

Supplementary Material

1 Additional File 1 (Supplementary Tables)

Table S1. The absolute abundance of 32 microbial phyla detected in five samples from different parts of China

Microbial phyla	AT-1	AT-2	AT-3	AT-4	AT-5
Proteobacteria	1612911	1101142	2273805	1683394	87210.5
Euglenozoa	87700.7	87301.6	32280.5	117316	32.2
Arthropoda	7625.1	8341.6	4226.5	7015	4993.3
Actinobacteria	177.2	36.8	17906.9	102.2	55.3
Firmicutes	2328.2	206.8	4756	2948.7	196.5
Streptophyta	1812	1627.2	3406.1	1227.2	40
Chordata	199.4	5375.3	44.2	2142.9	25.1
Unclassified	237.1	343.1	478.1	142.5	65.7
Bacteroidetes	60.9	34.5	987.9	16.8	26.9
Parabasalia	100	100	65	150	170
Acidobacteria	210.4	78.5	41.9	60.4	0
Nematoda	74.5	64.8	63	91.7	47.8
Chlamydiae	53.1	71.9	6.2	42.5	7
Apicomplexa	86.3	23.3	10.6	38.6	6.7
Ascomycota	3.2	68.2	4.7	23.9	9.6
Platyhelminthes	6.7	24.8	6	22.3	0
Chlorophyta	33	8.8	8.7	5.2	0
Nitrospinae	5	7.1	7.4	10	12
Euryarchaeota	8.8	9.1	1.7	9.9	6.4
Mollusca	4.5	11.4	3.9	10.5	3.3
Cyanobacteria	1.2	0	3.6	11.7	4.5
Evosea	4.2	4.2	2.7	7.1	1.7
Mucoromycota	4	7.1	3.9	3.3	0
Haptista	0	1.2	0	7.2	0
Thaumarchaeota	0	7.8	0	0	0
Candidatus Moranbacteria	0	7.7	0	0	0
Candidatus Kaiserbacteria	4.3	2.6	0	0	0
Candidatus Wolfbacteria	3.3	2.9	0	0	0
Planctomycetes	0	3.2	0	0	2.4
Spirochaetes	5.3	0	0	0	0
Verrucomicrobia	0	2.5	0	0	0
Zoopagomycota	0	1.9	0	0	0

AT-1: Urumqi, *M. ovinus*; AT-2: Kuqa City, *M. ovinus*; AT-3: Yecheng County, *M. ovinus*; AT-4: Qira County, *M. ovinus*; AT-5: Qira County, Pupae.

Table S2. The absolute abundance of 372 microbial genera in the five samples

Microbial genera	AT-1	AT-2	AT-3	AT-4	AT-5
<i>Bartonella</i>	1043642.7	845611.4	1877604.3	640751.6	20518.8
<i>Arsenophonus</i>	497090	159320.9	345648.3	202034.7	2627
<i>Pseudomonas</i>	108.2	1985.2	91.8	739483.6	20.2
<i>Trypanosoma</i>	87239.8	86978.5	32137.4	117055.2	30.8
<i>Wolbachia</i>	51656.1	42575.7	27123.9	58657.1	62978
<i>Pantoea</i>	1	34035.6	8.3	25921.9	1.2
<i>Glutamicibacter</i>	1	0	14152.5	19.7	0
<i>Lucilia</i>	1801.5	2274.6	1062.3	1901.5	1175.9
<i>Beta</i>	1800	1600	3400	1200	40
<i>Brucella</i>	1800	1600	3300	1100	40
<i>Staphylococcus</i>	1092.8	64.5	4255	2091	55.2
Unclassified	1076.6	1959.9	1456.1	2342.2	266.1
<i>Rhizobium</i>	1700	1400	2900	1000	30
<i>Escherichia</i>	1991.4	1033.9	2967.8	928.2	33.9
<i>Mesorhizobium</i>	1500	1300	2900	910	40
<i>Melophagus</i>	1940	1606	817	778	838
<i>Xenorhabdus</i>	2032	743	1579	934.8	19
<i>Mus</i>	0	3814	0	1418.6	0
<i>Enterobacter</i>	1701.5	819.7	1217.3	884.9	15
<i>Psychrobacter</i>	0	45.1	1924.2	2617	0
<i>Musca</i>	796.7	1045.1	485.8	828	517.6
<i>Serratia</i>	1300	554.9	940	628.6	12
<i>Erwinia</i>	1142.6	539.7	813.7	571.5	3
<i>Trichonephila</i>	567.2	532.5	377	864.6	633.3
<i>Moraxella</i>	0	2872.7	7.8	17.2	0
<i>Stomoxys</i>	594.3	756.4	365	637.2	376.9
<i>Arthrobacter</i>	3	0	2617	9.9	0
<i>Providencia</i>	1012	378.2	722.8	377.4	4.9
<i>Sodalis</i>	810	279	610	357	4
<i>Vollenhovia</i>	435.4	348.8	236.2	524.3	408.8
<i>Acinetobacter</i>	437	819.4	402.5	201.1	1.5
<i>Lactococcus</i>	1001.3	56.1	52	688	40
<i>Drosophila</i>	381.9	530.8	225.8	398	248.1
<i>Moellerella</i>	610	210	410	260	2.2
<i>Enhydrobacter</i>	0	1468.2	0	0	0
<i>Tatumella</i>	550	216.9	420	244.2	4.3
<i>Helicobacter</i>	643.7	29.4	14	584.5	32.2
<i>Ceratitis</i>	272.1	355.3	176.1	293.8	183.6
<i>Yersinia</i>	410	203.4	290	347.1	1
<i>Salmonella</i>	417.3	252	329.9	193.3	2.3
<i>Photorhabdus</i>	410	167.2	310	190	1.8
<i>Gilliamella</i>	420	143.7	260	220	0

<i>Rhagoletis</i>	205.2	216.7	110.5	193.2	108.6
<i>Klebsiella</i>	172.7	152.3	137.1	348.3	3.9
<i>Chryseobacterium</i>	0	0	782	0	0
<i>Bifidobacterium</i>	102	0	553.1	45.3	52
<i>Cryptotermes</i>	143.3	111.2	66.9	142.6	187.2
<i>Phytomonas</i>	280	187	68.4	115	0
<i>Bactrocera</i>	118.2	167.6	93.6	135.5	76.2
<i>Trichomonas</i>	100	100	65	150	170
<i>Rickettsia</i>	124	71	46.5	123	151
<i>Curvibacter</i>	59	49.3	22.3	53	242.4
<i>Shigella</i>	116.4	7.9	79.9	89	6.3
<i>Rattus</i>	0	194.8	0	83.8	0
<i>Zeugodacus</i>	54.7	77.1	38.3	65.4	32.5
<i>Exiguobacterium</i>	0	0	264	0	0
<i>Obesumbacterium</i>	0	0	0	242	0
<i>Leishmania</i>	86.8	53.1	29.2	66.1	1.4
<i>Homo</i>	0	149	0	64.8	0
<i>Citrobacter</i>	3	163.2	17.1	25	0
<i>Flavonifractor</i>	45	36	18	48	41
<i>Wasmannia</i>	32.3	37	21.4	36	58.7
<i>Pragia</i>	0	0	0	170	0
<i>Onchocerca</i>	43	22	15	43	46
<i>Paraburkholderia</i>	0	16	0	150	0
<i>Chitinophaga</i>	0	0	165	0	0
<i>Leptomonas</i>	34.6	49.9	25.1	55.2	0
<i>Acidovorax</i>	0	3.8	0	150	8.9
<i>Cricetulus</i>	0	106.5	0	46.9	0
<i>Avibacterium</i>	80.6	0	24.3	9.5	36.3
<i>Methylobacter</i>	40.5	36.8	22.4	48.7	0
<i>Pongo</i>	0	102.1	0	30.6	0
<i>Enterococcus</i>	68.4	5.1	0	45.5	3.5
<i>Chlamydia</i>	25.1	58.9	0	35	0
<i>Candidatus Fukatsuia</i>	47	22	6.8	16	26
<i>Neotoma</i>	0	83.7	0	32.2	0
<i>Caenorhabditis</i>	18	25	37	33	1.8
<i>Candidatus Amoebophilus</i>	48	20	11	14	21
<i>Candidatus Paracaedibacter</i>	43	29	9.2	15	14
<i>Streptomyces</i>	61.6	14.6	16.4	12.8	0
<i>Parasteatoda</i>	52	12	9.8	9.7	18
<i>Glossina</i>	13.9	30.3	12.9	26.7	9.5
<i>Blautia</i>	56.9	11	9.1	4.8	11.4
<i>Pteropus</i>	0	63.5	0	27	0
<i>Lasius</i>	20.8	20	13.1	21.2	12.1
<i>Acromyrmex</i>	7.9	24	24	14	17
<i>Bos</i>	46.2	7.7	2.1	27.9	2.8
<i>Strigomonas</i>	43.2	20.7	13.6	9.2	0

