neorhizobium	0.00082	0.00380	0.00857	0.02700
Pseudoxanthomonas_A	0.25065	0.33000	0.73479	0.77000
Clostridium	0.00098	0.00440	0.01744	0.04500
Sphingomonas_A	0.00008	0.00097	0.00082	0.00580
QHXM01	0.01064	0.02500	0.00595	0.02100
UKL13-2	0.00000	0.00024	0.00001	0.00062
Pirellulales_X_X	0.00030	0.00210	0.00960	0.02900
Mycoplana	0.02031	0.04200	0.18103	0.27000
Flavisolibacter	0.00158	0.00610	0.04345	0.09200

Leaf454	0.00007	0.00086	0.00084	0.00580
Sphingobacterium	0.42680	0.50000	0.35992	0.46000
Gemmata	0.00055	0.00290	0.00096	0.00630
Clostridium_AD	0.00202	0.00730	0.00662	0.02300
Alteromonadaceae_X	0.00000	0.00006	NA	NA
Steroidobacter	0.00019	0.00160	0.00298	0.01300
Pirellulaceae_X	0.00203	0.00730	0.11488	0.19000
Microvirga	0.00008	0.00097	0.00038	0.00380
Pedosphaeraceae_X	0.00000	0.00024	0.00001	0.00062
UBA1161_X	0.00011	0.00120	0.00303	0.01300
Pirellula	0.00117	0.00490	0.03018	0.06900
Lysobacter_A	0.10411	0.16000	0.84049	0.87000
Gemmatimonadaceae_X	0.00390	0.01200	0.01019	0.03000
UBA4664	0.00000	0.00024	0.00001	0.00062
Cellvibrio	0.07179	0.12000	0.58967	0.65000
Gp6-AA56	0.00517	0.01500	0.01702	0.04500
Pedosphaera	0.00001	0.00031	0.00001	0.00062
Chitinophagaceae_X	0.00040	0.00230	0.00909	0.02800
Rhodocyclaceae_X	0.00004	0.00060	0.00006	0.00170
Stenotrophomonas	0.49462	0.55000	0.37927	0.47000
Bacilli_X_X_X	0.00029	0.00200	0.00209	0.01100
Actinobacteriota_X_X_X_X	0.00459	0.01300	0.00153	0.00880
Palsa-739	0.00028	0.00190	0.00037	0.00380
Bacillus_BD	0.00003	0.00060	0.00008	0.00170
Pedosphaerales_X_X	0.00001	0.00031	0.00007	0.00170
Micromonosporaceae_X	0.00004	0.00062	0.00012	0.00200
Burkholderiales_X_X	0.00021	0.00170	0.00061	0.00500
Ohtaekwangia	0.00011	0.00120	0.00281	0.01300
Kosakonia	0.47176	0.53000	0.52575	0.60000
Cupriavidus	0.60486	0.65000	0.65812	0.71000
UBA4665_X	0.00581	0.01600	0.49543	0.58000
GWC2-73-18	0.00001	0.00031	0.00002	0.00094
UBA9968_X	0.00041	0.00240	0.00252	0.01200
Streptomycetaceae_X	0.05109	0.09000	0.02943	0.06800
UBA11741	0.02010	0.04100	0.01805	0.04700
Gemmataceae_X	0.00013	0.00130	0.00108	0.00690
UBA6082	0.00002	0.00047	0.00002	0.00094
GWA2-73-35_X	0.07795	0.13000	0.09104	0.16000
Chitinophaga	0.17823	0.24000	0.49279	0.58000
Polyangiales_X_X	0.00031	0.00210	0.00034	0.00350
Phenylobacterium	0.06722	0.11000	0.21108	0.30000
Bacillus_AA	0.00072	0.00350	0.00473	0.01800
Methylibium	0.00051	0.00270	0.00352	0.01400
Pararheinheimera	0.00000	0.00024	0.51252	0.58000
BOG-1338	0.00000	0.00024	0.00001	0.00085
Adhaeribacter	0.01232	0.02800	0.28323	0.38000
Exiguobacterium	0.00154	0.00600	0.00188	0.01000
Methylophilaceae_X	0.00429	0.01300	0.00330	0.01400
AR5	0.01011	0.02400	0.02800	0.06500
Gp7-AA10	0.00119	0.00500	0.00197	0.01000
Planobispora	0.00037	0.00230	0.00019	0.00260
Rhizobium	0.00425	0.01300	0.00815	0.02600

Erwinia	0.49197	0.55000	0.67882	0.73000
JKG1	0.00252	0.00870	0.00272	0.01300
Bryobacteraceae_X	0.00016	0.00140	0.00008	0.00170
Dongia	0.00175	0.00660	0.03319	0.07400
CP2B	0.12506	0.18000	0.07174	0.13000
Achromobacter	0.99524	1.00000	0.97549	0.98000
Pyrinomonadaceae_X	0.00053	0.00280	0.00083	0.00580
Flavobacterium_A	0.08219	0.13000	0.05472	0.11000
Vicinamibacterales_X_X	0.00349	0.01100	0.19728	0.28000
Geminicoccaceae_X	0.01219	0.02800	0.00528	0.01900
