

Gastric microbiome of Indian patients with *Helicobacter pylori* infection, and their interaction networks

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The following supplementary data includes information which has been used in this study.

The supplementary figure and legends along with supplementary tables and their respective titles are as follows.

Supplementary information

Supplementary Figure S1: OTU level abundance profile of the reported Indian cohort.

Supplementary Figure S2: Heat map showing PCA loadings of genera onto the first 2 principal components, for all the samples.

Supplementary Figure S3: Heat map showing PCA loadings of genera onto the first 2 principal components, for samples other than Chinese_Study_2.

Supplementary Figure S4: Heatmap of ranked median abundances of each microbial genera present in the considered studies, showing geography-based clustering.

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Supplementary Figure S7: Co-occurrence network of microbial genera present in samples from Chinese study 2.

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from Chinese study 2.

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Supplementary Figure S13: Variation of Shannon diversity with *Wolinella* abundance, as calculated for Chinese study 2.

Supplementary Figure S14: Variation of Shannon diversity with *Helicobacter* abundance, as calculated for Colombian study.

Supplementary Table S1: Sample IDs of subjects of reported Indian cohort, with corresponding age and gender information along with group affiliation.

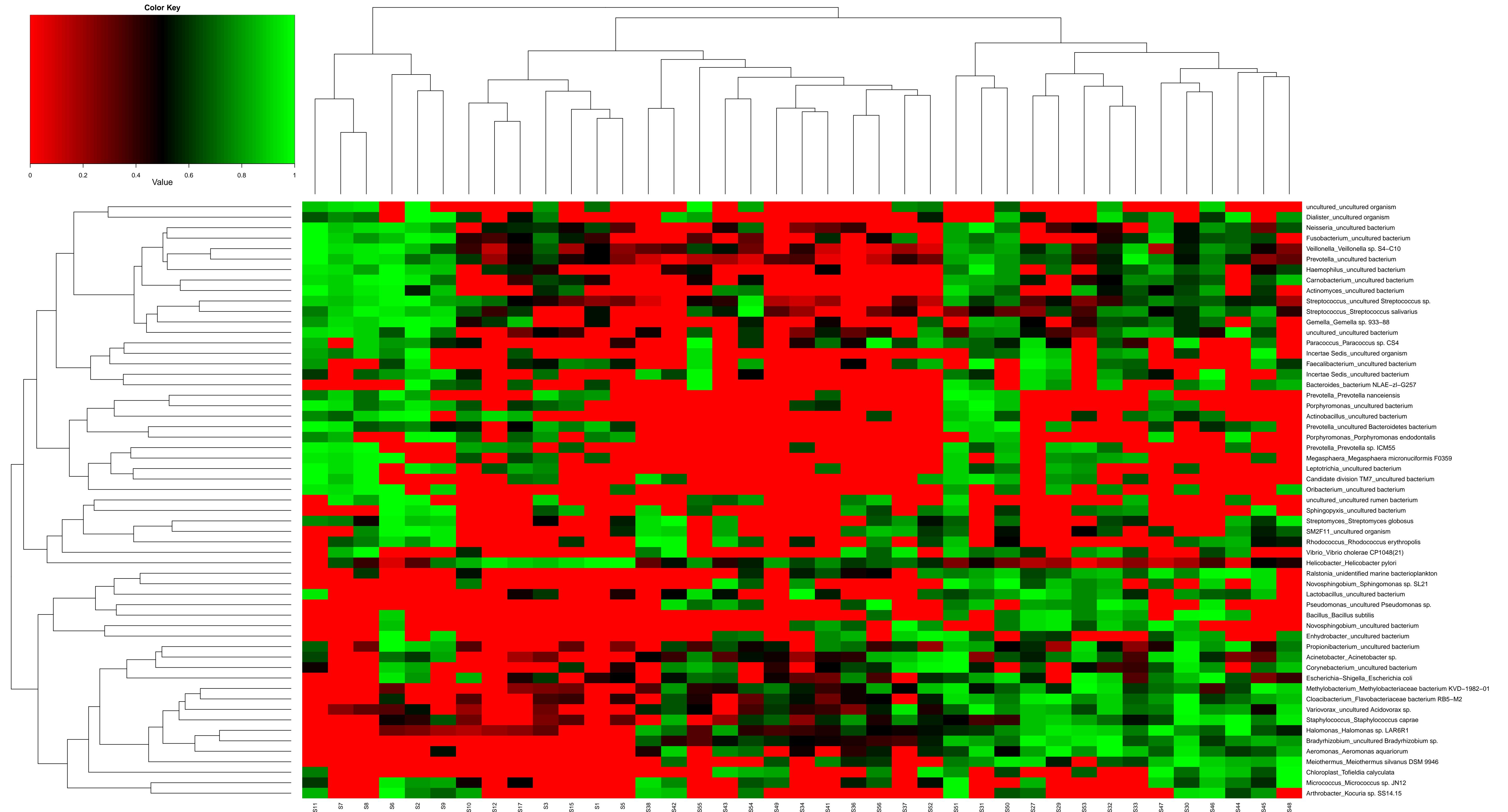
Supplementary Table S2: Taxonomic lineage from classification of Operational Taxonomic Units (OTUs).

Supplementary Table S3: Microbial genera and corresponding lowest taxa affiliation identified at OTU level.

Supplementary Table S4: Microbial genera identified in reported Indian cohort and corresponding cluster affiliations.

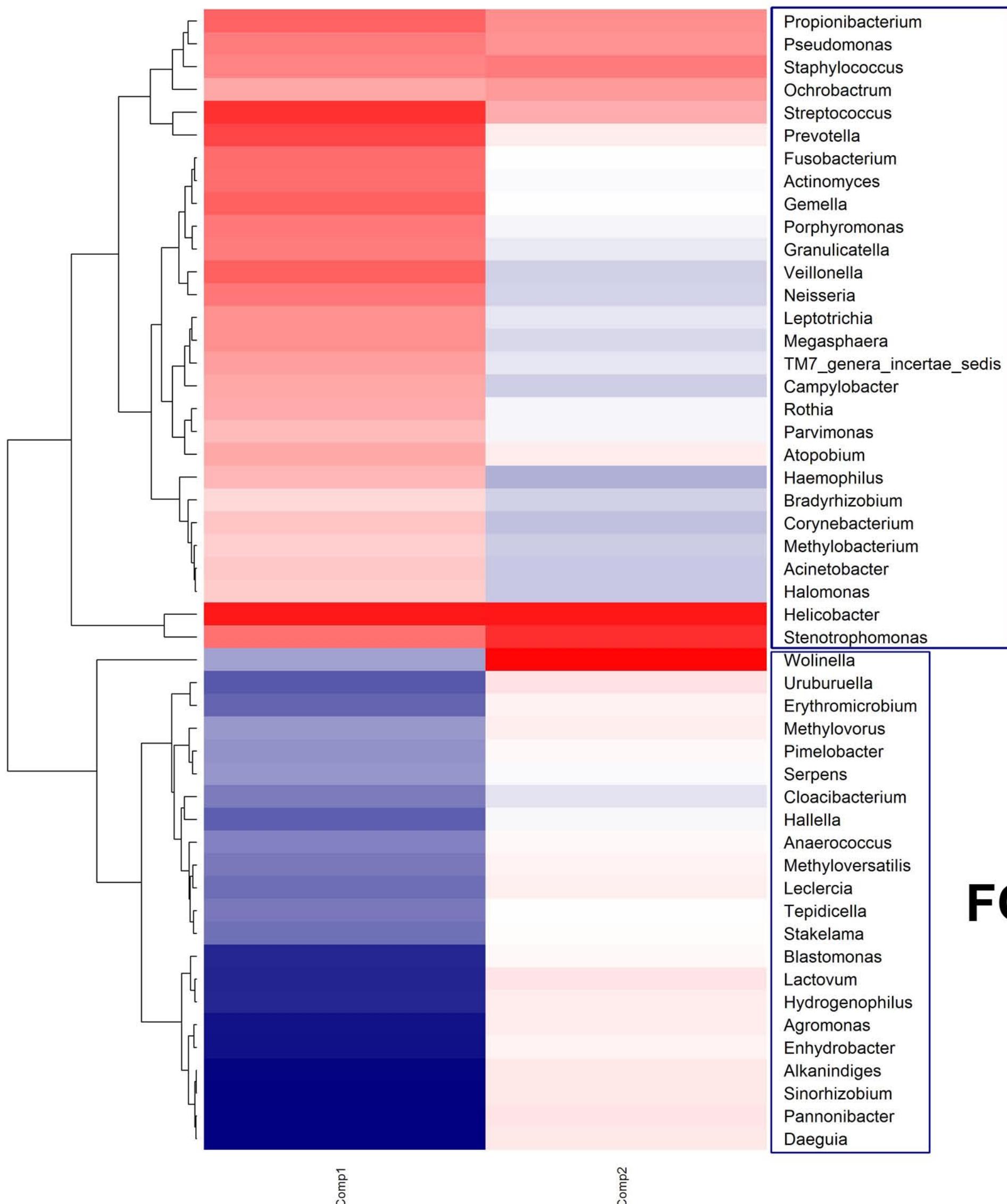
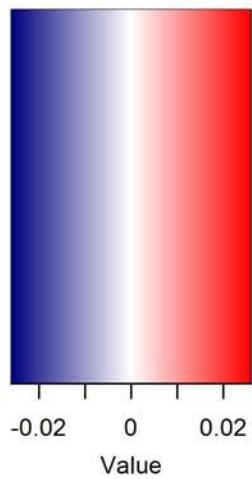
Supplementary Table S5: Sample ids and sequencing information of each sample.