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<i>Ceratina</i>	42	18	6.3	6.5	11
<i>Sphaeroforma</i>	50	9.4	9.6	8.1	0
<i>Myotis</i>	0	55.4	0	16.4	0
<i>Streptococcus</i>	4.9	0	43.3	11.7	7.1
<i>Ovis</i>	39	0	2.1	23.9	0
<i>Pseudocitrobacter</i>	0	62	0	0	0
<i>Neochlamydia</i>	28	13	6.2	7.5	7
<i>Eurytemora</i>	32	14	10	5.7	0
<i>Ailuropoda</i>	0	43.1	0	17.5	0
<i>Babesia</i>	42.6	0	1	12.9	3
<i>Capra</i>	31.7	0	1	23.2	1.4
<i>Branchiostoma</i>	25.5	7.7	14.4	9.4	0
<i>Pan</i>	0	41.1	0	15.2	0
<i>Gonium</i>	33	8.8	8.7	5.2	0
<i>Bacillus</i>	0	3.2	19.6	18.4	14.3
<i>Boleophthalmus</i>	13.9	11.7	6.8	10.7	11
<i>Colobus</i>	0	35	0	19	0
<i>Saimiri</i>	0	36	0	17	0
<i>Saitoella</i>	0	40	0	13	0
<i>Bombus</i>	14	21	2.8	9.2	5.7
<i>Cryptosporidium</i>	31	9	6.5	4.5	0
<i>Angomonas</i>	16.3	12.4	6.8	15.3	0
<i>Asbolus</i>	8.5	13	5.4	17	6
<i>Epinephelus</i>	0	36	0	13	0
<i>Cronobacter</i>	0	34.5	0	12.6	0
<i>Comamonas</i>	18.3	11.3	3.7	13.7	0
<i>Rhodobacter</i>	14	13	3.7	12	3.2
<i>Pectobacterium</i>	0	22.3	0	22.9	0
<i>Loxodonta</i>	0	29.5	0	15.4	0
<i>Anolis</i>	9.6	21.6	6	4.5	2.8
<i>Anopheles</i>	8	7.9	7.8	12	8.5
<i>Equus</i>	0	35.6	0	8.6	0
<i>Canis</i>	0	30	0	14	0
<i>Rhinopithecus</i>	0	30	0	14	0
<i>Roseateles</i>	0	8.8	0	0	35
<i>Nomascus</i>	0	34	0	9.3	0
<i>Athalia</i>	5.9	15	6.1	6.8	8.1
<i>Nitrospina</i>	5	7.1	7.4	10	12
<i>Eucalyptus</i>	5.8	14	4.6	16	0
<i>Laodelphax</i>	4.7	10	4.6	14	7
<i>Neisseria</i>	6.6	15.3	0	17.8	0
<i>Python</i>	0	27	0	12	0
<i>Apis</i>	9.2	8.7	3.4	11.1	5.7
<i>Cervus</i>	0	27	0	11	0
<i>Stenotrophomonas</i>	27.6	0	10.2	0	0

<i>Mesocricetus</i>	0	27	0	10	0
<i>Mycobacteroides</i>	0	9.2	20	7.8	0
<i>Blattella</i>	7.5	11	10	4.4	4
<i>Buttiauxella</i>	0	0	0	36.7	0
<i>Methanosarcina</i>	8.8	9.1	1.7	9.9	6.4
<i>Amazona</i>	3.3	10.5	4.7	12.2	4.6
<i>Legionella</i>	7	13	2.9	7.6	4.3
<i>Patagioenas</i>	0	23	0	9.1	0
<i>Vombatus</i>	0	25.6	0	6.5	0
<i>Paramormyrops</i>	0	17.2	0	14.3	0
<i>Lactobacillus</i>	9.8	2	13	4.7	1.9
<i>Trichinella</i>	4.3	15	0	12	0
<i>Ooceraea</i>	4.6	14	5.3	4.1	2.3
<i>Dipodomys</i>	0	20.8	0	9.3	0
<i>Culex</i>	3.9	8.5	2.7	5.7	8.7
<i>Eimeria</i>	0	7.2	3.1	16	1.8
<i>Agrilus</i>	11	2.8	3.2	6.1	4.7
<i>Proteus</i>	0	13	0	14.7	0
<i>Raoultella</i>	0	10	0	17.1	0
<i>Novimethylophilus</i>	0	0	14	13	0
<i>Puma</i>	0	20	0	6.9	0
<i>Lelliottia</i>	0	0	0	26.8	0
<i>Mandrillus</i>	0	19	0	7.5	0
<i>Rahnella</i>	0	15	0	10.7	0
<i>Methylocapsa</i>	0	8.9	10	5.8	1
<i>Clostridium</i>	10.9	0	0	11.9	2.8
<i>Chinchilla</i>	0	20	0	5.6	0
<i>Burkholderia</i>	11.5	3.7	1.7	7.9	0
<i>Agrococcus</i>	0	0	24.5	0	0
<i>Limulus</i>	6.4	3.8	3	5.6	5.7
<i>Corvus</i>	16.4	0	0	8	0
<i>Xanthomonas</i>	23.6	0	0	0	0
<i>Plasmodium</i>	11	7.1	0	5.2	0
<i>Yarrowia</i>	0	23.2	0	0	0
<i>Sinorhizobium</i>	6.3	4.7	1	11	0
<i>Bacteroides</i>	6.2	1.9	7.5	1.4	5.9
<i>Macrostomum</i>	6.7	7.6	5	3.4	0
<i>Schistosoma</i>	0	13	0	9.2	0
<i>Corallococcus</i>	14	3.8	4.1	0	0
<i>Kalamiella</i>	0	15.4	0	6.3	0
<i>Lipoptena</i>	2.8	6.8	3.8	3.7	4.6
<i>Buceros</i>	0	6.8	4.7	10	0
<i>Actinobacillus</i>	0	0	3	0	18.3
<i>Aedes</i>	4.5	6.8	4.1	2.8	2.9
<i>Propithecus</i>	0	19.5	0	1	0
<i>Corynebacterium</i>	0	0	19.1	1	0

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<i>Haemophilus</i>	0	11.1	0	8.9	0
<i>Dictyostelium</i>	4.2	4.2	2.7	7.1	1.7
<i>Crassostrea</i>	0	8	1.9	9.5	0
<i>Edwardsiella</i>	2.6	7.6	2.9	4.5	1
<i>Bicyclus</i>	6.3	4.8	3	1.6	2.9
<i>Tupaia</i>	0	13	0	5.4	0
<i>Rhizophagus</i>	4	7.1	3.9	3.3	0
<i>Hafnia</i>	0	0	0	18	0
<i>Rhodanobacter</i>	13.4	4.5	0	0	0
<i>Paenibacillus</i>	0	5.6	12.1	0	0
<i>Anaerostipes</i>	6.4	0	7.4	1	2.7
<i>Neodiprion</i>	2	6.1	2.8	6.4	0
<i>Aggregatibacter</i>	0	0	0	0	17.2
<i>Paeniglutamicibacter</i>	0	0	16.7	0	0
<i>Kluyvera</i>	0	6.5	0	10	0
<i>Aspergillus</i>	0	5	1.9	9.4	0
<i>Harpegnathos</i>	4.8	6.6	2.2	2.5	0
<i>Marinospirillum</i>	8	5.5	2.3	0	0
<i>Acipenser</i>	1.8	4.5	0	6.8	2.5
<i>Pseudarthrobacter</i>	0	0	11.6	3.9	0
<i>Achromobacter</i>	0	12.4	0	0	2.5
<i>Trichuris</i>	0	0	11	3.7	0
<i>Fonticula</i>	5.8	1.5	1	6.3	0
<i>Listeria</i>	0	1	7.3	6.1	0
<i>Cimex</i>	3.9	3.5	0	4.4	2.5
<i>Elysia</i>	4.5	3.4	2	1	3.3
<i>Camelus</i>	0	8.8	0	4.9	0
<i>Oryzias</i>	0	8.3	0	5.3	0
<i>Schistocephalus</i>	0	2.6	1	9.7	0
<i>Leclercia</i>	0	4.1	0	9	0
<i>Glaesserella</i>	0	0	0	0	13
<i>Gardnerella</i>	0	7	5.7	0	0
<i>Pluralibacter</i>	0	12	0	0	0
<i>Cyrtomium</i>	0	4.8	0	6.5	0
<i>Rubrivivax</i>	6.7	4.6	0	0	0
<i>Anaplasma</i>	6.1	0	0	5.2	0
<i>Superficieibacter</i>	0	9.1	2	0	0
<i>Caballeronia</i>	1.4	3.6	1.5	2.9	1.6
<i>Kagunavirus</i>	0	11	0	0	0
<i>Phaeobacter</i>	0	6.9	1.3	2.7	0
<i>Morganella</i>	0	3.9	4.9	2	0
<i>Cyanobacterium</i>	1.2	0	3.6	1.5	4.5
<i>Piliocolobus</i>	0	9	0	1.7	0
<i>Cardiobacterium</i>	0	0	0	10.7	0
<i>Eoetvoesia</i>	0	1	0	0	9.6

