Comparison of analysis of keystone OTUs of rhizosphere of *Solanum lycopersicum*: All samples, samples chosen by metadata, and samples chosen randomly.

Mario Jardon Santos

1 Introduction

For assesing the non-randomness of the results presented in "" here they are contrasted with new analysis. Since there more of them the samples of rhizosphere of *Solanum lycopersicum* were chosen for this task. Firstly they were diveded according to metadata. These samples were classified as "Desarrollo", "Llenado de fruto", "Por transplantar" and "Llenado de fruto". More than a half of them were classified as "Desarrollo". Hence they were divided by "Desarrollo" and all the others. There were also 10 random subsets of half (11) of the samples.

In each one of the cases a new correlation network was created and the analysis of script was done in the respective network. In this report are present the results of all 12 analysis and contrasted with the original one.

2 All samples, "Desarrollo" and Other

The analysis of samples labeled as "Desarrollo" gave more candidate to keystone OTUs than the original analysis. Meanwhile the analysis of the complement of samples gave less of them. In both restricted analyses there is a clear prevalence of phyla *Actinomycetota* and *Pseudomonadota*. More abundant genera in the analysis of "Desarrollo" samples are *Pseudomonas, Deinococcus* and *Corynebacterium*. In the less diverse analysis of the other samples the most abundant genus is *Pseudomonas*.

As can be seen in Figures 5 and 6 both partial analyses gave OTUs whose relative abundance tends to be between the median and the mean relative abundance of all other OTUs across samples. This ressembles the distribution of keystone OTUs of the samples of *Capsicum* and *Zea mays* and contrasts that of the first analysis of the samples of *Solanum lycopersicum*.

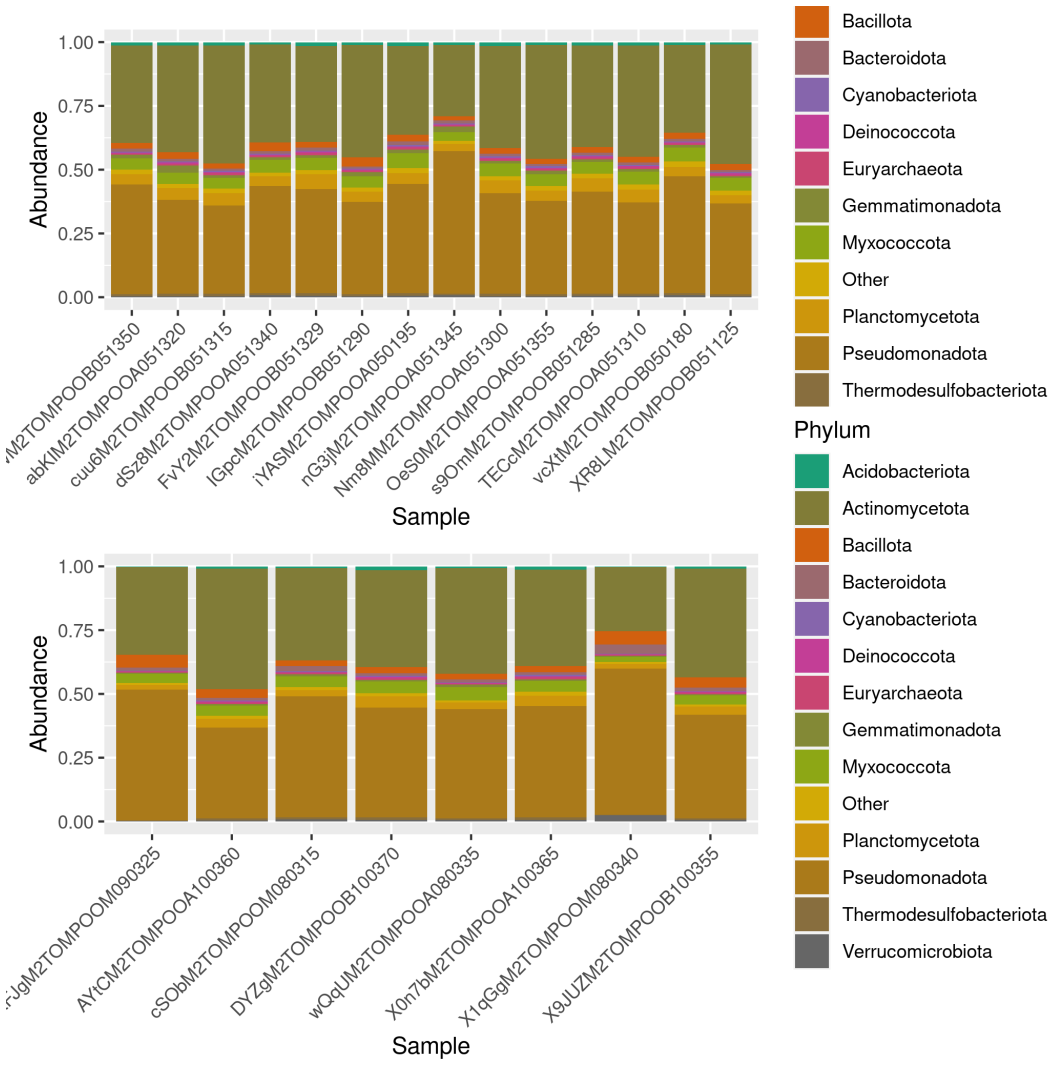

Figure 1: Comparison of reports of “Desarrollo” and “No desarrolo” by Phylum

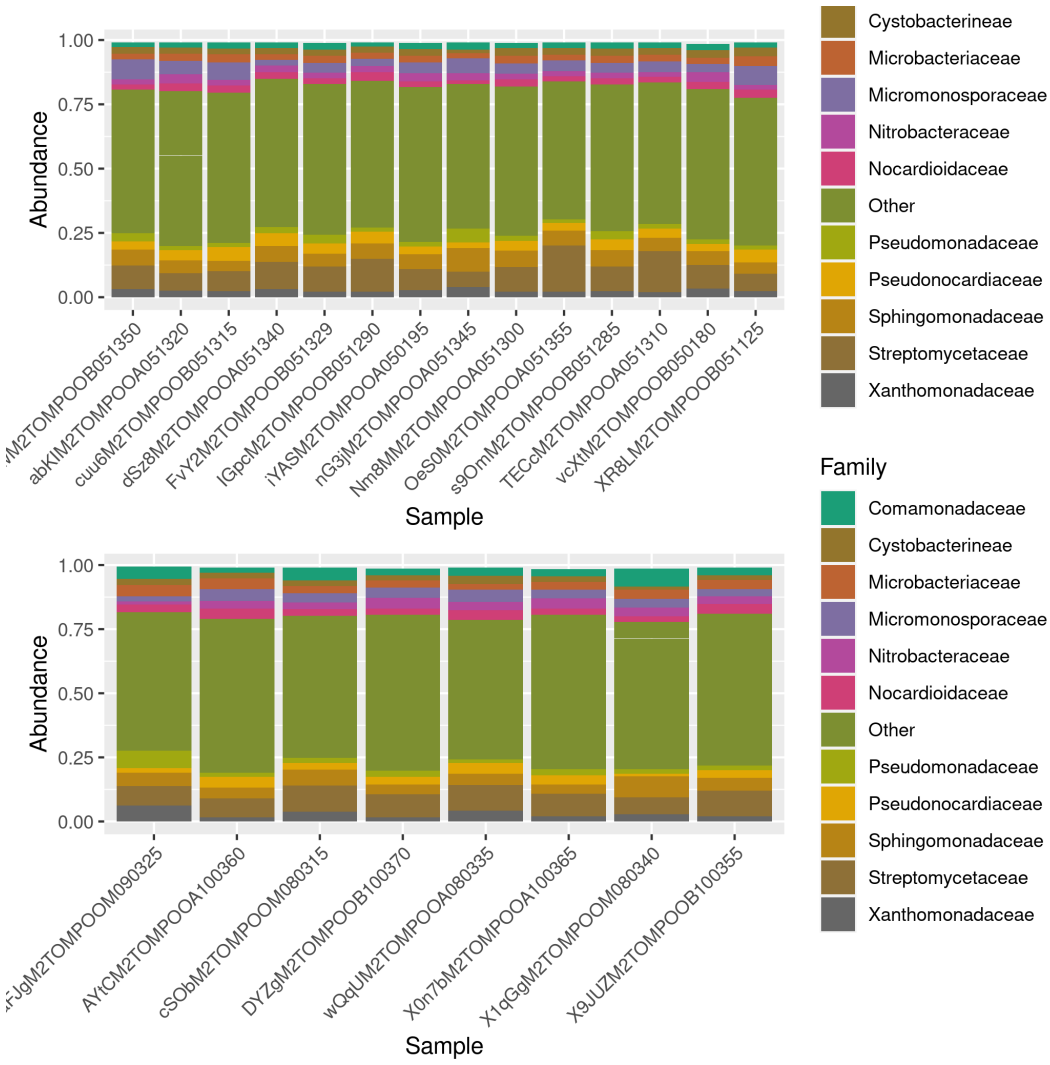

Figure 2: Comparison of reports of “Desarrollo” and “No desarrolo” by Family

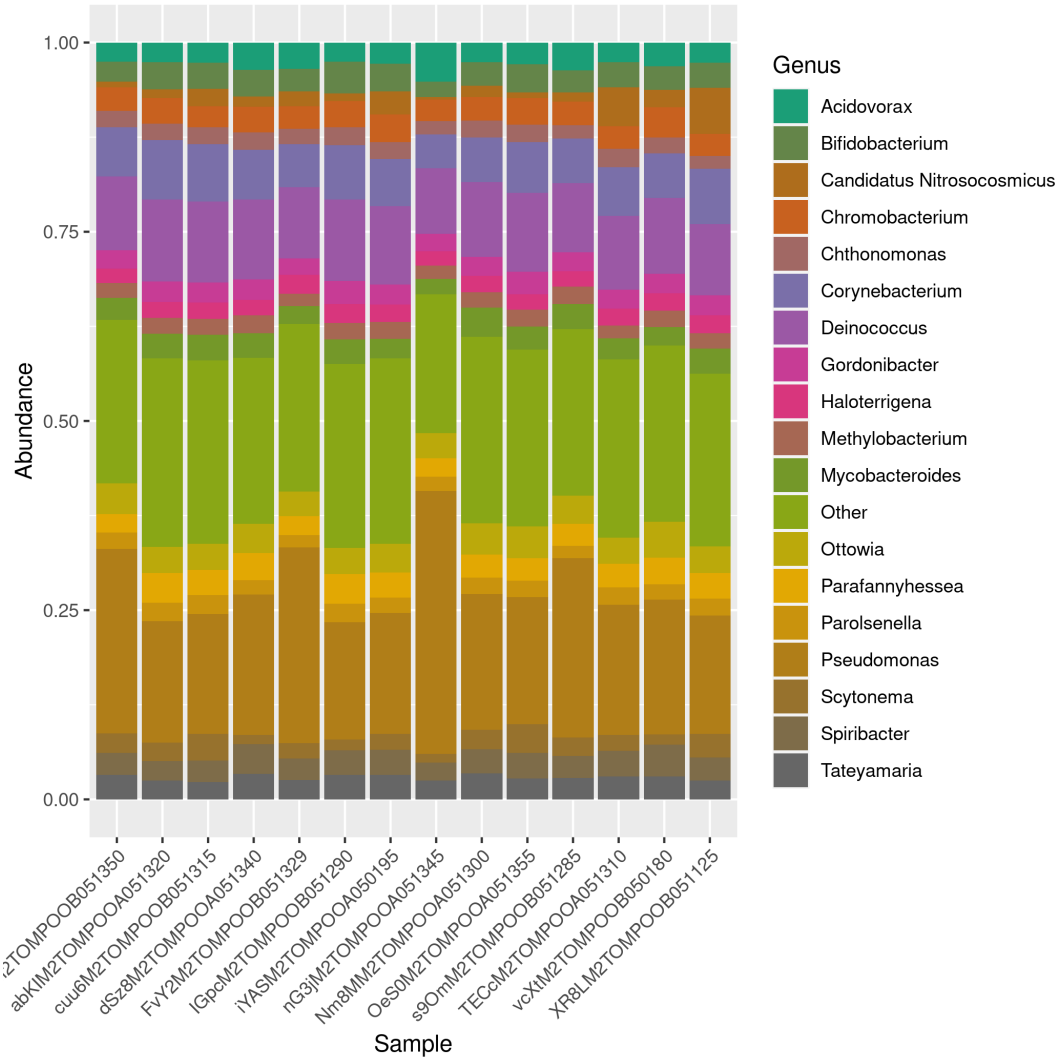

Figure 3: Relative abundance by genera of keystone OTUs in rhizosphere samples of *Solanum lycopersicum* labeled as "Desarrollo".