Supplementary Figure S1: OTU level abundance profile of the reported Indian cohort.



Supplementary Figure S2: Heat map showing PCA loadings of genera onto the first 2 principal components, for all the samples.

Color Key

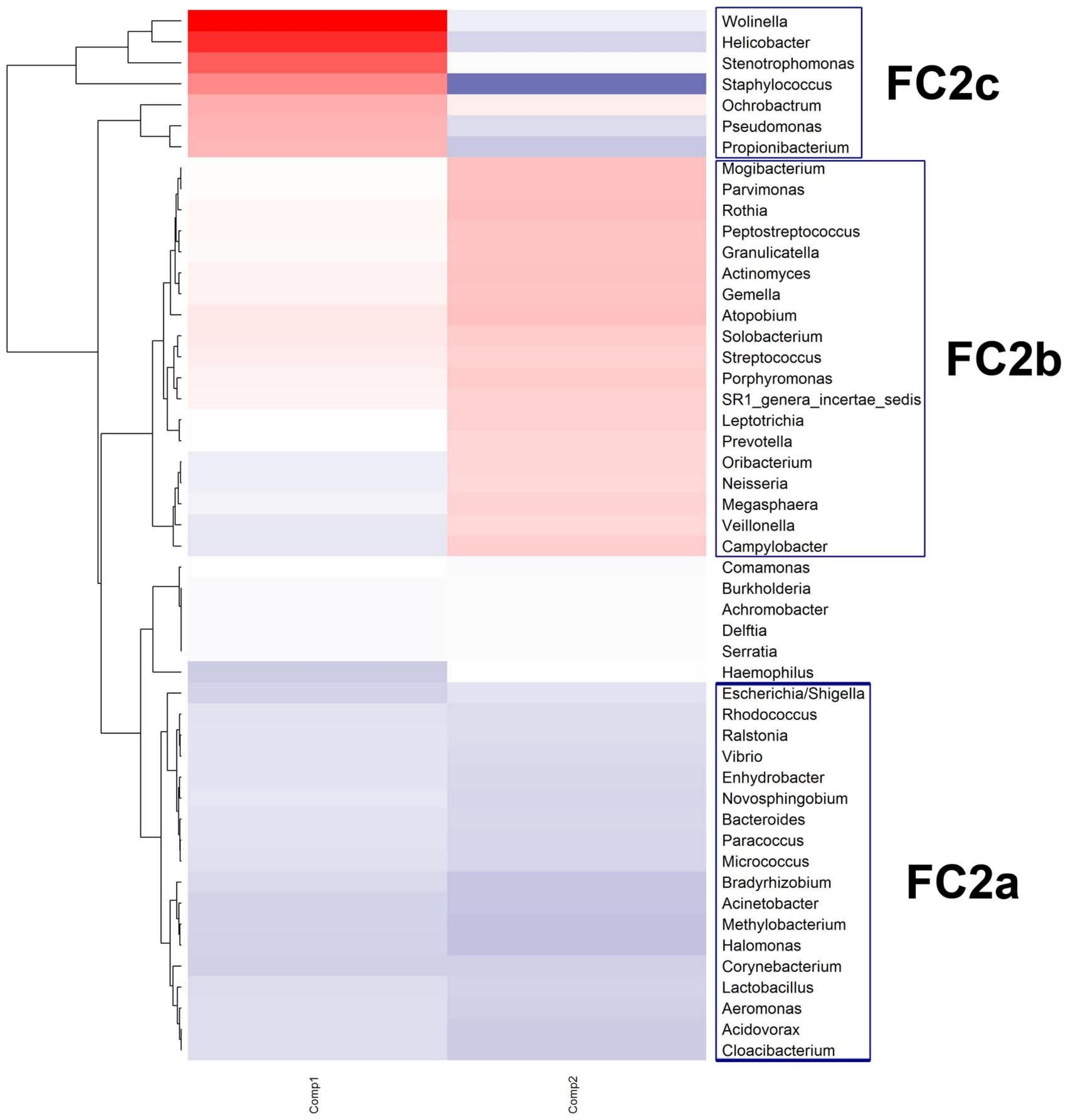
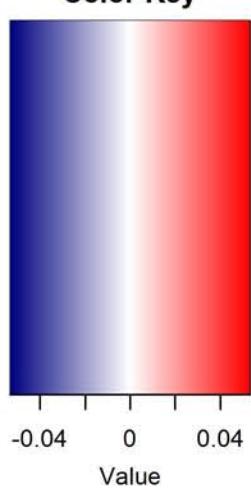


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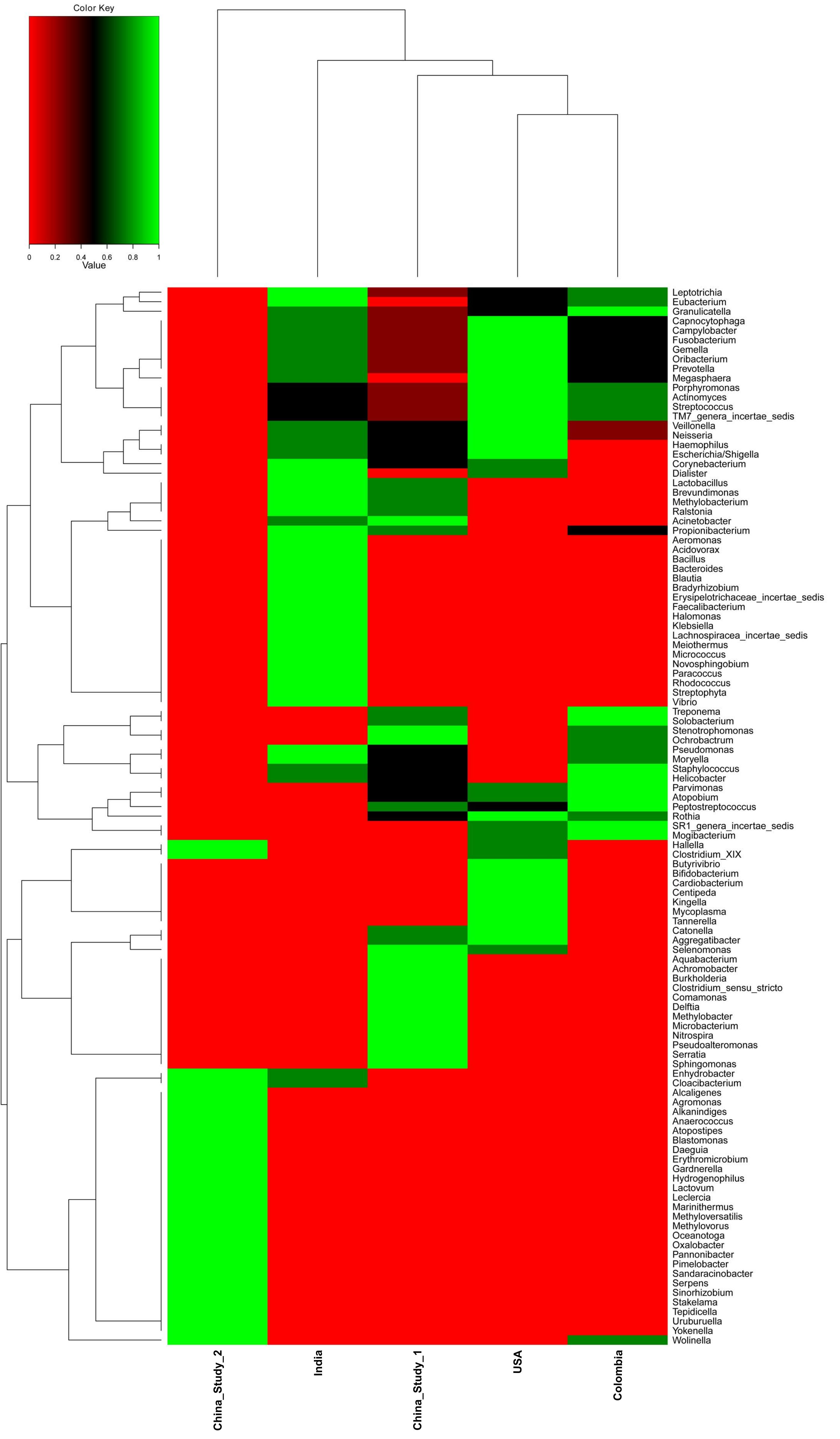
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Supplementary Figure S3: Heat map showing PCA loadings of genera onto the first 2 principal components, for samples other than Chinese_Study_2.