<i>Xiphophorus</i>	0	2.6	1.4	6.4	0
<i>Trichechus</i>	0	6.5	0	3.7	0
<i>Shewanella</i>	0	9.8	0	0	0
<i>Galeopterus</i>	0	9.8	0	0	0
<i>Subdoligranulum</i>	1	0	8.8	0	0
<i>Dickeya</i>	0	0	1	8.7	0
<i>Metarhizium</i>	0	0	0	0	9.6
<i>Aeromonas</i>	0	9.5	0	0	0
<i>Neomonachus</i>	0	6.5	0	3	0
<i>Cicer</i>	6.2	1.8	1.5	0	0
<i>Dorea</i>	6.4	1.4	1.7	0	0
<i>Izhakiella</i>	0	0	0	9.4	0
<i>Sextaecvirus</i>	0	0	1.8	7.2	0
<i>Rhodoferrax</i>	0	1	0	0	8
<i>Mixta</i>	0	0	0	9	0
<i>Eufriesea</i>	4.7	1	3.3	0	0
<i>Callorhinchus</i>	0	4.9	0	4	0
<i>Rhodovulum</i>	0	3.3	3.5	2	0
<i>Vibrio</i>	0	0	0	8.8	0
<i>Felis</i>	0	5.4	0	3.3	0
<i>Cedecea</i>	0	8.5	0	0	0
<i>Emiliana</i>	0	1.2	0	7.2	0
<i>Megachile</i>	0	2.9	1	4.4	0
<i>Kocuria</i>	0	0	8.3	0	0
<i>Leucobacter</i>	0	0	8.2	0	0
<i>Rouxiella</i>	0	8.1	0	0	0
<i>Sphingomonas</i>	0	0	0	7.9	0
<i>Pedobacter</i>	0	0	7.9	0	0
<i>Haematomicrobium</i>	0	0	7.9	0	0
<i>Candidatus Nitrosotalea</i>	0	7.8	0	0	0
<i>Terrapene</i>	0	7.8	0	0	0
<i>Pseudoclavibacter</i>	0	0	7.7	0	0
<i>Macrococcus</i>	0	0	6.7	1	0
<i>Ruminococcus</i>	1.6	0	6.1	0	0
<i>Brenneria</i>	0	0	0	7.6	0
<i>Citricoccus</i>	0	0	7.5	0	0
<i>Candidimonas</i>	0	0	7.5	0	0
<i>Venturia</i>	3.2	0	2.8	1.5	0
<i>Riemerella</i>	0	0	7.3	0	0
<i>Variovorax</i>	0	1.8	0	0	5.5
<i>Spodoptera</i>	0	2.2	0	5	0
<i>Ochotona</i>	0	5.4	0	1.7	0
<i>Pristionchus</i>	4.3	2.8	0	0	0
<i>Parabacteroides</i>	0	7	0	0	0
<i>Gallibacterium</i>	0	5	0	0	1.7
<i>Limnohabitans</i>	0	1.4	0	0	5.2

Supplementary Material

<i>Shimwellia</i>	0	6.5	0	0	0
<i>Aurantimicrobium</i>	0	0	6.5	0	0
<i>Rothia</i>	0	0	6.5	0	0
<i>Penaeus</i>	0	2	0	4.4	0
<i>Varibaculum</i>	0	0	6.4	0	0
<i>Idiomarina</i>	4.2	0	0	2.2	0
<i>Cyanistes</i>	0	6.1	0	0	0
<i>Nannospalax</i>	0	4.5	0	1.6	0
<i>Theropithecus</i>	0	4.3	0	1.8	0
<i>Cycloclasticus</i>	0	0	0	6.1	0
<i>Mycobacterium</i>	0	6	0	0	0
<i>Otolemur</i>	0	4.4	0	1.6	0
<i>Coprococcus</i>	0	1.8	2.8	0	1.3
<i>Sporosarcina</i>	0	0	5.8	0	0
<i>Microcystis</i>	0	0	0	5.8	0
<i>Cephalophus</i>	4.8	0	0	1	0
<i>Bemisia</i>	1	1.9	0	1.9	1
<i>Punavirus</i>	0	5.7	0	0	0
<i>Paracoccus</i>	0	0	0	0	5.6
<i>Eubacterium</i>	3.2	0	2.3	0	0
<i>Pseudoalteromonas</i>	0	0	0	5.5	0
<i>Carlito</i>	0	5.4	0	0	0
<i>Undibacterium</i>	0	5.3	0	0	0
<i>Fusicatenibacter</i>	0	0	4.3	1	0
<i>Brachyspira</i>	5.3	0	0	0	0
<i>Ralstonia</i>	0	5.3	0	0	0
<i>Agathobaculum</i>	2.7	0	1.5	0	1
<i>Ruegeria</i>	5.2	0	0	0	0
<i>Paroedura</i>	4.2	0	0	1	0
<i>Mycolicibacterium</i>	5	0	0	0	0
<i>Alligator</i>	0	3.6	0	1.4	0
<i>Marinomonas</i>	0	3.9	1	0	0
<i>Xenopus</i>	0	4.8	0	0	0
<i>Gordonia</i>	0	0	4.8	0	0
<i>Nitrosovibrio</i>	1	0	0	3.8	0
<i>Meriones</i>	0	4.7	0	0	0
<i>Abrus</i>	0	0	0	4.7	0
<i>Brachybacterium</i>	0	0	4.6	0	0
<i>Roseburia</i>	0	4.6	0	0	0
<i>Cajanus</i>	0	4.6	0	0	0
<i>Simplicispira</i>	3.2	1.4	0	0	0
<i>Clostridioides</i>	1	0	0	3.6	0
<i>Alicyclophilus</i>	0	0	0	0	4.4
<i>Nostoc</i>	0	0	0	4.4	0
<i>Kosakonia</i>	0	4.4	0	0	0

<i>Collinsella</i>	0	0	4.2	0	0
<i>Microbacterium</i>	0	0	4.2	0	0
<i>Flammeovirga</i>	0	2.4	1.6	0	0
<i>Dendroctonus</i>	0	3.9	0	0	0
<i>Brugia</i>	3.9	0	0	0	0
<i>Shinella</i>	0	3.9	0	0	0
<i>Desertihabitans</i>	0	0	3.7	0	0
<i>Arcobacter</i>	0	0	0	3.6	0
<i>Pasteurella</i>	0	0	1.6	1	1
<i>Parapoxvirus</i>	3.6	0	0	0	0
<i>Pseudorhodoferax</i>	0	0	0	0	3.6
<i>Marinobacter</i>	0	0	3.6	0	0
<i>Toxoplasma</i>	1.7	0	0	0	1.9
<i>Symbiodinium</i>	0	1.6	0	1.9	0
<i>Cavia</i>	0	3.5	0	0	0
<i>Novosphingobium</i>	0	3.5	0	0	0
<i>Trabulsiella</i>	0	0	3.4	0	0
<i>Methyloversatilis</i>	0	2	0	0	1.4
<i>Erinaceus</i>	0	2.3	0	1	0
<i>Mycetocola</i>	0	0	3.3	0	0
<i>Sulfurospirillum</i>	0	3.2	0	0	0
<i>Rhodopirellula</i>	0	3.2	0	0	0
<i>Ewingella</i>	0	0	3	0	0
<i>Octodon</i>	0	1.9	0	1	0
<i>Polaromonas</i>	0	0	0	0	2.7
<i>Phenylobacterium</i>	0	2.5	0	0	0
<i>Alcanivorax</i>	0	1	0	1.5	0
<i>Bordetella</i>	2.4	0	0	0	0
<i>Aquabacterium</i>	0	2.3	0	0	0
<i>Jeotgalicoccus</i>	0	2.2	0	0	0
<i>Tyzzerella</i>	0	0	0	0	2.2
<i>Gracilibacillus</i>	0	0	0	2.2	0
<i>Salpingoeca</i>	1	1	0	0	0
<i>Odocoileus</i>	2	0	0	0	0
<i>Lipotes</i>	0	2	0	0	0
<i>Desmodus</i>	0	2	0	0	0
<i>Flavobacterium</i>	0	0	2	0	0
<i>Sanguibacter</i>	0	0	2	0	0
<i>Candidatus Blochmannia</i>	0	1.9	0	0	0
<i>Gulosibacter</i>	0	0	1.9	0	0
<i>Smittium</i>	0	1.9	0	0	0
<i>Dasytus</i>	0	1.9	0	0	0
<i>Methylibium</i>	0	1.7	0	0	0
<i>Echinococcus</i>	0	1.6	0	0	0
<i>Zhihengliuella</i>	0	0	1.6	0	0
<i>Faecalibacterium</i>	0	1.5	0	0	0

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<i>Perlucidibaca</i>	0	1.4	0	0	0
<i>Peduvovirus</i>	0	0	0	1.2	0
<i>Corchorus</i>	0	1	0	0	0
<i>Francisella</i>	0	0	1	0	0
<i>Haemonchus</i>	1	0	0	0	0
<i>Parafilimonas</i>	1	0	0	0	0
<i>Glycine</i>	0	1	0	0	0
<i>Calypste</i>	0	0	1	0	0
<i>Oreochromis</i>	1	0	0	0	0
<i>Herbaspirillum</i>	0	0	0	0	1
<i>Acidocella</i>	0	1	0	0	0

AT-1: Urumqi, *M. ovinus*; AT-2: Kuqa City, *M. ovinus*; AT-3: Yecheng County, *M. ovinus*; AT-4: Qira County, *M. ovinus*; AT-5: Qira County, Pupae.

Table S3. The absolute abundance of 1037 microbial species in the above-mentioned five samples