Pseudoxanthomonas	0.41638	0.49000	0.29413	0.39000
2-12-FULL-64-23	0.00003	0.00060	0.00003	0.00099
Paenibacillaceae_X	0.00086	0.00390	0.00400	0.01600
SZUA-115	0.00070	0.00350	0.00026	0.00320
Gemmatirosa	0.01289	0.02900	0.02589	0.06100
Inquilinus	0.00430	0.01300	0.00896	0.02800
Vitosangium	0.01092	0.02600	0.00707	0.02400
Paramesorhizobium	0.03308	0.06200	0.04284	0.09100
Aeromonas	0.00238	0.00830	0.00579	0.02000
Gammaproteobacteria_X_X_X	0.00014	0.00130	0.00029	0.00330
Terrimicrobium	0.00851	0.02200	0.35115	0.45000
Arthrobacter_I	0.00348	0.01100	0.00198	0.01000
FW-11	0.01492	0.03300	0.00901	0.02800
Acidimicrobiales_X_X	0.01485	0.03300	0.05663	0.11000
Geodermatophilus	0.00122	0.00500	0.00071	0.00540
Kouleothrix	0.04937	0.08800	0.06509	0.12000
Saprospiraceae_X	0.00013	0.00130	0.00113	0.00700
Palsa-1233	0.00001	0.00031	0.00001	0.00062
ARS98	0.00341	0.01100	0.00397	0.01600
Rhizobiales_X_X	0.00003	0.00060	0.00003	0.00110
Zavarzinella	0.00000	0.00024	0.00001	0.00062
UBA5946	0.00590	0.01600	0.20359	0.29000
Bordetella_A	0.00049	0.00270	0.00123	0.00750
Bradyrhizobium	0.00006	0.00085	0.00011	0.00200
Planctomycetes_X_X_X	0.00396	0.01200	0.00812	0.02600
Fictibacillus_B	0.00148	0.00590	0.00399	0.01600
QHVH01	0.01477	0.03300	0.04376	0.09200
Citrobacter	0.44090	0.51000	0.37275	0.47000
Chthoniobacterales_X_X	0.00044	0.00250	0.01841	0.04700
Chitinophagales_X_X	0.00497	0.01400	0.00293	0.01300
UBA10511	0.00099	0.00440	0.03189	0.07200
Burkholderia	0.09485	0.15000	0.27921	0.38000
Thermomicrobiaceae_X	0.01786	0.03800	0.09357	0.16000
Catelliglobospora	0.00442	0.01300	0.05223	0.10000
Alishewanella	0.00000	0.00024	0.51252	0.58000
Arboricoccus	0.00004	0.00062	0.00006	0.00170
Novosphingobium	0.10310	0.16000	0.09184	0.16000
Opitutaceae_X	0.00003	0.00060	0.00004	0.00130
Dyadobacter	0.06207	0.11000	0.25745	0.35000
UBA1020	0.00218	0.00760	0.00980	0.02900
MM2	0.12106	0.18000	0.16562	0.25000
Saccharimonadales_X_X	0.00110	0.00470	0.01210	0.03500

Domibacillaceae_X	0.00198	0.00720	0.00243	0.01200
Ilumatobacter_A	0.00096	0.00430	0.00556	0.02000
Aeromicrobium	0.00025	0.00190	0.00085	0.00580
Saccharibacillus	0.59183	0.64000	0.51252	0.58000
Rubrobacter_B	0.00040	0.00230	0.00216	0.01100
Gemmatimonadales_X_X	0.01604	0.03500	0.00903	0.02800
Blastomonas	0.11504	0.17000	0.20507	0.29000
Pirellula_B	0.00003	0.00060	0.00005	0.00160
Plantactinospora_A	0.01007	0.02400	0.00892	0.02800
Nitrospira_A	0.00821	0.02100	0.01136	0.03300
PMNU01	0.00632	0.01700	0.02056	0.05100
PALSA-1355	0.15875	0.22000	0.26390	0.36000
Myxococcus	0.01577	0.03400	0.07624	0.14000
Acetobacteraceae_X	0.00056	0.00290	0.01632	0.04300
Reyranella	0.00022	0.00170	0.00055	0.00470
Arenimonas	0.00025	0.00190	0.00024	0.00300
Isosphaeraceae_X	0.00792	0.02100	0.02659	0.06300
Rhodobacteraceae_X	0.01076	0.02600	0.00480	0.01800
Pseudomonas_A	0.00488	0.01400	0.01972	0.05000
Taibaiella_A	0.40981	0.49000	0.90105	0.92000
Sphingopyxis	0.03213	0.06100	0.01744	0.04500
Verrucomicrobiae_X_X_X	0.00025	0.00190	0.00136	0.00800
Rhizorhabdus	0.63676	0.68000	0.52951	0.60000
UBA2386	0.00003	0.00060	0.00015	0.00220
Devosia	0.02770	0.05400	0.01940	0.04900
Aromatoleum	0.00058	0.00300	0.00135	0.00800
Chryseolinea_A	0.00003	0.00060	0.00006	0.00170
Prostheco bacter	0.00334	0.01100	0.15507	0.24000