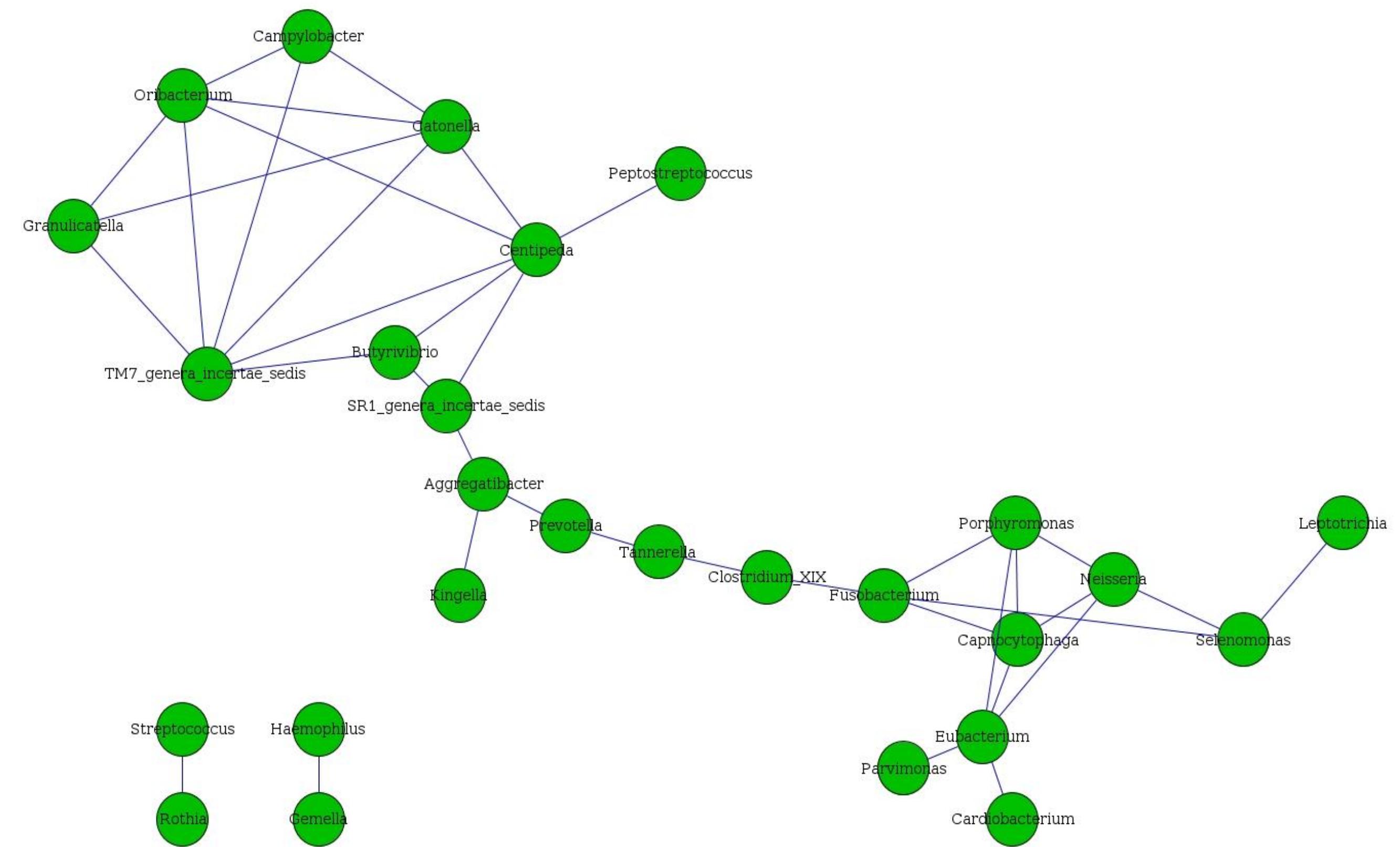
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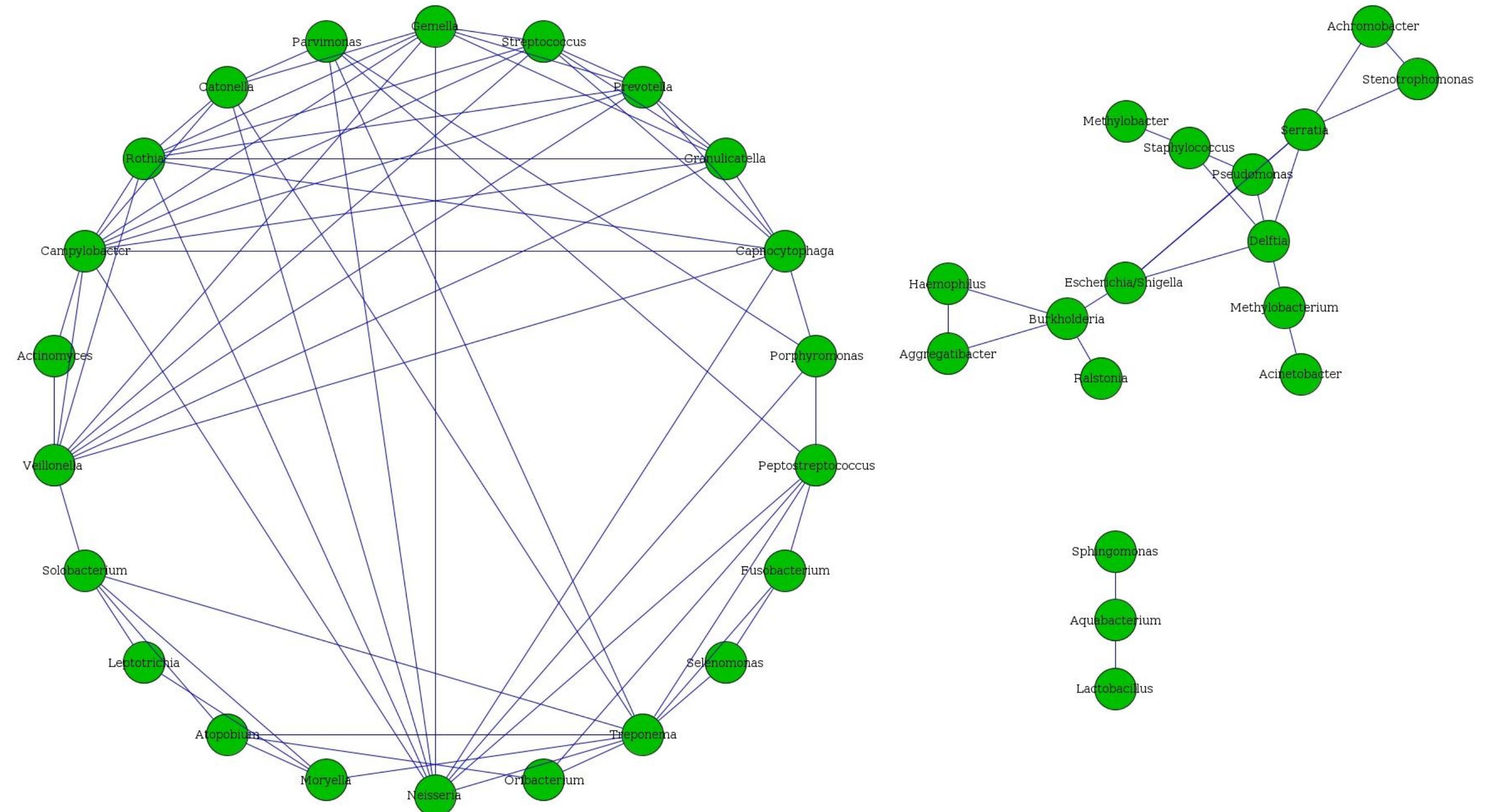
Supplementary Figure S4: Heat map of ranked median abundances of each microbial genera present in the considered studies, showing geography-based clustering.



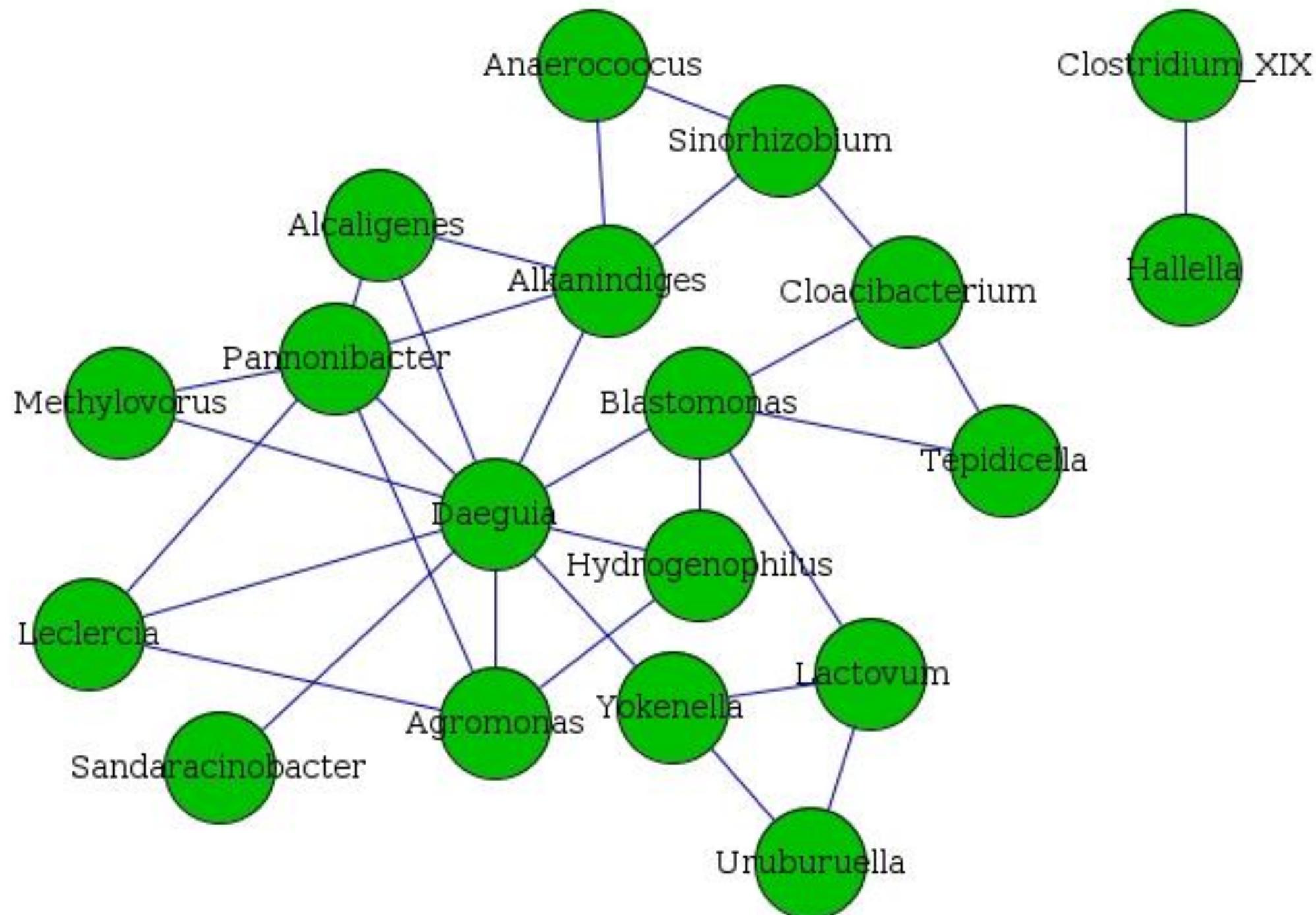
Supplementary Figure S5: Co-occurrence network of microbial genera present in samples from USA