Microbial species	AT-1	AT-2	AT-3	AT-4	AT-5	Is this the first report?
<i>Bartonella melophagi</i>	878967.6	712152.8	1559884.9	536860.4	17201.1	No
<i>Arsenophonus nasoniae</i>	342947.2	109866.9	238752.9	139419.9	1817.2	Yes
<i>Pseudomonas versuta</i>	44.1	1345.8	44.1	562429.6	6.8	Yes
<i>Bartonella schoenbuchensis</i>	76214.7	61410.4	147921.6	48049.1	1525	No
Unclassified	47797.1	48109.9	75294.6	129200.1	5529	Non-microbial
<i>Trypanosoma theileri</i>	81847	81877.2	30081.2	110479.1	28.7	Yes
<i>Arsenophonus endosymbiont of Nilaparvata lugens</i>	84310	26919	58523.2	34260	444.5	No
<i>Wolbachia endosymbiont of Cimex lectularius</i>	34457	27745.2	17247.7	36788.9	43942.3	No
<i>Bartonella</i> sp. WD12.1	36961.2	29068.6	66933.9	22534.1	683	No
<i>Arsenophonus</i> sp. ENCA	39287.8	12545	27183.2	15926	202.4	No
<i>Bartonella</i> sp. WD16.2	11367.5	9355	23285	6996.3	242.2	No
<i>Bartonella bovis</i>	7891.2	6287	13555	4797.3	175.8	Yes
<i>Arsenophonus endosymbiont of Bemisia tabaci</i>	11710	3780	8130	4720	62.8	No
<i>Pantoea vagans</i>	0	13638.2	0	11297.2	0	Yes
<i>Arsenophonus endosymbiont of Aleurodicus floccissimus</i>	7925	2549	5439	3131.8	36.3	No
<i>Wolbachia pipientis</i>	3410.1	3285.8	2267.9	5243.7	3918.7	Yes
<i>Glutamicibacter arilaitensis</i>	1	0	12652.8	5.2	0	Yes
<i>Pseudomonas antarctica</i>	4.6	45.1	4.7	9250	0	Yes
<i>Trypanosoma grayi</i>	2445.3	2252	877.9	2982.3	0	Yes
<i>Wolbachia endosymbiont of Dactylopius coccus</i>	1720.7	1612.6	1078.6	2444.8	1511	No
<i>Pseudomonas fragi</i>	1.8	23.3	1.2	8339	1	Yes
<i>Lucilia cuprina</i>	1801.5	2274.6	1062.3	1901.5	1175.9	Non-microbial
<i>Beta vulgaris</i>	1800	1600	3400	1200	40	Non-microbial
<i>Brucella abortus</i>	1800	1600	3300	1100	40	Yes
<i>Pseudomonas</i> sp. KBW05	0	27.1	0	7265	0	Yes
<i>Rhizobium</i> sp. NT-26	1700	1400	2900	1000	30	Yes
<i>Escherichia coli</i>	1987.3	1011.5	2851.7	924.3	31.9	No
<i>Mesorhizobium loti</i>	1500	1300	2900	910	40	Yes
<i>Trypanosoma cruzi</i>	1767.5	1851.3	745.6	2279	2.1	Yes
<i>Melophagus ovinus</i>	1940	1606	817	778	838	Non-microbial
<i>Wolbachia endosymbiont of Drosophila simulans</i>	1076.9	908.8	688	1356.6	1343.1	Yes
<i>Pseudomonas fluorescens</i>	0	17.9	0	5129	0	Yes
<i>Mus musculus</i>	0	3686.6	0	1382.6	0	Non-microbial
<i>Wolbachia endosymbiont of Armadillidium vulgare</i>	1125.5	840.3	520.8	1208.5	1202.4	Yes
<i>Enterobacter cloacae</i>	1700	598.7	1205.4	840.3	15	Yes

Supplementary Material

<i>Wolbachia endosymbiont of Cylisticus convexus</i>	879.5	707.5	480.2	957.5	1093.9	Yes
<i>Pantoea</i> sp. JKS000250	0	1590.6	1.1	2081.8	0	Yes
<i>Musca domestica</i>	796.7	1045.1	485.8	828	517.6	Non-microbial
<i>Pseudomonas</i> sp. PAMC 29040	0	13.6	0	3610	1	Yes
<i>Pseudomonas psychrophila</i>	0	3.5	0	3551	0	Yes
<i>Serratia marcescens</i>	1300	529.8	940	608.1	12	Yes
<i>Staphylococcus equorum</i>	0	1	2413	831.4	0	Yes
<i>Pseudomonas</i> sp. Lz4W	0	8.9	0	3160	0	Yes
<i>Pantoea agglomerans</i>	0	2120.3	1	903.4	0	Yes
<i>Pseudomonas viridiflava</i>	0	10.3	2.1	2970	0	Yes
<i>Trichonephila clavipes</i>	567.2	532.5	377	864.6	633.3	Non-microbial
<i>Bartonella</i> sp. AR 15-3	640	550	1300	380	11	No
<i>Moraxella osloensis</i>	0	2812.7	0	4.2	0	Yes
<i>Bartonella</i> sp. TT0105	0	0	2300	470	0	No
<i>Stomoxys calcitrans</i>	594.3	756.4	365	637.2	376.9	Non-microbial
<i>Pseudomonas syringae</i> group genomsp. 3	0	11.5	1.5	2670	0	Yes
<i>Pseudomonas syringae</i>	0	39.4	1	2609	0	Yes
<i>Pseudomonas deceptionensis</i>	0	12.4	2	2416	0	Yes
<i>Wolbachia endosymbiont of Laodelphax striatellus</i>	510.9	432.8	286.6	608.3	585.2	Yes
<i>Bartonella henselae</i>	326	588	1230	274	4.2	Yes
<i>Xenorhabdus bovienii</i>	940	340	760	365.6	8.5	Yes
<i>Wolbachia endosymbiont of Brugia malayi</i>	618.8	410.5	253.1	476.5	597	Yes
<i>Pantoea</i> sp. 9140	0	1057.4	0	1157.9	0	Yes
<i>Wolbachia endosymbiont of Wuchereria bancrofti</i>	454	350	235.2	447.6	567.1	Yes
<i>Wolbachia endosymbiont of Bemisia tabaci</i>	513.9	358.5	206.7	415.6	508	Yes
<i>Providencia rustigianii</i>	860	230	580	300	3	Yes
<i>Vollenhovia emeryi</i>	435.4	348.8	236.2	524.3	408.8	Non-microbial
<i>Lactococcus garvieae</i>	1001.3	56.1	50	688	40	Yes
<i>Staphylococcus aureus</i>	1036.8	38.7	24.4	642.7	31.1	Yes
<i>Pseudomonas marginalis</i>	2.1	8.3	1.1	1720	0	Yes
<i>Trypanosoma rangeli</i>	485.5	431.9	198.1	597.5	0	Yes
<i>Sodalis glossinidius</i>	660	210	480	290	4	Yes
<i>Pseudomonas poae</i>	1	1.9	0	1640	0	Yes
<i>Pseudomonas synxantha</i>	0	5.8	0	1516	0	Yes
<i>Moellerella wisconsensis</i>	610	210	410	260	2.2	Yes
<i>Wolbachia endosymbiont of Drosophila ananassae</i>	330.1	242.9	148.8	355.7	371.6	Yes
<i>Wolbachia endosymbiont of Cadra cautella</i>	358.1	273.4	154.8	320.4	320.9	Yes
<i>Pseudomonas</i> sp. OV657	1.2	5	1	1380	0	Yes

<i>Pantoea</i> sp. OV426	0	1208.9	0	167.4	0	Yes
<i>Helicobacter pylori</i>	643.7	29.4	14	584.5	32.2	Yes
<i>Xenorhabdus cabanillasii</i>	520	190	370	207.1	6.4	Yes
<i>Xenorhabdus ehlersii</i>	500	180	370	240	3.1	Yes
<i>Ceratitis capitata</i>	272.1	355.3	176.1	293.8	183.6	Non-microbial
<i>Pseudomonas lundensis</i>	0	2.5	1	1209	0	Yes
<i>Candidatus Arsenophonus lipoptenae</i>	460	170	350	210	3.8	Yes
<i>Salmonella enterica</i>	417.3	252	327.8	193.3	2.3	Yes
<i>Yersinia pestis</i>	410	151	290	340	1	Yes
<i>Wolbachia</i> endosymbiont of <i>Diaphorina citri</i>	280.3	204.2	124.3	267	312.4	Yes
<i>Pseudomonas</i> sp. GM48	0	4.9	0	1170	0	Yes
<i>Enhydrobacter aerosaccus</i>	0	1142.3	0	0	0	Yes
<i>Bartonella rattimassiliensis</i>	260	220	470	170	8	Yes
<i>Acinetobacter baumannii</i>	437	181.3	320	185.1	1.5	Yes
<i>Wolbachia</i> endosymbiont of <i>Culex quinquefasciatus</i>	173.5	184.5	132.3	293	340.4	Yes
<i>Trypanosoma conorhini</i>	262.7	300.9	116.5	420	0	Yes
<i>Bartonella</i> sp. CDC_skunk	0	1	860	200	0	Yes
<i>Gilliamella apicola</i>	420	143.7	260	220	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Ceratosolen solmsi</i>	171.5	160.9	129.7	240.8	306.2	Yes
<i>Pseudomonas</i> sp. 1 R 17	0	2.8	0	910	0	Yes
<i>Pseudomonas frederiksbergensis</i>	0	1.8	0	870	0	Yes
<i>Rhagoletis zephyria</i>	205.2	216.7	110.5	193.2	108.6	Non-microbial
<i>Pseudomonas putida</i>	0	0	0	810	0	Yes
<i>Bartonella florencae</i>	90	193	390	104	5	Yes
<i>Pseudomonas</i> sp. NFACC15-1	0	5	0	760	0	Yes
<i>Candidatus Erwinia haradaeae</i>	300	110	220	120	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Folsomia candida</i>	236.9	114.6	73	116.4	160.6	Yes
<i>Pseudomonas taetrolens</i>	0	1.5	0	688.6	0	Yes
<i>Pseudomonas lactis</i>	0	3	0	681	0	Yes
<i>Psychrobacter</i> sp. Sarcosine-02u-2	0	0	310.9	360.4	0	Yes
<i>Candidatus Erwinia dacicola</i>	260	101.4	190	113.3	0	Yes
<i>Cryptotermes secundus</i>	143.3	111.2	66.9	142.6	187.2	Non-microbial
<i>Phytomonas</i> sp. isolate Hart1	280	187	68.4	115	0	Yes
<i>Pseudomonas monteii</i>	0	0	0	650	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Glossina morsitans morsitans</i>	113	110.4	68.8	189.9	165.9	Yes
<i>Pseudomonas endophytica</i>	1.3	1	0	640	0	Yes
<i>Pseudomonas</i> sp. GLE121	0	1	0	640	1	Yes
<i>Pseudomonas arsenicoxydans</i>	0	4.8	0	630	1	Yes
<i>Chryseobacterium indoltheticum</i>	0	0	634.6	0	0	Yes
<i>Psychrobacter</i> sp. SHUES1	0	0	288.7	327	0	Yes
<i>Pseudomonas</i> sp. HMWF021	0	4.8	0	610	0	Yes