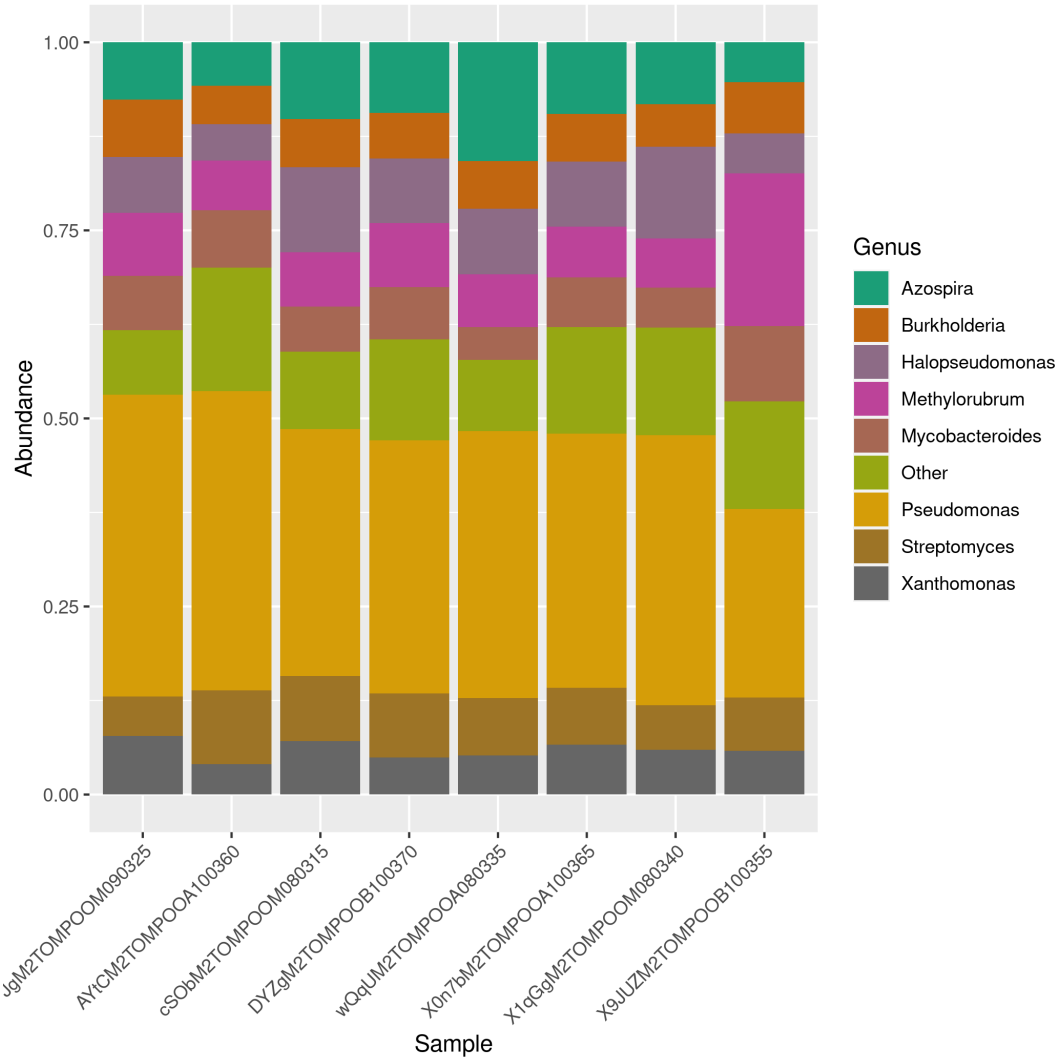

Figure 4: Relative abundance by genera of keystone OTUs in rhizosphere samples of *Solanum lycopersicum* not labeled as "Desarrollo".

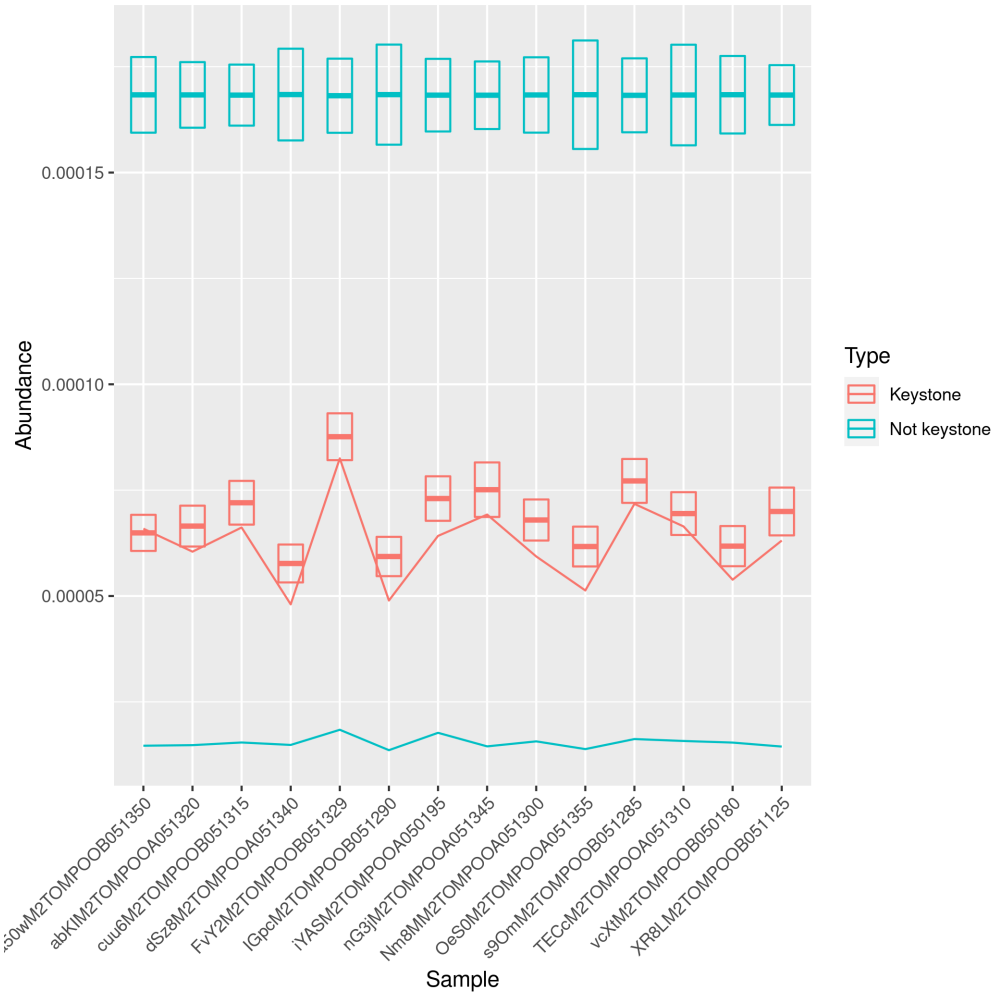

Figure 5: Boxes represent mean and standard error in the distribution of corresponding samples.

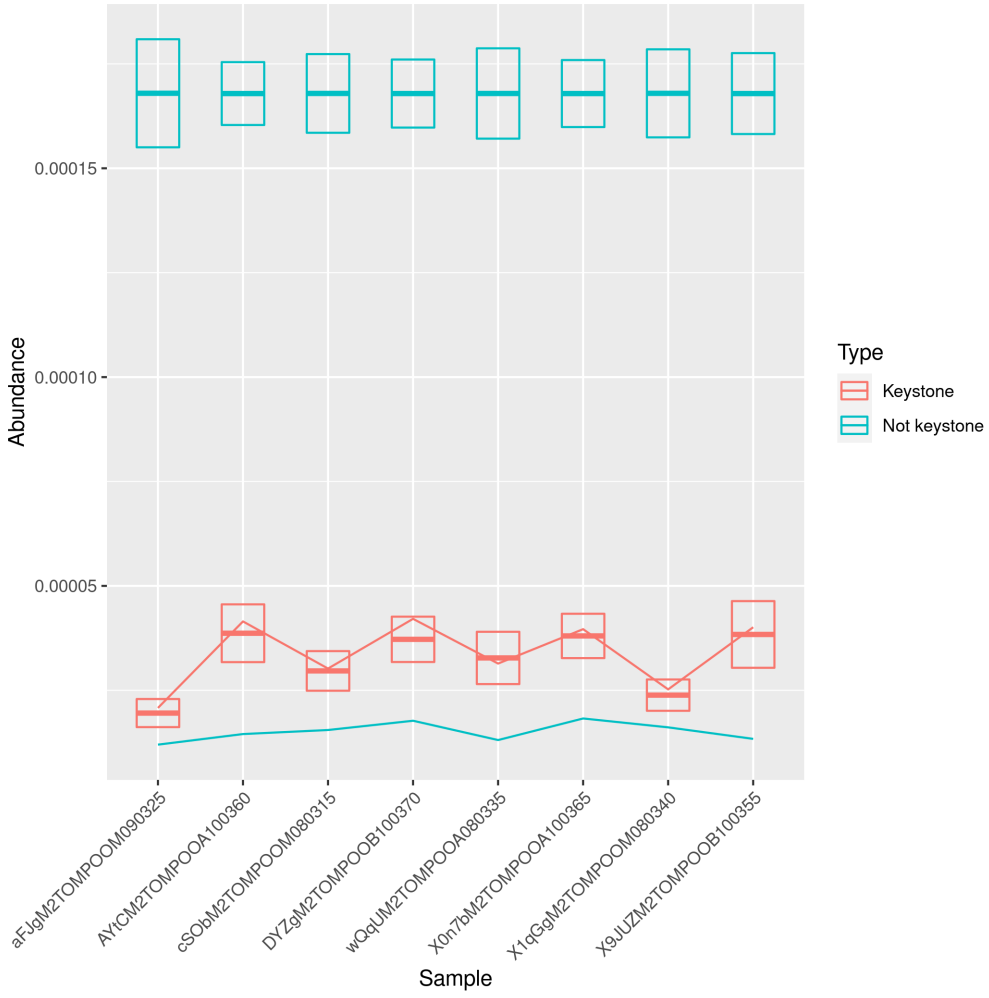

Figure 6: Boxes represent mean and standard error in the distribution of corresponding samples. Lines represent the corresponding medians. In these samples of rhizosphere oftomate no desarrollo.csv

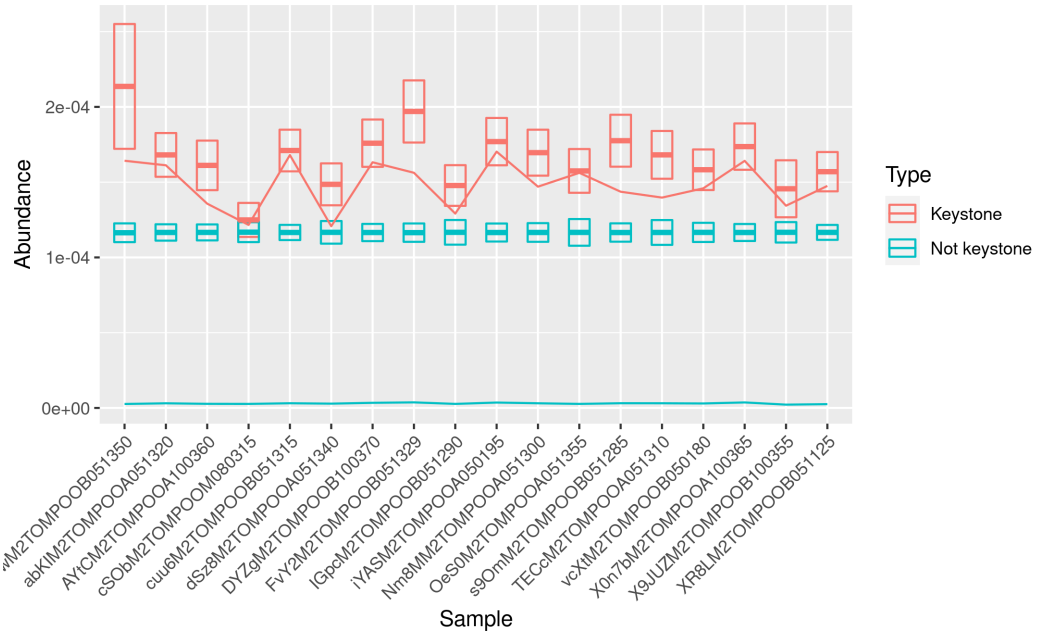

Figure 7: Boxes represent mean and standard error in the distribution of corresponding samples. Lines represent the corresponding medians. In these samples of rhizosphere of *Solanum lycopersicum* relative abundance keystone OTUs tend to be higher than the median and the mean of the relative abundance of all other OTUs.