Mycobacteriales_X_X	0.04231	0.07700	0.02376	0.05800
Pseudomonas_F	0.00097	0.00440	0.01408	0.03900
Thauera	0.00012	0.00130	0.00012	0.00200
AR19	0.00957	0.02300	0.01301	0.03600
Opitutus	0.00001	0.00031	0.00001	0.00062
Rubellimicrobium	0.06249	0.11000	0.10845	0.18000
Actinobacteria_X_X_X	0.00374	0.01200	0.00191	0.01000
Nevskiaceae_X	0.00014	0.00130	0.00099	0.00640
SCN-70-22	0.49677	0.55000	0.49443	0.58000
Bosea	0.02917	0.05600	0.61713	0.67000
Solirubrobacteraceae_X	0.00994	0.02400	0.01316	0.03700
Steroidobacteraceae_X	0.00019	0.00160	0.00248	0.01200
Herpetosiphon	0.01769	0.03700	0.03774	0.08200
Solirubrobacter	0.02432	0.04900	0.01188	0.03500
Rhodanobacteraceae_X	0.00003	0.00060	0.00012	0.00200
Noviherbaspirillum	0.01943	0.04000	0.01253	0.03600
Bin18	0.00483	0.01400	0.01743	0.04500
Niastella	0.07539	0.12000	0.14674	0.23000
NS-102	0.33786	0.42000	0.88803	0.91000
Pseudomonas_H	0.00033	0.00210	NA	NA
Flavisolibacter_B	0.10034	0.15000	0.46412	0.55000
Pseudonocardia	0.01286	0.02900	0.00755	0.02500
SCN-69-37	0.00168	0.00640	0.01245	0.03600
Palsa-89	0.00185	0.00680	0.03284	0.07400

Blastocatellia_X_X_X	0.10054	0.15000	0.08042	0.14000
Proteobacteria_X_X_X_X	0.01481	0.03300	0.01484	0.04000
UBA4720	0.00111	0.00470	0.00360	0.01500
Bacteroidia_X_X_X	0.00741	0.02000	0.06012	0.12000
Azohydromonas	0.01161	0.02700	0.26433	0.36000
Nocardioideaceae_X	0.05884	0.10000	0.03005	0.06900
Caulobacteraceae_X	0.06953	0.12000	0.10297	0.17000
Nitrospira_C	0.08562	0.13000	0.08484	0.15000
Root149	0.11882	0.18000	0.06223	0.12000
Planctomyces_A	0.00540	0.01500	0.12163	0.20000
Jiangella	0.00050	0.00270	0.00033	0.00350
Isopterocola_B	0.00137	0.00550	0.03643	0.08000
Xanthobacteraceae_X	0.02674	0.05200	0.04531	0.09400
SM1A02_X	0.00003	0.00060	0.00015	0.00220
ZC4RG30	0.01140	0.02700	0.06633	0.12000
Blastococcus	0.03364	0.06300	0.05609	0.11000
Agromyces	0.07840	0.13000	0.69366	0.74000
BOG-1460	0.00064	0.00320	0.00045	0.00420
Phycisphaerae_X_X_X	0.02851	0.05500	0.35656	0.45000
SWB02	0.04978	0.08800	0.30522	0.40000
Mycolicibacterium	0.07255	0.12000	0.49231	0.58000
Ramlibacter	0.03473	0.06400	0.07266	0.13000
IMCC26207	0.03566	0.06600	0.02784	0.06500
Aneurinibacillus_A	0.00256	0.00880	0.00176	0.00970
Dactylosporangium	0.02619	0.05200	0.36211	0.46000
P52-10	0.00003	0.00060	0.00013	0.00210
Thermoleophilia_X_X_X	0.00753	0.02000	0.00528	0.01900
Berkiella	0.00005	0.00067	0.00014	0.00210
Domibacillus	0.57932	0.63000	0.60304	0.66000
Herminiimonas	0.02520	0.05000	0.04775	0.09800
Bin134	0.00071	0.00350	0.00067	0.00530
Paracoccus	0.22298	0.30000	0.19454	0.28000
UBA11883	0.00055	0.00290	0.00159	0.00910
Delftia	0.31964	0.40000	0.33461	0.43000
Hungatella	0.10310	0.16000	0.09184	0.16000
Chloroflexota_X_X_X_X	0.14402	0.21000	0.51298	0.58000
Ralstonia	0.00000	0.00006	NA	NA
Anaeromyxobacter	0.00085	0.00390	0.00090	0.00600
URHD0088	0.00001	0.00031	0.00003	0.00099
Rubrobacteraceae_X	0.01214	0.02800	0.01059	0.03200
Polymorphum	0.00468	0.01400	0.06574	0.12000
SZUA-252	0.00952	0.02300	0.01974	0.05000
Lentzea	0.00008	0.00097	0.00009	0.00180
Streptacidiphilus	0.00099	0.00440	0.40038	0.49000
Idiomarina	0.00033	0.00210	NA	NA
Rhodococcus	0.21850	0.29000	0.19155	0.28000
HGW-BRC1-1	0.00001	0.00031	0.00002	0.00099
KBS-96	0.00027	0.00190	0.00058	0.00500
Azospirillum	0.16074	0.22000	0.15747	0.24000