Supplementary Material

<i>Wolbachia endosymbiont of Nomada panzeri</i>	146.3	103.1	73.8	151.5	130.2	Yes
<i>Pseudomonas chlororaphis</i>	0	1	0	584.7	0	Yes
<i>Trichomonas vaginalis</i>	100	100	65	150	170	Yes
<i>Wolbachia endosymbiont of Trichogramma pretiosum</i>	153	94.4	54.3	143	134	Yes
<i>Wolbachia endosymbiont of Onchocerca volvulus</i>	94	93	63	150	150	Yes
<i>Pseudomonas coronafaciens</i>	0	0	0	540	0	Yes
<i>Alphaproteobacteria bacterium</i>	85.9	86	56	140	160	Yes
<i>Rickettsia endosymbiont of Ixodes pacificus</i>	124	71	46.5	123	151	Yes
<i>Bifidobacterium adolescentis</i>	66.7	0	380.9	33.4	30	Yes
<i>Arthrobacter</i> sp. MYb222	0	0	510.8	0	0	Yes
<i>Pseudomonas orientalis</i>	0	0	0	490	0	Yes
<i>Glutamicibacter</i> sp. HZAU	0	0	471.7	2.5	0	Yes
<i>Pseudomonas</i> sp. URIL14HWK12:I6	0	1.5	0	471	0	Yes
<i>Pseudomonas aeruginosa</i>	0	0	0	470	2.3	NO
<i>Pseudomonas moorei</i>	0	0	0	470	0	Yes
<i>Pseudomonas</i> sp. AD21	0	2.5	0	460	0	Yes
<i>Pseudomonas helleri</i>	0	0	0	460	0	Yes
<i>Trypanosoma brucei</i>	211	103.1	48.2	93.3	0	Yes
<i>Pseudomonas amygdali</i>	0	4.5	0	450	0	Yes
<i>Pseudomonas brassicacearum</i>	0	1.4	0	423	0	Yes
<i>Sodalis-like symbiont of Philaenus spumarius</i>	150	69	130	67	0	Yes
<i>Trypanosoma vivax</i>	125.4	98.8	42.2	145.3	0	Yes
<i>Acidobacteria bacterium</i>	210.4	78.5	41.9	60.4	0	Yes
<i>Pseudomonas fuscovaginae</i>	0	0	0	390	0	Yes
<i>Klebsiella michiganensis</i>	140	62.5	110	73.8	1.5	Yes
<i>Wolbachia endosymbiont of Paratrechina longicornis</i>	62	69	37	98	120	Yes
<i>Providencia alcalifaciens</i>	150	50	120	64	1.9	Yes
<i>Pseudomonas</i> sp. CFII64	0	0	1.1	380	0	Yes
<i>Wolbachia endosymbiont of Drosophila incompta</i>	104.3	77.6	41	102.8	48.2	Yes
<i>Pantoea brenneri</i>	0	369.7	0	0	0	Yes
<i>Bactrocera oleae</i>	70.5	112.8	52	76.4	46.5	Non-microbial
<i>Pseudomonas</i> sp. OV546	0	3.5	0	350	0	Yes
<i>Wolbachia</i> sp. wRi_2	142.1	60	31.8	55.3	63.5	Yes
<i>Pseudomonas</i> sp. BGI-2	0	2.3	0	350	0	Yes
<i>Klebsiella pneumoniae</i>	32.7	61.4	24.3	228.1	2.4	Yes
<i>Wolbachia endosymbiont of Operophtera brumata</i>	57.4	65.9	37.1	98	90.4	Yes
<i>Pseudomonas rhodesiae</i>	0	2.2	0	330	0	Yes
<i>Pseudomonas grimontii</i>	0	0	0	330	0	Yes

<i>Pseudomonas</i> sp. 2822-17	0	2.7	0	320	0	Yes
<i>Pseudomonas</i> sp. GM50	0	2.3	0	320	0	Yes
<i>Pseudomonas salomonii</i>	0	0	1	319	0	Yes
<i>Pseudomonas</i> sp. ES3-33	0	0	0	320	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Drosophila melanogaster</i>	71.3	65.6	46.9	73.2	57.2	Yes
<i>Pseudomonas</i> sp. A46	0	2.3	0	310	0	Yes
<i>Pseudomonas</i> sp. NC02	0	1.8	0	310	0	Yes
<i>Pseudomonas</i> sp. Irchel s3f7	0	1.4	0	310	0	Yes
<i>Pseudomonas</i> sp. DP16D-R1	0	0	0	310	0	Yes
<i>Pseudomonas jessenii</i>	0	0	0	310	0	Yes
<i>Pseudomonas veronii</i>	0	1.8	0	302	0	Yes
<i>Pseudomonas</i> sp. 655	0	1.4	0	302	0	Yes
<i>Pseudomonas</i> sp. OV081	0	2.1	0	300	0	Yes
<i>Wolbachia</i> phage WO	140	63	21	30	47	Yes
<i>Pseudomonas</i> sp. GM33	0	1	0	300	0	Yes
<i>Pseudomonas</i> sp. 58 R 12	0	0	0	300	0	Yes
<i>Pseudomonas savastanoi</i>	0	0	0	300	0	Yes
<i>Pseudomonas caspiana</i>	0	0	0	300	0	Yes
<i>Pseudomonas</i> sp. ACN8	0	1.2	0	290	0	Yes
<i>Pseudomonas koreensis</i>	0	0	0	290	0	Yes
<i>Enhydrobacter</i> sp. H5	0	282.2	0	0	0	Yes
<i>Pseudomonas</i> sp. IB20	0	0	0	280	0	Yes
<i>Rattus norvegicus</i>	0	194.8	0	83.8	0	Non-microbial
<i>Pseudomonas lurida</i>	0	2.1	0	270	0	Yes
<i>Zeugodacus cucurbitae</i>	54.7	77.1	38.3	65.4	32.5	Non-microbial
<i>Wolbachia</i> endosymbiont of <i>Culex molestus</i>	62	48	25.5	57.2	73.8	Yes
<i>Pantoea</i> sp. CFSAN033090	0	129.1	0	131	0	Yes
<i>Drosophila kikkawai</i>	62	61	31.9	50.2	50.5	Non-microbial
<i>Pseudomonas</i> sp. Choline-02u-1	0	1.7	0	243	0	Yes
<i>Obesumbacterium proteus</i>	0	0	0	242	0	Yes
<i>Pseudomonas</i> sp. 58 R 3	0	1.8	0	240	0	Yes
<i>Pseudomonas</i> sp. Irchel s3h17	0	1.5	0	240	0	Yes
<i>Trypanosoma congolense</i>	90.2	61.3	27.7	58.7	0	Yes
<i>Drosophila willistoni</i>	40.7	71.4	34	52	37	Non-microbial
<i>Pseudomonas</i> sp. CF161	0	1.9	0	230	0	Yes
<i>Pseudomonas</i> sp.	0	1.5	0	228	0	Yes
<i>Curvibacter</i> putative symbiont of <i>Hydra magnipapillata</i>	59	42.5	22.3	53	52	Yes
<i>Arthrobacter</i> sp. W1	1	0	226.4	0	0	Yes
<i>Pseudomonas vranovensis</i>	0	3.1	0	218	0	Yes
<i>Pseudomonas canadensis</i>	0	0	0	220	0	Yes
<i>Pantoea</i> sp. PSNIH6	0	214.4	0	1	0	Yes
<i>Homo sapiens</i>	0	149	0	64.8	0	Non-microbial
<i>Pseudomonas</i> sp. Root401	0	0	0	212	0	Yes