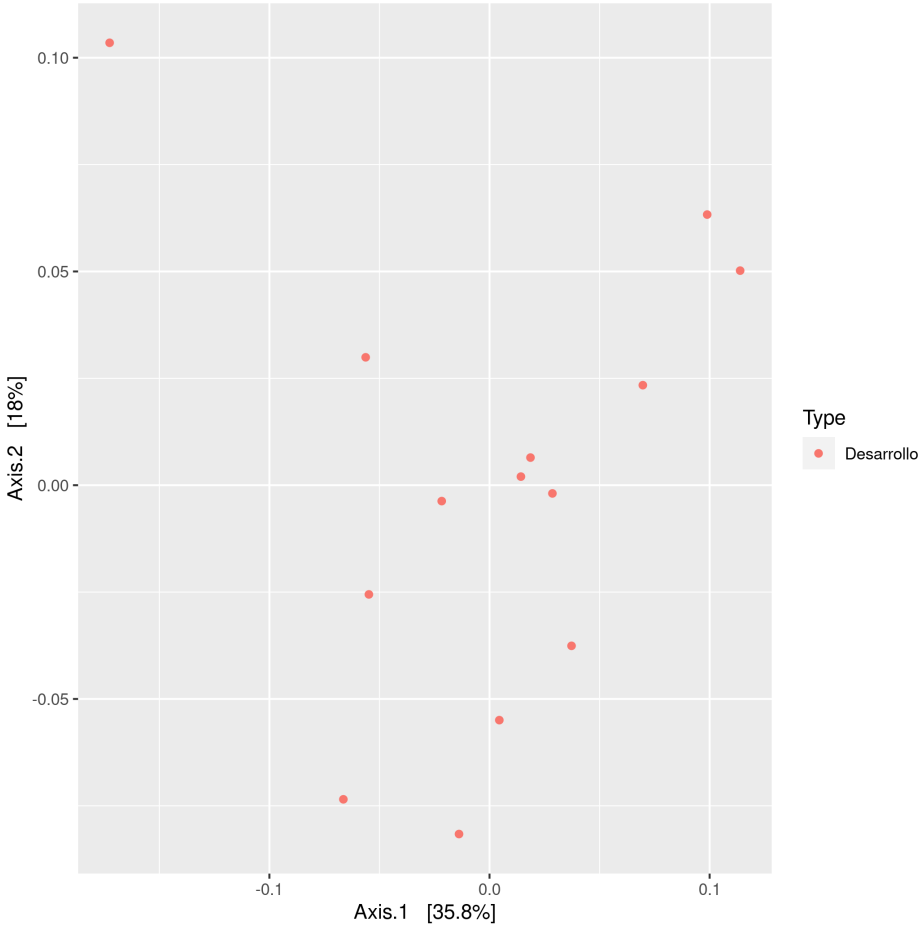

Figure 8: PCoA analysis with Bray-Curtis distance of rhizosphere samples

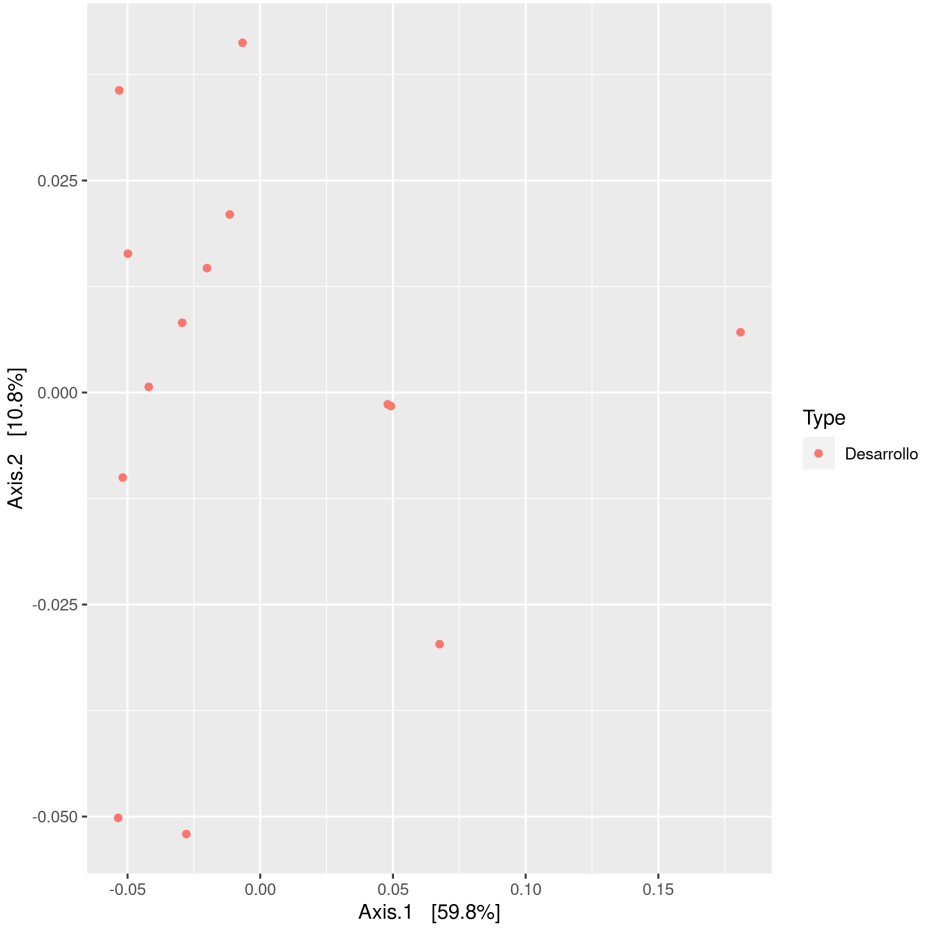

Figure 9: PCoA analysis with Bray-Curtis distance of rhizosphere samples

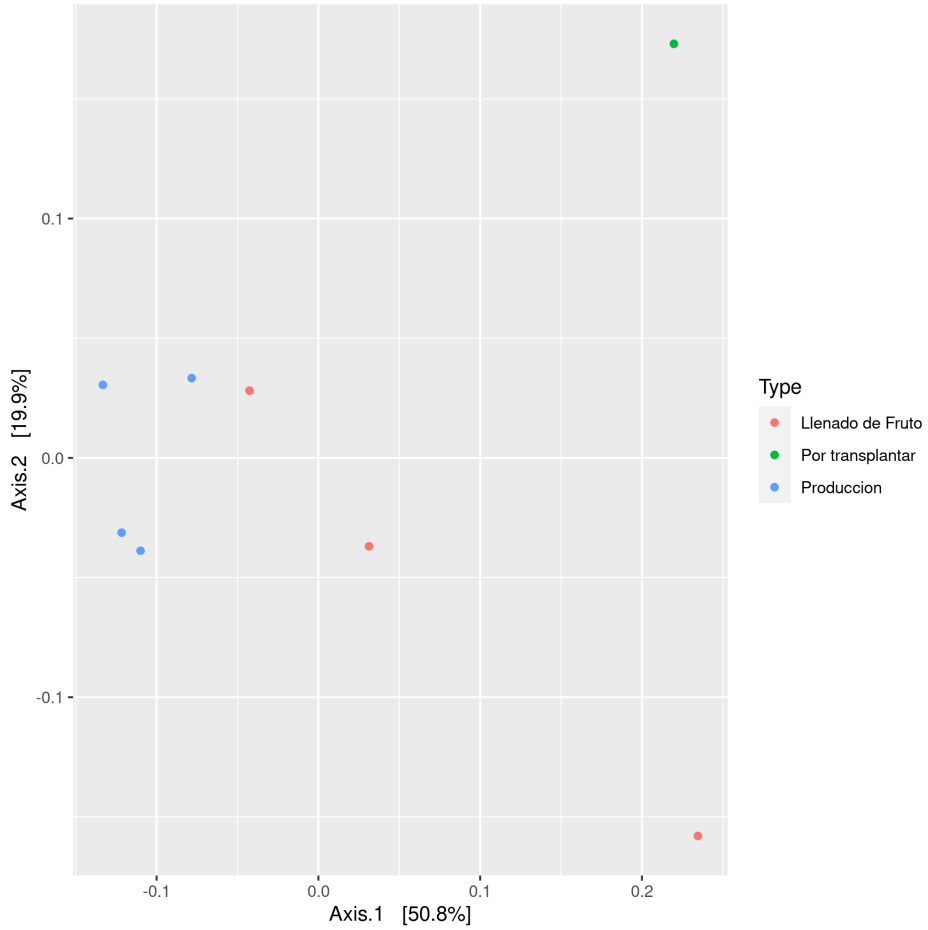

Figure 10: PCoA analysis with Bray-Curtis distance of rhizosphere samples of tomate no desarrollo.csv.

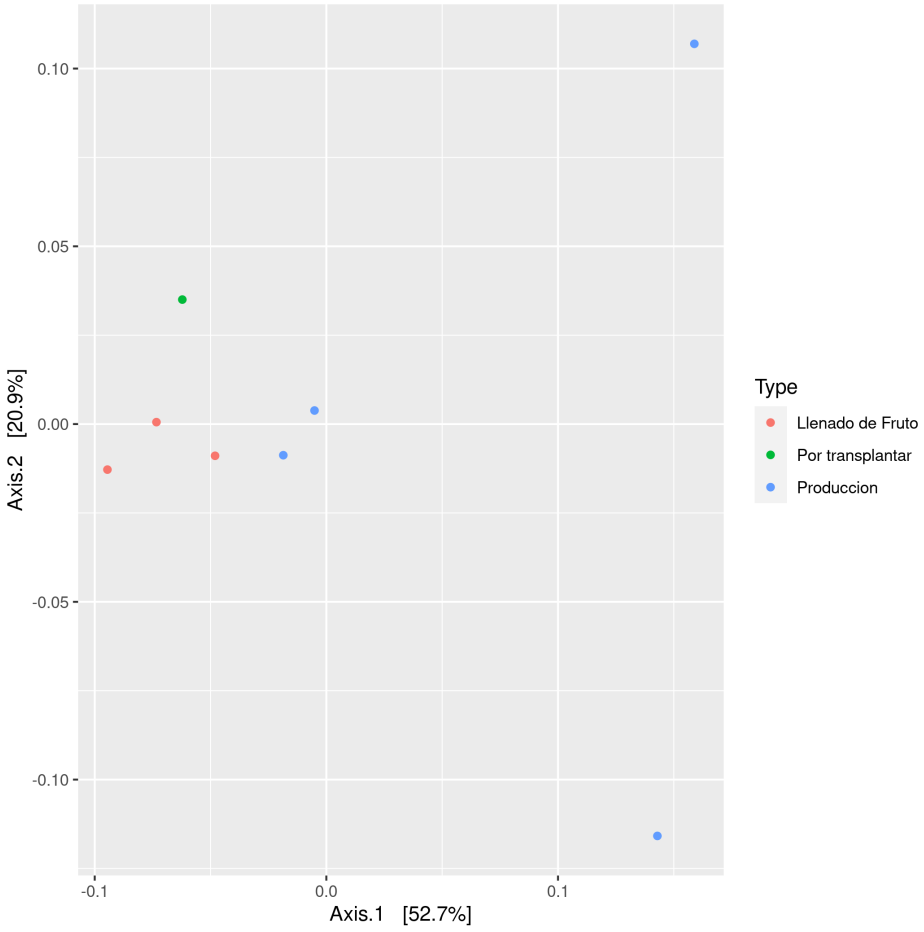

Figure 11: PCoA analysis with Bray-Curtis distance of rhizosphere samples of tomate no desarrollo.csv, restricted to keystone OTUs.