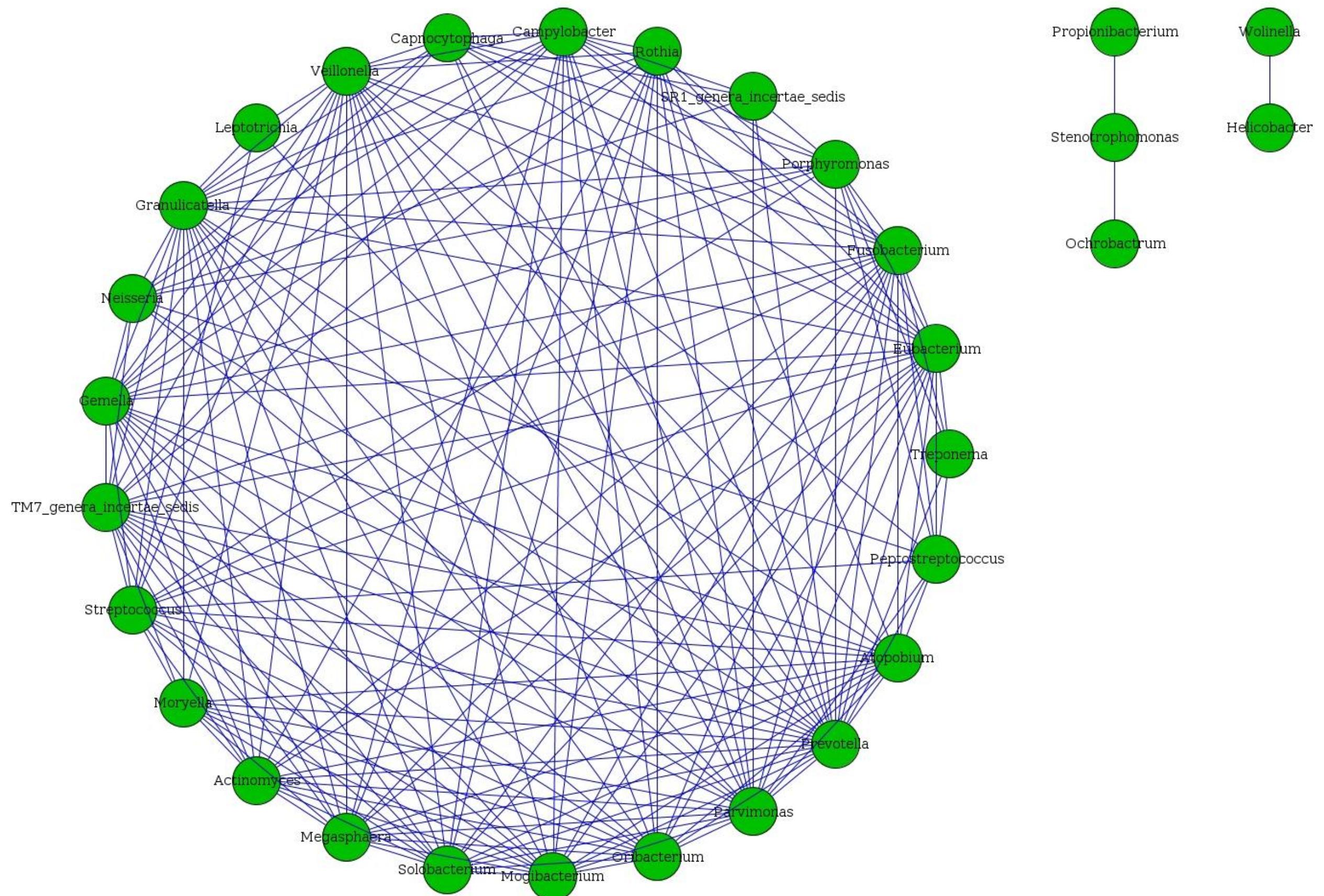
Supplementary Figure S6: Co-occurrence network of microbial genera present in samples from Chinese study 1



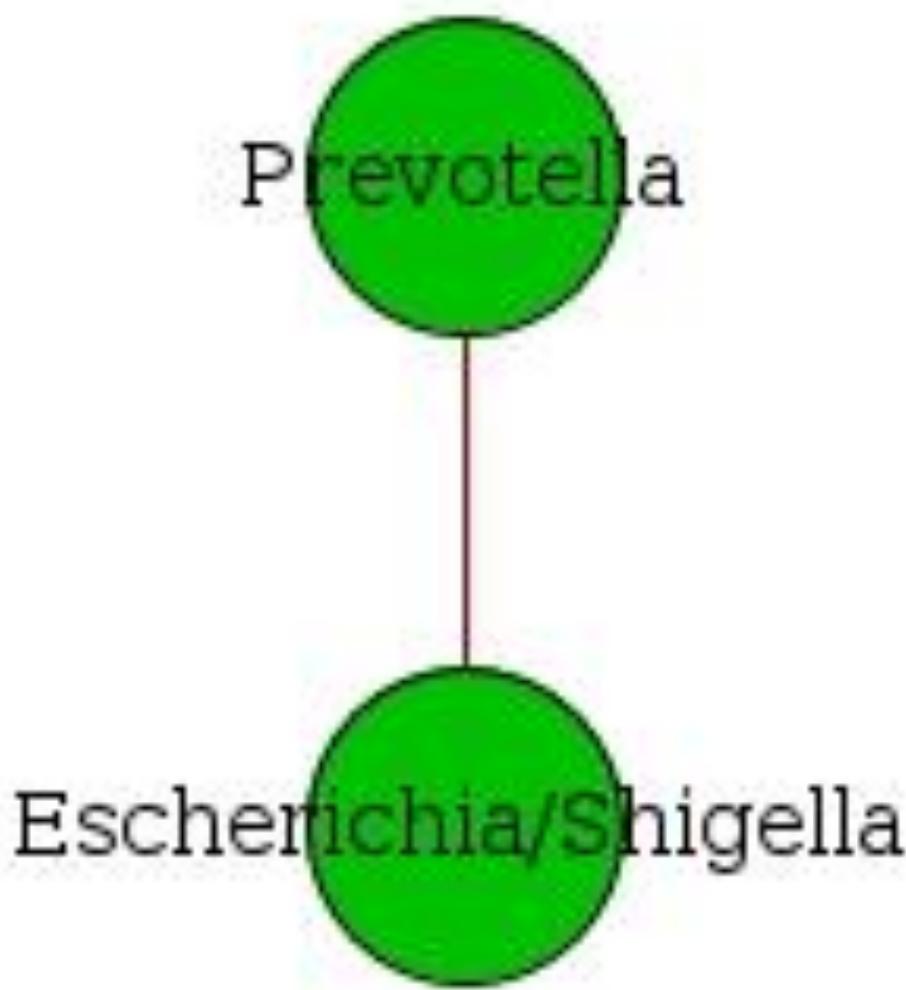
Supplementary Figure S7: Co-occurrence network of microbial genera present in samples from Chinese study 2