Supplementary Material

<i>Glutamicibacter mysorens</i>	0	0	211.2	0	0	Yes
<i>Pseudomonas</i> sp. o96-267	19	0	0	191	0	Yes
<i>Pantoea</i> sp. MBLJ3	0	200.6	0	8.6	0	Yes
<i>Glutamicibacter halophytocola</i>	0	0	207.4	0	0	Yes
<i>Pantoea ananatis</i>	0	100.4	0	106.8	0	Yes
<i>Shigella sonnei</i>	104.4	5.4	13.3	80	0	Yes
<i>Pantoea deleyi</i>	0	99.2	1	100.6	1.2	Yes
<i>Pseudomonas</i> sp. BS3767	0	0	0	200	0	Yes
<i>Pseudomonas</i> sp. A25(2017)	0	0	0	200	0	Yes
<i>Wolbachia</i> sp. wRi	34	42.3	35.8	67.2	15.1	Yes
<i>Pseudomonas weihenstephanensis</i>	0	2.7	0	190	0	Yes
<i>Pseudomonas</i> sp. G5(2012)	0	1.6	0	190	0	Yes
<i>Arthrobacter</i> sp. MYb214	0	0	191.5	0	0	Yes
<i>Flavonifractor</i> sp. An112	45	36	18	48	41	Yes
<i>Wasmannia auropunctata</i>	32.3	37	21.4	36	58.7	Non-microbial
<i>Pseudomonas rhizosphaerae</i>	0	2.2	0	180	0	Yes
<i>Pseudomonas</i> sp. 28 E 9	0	0	0	180	0	Yes
<i>Pseudomonas</i> sp. TMW 2.1634	0	0	0	180	0	Yes
<i>Pseudomonas brenneri</i>	0	0	0	180	0	Yes
<i>Pseudomonas cuatrocieneegasensis</i>	0	0	0	180	0	Yes
<i>Psychrobacter cryohalolentis</i>	0	1	75.9	99.3	0	Yes
<i>Drosophila hydei</i>	43	41	18.5	37	33	Non-microbial
<i>Pseudomonas</i> sp. 9.1(2019)	0	1.2	0	169	0	Yes
<i>Pseudomonas extremaustralis</i>	0	0	0	170	0	Yes
<i>Pseudomonas</i> sp. 2588-5	0	0	0	170	0	Yes
<i>Pseudomonas psychrotolerans</i>	0	0	0	170	0	Yes
<i>Pseudomonas</i> sp. GR 6-02	0	0	0	170	0	Yes
<i>Pseudomonas</i> sp. FW300-N1A1	0	0	0	170	0	Yes
<i>Pseudomonas protegens</i>	0	0	0	170	0	Yes
<i>Pseudomonas</i> sp. TAD18	0	0	0	169.5	0	Yes
<i>Onchocerca ochengi</i>	42	22	15	43	46	Yes
<i>Chitinophaga</i> sp. K20C18050901	0	0	165	0	0	Yes
<i>Pseudomonas</i> sp. MYb115	0	3.9	0	160	0	Yes
<i>Wolbachia endosymbiont of Nomada ferruginata</i>	24.9	21	23.7	54	38.9	Yes
<i>Pseudomonas azotoformans</i>	0	0	0	162	0	Yes
<i>Pseudomonas batumici</i>	0	1.1	0	160	0	Yes
<i>Pseudomonas abietaniphila</i>	0	1.1	0	160	0	Yes
<i>Pseudomonas</i> sp. ICMP 564	0	0	0	160	0	Yes
<i>Pseudomonas</i> sp. MF4836	0	0	0	160	0	Yes
<i>Pseudomonas knackmussii</i>	0	0	0	160	0	Yes
<i>Pseudomonas</i> sp. GM78	0	0	0	160	0	Yes
<i>Pseudomonas</i> sp. Eur1 9.41	0	0	0	160	0	Yes
<i>Pseudomonas kilonensis</i>	0	0	0	160	0	Yes
<i>Pseudomonas</i> sp. S06B 330	0	0	0	160	0	Yes

<i>Pseudomonas</i> sp. R9.37	0	0	0	160	0	Yes
<i>Psychrobacter</i> sp. Sarcosine-3u-12	0	0	73.9	82.6	0	Yes
<i>Cricetulus griseus</i>	0	106.5	0	46.9	0	Non-microbial
<i>Psychrobacter</i> sp. PAMC 21119	0	0	25.3	127.9	0	Yes
<i>Paraburkholderia tuberum</i>	0	3	0	150	0	Yes
<i>Pseudomonas libanensis</i>	0	1.6	0	150	0	Yes
<i>Pseudomonas</i> sp. GM79	0	1.6	0	150	0	Yes
<i>Pseudomonas</i> sp. Larv2_ips	0	1.4	0	150	0	Yes
<i>Pseudomonas</i> sp. ACM7	0	1	0	150	0	Yes
<i>Pseudomonas</i> sp. 443	0	0	0	150	0	Yes
<i>Pseudomonas</i> sp. R4-39-08	0	0	0	150	0	Yes
<i>Pseudomonas</i> sp. FW305-53	0	0	0	150	0	Yes
<i>Pseudomonas saxonica</i>	0	0	0	150	0	Yes
<i>Acidovorax</i> sp. HMWF029	0	0	0	150	0	Yes
<i>Leptomonas pyrrhocris</i>	30	46.1	21.4	51.9	0	Yes
<i>Bactrocera latifrons</i>	27	37.6	26.6	32.7	22.9	Non-microbial
<i>Pseudomonas</i> sp. PE-S1G-1	0	1.9	0	140	0	Yes
<i>Arthrobacter</i> sp. S41	0	0	140	0	0	Yes
<i>Pseudomonas</i> sp. Irchel s3b5	0	0	0	140	0	Yes
<i>Pseudomonas</i> sp. LH1G9	0	0	0	140	0	Yes
<i>Pseudomonas</i> sp. UW4	0	0	0	140	0	Yes
<i>Pseudomonas</i> sp. WP001	0	0	0	140	0	Yes
<i>Leishmania braziliensis</i>	54.2	32	21.2	31.8	0	Yes
<i>Pantoea conspicua</i>	0	85.2	0	53.7	0	Yes
<i>Psychrobacter</i> sp. DAB_AL32B	0	0	83.3	55.4	0	Yes
<i>Drosophila busckii</i>	36.8	45.2	16.5	28.3	8.6	Non-microbial
<i>Acinetobacter lwoffii</i>	0	126.8	7.5	0	0	Yes
<i>Pseudomonas</i> sp. MWU12-2312b	0	4	0	130	0	Yes
<i>Pseudomonas</i> sp. URHB0015	0	2.7	0	130	0	Yes
<i>Pongo abelii</i>	0	102.1	0	30.6	0	Non-microbial
<i>Pseudomonas</i> sp. Irchel s3b2	0	0	0	130	1.2	Yes
<i>Pseudomonas</i> sp. MT-1	0	0	0	130	0	Yes
<i>Glutamicibacter nicotianae</i>	0	0	128.6	0	0	Yes
<i>Psychrobacter</i> sp. P2G3	0	8.9	44.4	72.4	0	Yes
<i>Glutamicibacter</i> sp. 0426	0	0	125.2	0	0	Yes
<i>Bifidobacterium pseudocatenulatum</i>	18.9	0	90.2	2.4	12.8	Yes
<i>Psychrobacter arcticus</i>	0	0	67	56.8	0	Yes
<i>Pseudomonas stutzeri</i>	3.1	0	0	120	0	Yes
<i>Pseudomonas</i> sp. P1.8	0	3.1	0	120	0	Yes
<i>Pseudomonas laurylsulfatiphila</i>	0	1.2	0	120	0	Yes
<i>Curvibacter</i> sp. PD_MW3	0	5.4	0	0	114.7	Yes
<i>Staphylococcus pettenkoferi</i>	56	19	9.1	13	23	Yes
<i>Pseudomonas</i> sp. Ag1	0	0	0	120	0	Yes
<i>Pseudomonas</i> sp. ERMR1:02	0	0	0	120	0	Yes
<i>Pseudomonas</i> sp. R2-37-08W	0	0	0	120	0	Yes
<i>Pseudomonas</i> sp. LBUM920	0	0	0	120	0	Yes

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<i>Pseudomonas</i> sp. Leaf48	0	0	0	120	0	Yes
<i>Pseudomonas</i> sp. FH1	0	0	0	120	0	Yes
<i>Glutamicibacter</i> sp. BW77	0	0	107.5	12	0	Yes
<i>Staphylococcus cohnii</i>	0	2.5	94.3	21.5	0	Yes
<i>Candidatus Fukatsuia symbiotica</i>	47	22	6.8	16	26	Yes
<i>Neotoma lepida</i>	0	83.7	0	32.2	0	Non-microbial
<i>Mus caroli</i>	0	88.2	0	26.7	0	Non-microbial
<i>Caenorhabditis remanei</i>	18	25	37	33	1.8	Yes
<i>Pantoea</i> sp. aB	0	99.4	0	15	0	Yes
<i>Candidatus Amoebophilus asiaticus</i>	48	20	11	14	21	Yes
<i>Pantoea</i> sp. ARC607	0	91.5	0	21.8	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Drosophila subpulchrella</i>	52	18	8.1	13	22	Yes
<i>Enterobacter hormaechei</i>	0	96	7.7	8.5	0	Yes
<i>Pseudomonas</i> sp. CMAA1215	0	1.1	0	110	0	Yes
<i>Pseudomonas cedrina</i>	0	1	0	110	0	Yes
<i>Candidatus Paracaedibacter acanthamoebae</i>	43	29	9.2	15	14	Yes
<i>Pseudomonas</i> sp. GL93	0	0	0	110	0	Yes
<i>Pseudomonas</i> sp. B26(2017)	0	0	0	110	0	Yes
<i>Pseudomonas</i> sp. Irchel 3H3	0	0	0	110	0	Yes
<i>Drosophila virilis</i>	17	53.9	5.4	22.2	10.2	Non-microbial
<i>Arthrobacter</i> sp. EpRS66	0	0	106.4	1	0	Yes
<i>Drosophila arizonae</i>	23	38.1	9.9	16.3	19.2	Yes
<i>Drosophila eugracilis</i>	26.6	30.3	11.3	25.7	11.4	Non-microbial
<i>Psychrobacter cibarius</i>	0	0	57.4	47.8	0	Yes
<i>Citrobacter freundii</i>	0	86.2	0	18.8	0	Yes
<i>Psychrobacter</i> sp. G	0	0	48.3	55.6	0	Yes
<i>Parasteatoda tepidariorum</i>	52	12	9.8	9.7	18	Non-microbial
<i>Pseudomonas cichorii</i>	1	0	0	100	0	Yes
<i>Psychrobacter</i> sp. DAB_AL43B	0	0	44.3	55.8	0	Yes
<i>Pseudomonas asplenii</i>	0	0	0	100	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Callosobruchus chinensis</i>	13.9	17.8	16.8	36	10.5	Yes
<i>Avibacterium paragallinarum</i>	56.6	0	24.3	2.3	10.8	Yes
<i>Exiguobacterium undae</i>	0	0	93.4	0	0	Yes
<i>Glossina morsitans</i>	13.9	30.3	12.9	26.7	9.5	Non-microbial
<i>Pantoea rwandensis</i>	0	92.5	0	0	0	Yes
<i>Chlamydia trachomatis</i>	0	58.9	0	30.9	0	Yes
<i>Pantoea anthophila</i>	0	49.3	0	39	0	Yes
<i>Pantoea</i> sp. 3_1284	0	88	0	0	0	Yes
<i>Lasius niger</i>	20.8	20	13.1	21.2	12.1	Non-microbial
<i>Acromyrmex echinatio</i>	7.9	24	24	14	17	Non-microbial
<i>Ceratina calcarata</i>	42	18	6.3	6.5	11	Non-microbial
<i>Drosophila obscura</i>	17	21.2	14.5	18.1	11.7	Non-microbial