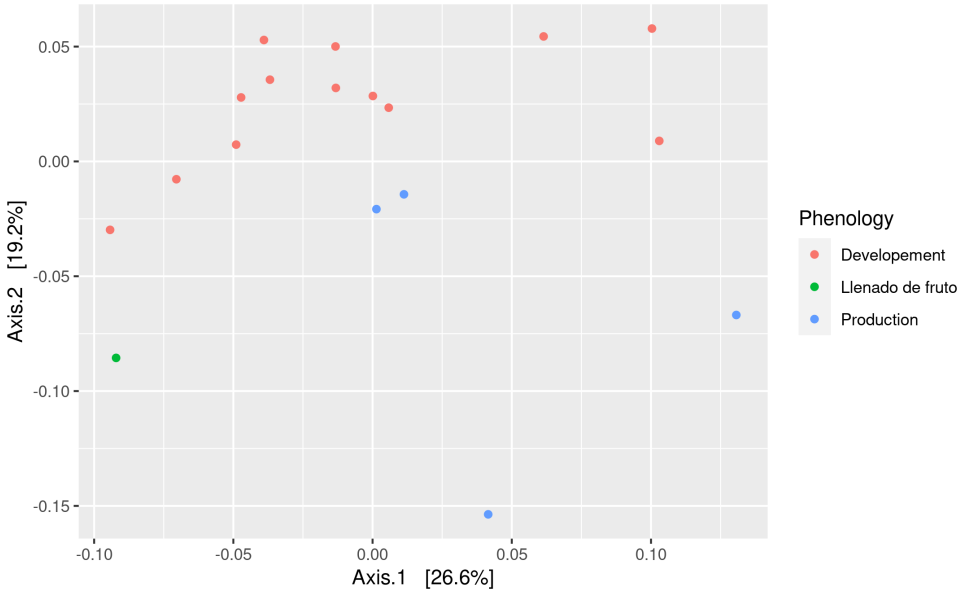

Figure 12: PCoA analysis with Bray-Curtis distance of rhizosphere samples of *Solanum lycopersicum*.

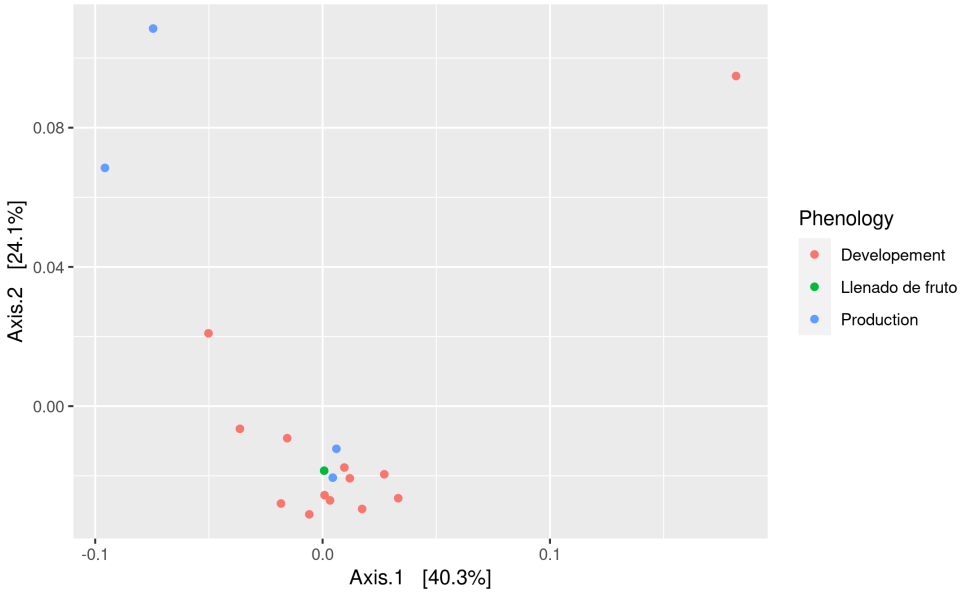

Figure 13: PCoA analysis with Bray-Curtis distance of rhizosphere samples of *Solanum lycopersicum*, restricted to keystone OTUs.