Acidimicrobiaceae_X	0.59066	0.64000	0.60568	0.66000
AV2	0.00002	0.00058	0.00007	0.00170
Litorilinea	0.00108	0.00470	0.00094	0.00620

Nonomuraea	0.00446	0.01300	0.00227	0.01100
Brevundimonas	0.05530	0.09600	0.03788	0.08200
Luteimonas	0.33298	0.41000	0.23310	0.32000
Nocardioides	0.00270	0.00920	0.00585	0.02100
Tumebacillus_A	0.00284	0.00940	0.00200	0.01000
Gemmatimonadetes_X_X_X	0.01950	0.04000	0.01332	0.03700
Sphingobium	0.02712	0.05300	0.03523	0.07800
Bacillus_X	0.59183	0.64000	0.51252	0.58000
Zobellella_B	0.00885	0.02200	NA	NA
Terrimonas	0.00280	0.00940	0.00660	0.02300
Spirillospora	0.75549	0.77000	0.60147	0.66000
Shinella	0.21850	0.29000	0.19155	0.28000
Solitalea	0.03540	0.06600	0.06003	0.12000
Ferrovibrio	0.00058	0.00300	0.00035	0.00360
Cytophagales_X_X	0.00655	0.01800	0.03026	0.06900
Xanthomonadales_X_X	0.00502	0.01400	0.10029	0.17000
RBG-16-71-46	0.01618	0.03500	0.01421	0.03900
A52C2	0.00152	0.00600	0.00304	0.01300
Flaviumibacter	0.00878	0.02200	0.02797	0.06500
Parapedobacter	0.06464	0.11000	0.06181	0.12000
Nitrosospira	0.00123	0.00500	0.00066	0.00530
Polyangiaceae_X	0.00011	0.00120	0.00009	0.00180
Frateuria_A	0.02342	0.04700	0.18035	0.27000
Acidobacteriales_X_X	0.00135	0.00540	0.00120	0.00740
OLB7	0.00051	0.00270	0.00175	0.00970
Schlesneria	0.04276	0.07800	0.04452	0.09300
Actinocorallia	0.00037	0.00230	0.00031	0.00340
Caldilinea	0.00365	0.01100	0.01121	0.03300
Myxococcaceae_X	0.04850	0.08600	0.03845	0.08300
Ga0074140	0.00062	0.00320	0.00938	0.02900
Frankia	0.00033	0.00210	0.00047	0.00420
Franconibacter	0.57911	0.63000	0.58283	0.65000
Byssovorax	0.47790	0.54000	0.32074	0.42000
Microbacteriaceae_X	0.02066	0.04200	0.09379	0.16000
Mucilaginibacter	0.02822	0.05400	0.01885	0.04800
QHBO01	0.00085	0.00390	0.00074	0.00540
Bacillaceae_H_X	0.13731	0.20000	0.37628	0.47000
Mycobacteriaceae_X	0.07250	0.12000	0.08986	0.16000
Nannocystis	0.08015	0.13000	0.05089	0.10000
Lacunisphaera	0.00484	0.01400	0.00676	0.02300
Cnuella	0.12257	0.18000	0.09181	0.16000
Glycomyces	0.00820	0.02100	0.01430	0.03900
Planococcaceae_X	0.00162	0.00620	0.00352	0.01400
Acidobacteriota_X_X_X_X	0.64910	0.69000	0.44943	0.54000
Algoriphagus	0.00885	0.02200	NA	NA
Geodermatophilaceae_X	0.01414	0.03100	0.00793	0.02600
Roseomonas	0.08578	0.13000	0.10085	0.17000
UBA2475	0.00013	0.00130	0.00021	0.00280
Oscillochloris	0.46749	0.53000	0.83177	0.86000
Massilia	0.46785	0.53000	0.33486	0.43000
Dehalococcoidia_X_X_X	0.02969	0.05700	0.01796	0.04600
55-13	0.00077	0.00370	0.01993	0.05000

Azoarcus_A	0.00111	0.00470	0.00066	0.00530
Pseudoduganella	0.09675	0.15000	0.04356	0.09200
Bacillus_BE	0.00885	0.02200	NA	NA
Paenibacillus_H	0.45427	0.52000	0.50261	0.58000
Microbacterium	0.40169	0.48000	0.40685	0.50000
Labrys	0.00887	0.02200	0.02994	0.06900
GCA-002840015	0.59183	0.64000	0.51252	0.58000
Cellulosimicrobium	0.72871	0.75000	0.95503	0.96000
40CM-3-62-11	0.01223	0.02800	0.01651	0.04400
HRBIN29	0.23306	0.31000	0.17934	0.27000
Pseudomonadales_X_X	0.21163	0.29000	0.17849	0.27000
Palsa-1382	0.00277	0.00940	0.01299	0.03600
Comamonas	0.05413	0.09400	0.51252	0.58000
Acidovorax_B	0.87625	0.88000	0.98639	0.99000
GJ-E10	0.00008	0.00097	0.00022	0.00280
Sandaracinus	0.00360	0.01100	0.00217	0.01100
Cellulomonadaceae_X	0.67825	0.72000	0.62725	0.68000