<i>Psychrobacter aquaticus</i>	0	0	27.2	53.9	0	Yes
<i>Bos mutus</i>	45.2	3.8	2.1	26.9	2.8	Non-microbial
<i>Pantoea</i> sp. 3.5.1	0	77.3	0	2.9	0	Yes
<i>Arthrobacter</i> sp. MYb213	0	0	72.6	6.9	0	Yes
<i>Drosophila rhopaloa</i>	17.6	14.9	9.4	28.8	8.6	Non-microbial
<i>synthetic construct</i>	0	58	0	20.7	0	Non-microbial
<i>Pantoea dispersa</i>	0	48.5	0	28.8	0	Yes
<i>Sphaeroforma arctica</i>	50	9.4	9.6	8.1	0	Non-microbial
<i>Psychrobacter</i> sp. JCM 18903	0	1	24	52	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Nomada flava</i>	14.8	14.9	10.5	28	8.4	Yes
<i>Enterococcus faecalis</i>	41	5.1	0	25.9	2.5	Yes
<i>Strigomonas culicis</i>	43.2	16.5	9.7	4.9	0	Yes
<i>Wolbachia</i> endosymbiont wVitB of <i>Nasonia vitripennis</i> phage WOVitB	31	15	7.5	8.8	12	Yes
<i>Drosophila biarmipes</i>	15	19.5	14.4	15.2	9.2	Non-microbial
<i>Pseudomonas prosekii</i>	0	0	0	71	0	Yes
<i>Streptomyces</i> sp. or3	43	11	9.5	6.3	0	Yes
<i>[Ruminococcus] gnavus</i>	53.2	7.8	1.2	1.2	6.1	Yes
<i>Pteropus alecto</i>	0	47	0	21.6	0	Non-microbial
<i>Psychrobacter immobilis</i>	0	0	41.2	25.6	0	Yes
<i>Pseudomonas gingeri</i>	0	1	0	65	0	Yes
<i>Ovis aries</i>	39	0	2.1	23.9	0	Non-microbial
<i>Drosophila melanogaster</i>	9.4	20.9	7.4	20.1	5.6	Non-microbial
<i>Xenorhabdus innexi</i>	0	0	0	62.5	0	Yes
<i>Arthrobacter</i> sp. NIO-1057	0	0	62	0	0	Yes
<i>Psychrobacter</i> sp. P11F6	0	0	37.7	24.3	0	Yes
<i>Pseudocitrobacter</i> sp. RIT 415	0	62	0	0	0	Yes
<i>Eurytemora affinis</i>	32	14	10	5.7	0	Non-microbial
<i>Neochlamydia</i> sp. TUME1	28	13	6.2	7.5	7	Yes
<i>Bactrocera dorsalis</i>	15.4	12.1	10.9	18	4.8	Non-microbial
<i>Glutamicibacter</i> sp. BW80	0	0	61.1	0	0	Yes
<i>Ailuropoda melanoleuca</i>	0	43.1	0	17.5	0	Non-microbial
<i>Arthrobacter</i> sp. PAO19	0	0	60.6	0	0	Yes
<i>Arthrobacter</i> sp. YC-RL1	0	0	58.1	0	0	Yes
<i>Psychrobacter</i> sp. Marseille-P5312	0	1	28.8	28.2	0	Yes
<i>Drosophila ananassae</i>	13	19	10	11	4.7	Non-microbial
<i>Drosophila navojoa</i>	12	20	5.5	11	8.9	Non-microbial
<i>Capra hircus</i>	31.7	0	1	23.2	1.4	Non-microbial
<i>Drosophila guanche</i>	9.3	20.8	7.7	14.8	4.2	Non-microbial
<i>Pan troglodytes</i>	0	41.1	0	15.2	0	Non-microbial
<i>Branchiostoma floridae</i>	25.5	6.7	14.4	9.4	0	Non-microbial
<i>Gonium pectorale</i>	33	8.8	8.7	5.2	0	Non-microbial
<i>Providencia</i> sp. WCHPHu000369	0	50	5.4	0	0	Yes
<i>Erwinia</i> sp. 198	0	54.9	0	0	0	Yes
<i>Boleophthalmus pectinirostris</i>	13.9	11.7	6.8	10.7	11	Non-microbial

Supplementary Material

<i>Colobus angolensis</i>	0	35	0	19	0	Non-microbial
<i>Saitoella complicata</i>	0	40	0	13	0	Yes
<i>Saimiri boliviensis</i>	0	36	0	17	0	Non-microbial
<i>Bombus terrestris</i>	14	21	2.8	9.2	5.7	Non-microbial
<i>Yersiniaceae bacterium 2015Iso6</i>	0	52.5	0	0	0	Yes
<i>Cryptosporidium meleagridis</i>	31	9	6.5	4.5	0	Yes
<i>Angomonas deanei</i>	16.3	12.4	6.8	15.3	0	Yes
<i>Asbolus verrucosus</i>	8.5	13	5.4	17	6	Non-microbial
<i>Epinephelus bruneus</i>	0	36	0	13	0	Non-microbial
<i>Mus pahari</i>	0	39.2	0	9.3	0	Non-microbial
<i>Psychrobacter</i> sp. JCM 18902	0	0	18.1	30.3	0	Yes
<i>Psychrobacter</i> sp. C 20.9	0	0	24.6	22.8	0	Yes
<i>Pantoea</i> sp. VS1	0	21.3	0	26.1	0	Yes
<i>Curvibacter delicatus</i>	0	1.4	0	0	46	Yes
<i>Comamonas thiooxydans</i>	18.3	11.3	3.7	13.7	0	Yes
<i>Drosophila pseudoobscura</i>	11.6	14.5	4.1	9	7.1	Non-microbial
<i>Drosophila persimilis</i>	10	12	7.4	10	6.7	Non-microbial
<i>Shigella flexneri</i>	3.8	0	38.9	1.4	2	Yes
<i>Rhodobacter viridis</i>	14	13	3.7	12	3.2	Yes
<i>Streptococcus anginosus</i>	0	0	41.3	4.1	0	Yes
<i>Leishmania infantum</i>	14	7.3	3	20.8	0	Yes
<i>Loxodonta africana</i>	0	29.5	0	15.4	0	Non-microbial
<i>Anolis carolinensis</i>	9.6	21.6	6	4.5	2.8	Non-microbial
<i>Anopheles gambiae</i>	8	7.9	7.8	12	8.5	Non-microbial
<i>Equus caballus</i>	0	35.6	0	8.6	0	Non-microbial
<i>Psychrobacter</i> sp. P11G5	0	0	6.3	37.9	0	Yes
<i>Canis lupus</i>	0	30	0	14	0	Non-microbial
<i>Rhinopithecus bieti</i>	0	30	0	14	0	Non-microbial
<i>Roseateles terrae</i>	0	8.8	0	0	35	Yes
<i>Nomascus leucogenys</i>	0	34	0	9.3	0	Non-microbial
<i>Enterococcus faecium</i>	21.9	0	0	19.6	1	Yes
<i>Pantoea</i> sp. AG1095	0	38.5	0	3.6	0	Yes
<i>Athalia rosae</i>	5.9	15	6.1	6.8	8.1	Non-microbial
<i>Acinetobacter johnsonii</i>	0	41.5	0	0	0	Yes
<i>Nitrospina gracilis</i>	5	7.1	7.4	10	12	Yes
<i>Pantoea septica</i>	0	40.4	0	0	0	Yes
<i>Eucalyptus grandis</i>	5.8	14	4.6	16	0	Non-microbial
<i>Laodelphax striatellus</i>	4.7	10	4.6	14	7	Non-microbial
<i>Drosophila elegans</i>	4.2	13	5.7	11	6.2	Non-microbial
<i>Pseudomonas</i> sp. Ant30-3	0	0	0	40	0	Yes
<i>Psychrobacter glacincola</i>	0	0	13.4	25.8	0	Yes
<i>Python bivittatus</i>	0	27	0	12	0	Non-microbial
<i>Cervus elaphus</i>	0	27	0	11	0	Non-microbial
<i>Providencia stuartii</i>	0	12.2	12.3	13.4	0	Yes
<i>Pantoea</i> sp. ARC270	0	4.9	0	32.9	0	Yes