3 10 random subsamples

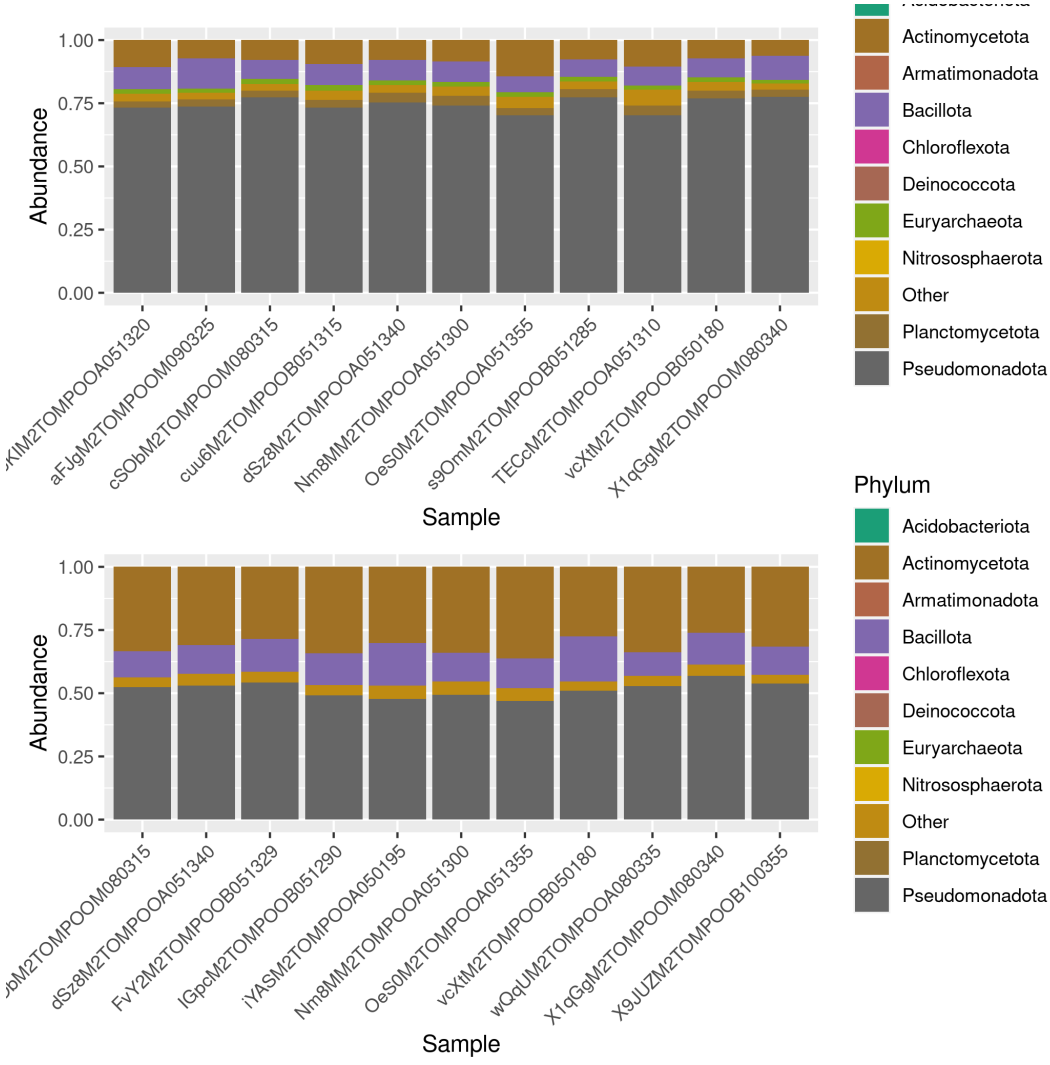

Figure 14: Comparison of reports from random subsamples 1 and 2 by Phylum

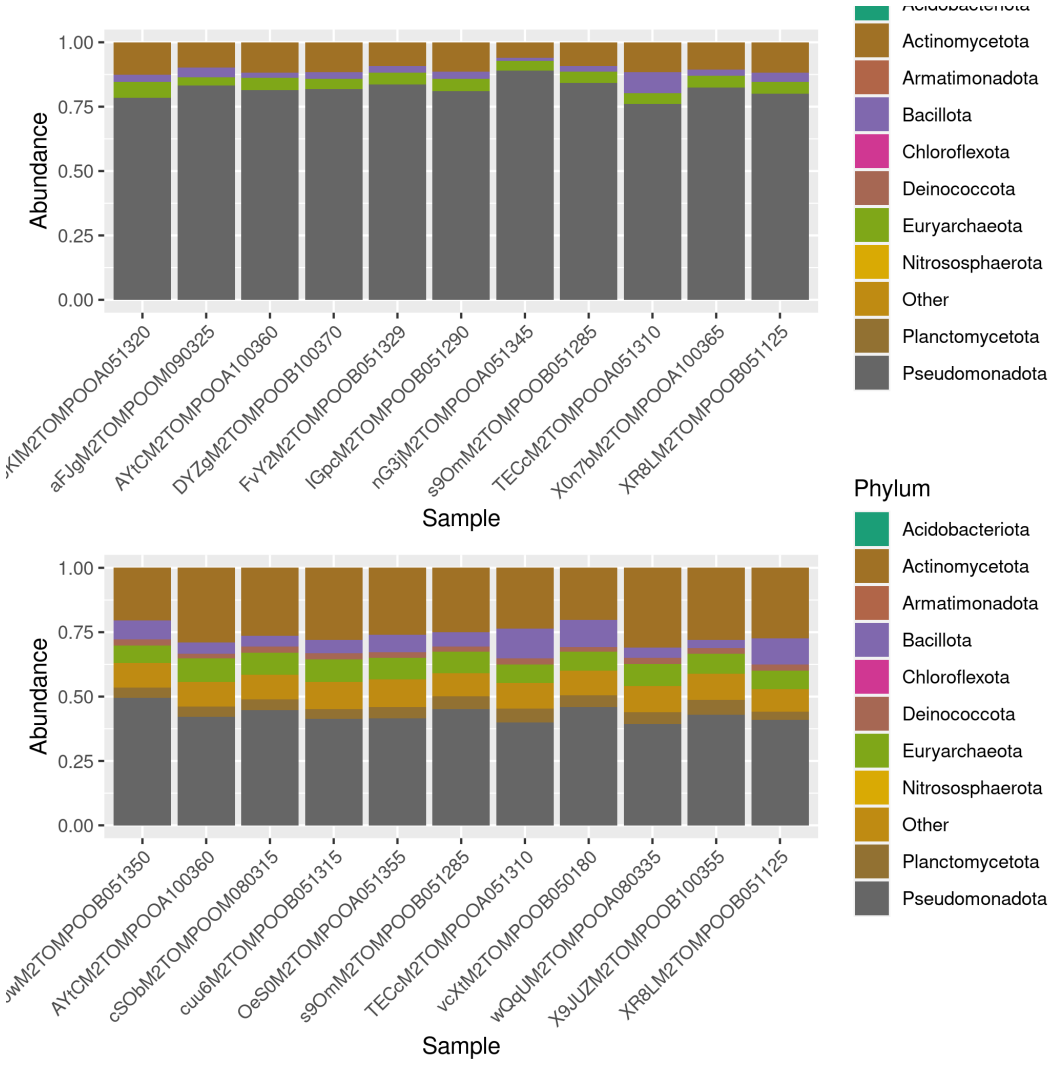

Figure 15: Comparison of reports from random subsamples 3 and 4 by Phylum

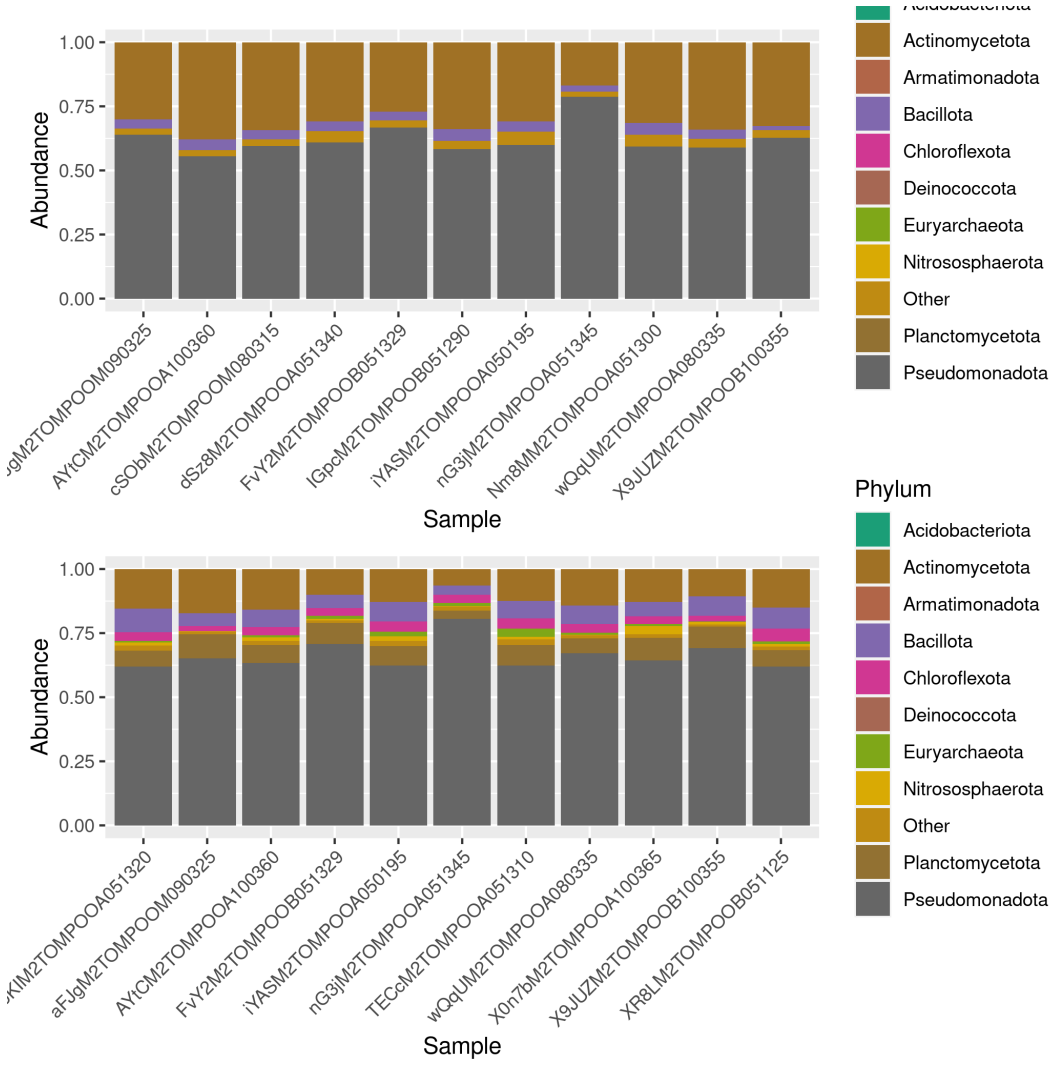

Figure 16: Comparison of reports from random subsamples 5 and 6 by Phylum

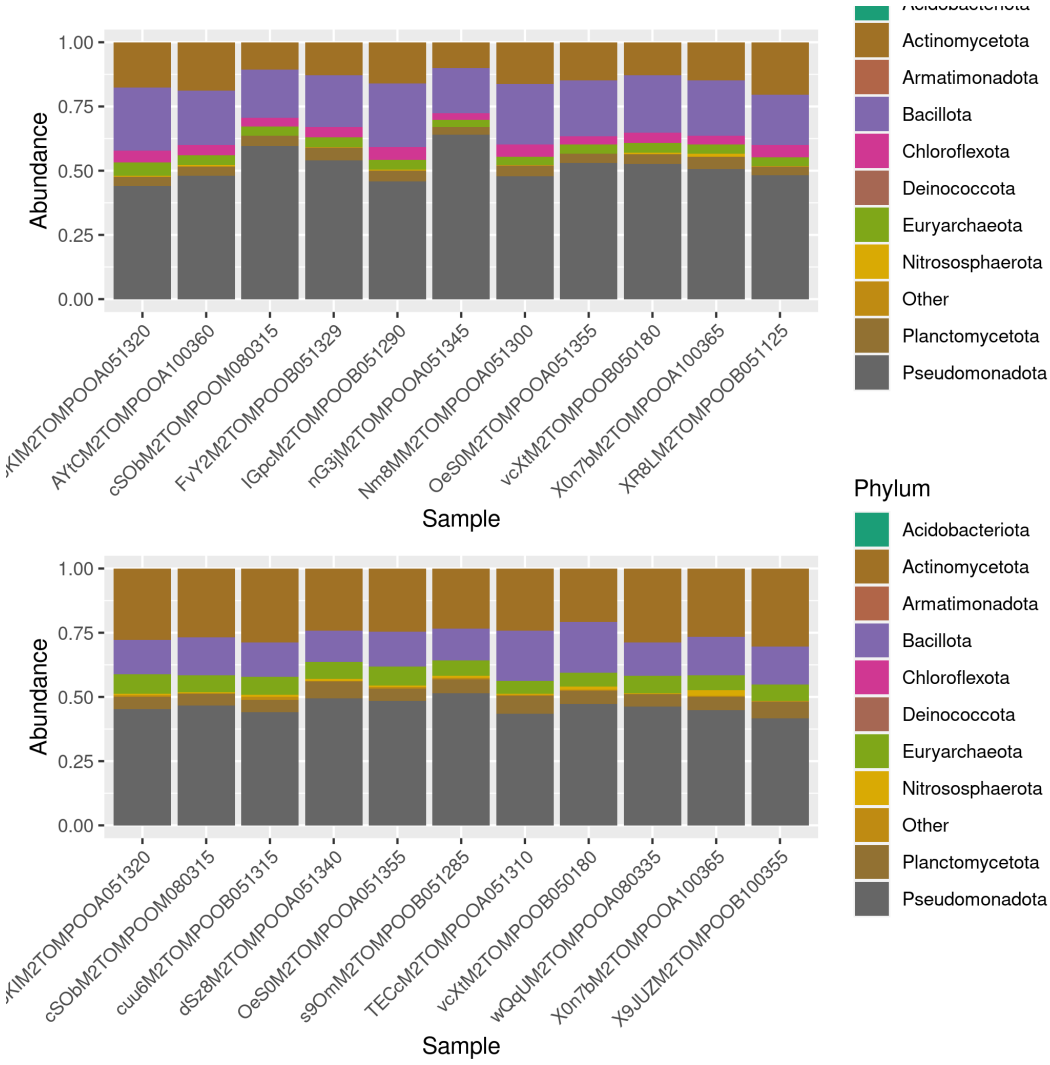

Figure 17: Comparison of reports from random subsamples 7 and 8 by Phylum

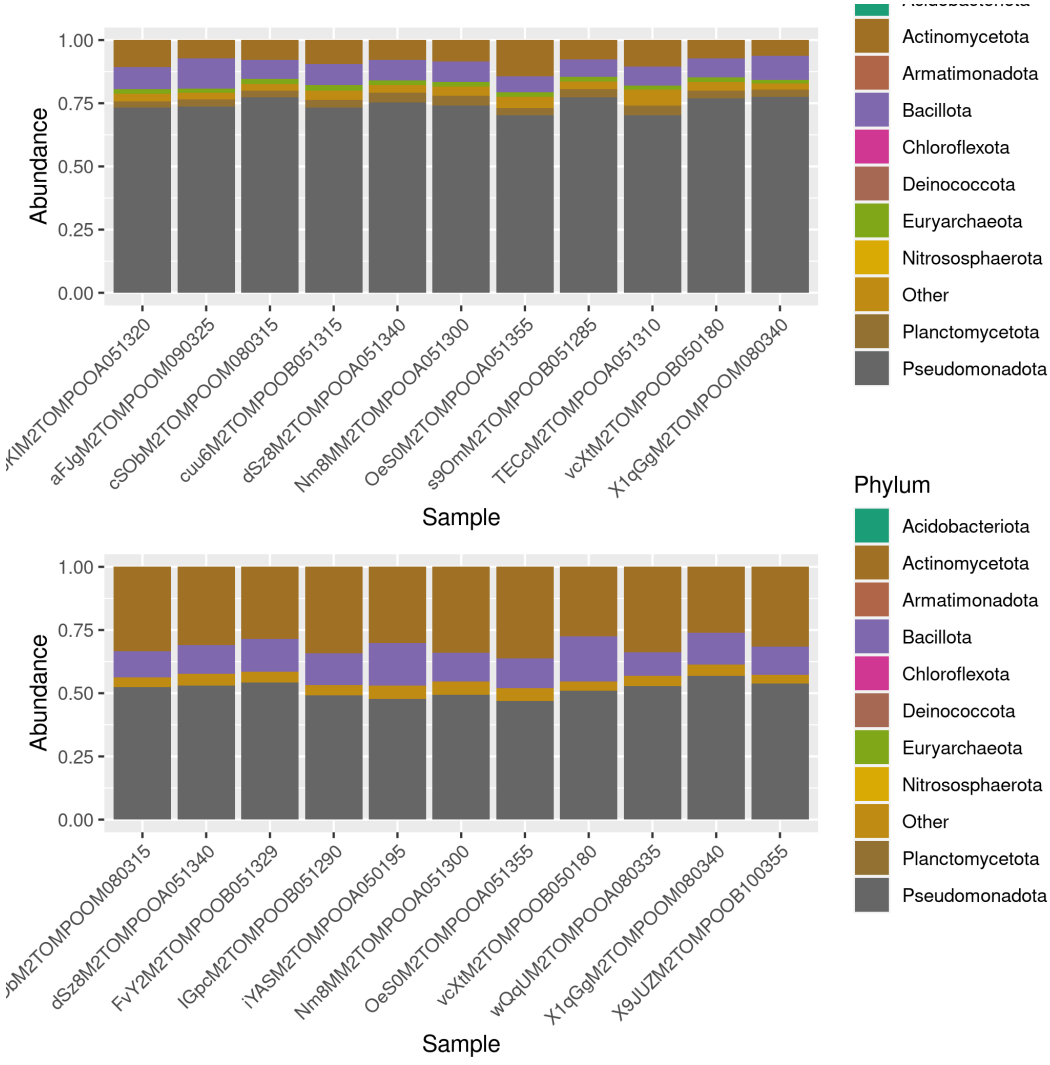

Figure 18: Comparison of reports from random subsamples 9 and 10 by Phylum

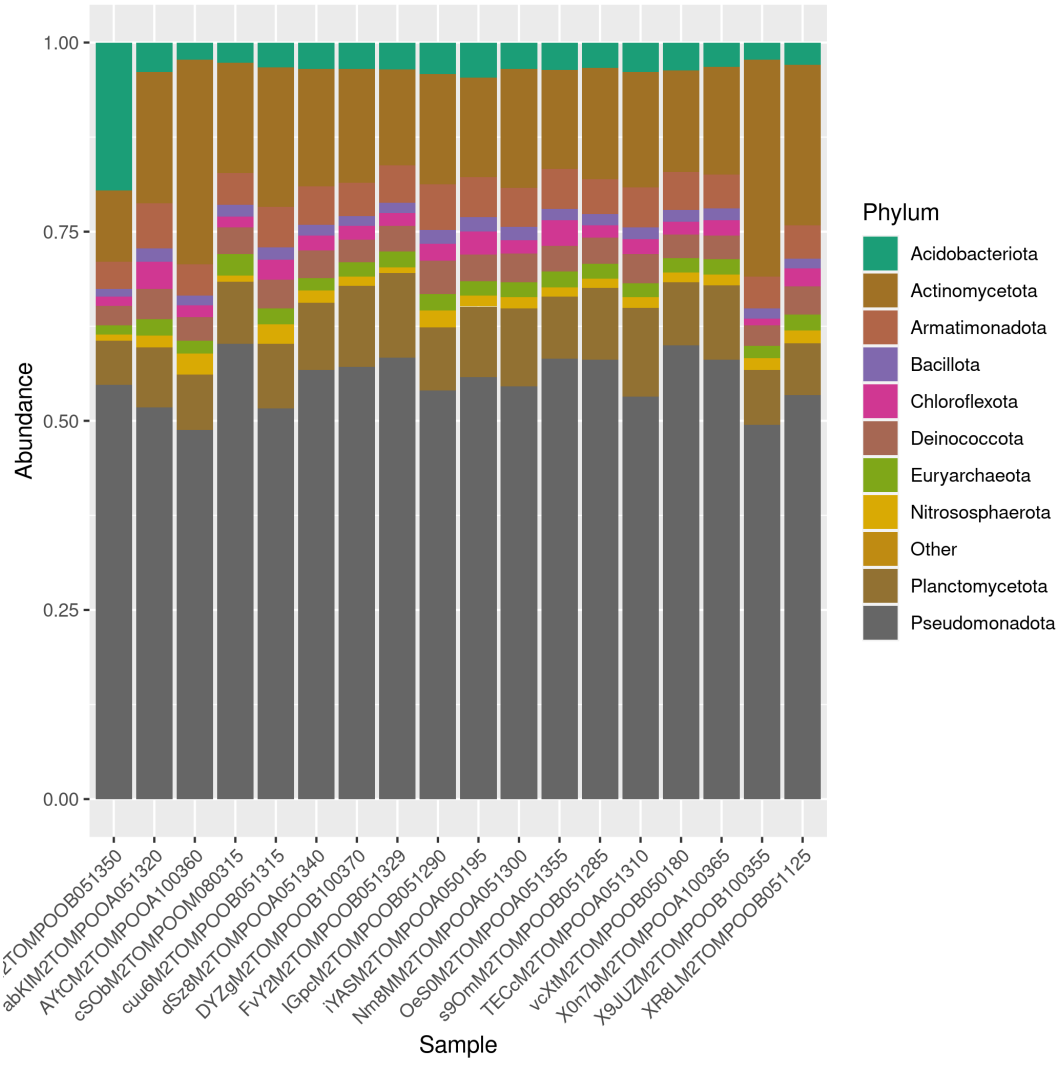

Figure 19: Comparison of reports from random subsamples 9 and 10 by Phylum

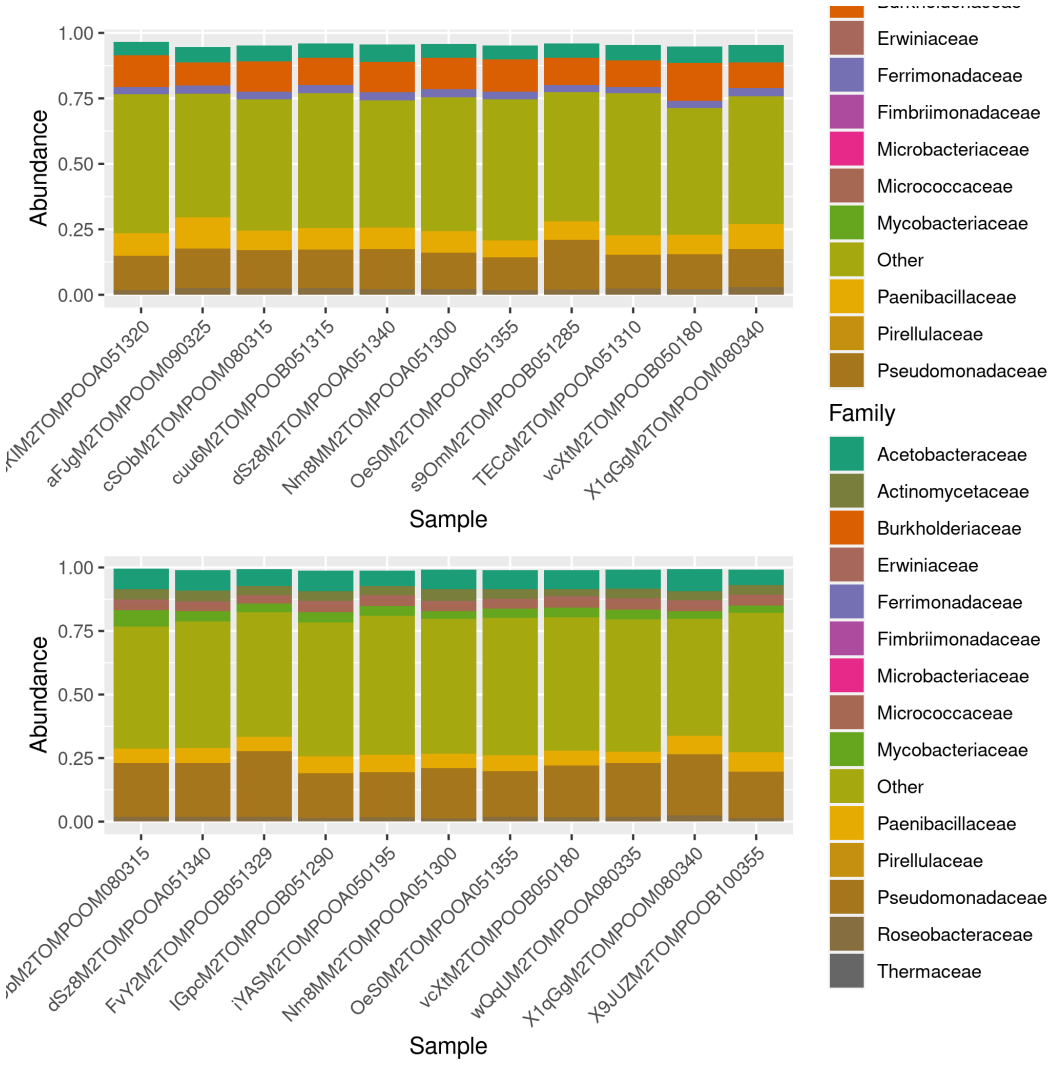

Figure 20: Comparison of reports from random subsamples 1 and 2 by Phylum

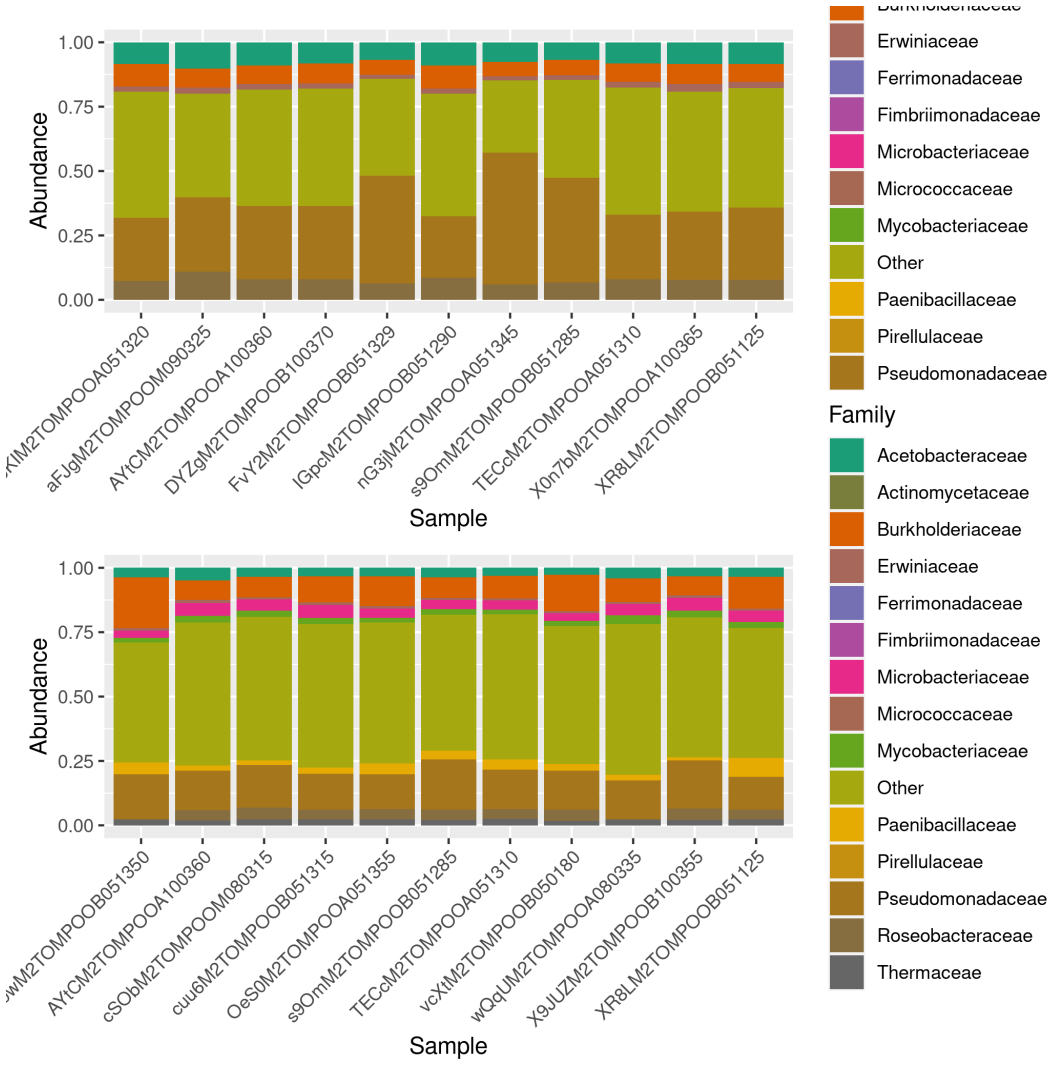

Figure 21: Comparison of reports from random subsamples 3 and 4 by Phylum

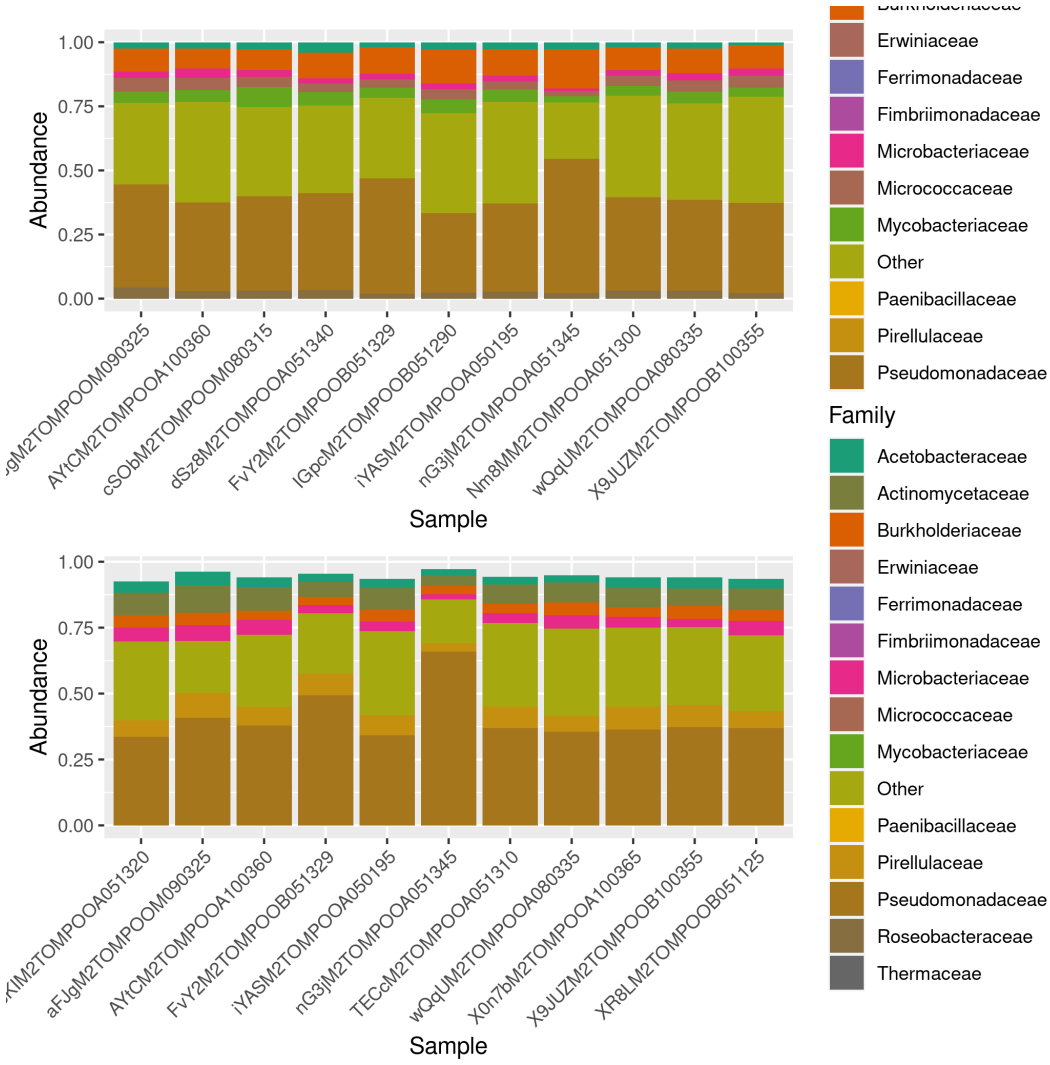

Figure 22: Comparison of reports from random subsamples 5 and 6 by Phylum

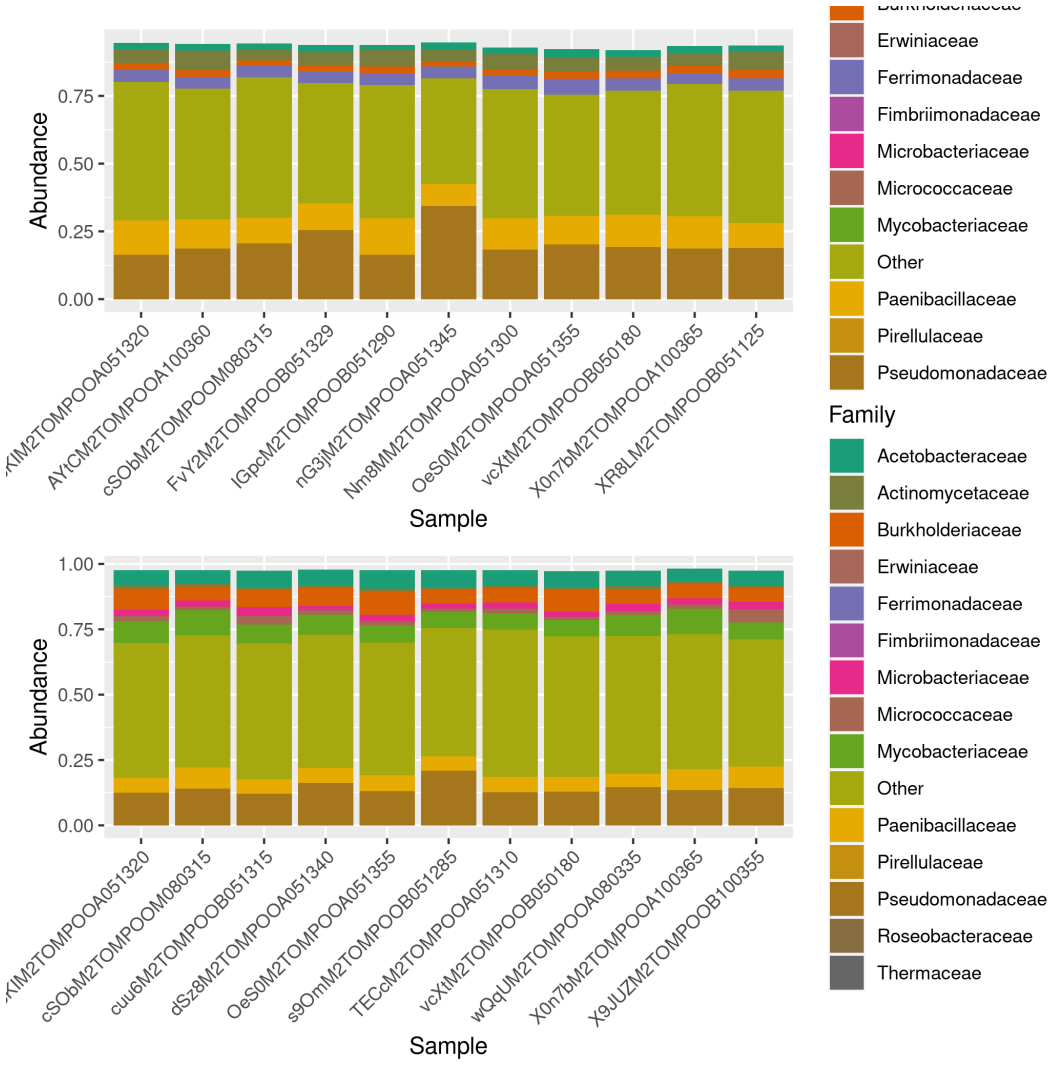

Figure 23: Comparison of reports from random subsamples 7 and 8 by Phylum

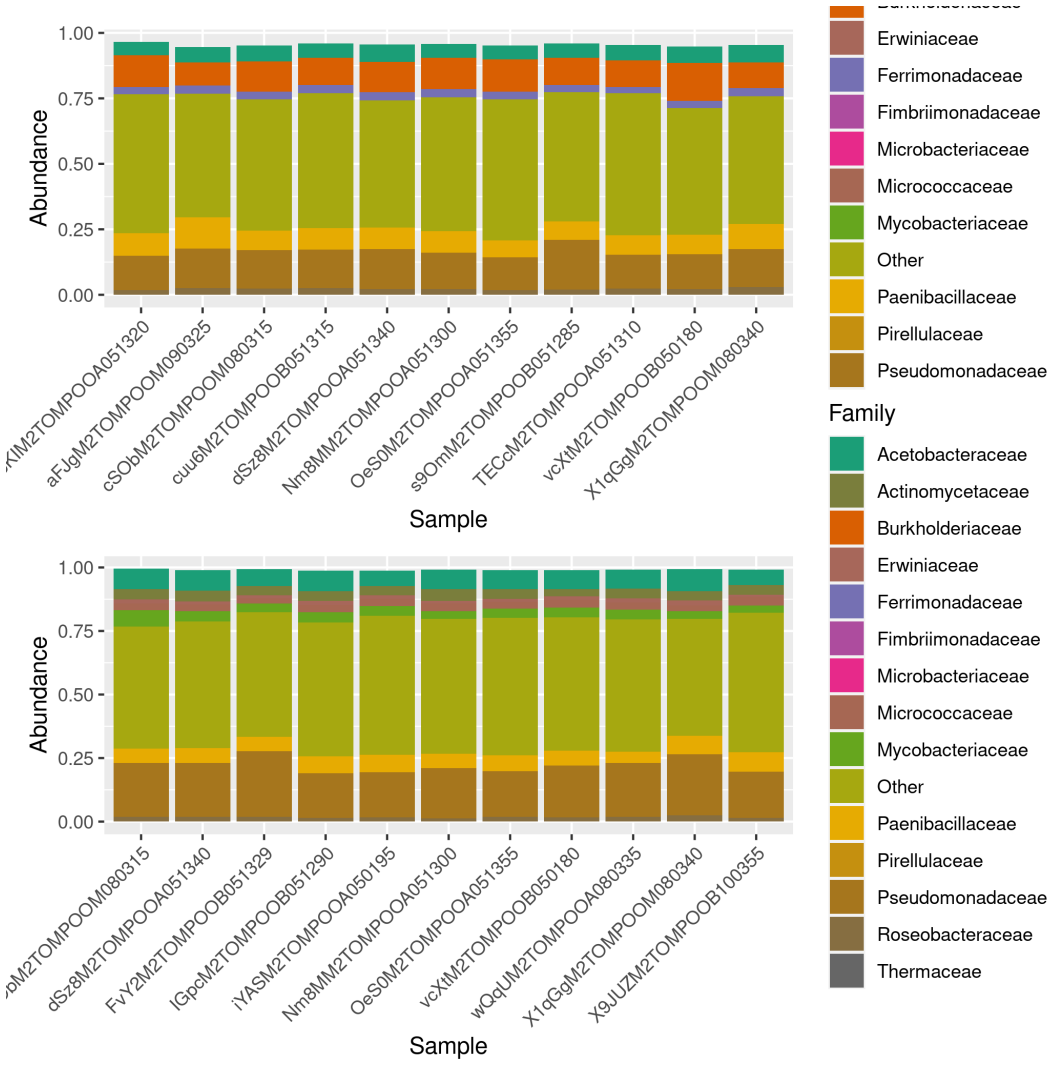

Figure 24: Comparison of reports from random subsamples 9 and 10 by Phylum

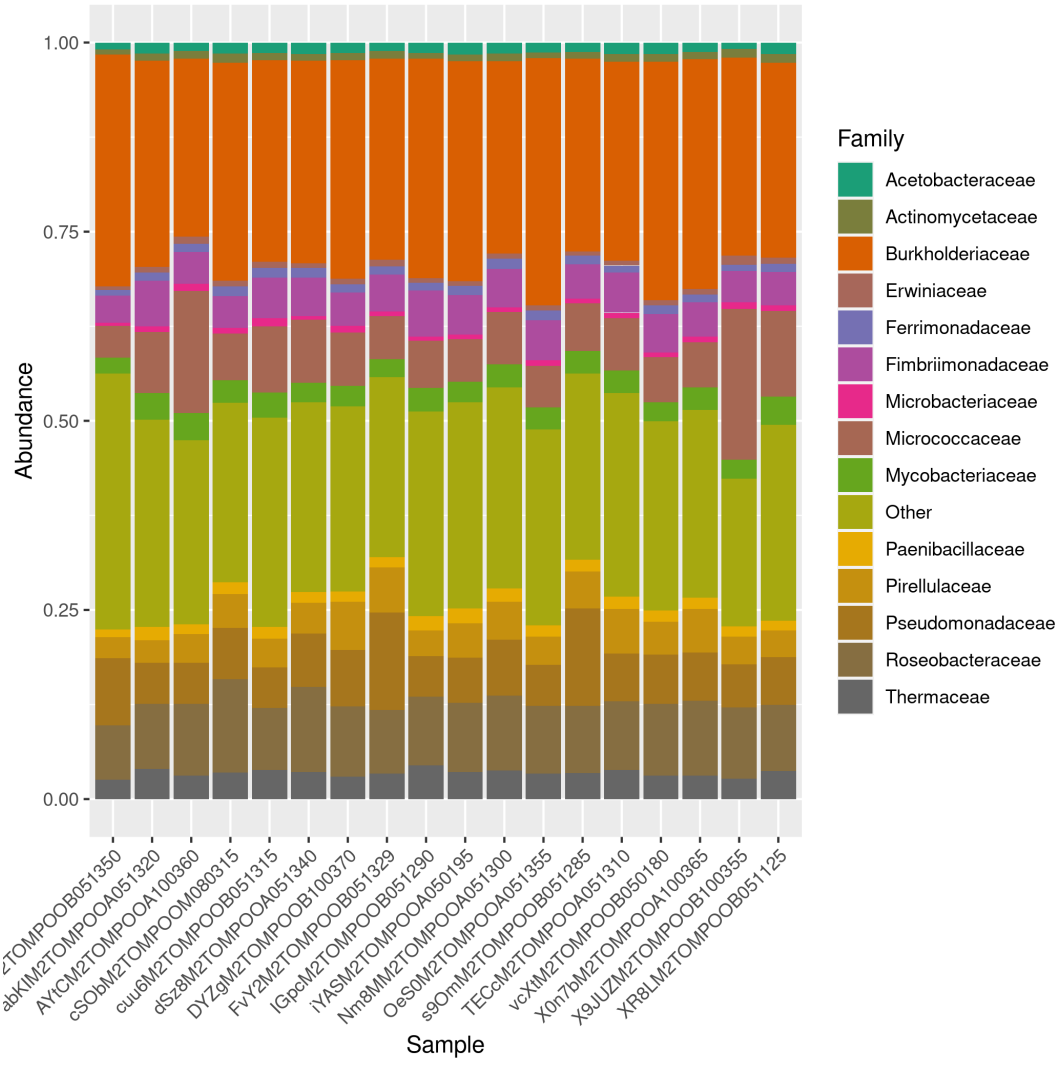

Figure 25: Comparison of reports from random subsamples 9 and 10 by Phylum

	OTU	MeanRA	MedianRA	SE
1479019	Methylobacterium sp. C	0.00007633	0.00007547	0.00000216
299262	Tateyamaria omphali	0.00010673	0.00010456	0.00000349
1858609	Acidovorax sp. T	0.00011493	0.00010232	0.00000968
1658672	Ottowia sp. oral taxon 89	0.00013825	0.00013775	0.00000374
2202141	Chromobacterium phragmiti	0.00011981	0.00011471	0.00000336
658630	Pseudomonas sp. CMR5	0.00008522	0.00007885	0.00000672
1881017	Pseudomonas sp. 7SR	0.00008174	0.00006956	0.00000750
2054919	Pseudomonas sp. S09G 35	0.00004755	0.00004597	0.00000304
2774873	Pseudomonas sp. ADP	0.00005952	0.00004786	0.00000683
2219057	Pseudomonas sp. LG1E	0.00003061	0.00002850	0.00000180
1898684	Pseudomonas sp. LPH	0.00004548	0.00002501	0.00001203
2590776	Pseudomonas sp. NIBRBAC00050277	0.00002328	0.00002083	0.00000190