Amantichitinum	0.15860	0.22000	0.13278	0.21000
Hyalangium	0.38754	0.47000	0.41069	0.50000
Fimbriimonas	0.00685	0.01800	0.04264	0.09100
Clostridiales_X_X	0.01132	0.02700	0.03373	0.07500
Stenotrophomonas_A	0.88048	0.89000	0.89177	0.91000
Cyclobacteriaceae_X	0.00003	0.00060	0.00011	0.00200
Azospirillaceae_X	0.26505	0.34000	0.16890	0.26000
UBA4655	0.16810	0.23000	0.09704	0.16000
R-RK-3	0.00790	0.02100	0.00438	0.01700
UBA4722	0.01353	0.03000	0.21727	0.30000
Anaerolineae_X_X_X	0.01230	0.02800	0.07543	0.14000
Azovibrio	0.00020	0.00160	0.00033	0.00350
Nocardia	0.47533	0.54000	0.44715	0.54000
Blastococcus_A	0.65042	0.69000	0.48017	0.57000
Verrucomicrobiales_X_X	0.38654	0.47000	0.48335	0.57000
Abditibacterium	0.00016	0.00140	0.00402	0.01600
Nitrolancea	0.02631	0.05200	0.04453	0.09300
Isosphaera	0.00432	0.01300	0.00476	0.01800
Aquamicrobium_A	0.05655	0.09800	0.05469	0.11000
Saccharimonadia_X_X_X	0.00026	0.00190	0.00170	0.00960
Chryseolinea	0.03640	0.06700	0.08485	0.15000
Rubricoccus	0.05380	0.09400	0.06158	0.12000
Sorangium	0.89712	0.90000	0.78395	0.82000
Par-f-2	0.01228	0.02800	0.00605	0.02100
Arthrobacter_F	0.44793	0.52000	0.51252	0.58000
Chloroflexia_X_X_X	0.14376	0.21000	0.08864	0.15000
Chthonomonas	0.00548	0.01500	0.00273	0.01300
Bacilli_A_X_X_X	0.44793	0.52000	0.51252	0.58000
Rhodospirillum_A	0.16059	0.22000	0.07941	0.14000
Arsukibacterium	0.00885	0.02200	NA	NA
UBA6092	0.01718	0.03600	0.02847	0.06600
UBA7805	0.06791	0.11000	0.12036	0.19000
Vampirovibrionia_X_X_X	0.00077	0.00370	0.00310	0.01300
Geobacteraceae_X	0.00120	0.00500	0.00274	0.01300
Hydrogenedens	0.00419	0.01300	0.01271	0.03600

Vulgatibacter	0.01665	0.03600	0.02081	0.05100
Altererythrobacter_A	0.03258	0.06100	0.04968	0.10000
Bdellovibrio	0.07644	0.12000	0.07094	0.13000
QKVK01	0.00025	0.00190	0.00148	0.00860
Chloroflexales_X_X	0.07322	0.12000	0.14416	0.23000
CSP1-2_X	0.16800	0.23000	0.10395	0.17000
Planctomicrobium	0.06160	0.10000	0.05532	0.11000
Massilia_B	0.00511	0.01400	0.00758	0.02500
Alkaliphilus	0.74600	0.77000	0.77361	0.81000
Thermotalea	0.27307	0.35000	0.39992	0.49000
UTCFX2	0.08293	0.13000	0.11473	0.19000
Brevibacillus	0.30151	0.38000	0.27897	0.38000
Pseudomonas	0.39357	0.47000	0.38381	0.48000
Binatia_X_X_X	0.33938	0.42000	0.22685	0.32000
W-Chloroflexi-9	0.09365	0.15000	0.13548	0.21000
TOLSYN	0.32508	0.40000	0.30471	0.40000
Micrococcaceae_X	0.27415	0.35000	0.17939	0.27000
Hydrogenophaga	0.53042	0.59000	0.96262	0.97000
Labilithrix	0.01863	0.03900	0.02751	0.06500
UBA12294	0.02072	0.04200	0.01352	0.03700
HZ-65	0.00046	0.00260	0.00068	0.00530
G233	0.04676	0.08400	0.02427	0.05800
MEBICO9517	0.16913	0.23000	0.16280	0.25000
Aquamicrobium	0.38872	0.47000	0.48005	0.57000
Tumebacillales_X_X	0.22757	0.30000	0.61596	0.67000
Bacillus_C	0.01516	0.03300	0.02022	0.05000
GCA-2723275	0.03173	0.06000	0.32493	0.42000
Bacteroidota_X_X_X_X	0.00017	0.00140	0.00042	0.00410
Enterobacterales_X_X	0.15860	0.22000	NA	NA
SCGC-AG-212-F23	0.00625	0.01700	0.01574	0.04200
UBA4093	0.25836	0.33000	0.18719	0.28000
Bacillus_F	0.49581	0.55000	0.47056	0.56000
Minicystis	0.00179	0.00670	0.00212	0.01100
UTBCD1	0.00323	0.01100	0.00334	0.01400
Pseudorhodoferax	0.27802	0.36000	0.40740	0.50000
Kineosporia	0.21850	0.29000	0.19155	0.28000