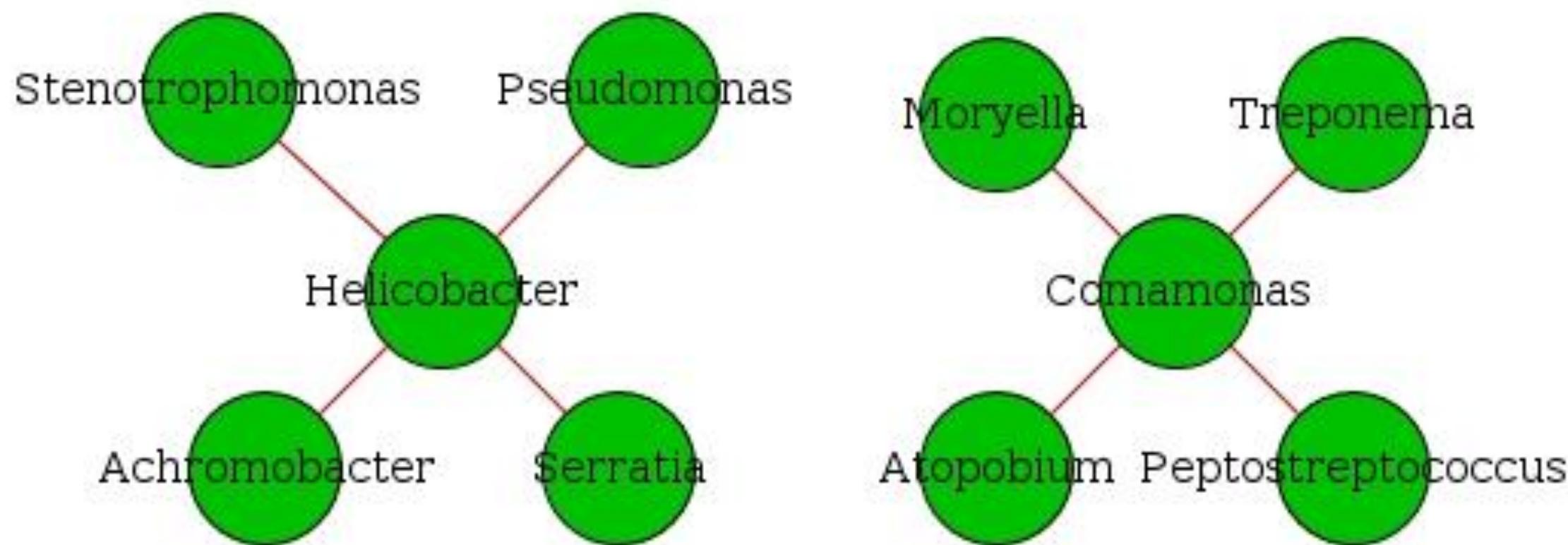
Supplementary Figure S8: Co-occurrence network of microbial genera present in samples from Colombian study



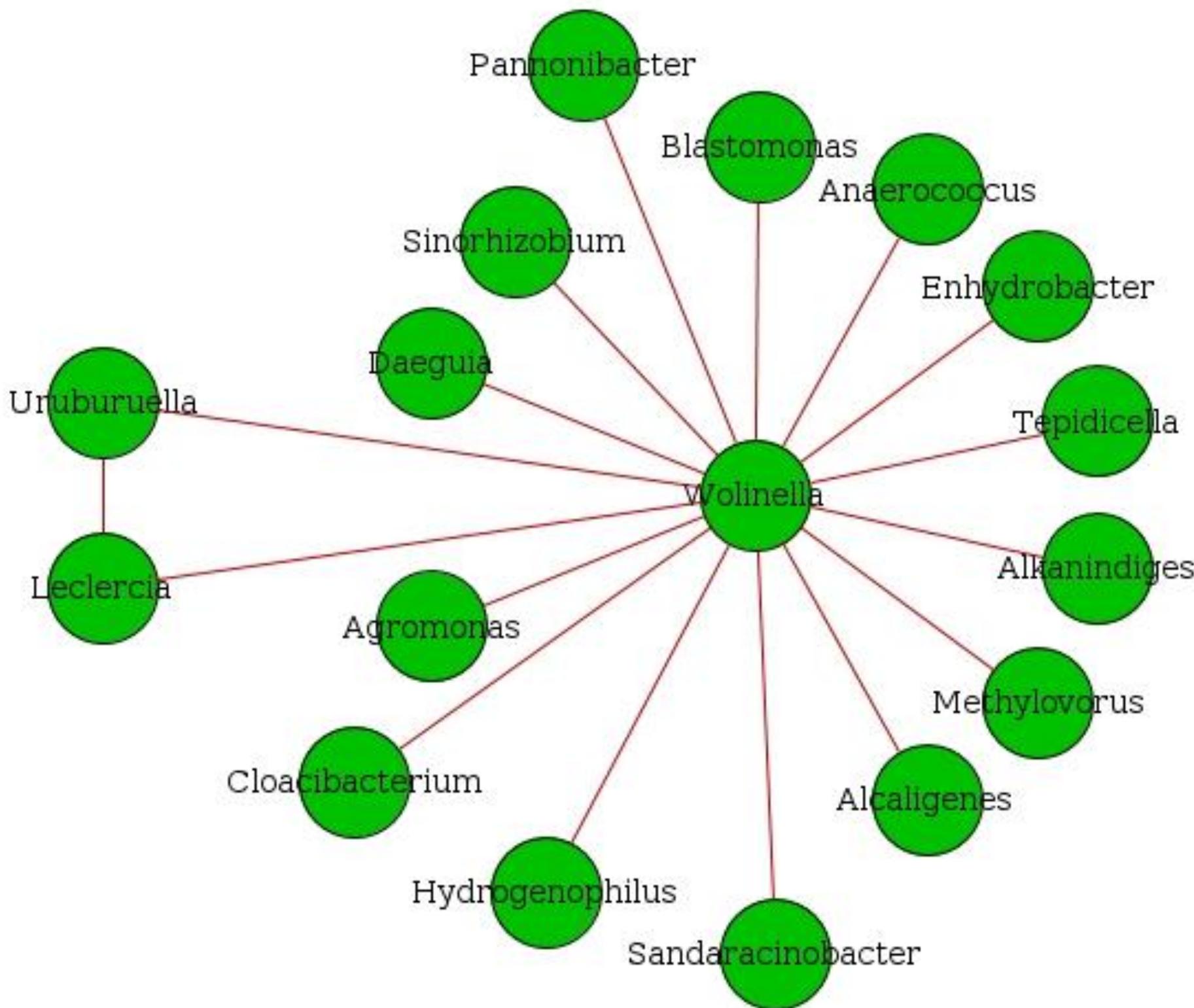
Supplementary Figure S9: Negative interaction network of microbial genera present in samples from USA



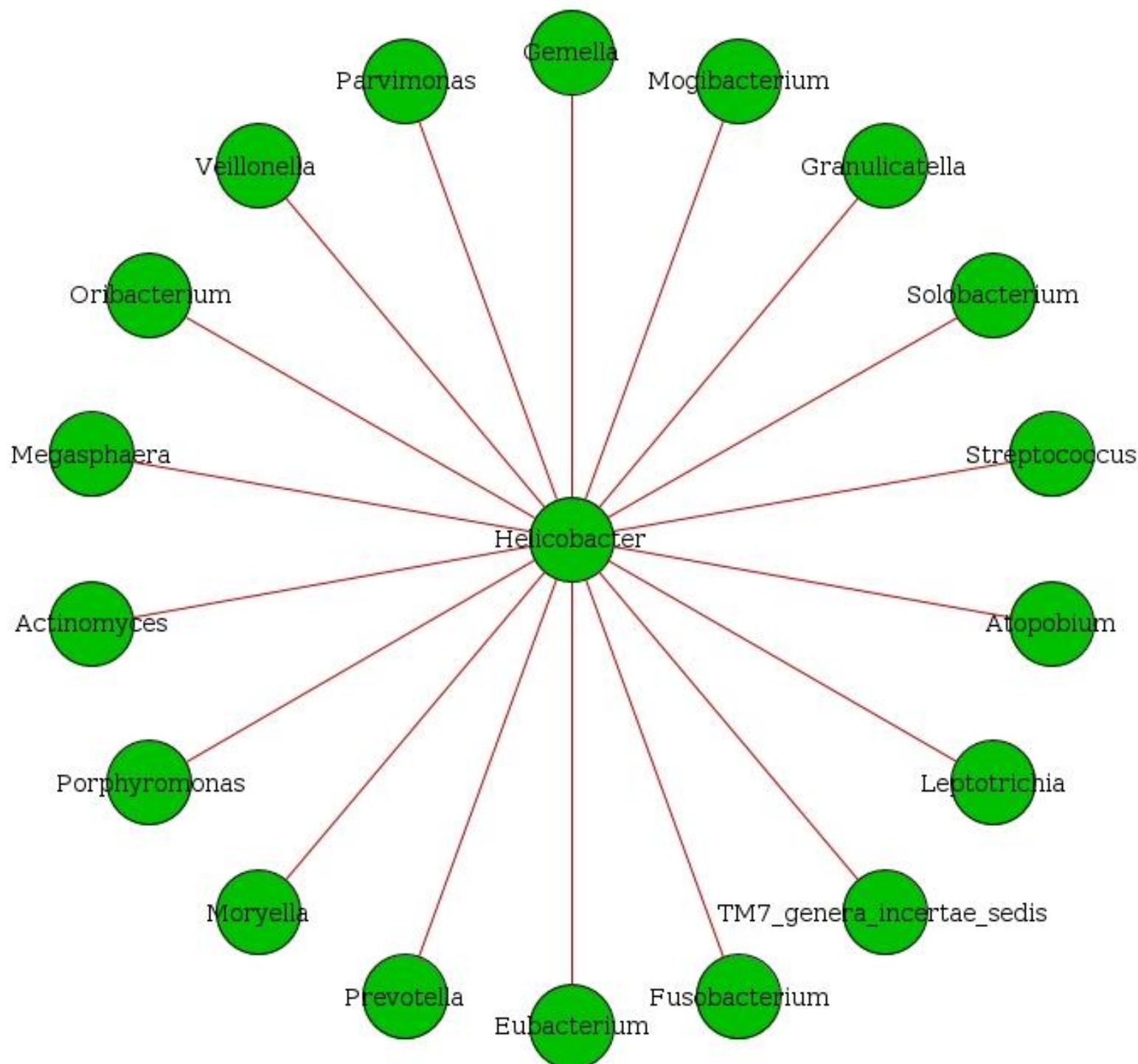
Supplementary Figure S10: Negative interaction network of microbial genera present in samples from Chinese study 1