2774459	Pseudomonas sp. IzPS5	0.00002884	0.00002700	0.00000225
200450	Pseudomonas triviali	0.00007870	0.00007535	0.00000487
183795	Pseudomonas mediterrane	0.00006965	0.00005698	0.00000853
29442	Pseudomonas tolaasi	0.00004854	0.00004475	0.00000300
75588	Pseudomonas libanensi	0.00002296	0.00001980	0.00000186
1691904	Pseudomonas sedimini	0.00007117	0.00004577	0.00001392
1853130	Pseudomonas silesiensi	0.00005116	0.00004823	0.00000342
1434072	Halopseudomonas salegen	0.00005960	0.00005114	0.00000621
1073999	Cronobacter condimenti	0.00002925	0.00002816	0.00000115
2666185	Spiribacter sp. 243	0.00011615	0.00011621	0.00000390
2661612	Pseudodesulfovibrio	0.00004334	0.00004365	0.00000183
1894	Kitasatospora aureofacien	0.00007564	0.00007907	0.00000520
300019	Microbacterium paludicol	0.00003330	0.00002934	0.00000293
256701	Glutamicibacter arilaitensi	0.00004168	0.00004316	0.00000315
1630135	Dermabacter vaginali	0.00007216	0.00007167	0.00000313
83262	Mycobacteroides immunogenu	0.00011016	0.00010334	0.00000493
441500	Corynebacterium timonens	0.00009727	0.00009133	0.00000364
43771	Corynebacterium urealyticu	0.00006312	0.00006273	0.00000245
43770	Corynebacterium striatu	0.00004302	0.00004224	0.00000233
203263	Corynebacterium aquila	0.00003411	0.00003577	0.00000180
2609299	Actinobaculum	0.00004557	0.00004722	0.00000257
35760	Bifidobacterium choerinu	0.00011989	0.00012381	0.00000479
1335613	Gordonibacter urolithinfacien	0.00009591	0.00009744	0.00000181
604330	Parafannyhessea umbonat	0.00011704	0.00011906	0.00000404
1871022	Parolsenella massiliensi	0.00007758	0.00007810	0.00000239
365617	Paenibacillus sabina	0.00004839	0.00004879	0.00000176
2610894	Flintibacter	0.00004748	0.00004828	0.00000247
2614128	Clostridium	0.00005019	0.00004795	0.00000247
42837	Ammonife	0.00007226	0.00007016	0.00000298
92942	Nostoc lincki	0.00002378	0.00001464	0.00000550
2618749	Scytonema	0.00008482	0.00008961	0.00000847
980427	Deinococcus wulumuqiensi	0.00014906	0.00014494	0.00000394
1299	Deinococcus radioduran	0.00012662	0.00012342	0.00000325
310783	Deinococcus desert	0.00009394	0.00009060	0.00000429
454171	Chthonomonas calidirose	0.00007864	0.00007652	0.00000248