Azoarcus_B	0.00565	0.01600	0.00336	0.01400
Patescibacteria_X_X_X_X	0.00034	0.00210	0.00113	0.00700
UBA1268_X	0.12753	0.19000	0.17897	0.27000
JJ-A5	0.91850	0.92000	0.96514	0.97000
Caldilineales_X_X	0.72764	0.75000	0.74962	0.79000
UBA6960_X	0.00319	0.01000	0.00251	0.01200
Elizabethkingia	0.41877	0.49000	0.36907	0.46000
Sphingobacteriaceae_X	0.13396	0.20000	0.14799	0.23000
Pseudonocardiaceae_X	0.05997	0.10000	0.07037	0.13000
LHW63021	0.11695	0.17000	0.08807	0.15000
Pajaroellobacter	0.00046	0.00260	0.00067	0.00530
Clostridium_AK	0.27880	0.36000	0.33574	0.43000
GR16-43	0.00017	0.00150	0.00009	0.00180
Elioraea	0.11461	0.17000	0.07087	0.13000
GWC2-70-10	0.05660	0.09800	0.40135	0.49000
Zhizhongheella	0.00038	0.00230	0.00076	0.00550

HRBIN30	0.04526	0.08200	0.23293	0.32000
Cryptosporangium	0.04347	0.07900	0.08291	0.15000
Methylocystis	0.00152	0.00600	0.00096	0.00630
UBA10212_X	0.00105	0.00460	0.00664	0.02300
Moranbacterales_X_X	0.01368	0.03000	0.05241	0.10000
Planctomycetota_X_X_X_X	0.00014	0.00130	0.00030	0.00330
C7867-001	0.67825	0.72000	0.62725	0.68000
EW11	0.00207	0.00740	0.00504	0.01900
Planctopirus	0.01905	0.04000	0.10261	0.17000
Symbiobacterium	0.07488	0.12000	0.05877	0.11000
Asinibacterium	0.02285	0.04600	0.04526	0.09400
Rummeliibacillus	0.73037	0.76000	0.57388	0.64000
Caulobacter	0.68465	0.72000	0.91652	0.93000
AG11	0.77286	0.79000	0.75501	0.79000
Exiguobacterium_A	0.02705	0.05300	0.03402	0.07500
Clostridium_AM	0.18362	0.25000	0.19200	0.28000
Z2-YC6860	0.00391	0.01200	0.01423	0.03900
Rhizobacter	0.87140	0.88000	0.91027	0.93000
UBA2337	0.00006	0.00085	0.00011	0.00200
Cystobacter	0.39990	0.48000	0.26871	0.37000
GCA-2737725	0.10739	0.16000	0.18804	0.28000
Hymenobacteraceae_X	0.08693	0.14000	0.04479	0.09400
Methylobacterium	0.10643	0.16000	0.10791	0.18000
UBA5793	0.72874	0.75000	0.70938	0.75000
Nitrosomonas	0.00078	0.00370	0.06181	0.12000
Pseudomonas_D	0.00885	0.02200	NA	NA
Flavobacteriaceae_X	0.89008	0.90000	0.93557	0.95000
SZUA-42	0.27088	0.35000	0.92730	0.94000
Ilumatobacter	0.55557	0.61000	0.38736	0.48000
UBA4416	0.01165	0.02700	0.01252	0.03600
SG-1	0.59183	0.64000	0.51252	0.58000
Lachnospiraceae_X	0.13785	0.20000	0.08590	0.15000
UBA4207	0.29479	0.37000	0.23156	0.32000
Paludisphaera	0.01900	0.04000	0.04929	0.10000
Bacillus_AG	0.04772	0.08500	0.02562	0.06100
21-14-0-10-47-8	0.60179	0.65000	0.85333	0.88000
Limnobacter	0.15860	0.22000	NA	NA
Kribbella	0.08404	0.13000	0.11440	0.19000
NIC37A-2	0.11058	0.17000	0.06327	0.12000
GCA-002686595_X	0.07679	0.12000	0.10587	0.18000
Paenibacillus_C	0.21850	0.29000	0.19155	0.28000
Hyphomicrobium	0.01604	0.03500	0.03351	0.07500
Beijerinckiaceae_X	0.16671	0.23000	0.11760	0.19000
Myxococcales_X_X	0.02131	0.04300	0.02511	0.06000
40CM-68-15	0.06587	0.11000	0.03637	0.08000
Singulisphaera	0.35234	0.43000	0.67130	0.72000
Asticcacaulis	0.33225	0.41000	0.52435	0.59000
Klebsiella_B	0.35833	0.44000	0.31433	0.41000
Vitreoscilla_A	0.00001	0.00031	0.00002	0.00094
2-12-FULL-35-15	0.19631	0.27000	0.31097	0.41000
Diaphorobacter	0.00885	0.02200	NA	NA
Mongoliimonas	0.45326	0.52000	0.42187	0.51000

SZUA-318	0.10874	0.16000	0.27122	0.37000
Dyella	0.35833	0.44000	0.31433	0.41000
Afifella	0.38660	0.47000	0.24714	0.34000
Piscinibacter	0.15860	0.22000	NA	NA
Jidaibacter	0.00526	0.01500	0.00679	0.02300