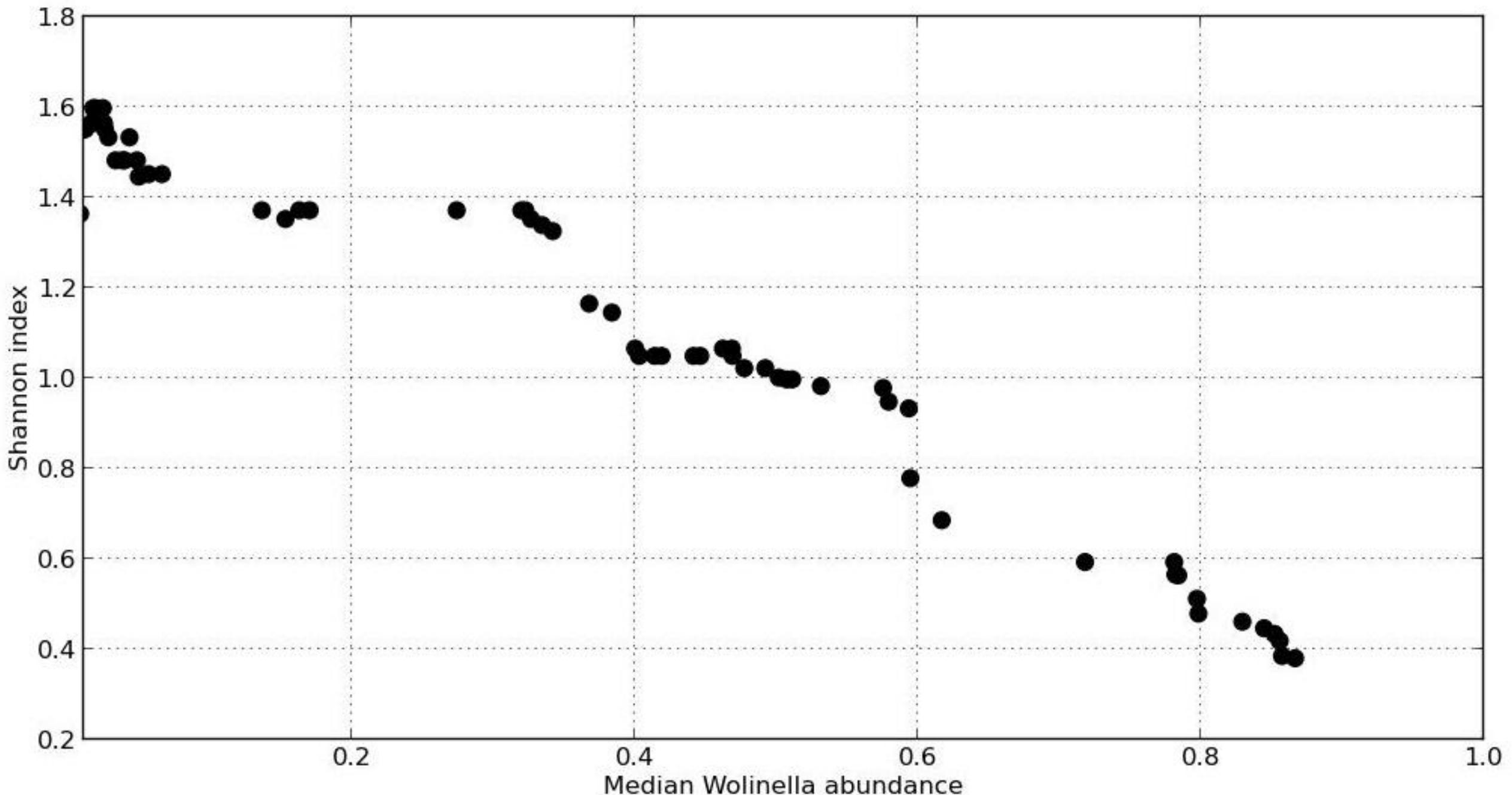
Supplementary Figure S11: Negative interaction network of microbial genera present in samples from Chinese study 2



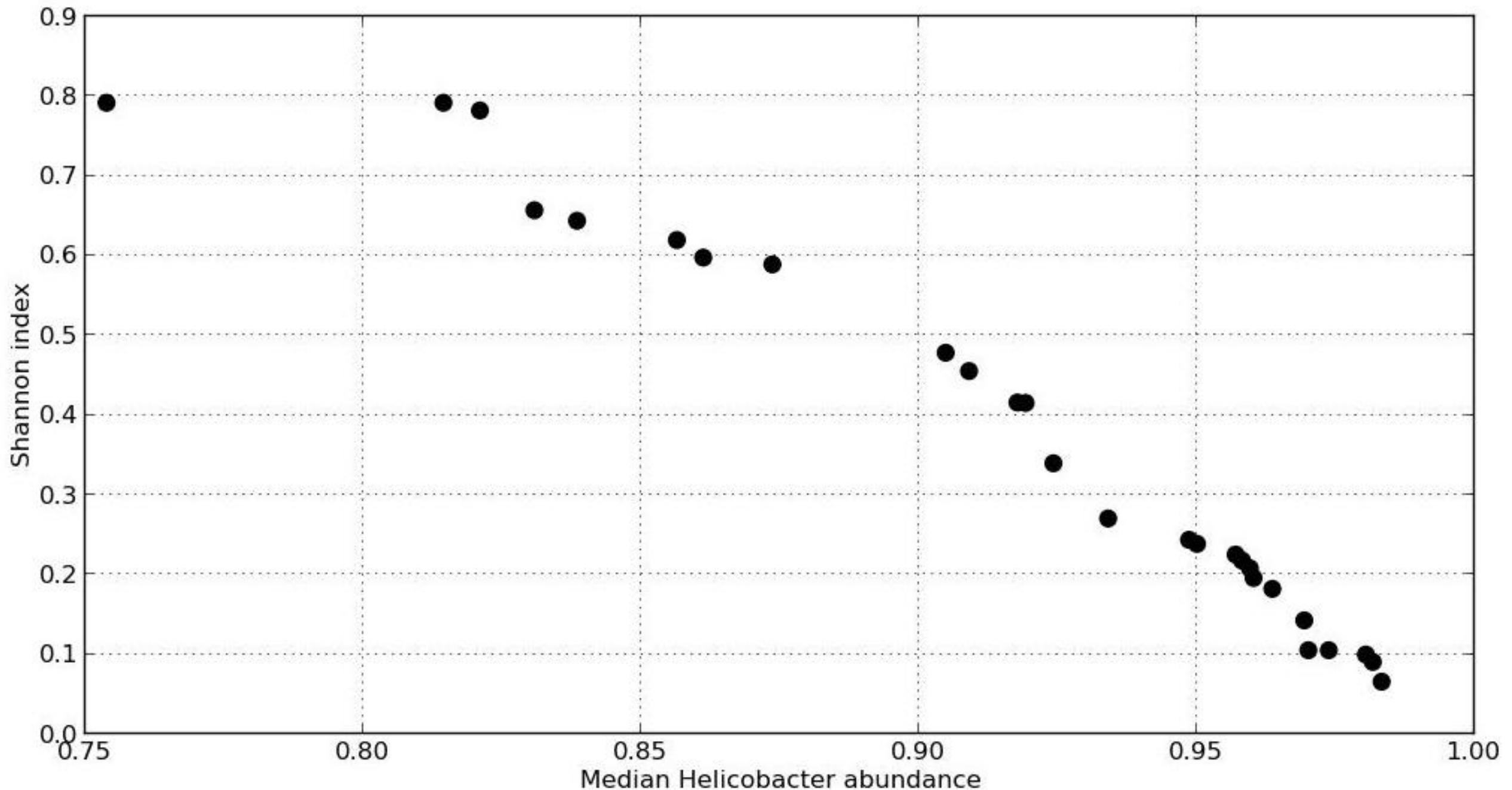
Supplementary Figure S12: Negative interaction network of microbial genera present in samples from Colombian study



Supplementary Figure S13: Variation of Shannon diversity with *Wolinella* abundance, as calculated for Chinese study 2



Supplementary Figure S14: Variation of Shannon diversity with *Helicobacter* abundance, as calculated for Colombian study



Supplementary Table S1: Sample IDs of subjects of reported Indian cohort, with corresponding age and gender information along with group affiliation.