290174	Aquimarin	0.00001626	0.00001591	0.00000115
869211	Spirochaeta thermophila	0.00002979	0.00002963	0.00000142
62320	Haloterrigena turkmenic	0.00008121	0.00008087	0.00000363
370324	Natrinema longu	0.00005274	0.00005464	0.00000214
13769	Natrialba magadi	0.00007369	0.00007005	0.00000315
1175445	Methanocella arvoryza	0.00003724	0.00003540	0.00000206
1826872	Candidatus Nitrosocosmicus hydrocol	0.00007780	0.00005223	0.00001720

	OTU	MeanRA	MedianRA	SE
419610	Methylorubrum extorquens	0.00006533	0.00005353	0.00001571
32009	Burkholderia gladioli	0.00004414	0.00004435	0.00000339
640081	Azospira oryzae	0.00006336	0.00005796	0.00000936
2706126	Pseudomonas sp. OIL-	0.00005744	0.00005843	0.00000328
2726989	Pseudomonas sp. gcc2	0.00005071	0.00004922	0.00000329
76760	Pseudomonas rhodesia	0.00004632	0.00004114	0.00000576
553151	Halopseudomonas pelagi	0.00005750	0.00006352	0.00000567
219572	Pseudomonas antarctic	0.00004038	0.00003570	0.00000376
163011	Pseudomonas lin	0.00004752	0.00003619	0.00001561
64187	Xanthomonas oryzae	0.00004090	0.00003884	0.00000303
349967	Yersinia mollaretii	0.00000693	0.00000691	0.00000067
213554	Halomonas campaniensi	0.00000240	0.00000200	0.00000086
28084	Legionella cherri	0.00000718	0.00000570	0.00000212
92644	Streptomyces malaysiensi	0.00003218	0.00003575	0.00000554
67260	Streptomyces cinereorube	0.00002301	0.00002338	0.00000287
556325	Neomicrococcus aestuari	0.00003666	0.00003595	0.00000502
1520670	[Mycobacterium] stephanolepidi	0.00004888	0.00004736	0.00000707
33035	Blautia product	0.00001165	0.00001107	0.00000076
2214	Methanosarcina acetivoran	0.00000506	0.00000397	0.00000123
1903276	Candidatus Nitrosotalea okcheonensi	0.00001042	0.00000944	0.00000316
1410606	Candidatus Nitrosopelagicus brevi	0.00000579	0.00000431	0.00000191
2271	Thermoproteus tena	0.00000577	0.00000552	0.00000157

Table 2: Keystone OTUs of

	OTU	MeanRA	MedianRA	SE
1458461	Candidatus Phaeomarinobacter ectocarp	0.00010969	0.00011098	0.00000502
664962	Azospirillum sp. TSH5	0.00025600	0.00026473	0.00000964
265959	Komagataeibacter saccharivoran	0.00008108	0.00008263	0.00000301
540747	Roseovarius indicu	0.00028936	0.00028946	0.00000572