Promicromonospora	0.67825	0.72000	0.62725	0.68000
Rhodothermales_X_X	0.50578	0.56000	0.70297	0.75000
Enterococcaceae_X	0.67825	0.72000	0.62725	0.68000
Porphyrobacter	0.98774	0.99000	0.95981	0.97000
Anaerolineales_X_X	0.22808	0.30000	0.30467	0.40000
Fulvimonas	0.70085	0.73000	0.78303	0.82000
Rhodomicrobiaceae_X	0.52558	0.58000	0.52308	0.59000
Methylophilus	0.15549	0.22000	0.08073	0.14000
Peptostreptococcales_X_X	0.32189	0.40000	0.36206	0.46000
UBA1568	0.33804	0.42000	0.42397	0.51000
Bacteriovoracaceae_X	0.48379	0.55000	0.68568	0.73000
GCA-2770975	0.00070	0.00350	0.00128	0.00760
Desulfuromonadales_X_X	0.42662	0.50000	0.42323	0.51000
Rubritepida	0.00296	0.00970	0.00391	0.01600
Paracaedibacter	0.10310	0.16000	0.09184	0.16000
Palsa-1392	0.40118	0.48000	0.55402	0.62000
Paenibacillus	0.69730	0.73000	0.75272	0.79000
Rubrobacter	0.45326	0.52000	0.42187	0.51000
Fimbriimonadaceae_X	0.05846	0.10000	0.05227	0.10000
2013-40CM-41-45	0.59071	0.64000	0.80782	0.84000
Euzebya	0.02642	0.05200	0.02389	0.05800
ZC4RG24	0.52063	0.58000	0.85377	0.88000
Clostridium_T	0.42657	0.50000	0.39908	0.49000
Ga0077550	0.00283	0.00940	0.00197	0.01000
Moheibacter	0.18516	0.25000	0.20586	0.29000
Omnitrophales_X_X	0.00115	0.00480	0.00061	0.00500
Gorillibacterium	0.73787	0.76000	0.76319	0.80000
67-14	0.36423	0.44000	0.23918	0.33000
Geobacterales_X_X	0.00209	0.00740	0.00283	0.01300
Fluviicola	0.04661	0.08400	0.07750	0.14000
Pelomonas	0.56736	0.62000	0.56776	0.63000
Hydrocarboniphaga	0.00489	0.01400	0.00567	0.02000
Gemmatimonas	0.03217	0.06100	0.04631	0.09500
Bacillus_BC	0.17694	0.24000	0.11922	0.19000
Spirosomaceae_X	0.16162	0.22000	0.12269	0.20000
Pigmentiphaga	0.21850	0.29000	0.19155	0.28000
Micavibrio_B	0.01077	0.02600	0.02268	0.05600
UKL13-3	0.00294	0.00970	0.00340	0.01400
GAS474	0.35833	0.44000	0.31433	0.41000
Weeksellaceae_X	0.30151	0.38000	0.19155	0.28000
Coleofasciculus	0.07520	0.12000	0.19155	0.28000
IMCC26256	0.47186	0.53000	0.45860	0.55000
SZUA-320	0.14251	0.21000	0.13224	0.21000
Chryseomicrobium	0.06035	0.10000	0.06181	0.12000
Niabella	0.42657	0.50000	0.39908	0.49000
UBA12499	0.15505	0.22000	0.16054	0.25000
BD2-11	0.53131	0.59000	0.36138	0.46000

Babeliales_X_X	0.00182	0.00680	0.00440	0.01700
Actinoplanes	0.41581	0.49000	0.27897	0.38000
Ga0077541	0.01370	0.03000	0.00578	0.02000
4572-78_X_X	0.71287	0.74000	0.51333	0.58000
Acidobacteriaceae_X	0.70110	0.73000	0.97674	0.98000
F0540	0.71453	0.74000	0.73274	0.77000
2-01-FULL-59-12	0.00761	0.02000	0.00650	0.02200
Desulfonisporea	0.15423	0.22000	0.31149	0.41000
UBA10450_X	0.13554	0.20000	0.13581	0.21000
Bog-1198	0.05942	0.10000	0.07675	0.14000
Nostocaceae_X	0.21850	0.29000	0.19155	0.28000
Bacillus_AJ	0.06566	0.11000	0.06181	0.12000
PMMR1	0.08407	0.13000	0.11182	0.18000
Chloroflexaceae_X	0.07607	0.12000	0.04994	0.10000
Pseudorhodoplanes	0.00842	0.02200	0.00560	0.02000
UTPRO1	0.02418	0.04800	0.14826	0.23000
Herpetosiphonaceae_X	0.03813	0.07000	0.04556	0.09400
Cesiribacter	0.21850	0.29000	0.19155	0.28000
OLB11	0.00001	0.00031	0.00002	0.00094
Uliginosibacterium	0.19355	0.26000	0.20684	0.29000
Chloroploca	0.74861	0.77000	0.58277	0.65000
Sporichthya	0.29302	0.37000	0.33282	0.43000
GCA-2699025	0.11800	0.18000	0.17153	0.26000
Paracraurococcus	0.09078	0.14000	0.19155	0.28000