SAMPLE ID	Age	Gender	Sample_Group	SAMPLE ID	Age	Gender	Sample_Group
S1	24	Male	G3	S36	53	Male	G4
S2	54	Male	G2	S37	22	Male	G4
S3	40	Male	G3	S38	56	Male	G4
S5	43	Female	G3	S41	45	Female	G4
S6	85	Female	G2	S42	45	Female	G4
S7	27	Male	G2	S43	55	Male	G4
S8	56	Male	G2	S44	25	Female	G1
S9	24	Male	G2	S45	34	Female	G1
S10	34	Male	G3	S46	45	Female	G1
S11	79	Male	G2	S47	45	Male	G1
S12	30	Female	G3	S48	41	Male	G4
S15	85	Male	G3	S49	60	Female	G4
S17	31	Female	G3	S50	28	Female	G1
S27	21	Male	G1	S51	45	Female	G1
S29	48	Male	G1	S52	48	Male	G4
S30	52	Male	G1	S53	43	Male	G4
S31	29	Male	G1	S54	38	Female	G4
S32	78	Male	G1	S55	52	Female	G3
S33	60	Female	G1	S56	46	Female	G4
S34	62	Male	G3				

Supplementary Table S2: Taxonomic lineage from classification of Operational Taxonomic Units (OTUs).

OTU_LIST	LINEAGE
OTU1	Bacteria;Proteobacteria;Betaproteobacteria;Burkholderiales;Comamonadaceae;Variovorax;uncultured Acidovorax sp.
OTU3	Bacteria;Bacteroidetes;Flavobacteria;Flavobacteriales;Flavobacteriaceae;Cloacibacterium;Flavobacteriaceae bacterium RB5-M2
OTU5	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU6	Bacteria;Proteobacteria;Betaproteobacteria;Neisseriales;Neisseriaceae;Neisseria;uncultured bacterium
OTU7	Bacteria;Actinobacteria;Actinobacteria;Micrococcales;Micrococcaceae;Micrococcus;Micrococcus sp. JN12
OTU8	Bacteria;Proteobacteria;Gammaproteobacteria;Oceanospirillales;Halomonadaceae;Halomonas;Halomonas sp. LAR6R1
OTU12	Bacteria;Firmicutes;Bacilli;Lactobacillales;Streptococcaceae;Streptococcus;uncultured Streptococcus sp.
OTU14	Bacteria;Firmicutes;Negativicutes;Selenomonadales;Veillonellaceae;Veillonella;Veillonella sp. S4-C10
OTU15	Bacteria;Firmicutes;Clostridia;Clostridiales;Ruminococcaceae;Faecalibacterium;uncultured bacterium
OTU16	Bacteria;Proteobacteria;Gammaproteobacteria;Enterobacteriales;Enterobacteriaceae;Escherichia-Shigella;Escherichia coli
OTU17	Bacteria;Proteobacteria;Gammaproteobacteria;Pasteurellales;Pasteurellaceae;Actinobacillus;uncultured bacterium
OTU20	Bacteria;Fusobacteria;Fusobacterii;Fusobacteriales;Fusobacteriaceae;Fusobacterium;uncultured bacterium
OTU23	Bacteria;Firmicutes;Bacilli;Lactobacillales;Carnobacteriaceae;Carnobacterium;uncultured bacterium
OTU27	Bacteria;Proteobacteria;Alphaproteobacteria;Rhizobiales;Bradyrhizobiaceae;Bradyrhizobium;uncultured Bradyrhizobium sp.
OTU31	Bacteria;Proteobacteria;Epsilonproteobacteria;Campylobacteriales;Helicobacteraceae;Helicobacter;Helicobacter pylori
OTU33	Bacteria;Candidate division TM7;uncultured bacterium
OTU37	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Bacteroidaceae;Bacteroides;bacterium NLAE-zl-G257
OTU44	Bacteria;Proteobacteria;Alphaproteobacteria;Rhodobacteriales;Rhodobacteraceae;Paracoccus;Paracoccus sp. CS4
OTU56	Bacteria;SM2F11;uncultured organism
OTU60	Bacteria;Deinococcus-Thermus;Deinococci;Thermales;Thermaceae;Meiothermus;Meiothermus silvanus DSM 9946
OTU61	Bacteria;Actinobacteria;Actinobacteria;Streptomycetales;Streptomycetaceae;Streptomyces;Streptomyces globosus
OTU73	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU76	Bacteria;Cyanobacteria;Chloroplast;Tofieldia calyculata
OTU86	Bacteria;Proteobacteria;Alphaproteobacteria;Sphingomonadales;Sphingomonadaceae;Sphingopyxis;uncultured bacterium
OTU100	Bacteria;Proteobacteria;Gammaproteobacteria;Chromatiales;Chromatiaceae;Nitrosococcus;uncultured bacterium
OTU111	Bacteria;Actinobacteria;Actinobacteria;Streptomycetales;Streptomycetaceae;Streptomyces;Streptomyces globosus
OTU133	Bacteria;Firmicutes;Clostridia;Clostridiales;Ruminococcaceae;uncultured;uncultured rumen bacterium
OTU186	Bacteria;Proteobacteria;Gammaproteobacteria;Pseudomonadales;Pseudomonadaceae;Pseudomonas;uncultured bacterium
OTU264	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Porphyromonadaceae;Porphyromonas;uncultured bacterium
OTU345	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;Prevotella sp. ICM55
OTU350	Bacteria;Firmicutes;Clostridia;Clostridiales;Family XIII Incertae Sedis;Incertae Sedis;[Eubacterium] sulci
OTU357	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Porphyromonadaceae;Porphyromonas;Porphyromonas endodontalis
OTU358	Bacteria;Proteobacteria;Alphaproteobacteria;Rhizobiales;Methylobacteriaceae;Methylobacterium;Methylobacteriaceae bacterium KVD-1982-01
OTU359	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU363	Bacteria;Actinobacteria;Actinobacteria;Propionibacteriales;Propionibacteriaceae;Propionibacterium;uncultured bacterium
OTU372	Bacteria;Proteobacteria;Gammaproteobacteria;Pseudomonadales;Moraxellaceae;Acinetobacter;Acinetobacter sp.
OTU373	Bacteria;Proteobacteria;Gammaproteobacteria;Pseudomonadales;Moraxellaceae;Enhydrobacter;uncultured bacterium
OTU375	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;Prevotella nanceiensis
OTU381	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured Bacteroidetes bacterium
OTU385	Bacteria;Proteobacteria;Epsilonproteobacteria;Campylobacteriales;Campylobacteraceae;Campylobacter;Campylobacter concisus UNSWCD
OTU386	Bacteria;Firmicutes;Bacilli;Bacillales;Family XI Incertae Sedis;Gemella;Gemella sp. 933-88
OTU394	Bacteria;Proteobacteria;Alphaproteobacteria;Sphingomonadales;Sphingomonadaceae;Novosphingobium;Sphingomonas sp. SL21
OTU400	Bacteria;Proteobacteria;Alphaproteobacteria;Caulobacterales;Caulobacteraceae;Brevundimonas;uncultured Brevundimonas sp.

OTU404	Bacteria;Firmicutes;Negativicutes;Selenomonadales;Veillonellaceae;Dialister;uncultured organism
OTU455	Bacteria;Proteobacteria;Betaproteobacteria;Burkholderiales;Burkholderiaceae;Ralstonia;unidentified marine bacterioplankton
OTU456	Bacteria;Actinobacteria;Actinobacteria;Actinomycetales;Actinomycetaceae;Actinomyces;uncultured bacterium
OTU463	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU468	Bacteria;Firmicutes;Bacilli;Lactobacillales;Lactobacillaceae;Lactobacillus;uncultured bacterium
OTU481	Bacteria;Actinobacteria;Actinobacteria;Corynebacteriales;Corynebacteriaceae;Corynebacterium;uncultured bacterium
OTU482	Bacteria;Actinobacteria;Actinobacteria;Corynebacteriales;Nocardiaceae;Rhodococcus;Rhodococcus erythropolis
OTU520	Bacteria;Firmicutes;Bacilli;Lactobacillales;Lactobacillaceae;Lactobacillus;uncultured bacterium
OTU552	Bacteria;Firmicutes;Clostridia;Clostridiales;Lachnospiraceae;Stomatobaculum;Stomatobaculum longum
OTU553	Bacteria;Proteobacteria;Gammaproteobacteria;Vibrionales;Vibrionaceae;Vibrio;Vibrio cholerae CP1048(21)
OTU560	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU564	Bacteria;Firmicutes;Negativicutes;Selenomonadales;Veillonellaceae;Megasphaera;Megasphaera micronuciformis F0359
OTU565	Bacteria;Actinobacteria;Actinobacteria;Corynebacteriales;Corynebacteriaceae;Corynebacterium;uncultured bacterium
OTU579	Bacteria;Firmicutes;Clostridia;Clostridiales;Lachnospiraceae;Oribacterium;uncultured bacterium
OTU585	Bacteria;Firmicutes;Clostridia;Clostridiales;Lachnospiraceae;Lachnoanaerobaculum;uncultured organism
OTU611	Bacteria;Proteobacteria;Gammaproteobacteria;Aeromonadales;Aeromonadaceae;Aeromonas;Aeromonas aquariorum
OTU613	Bacteria;Firmicutes;Bacilli;Bacillales;Staphylococcaceae;Staphylococcus;Staphylococcus caprae
OTU659	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU661	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;uncultured bacterium
OTU668	Bacteria;Firmicutes;Bacilli;Lactobacillales;Lactobacillaceae;Lactobacillus;uncultured bacterium
OTU679	Bacteria;Proteobacteria;Gammaproteobacteria;Pseudomonadales;Pseudomonadaceae;Pseudomonas;uncultured Pseudomonas sp.
OTU704	Bacteria;Bacteroidetes;Bacteroidia;Bacteroidales;Prevotellaceae;Prevotella;Prevotella nigrescens ATCC 33563
OTU729	Bacteria;Firmicutes;Bacilli;Lactobacillales;Streptococcaceae;Streptococcus;Streptococcus salivarius
OTU731	Bacteria;Proteobacteria;Gammaproteobacteria;Pseudomonadales;Pseudomonadaceae;Pseudomonas;Pseudomonas stutzeri
OTU732	Bacteria;Proteobacteria;Gammaproteobacteria;Pasteurellales;Pasteurellaceae;Haemophilus;uncultured bacterium
OTU757	Bacteria;Actinobacteria;Actinobacteria;Micrococcales;Micrococcaceae;Arthrobacter;Kocuria sp. SS14.15
OTU763	Bacteria;Proteobacteria;Alphaproteobacteria;Sphingomonadales;Sphingomonadaceae;Novosphingobium;uncultured bacterium

Supplementary Table S3: Microbial genera and corresponding lowest taxa affiliation identified at OTU level.