311180	Alloyangia pacific	0.00027703	0.00027666	0.00000503
101571	Burkholderia ubonensi	0.00030111	0.00029961	0.00000970
179879	Burkholderia anthin	0.00020302	0.00019456	0.00000805
1637853	Burkholderia sp. NRF60-BP	0.00007520	0.00007616	0.00000330
28450	Burkholderia pseudomalle	0.00028979	0.00027932	0.00001318
2735433	Paraburkholderia sp. PGU1	0.00014528	0.00014581	0.00000776
1417228	Paraburkholderia phytofirmans	0.00012977	0.00012522	0.00000523
134537	Paraburkholderia fungoru	0.00023287	0.00022773	0.00001276
1761016	Paraburkholderia caffeinilytic	0.00016107	0.00016257	0.00000629
656178	Pandoraea vervact	0.00017448	0.00017640	0.00000579
2320867	Pseudomonas caverna	0.00024406	0.00019991	0.00003192
1931241	Halopseudomonas phragmiti	0.00007181	0.00007016	0.00000402
364197	Pseudomonas pohangensi	0.00007540	0.00006487	0.00000571
46677	Pseudomonas agaric	0.00005228	0.00004649	0.00000390
549	Pantoea agglomeran	0.00004466	0.00004297	0.00000220
2819280	Acidihalobacter yilgarnensi	0.00011547	0.00011858	0.00000483
550540	Ferrimonas balearica	0.00006810	0.00006783	0.00000238
145458	Rathayibacter toxicu	0.00004330	0.00004355	0.00000240
2649579	Kocuria	0.00018552	0.00018052	0.00000885
85085	Pseudarthrobacter chlorophenolicu	0.00020598	0.00014120	0.00003691
121292	Pseudarthrobacter sulfonivoran	0.00009350	0.00007732	0.00001262
2593973	Ornithinimicrobium pratens	0.00022492	0.00022325	0.00000936
126673	Mycolicibacterium doricu	0.00017894	0.00018047	0.00000638
1661	Trueperella pyogene	0.00005859	0.00006066	0.00000199
49283	Paenibacillus thiaminolyticu	0.00009204	0.00009356	0.00000363
186192	Marinithermus hydrothermali	0.00021079	0.00020931	0.00000722
2509675	Ktedonosporobacter rubrisol	0.00012649	0.00011891	0.00001055
1005039	Fimbriimonas ginsengisol	0.00029796	0.00029765	0.00001108
125	Pirellula staley	0.00027144	0.00023236	0.00001909
128	Isosphaera pallid	0.00026970	0.00026452	0.00001368
2703788	Edaphobacter sp. 12200R-10	0.00028184	0.00021699	0.00007508
2643768	Halorussus	0.00011966	0.00012219	0.00000403
1353260	Candidatus Nitrosocosmicus oleophilu	0.00009234	0.00008950	0.00000769

Table 3: Keystone OTUs of *Solanum lycopersicum* with mean and median relative abundance and standard error.