Nitrospiraceae_X	0.22975	0.30000	0.13592	0.21000
Gp1-AA17	0.82893	0.84000	0.83676	0.86000
Enterobacter_B	0.32508	0.40000	0.30471	0.40000
Bin61	0.15499	0.22000	0.09644	0.16000
UBA11740	0.03287	0.06200	0.00909	0.02800
Coriobacteriales_X_X	0.41877	0.49000	0.51252	0.58000
Hyphomicrobiaceae_X	0.08686	0.14000	0.08756	0.15000
Roseiflexus	0.50763	0.56000	0.60344	0.66000
Pseudescherichia	0.64685	0.69000	0.62454	0.68000
Caulobacterales_X_X	0.56736	0.62000	0.56776	0.63000
Bog-159	0.38984	0.47000	0.33004	0.42000
Lysinibacillus	0.15827	0.22000	0.24176	0.33000
HRBIN40	0.66008	0.70000	0.51010	0.58000
GCA-2725915	0.07931	0.13000	0.09587	0.16000
Blastochloris	0.25399	0.33000	0.71877	0.76000
Elusimicrobia_X_X_X	0.00385	0.01200	0.00557	0.02000
GCA-002050365	0.68917	0.72000	0.56781	0.63000
Paenibacillus_E	0.21850	0.29000	0.19155	0.28000
Nitrospira_D	0.28178	0.36000	0.31593	0.41000
Phreatobacter	0.44202	0.51000	0.49993	0.58000
Haliangium	0.41699	0.49000	0.28045	0.38000
Parachlamydiales_X_X	0.51742	0.57000	0.53694	0.61000
Fen-1247	0.49581	0.55000	0.47056	0.56000
Gp18-AA60	0.25151	0.33000	0.16039	0.25000
Altererythrobacter_B	0.28055	0.36000	0.27254	0.37000
Tol-SR	0.01835	0.03900	0.01880	0.04800
Taibaiella_B	0.39357	0.47000	0.25589	0.35000
Marmoricola	0.55527	0.61000	0.57241	0.64000

GWC2-71-9_X	0.79691	0.81000	0.68896	0.74000
Fen-1342	0.33457	0.41000	0.25182	0.35000
OLB15	0.00196	0.00720	0.00427	0.01700
01-FULL-45-10b	0.00033	0.00210	0.00047	0.00420
UBA1931	0.01368	0.03000	0.01634	0.04300
UBA8087	0.43835	0.51000	0.30471	0.40000
GCA-2699585	0.02367	0.04800	0.03101	0.07000
UBA1547	0.63428	0.68000	0.60908	0.67000
Conexibacter_A	0.31637	0.40000	0.21416	0.30000
SZUA-149	0.38298	0.46000	0.30606	0.40000
UBA920	0.86486	0.88000	0.73405	0.77000
UBA3495_X	0.15812	0.22000	0.14297	0.22000
Vermiphilus	0.42486	0.50000	0.44243	0.53000
Nannocystaceae_X	0.11167	0.17000	0.13145	0.21000
Bdellovibrionales_X_X	0.24162	0.32000	0.37619	0.47000
OLB9	0.05104	0.09000	0.06218	0.12000
HRBIN37	0.27870	0.36000	0.17256	0.26000
Sulfuricaulis	0.34662	0.43000	0.59295	0.66000
GWA1-54-10	0.03332	0.06200	0.05299	0.11000
Phycisphaerales_X_X	0.84574	0.86000	0.76384	0.80000
Sporomusaceae_X	0.44037	0.51000	0.41447	0.50000
Algiphilus	0.00939	0.02300	0.01090	0.03200
Gastranaerophilales_X_X	0.05154	0.09000	0.05136	0.10000
Ga0074137	0.46674	0.53000	0.59881	0.66000
Cyanobacteriales_X_X	0.76175	0.78000	0.68275	0.73000
Larkinella	0.84446	0.86000	0.92068	0.93000
Kapabacteriales_X_X	0.00968	0.02400	0.00242	0.01200
BOG-1112	0.68822	0.72000	0.82917	0.86000
Tistlia	0.56635	0.62000	0.44844	0.54000
UBA9983_A_X_X	0.00216	0.00760	0.00319	0.01400
Polyangia_X_X_X	0.20295	0.27000	0.20180	0.29000
Fuerstia	0.14342	0.21000	0.17965	0.27000
Myxococcota_X_X_X_X	0.29851	0.38000	0.32880	0.42000
GCA-2683135	0.04539	0.08200	0.02366	0.05800
A4b_X	0.04632	0.08300	0.02379	0.05800
UBA9655	0.20022	0.27000	0.21407	0.30000
Flavobacteriales_X_X	0.23603	0.31000	0.24407	0.34000
GCA-2683825	0.00712	0.01900	0.00211	0.01100
Geminicoccus	0.00361	0.01100	0.00457	0.01700
OLB13	0.10364	0.16000	0.18531	0.28000
Cyanobacteriia_X_X_X	0.25145	0.33000	0.28724	0.38000
Enhygromyxa	0.13637	0.20000	0.06572	0.12000
UBA11359_X	0.04976	0.08800	0.05450	0.11000
HRBIN33	0.75078	0.77000	0.85017	0.88000