Genera	Lowest Taxa Level
Acidovorax	Acidovorax_sp
Acinetobacter	Acinetobacter_sp
Actinomyces	Actinomyces_uncultured_bacterium
Aeromonas	Aeromonas_aquariorum
Bacteroides	Bacteroides_bacterium_NLAE-zl-G257
Bradyrhizobium	uncultured_Bradyrhizobium_sp
Brevundimonas	uncultured_Brevundimonas_sp
Campylobacter	Campylobacter_concisis_UNSWCD
Corynebacterium	Corynebacterium_uncultured_bacterium1
Corynebacterium	Corynebacterium_uncultured_bacterium2
Dialister	Dialister_uncultured_organism
Enhydrobacter	Enhydrobacter_uncultured_bacterium
Escherichia	Escherichia_coli
Faecalibacterium	Faecalibacterium_bacterium
Fusobacterium	Fusobacterium_uncultured_bacterium
Gemella	Gemella_sp_933-88
Haemophilus	Haemophilus_uncultured_bacterium
Halomonas	Halomonas_sp_LAR6R1
Helicobacter	Helicobacter_pylori
Lachnospiracea_incertae_sedis	Lachnoanaerobaculum_uncultured_organism
Lactobacillus	Lactobacillus_uncultured_bacterium1
Lactobacillus	Lactobacillus_uncultured_bacterium2
Lactobacillus	Lactobacillus_uncultured_bacterium3
Megasphaera	Megasphaera_micronuciformis_F0359
Meiothermus	Meiothermus_silvanus_DSM_9946
Micrococcus	Micrococcus_sp_JN12
Neisseria	Neisseria_uncultured_bacterium
Novosphingobium	Novosphingobium_uncultured_bacterium
Oribacterium	Oribacterium_uncultured_bacterium
Paracoccus	Paracoccus_sp_CS4
Porphyromonas	Porphyromonas_uncultured_bacterium
Prevotella	Prevotella_uncultured_bacterium1
Prevotella	Prevotella_uncultured_bacterium2
Prevotella	Prevotella_sp_ICM55
Prevotella	Prevotella_uncultured_bacterium3
Prevotella	Prevotella_nanceiensis
Prevotella	Prevotella_uncultured_bacterium4
Prevotella	Prevotella_uncultured_bacterium5
Prevotella	Prevotella_uncultured_bacterium6
Prevotella	Prevotella_uncultured_bacterium7
Prevotella	Prevotella_uncultured_bacterium8
Prevotella	Prevotella_nigrescens_ATCC_33563

Propionibacterium	Propionibacterium_uncultured_bacterium
Pseudomonas	Pseudomonas_uncultured_bacterium
Pseudomonas	uncultured_Pseudomonas_sp
Pseudomonas	Pseudomonas_stutzeri
Ralstonia	Ralstonia_unidentified_marine_bacterioplankton
Rhodococcus	Rhodococcus_erythropolis
Staphylococcus	Staphylococcus_caprae
Streptococcus	uncultured_Streptococcus_sp
Streptococcus	Streptococcus_salivarius
TM7_genera_incertae_sedis	TM7_uncultured_bacterium
Veillonella	Veillonella_sp_S4-C10
Vibrio	Vibrio_cholerae_CP1048(21)

Supplementary Table S4: Microbial genera identified in reported Indian cohort and corresponding cluster affiliations.

Genus	Cluster	Genus	Cluster
Actinomyces	C1	Acinetobacter	C2
Bacillus	C1	Aeromonas	C2
Campylobacter	C1	Bacteroides	C2
Capnocytophaga	C1	Blautia	C2
Dialister	C1	Bradyrhizobium	C2
Escherichia/Shigella	C1	Brevundimonas	C2
Eubacterium	C1	Cloacibacterium	C2
Fusobacterium	C1	Corynebacterium	C2
Gemella	C1	Enhydrobacter	C2
Granulicatella	C1	Erysipelotrichaceae_incertae_sedis	C2
Haemophilus	C1	Faecalibacterium	C2
Leptotrichia	C1	Halomonas	C2
Megasphaera	C1	Helicobacter	C2
Moryella	C1	Klebsiella	C2
Neisseria	C1	Lachnospiracea_incertae_sedis	C2
Novosphingobium	C1	Lactobacillus	C2
Oribacterium	C1	Meiothermus	C2
Porphyromonas	C1	Methylobacterium	C2
Prevotella	C1	Micrococcus	C2
Ralstonia	C1	Paracoccus	C2
Streptococcus	C1	Propionibacterium	C2
TM7_genera_incertae_sedis	C1	Pseudomonas	C2
Veillonella	C1	Rhodococcus	C2
Vibrio	C1	Staphylococcus	C2
Acidovorax	C2	Streptophyta	C2

Supplementary Table S5: Sample ids and sequencing information of each sample.

Samples	Number of Sequences	Mean_Length	Std. Dev. (Length)	PRIMER NO	BARCODE NAME	BARCODE SEQUENCE
S1	28172	865.63	57.42	265	265(926R34)	ACGGCTC
S2	21460	851.68	101.35	266	266(926R35)	TGCGTTC
S3	21464	846.48	69.38	267	267(926R36)	TCTCGAC
S5	12018	869.27	54.3	269	269(926R38)	ACTCCTC
S6	2235	832.65	117.07	270	270(926R39)	TTCCCTGC
S7	20859	869.98	71.85	271	271(926R40)	TTCATAC
S8	21600	850.28	96.18	272	272(926R41)	CGTCGTC
S9	5734	854.26	84.2	273	273(926R42)	AAGGCAC
S10	25124	870.42	58.56	274	274(926R43)	AACAACTC
S11	7847	855.38	102.08	275	275(926R44)	ACACGGAC
S12	11422	870.59	59.63	276	276(926R45)	TGCCGAAC
S15	10791	867.33	61.32	279	279(926R48)	CCGGCCAC
S17	93926	866.87	56.88	281	281(926R50)	TCTCCGTC
S27	26981	844.32	102.22	233	233(926R2)	CGCAAC
S29	35996	853.61	94.41	235	235(926R4)	ACTTGC
S30	76213	847.69	99.33	236	236(926R5)	TCACAC
S31	23573	851.89	92.07	237	237(926R6)	CGTGAC
S32	23539	848.65	97.76	238	238(926R7)	ACGCGC
S33	38886	852.66	97.6	239	239(926R8)	CCTCTC
S34	15962	842.32	91.37	240	240(926R9)	ACTCAC
S36	18005	843.74	93.09	242	242(926R11)	CGACTC
S37	17017	848.13	88.33	243	243(926R12)	AGCTTC
S38	17024	831.12	108.76	244	244(926R13)	AAGCCG
S41	19251	850.01	86.28	247	247(926R16)	TATCAAC
S42	14717	833.13	106.95	248	248(926R17)	AGGCGGC
S43	15626	846.68	97.37	249	249(926R18)	CGGTATC
S44	16486	822.07	115.49	250	250(926R19)	TGACGAC
S45	19710	844.75	94.84	251	251(926R20)	ACAAGGC
S46	14008	835.19	103.69	252	252(926R21)	AGACCTC
S47	14555	835.08	110.58	253	253(926R22)	ATACCAAC
S48	26128	840.44	96.42	254	254(926R23)	TCGCGGC
S49	23249	860.51	69.57	255	255(926R24)	ATCTTAC
S50	14498	847.4	97.1	256	256(926R25)	AACCAGC
S51	12397	845.22	95.99	257	257(926R26)	TTCGAGC
S52	13412	848.69	87.77	258	258(926R27)	AAGGTGC
S53	18172	836.62	100.89	259	259(926R28)	TCTTGGC
S54	15888	826.09	99.15	260	260(926R29)	TAATCTC
S55	20218	850.24	83.09	261	261(926R30)	TCACCTC
S56	60072	849.32	86.14	262	262(926R31)	TCCGCTC
Total Sequences	941415					
Filtered Sequences	940591					
Sequences fetched by tags	894235					