<i>Pantoea</i> sp. ICBG 1758	0	21.6	0	15.7	0	Yes
<i>Mycobacteroides abscessus</i>	0	9.2	20	7.8	0	Yes
<i>Mesocricetus auratus</i>	0	27	0	10	0	Non-microbial
<i>Pantoea</i> sp. Sc1	0	19.4	0	17.6	0	Yes
<i>Blattella germanica</i>	7.5	11	10	4.4	4	Non-microbial
<i>Pantoea</i> sp. RIT388	0	36.8	0	0	0	Yes
<i>Buttiauxella brennerae</i>	0	0	0	36.7	0	Yes
<i>Arthrobacter</i> sp. AG1021	0	0	36.1	0	0	Yes
<i>[Curtobacterium] plantarum</i>	0	26.3	0	9.8	0	Yes
<i>Pantoea eucrina</i>	0	36	0	0	0	Yes
<i>Erwinia</i> sp. ErVv1	2.6	23.9	3.7	5.7	0	Yes
<i>Myotis davidii</i>	0	28.4	0	7.5	0	Non-microbial
<i>Myotis lucifugus</i>	0	27	0	8.9	0	Non-microbial
<i>Methanosarcina</i> sp. WWM596	8.8	9.1	1.7	9.9	6.4	Yes
<i>Amazona aestiva</i>	3.3	10.5	4.7	12.2	4.6	Non-microbial
<i>Acinetobacter indicus</i>	0	35	0	0	0	Yes
<i>Avibacterium volantium</i>	24	0	0	0	10.8	Yes
<i>Legionella pneumophila</i>	7	13	2.9	7.6	4.3	Yes
<i>Psychrobacter</i> sp. L7	0	0	10.7	23.9	0	Yes
<i>Shigella dysenteriae</i>	3.5	1.5	20.5	3.9	4.3	Yes
<i>Exiguobacterium sibiricum</i>	0	0	33.6	0	0	Yes
<i>Apis cerana</i>	9.2	6.7	3.4	8.2	5.7	Non-microbial
<i>Cronobacter sakazakii</i>	0	20.5	0	12.6	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Dirofilaria immitis</i>	8.5	8.1	0	5.5	11	Yes
<i>Psychrobacter phenylpyruvicus</i>	0	11	15.9	5.2	0	Yes
<i>Vombatus ursinus</i>	0	25.6	0	6.5	0	Non-microbial
<i>Patagioenas fasciata</i>	0	23	0	9.1	0	Non-microbial
<i>Paramormyrops kingsleyae</i>	0	17.2	0	14.3	0	Non-microbial
<i>Drosophila takahashii</i>	11	7.6	4.4	6.7	1.8	Non-microbial
<i>Trichinella pseudospiralis</i>	4.3	15	0	12	0	Yes
<i>Babesia bigemina</i>	19.9	0	1	8.1	2	Yes
<i>Acinetobacter</i> sp. SFA	0	3	27.8	0	0	Yes
<i>Psychrobacter</i> sp. Rd 27.2	0	0	9.1	21.4	0	Yes
<i>Ooceraea biroii</i>	4.6	14	5.3	4.1	2.3	Non-microbial
<i>Chryseobacterium balustinum</i>	0	0	30.2	0	0	Yes
<i>Dipodomys ordii</i>	0	20.8	0	9.3	0	Non-microbial
<i>Citrobacter braakii</i>	2	26.1	1.8	0	0	Yes
<i>Staphylococcus saprophyticus</i>	0	0	26.2	3.7	0	Yes
<i>Escherichia albertii</i>	2.1	0	25.9	1.9	0	Yes
<i>Psychrobacter</i> sp. MES7-P7E	0	1.8	5.2	22.9	0	Yes
<i>Culex quinquefasciatus</i>	3.9	8.5	2.7	5.7	8.7	Non-microbial
<i>Wolbachia</i> endosymbiont of <i>Onchocerca ochengi</i>	6.1	5.5	9.4	8.2	0	Yes
<i>Psychrobacter fozi</i>	0	1.3	7.5	20.2	0	Yes

Supplementary Material

<i>Wolbachia endosymbiont of Muscidifurax uniraptor</i>	7.2	4.4	4.6	11	1.7	Yes
<i>Enterobacter cancerogenus</i>	0	22	0	6.8	0	Yes
<i>Babesia ovata</i>	22.7	0	0	4.8	1	Yes
<i>Moraxella atlantae</i>	0	28.2	0	0	0	Yes
<i>Type-F symbiont of Plautia stali</i>	0	26.1	0	1.9	0	Yes
<i>Psychrobacter</i> sp. JB193	0	0	13.3	14.7	0	Yes
<i>Agrilus planipennis</i>	11	2.8	3.2	6.1	4.7	Non-microbial
<i>Leishmania donovani</i>	7.5	8.1	3.1	7.2	1.4	Yes
<i>Klebsiella variicola</i>	0	8	0	19.1	0	Yes
<i>Novimethylophilus kurashikiensis</i>	0	0	14	13	0	Yes
<i>Puma concolor</i>	0	20	0	6.9	0	Non-microbial
<i>Lelliottia nimipressuralis</i>	0	0	0	26.8	0	Yes
<i>Pantoea</i> sp. IMH	0	26.7	0	0	0	Yes
<i>Streptomyces scabiei</i>	14	3.6	2.5	6.5	0	Yes
<i>Mandrillus leucophaeus</i>	0	19	0	7.5	0	Non-microbial
<i>Eimeria praecox</i>	0	7.2	3.1	16	0	Yes
<i>Enterobacter kobei</i>	0	26.1	0	0	0	Yes
<i>Rahnella aquatilis</i>	0	15	0	10.7	0	Yes
<i>Methylocapsa palsarum</i>	0	8.9	10	5.8	1	Yes
<i>Chinchilla lanigera</i>	0	20	0	5.6	0	Non-microbial
<i>Yersinia intermedia</i>	0	25.3	0	0	0	Yes
<i>Enterobacter asburiae</i>	0	17.6	0	7.7	0	Yes
<i>Exiguobacterium</i> sp. RIT452	0	0	25.1	0	0	Yes
<i>Staphylococcus xylosus</i>	0	0	22.2	2.8	0	No
<i>Bactrocera tryoni</i>	5.3	5.1	4.1	8.4	2	Non-microbial
<i>Arthrobacter</i> sp. LS16	1	0	23.6	0	0	Yes
<i>Agrococcus pavilionensis</i>	0	0	24.5	0	0	Yes
<i>Psychrobacter</i> sp. Cmf 22.2	0	0	6.4	18.1	0	Yes
<i>Limulus polyphemus</i>	6.4	3.8	3	5.6	5.7	Non-microbial
<i>Pantoea</i> sp. ICBG 828	0	0	0	23.6	0	Yes
<i>Stenotrophomonas maltophilia</i>	13.1	0	10.2	0	0	Yes
<i>Yarrowia lipolytica</i>	0	23.2	0	0	0	Yes
<i>Pantoea</i> sp. 111	0	23	0	0	0	Yes
<i>Pantoea</i> sp. PNA 03-3	0	23	0	0	0	Yes
<i>Sinorhizobium medicae</i>	6.3	4.7	1	11	0	Yes
<i>Clostridium botulinum</i>	10.9	0	0	11.9	0	Yes
<i>Chlamydia abortus</i>	19.6	0	0	3.1	0	Yes
<i>Macrostomum lignano</i>	6.7	7.6	5	3.4	0	Yes
<i>Schistosoma japonicum</i>	0	13	0	9.2	0	Yes
<i>Burkholderia mallei</i>	8.7	3.7	1.7	7.9	0	Yes
<i>Pteropus vampyrus</i>	0	16.5	0	5.4	0	Non-microbial
<i>Corallococcus praedator</i>	14	3.8	4.1	0	0	Yes
<i>Kalamiella piersonii</i>	0	15.4	0	6.3	0	Yes
<i>Lipoptena fortisetosa</i>	2.8	6.8	3.8	3.7	4.6	Non-microbial

<i>Staphylococcus</i> sp. OJ82	0	0	17	4.6	0	Yes
<i>Serratia fonticola</i>	0	11	0	10.6	0	Yes
<i>Psychrobacter pasteurii</i>	0	0	7.1	14.4	0	Yes
<i>Buceros rhinoceros</i>	0	6.8	4.7	10	0	Non-microbial
<i>Aedes albopictus</i>	4.5	6.8	4.1	2.8	2.9	Non-microbial
<i>Arthrobacter</i> sp. MYb224	0	0	21	0	0	Yes
<i>Bacteroides heparinolyticus</i>	6.2	0	7.5	1.4	5.9	Yes
<i>Wolbachia</i> endosymbiont of <i>Culex pipiens</i>	5.9	4.8	2.5	5.5	2.1	Yes
<i>Propithecus coquereli</i>	0	19.5	0	1	0	Non-microbial
<i>Dictyostelium discoideum</i>	4.2	4.2	2.7	7.1	1.7	Yes
<i>Escherichia fergusonii</i>	1	7.5	9.1	0	2	Yes
<i>Crassostrea gigas</i>	0	8	1.9	9.5	0	Non-microbial
<i>Yersinia pseudotuberculosis</i>	0	19.3	0	0	0	Yes
<i>Pantoea cypripedii</i>	0	12.8	0	6.1	0	Yes
<i>Pantoea</i> sp. YU22	0	18.8	0	0	0	Yes
<i>Curvibacter</i> sp. GWA2_64_110	0	0	0	0	18.7	Yes
<i>Pantoea eucalypti</i>	0	13.3	0	5.3	0	Yes
<i>Edwardsiella piscicida</i>	2.6	7.6	2.9	4.5	1	Yes
<i>Bicyclus anynana</i>	6.3	4.8	3	1.6	2.9	Non-microbial
<i>Tupaia chinensis</i>	0	13	0	5.4	0	Non-microbial
<i>Actinobacillus pleuropneumoniae</i>	0	0	0	0	18.3	Yes
<i>Rhizophagus</i> sp. MUCL 43196	4	7.1	3.9	3.3	0	Yes
<i>Acinetobacter idrijaensis</i>	0	18.1	0	0	0	Yes
<i>Providencia rettgeri</i>	0	18	0	0	0	Yes
<i>Hafnia alvei</i>	0	0	0	18	0	Yes
<i>Psychrobacter piechaudii</i>	0	0	5.7	12	0	Yes
<i>Erwinia tracheiphila</i>	0	0	0	17.6	0	Yes
<i>Anaerostipes hadrus</i>	6.4	0	7.4	1	2.7	Yes
<i>Psychrobacter</i> sp. JB385	0	0	5.3	12	0	Yes
<i>Neodiprion lecontei</i>	2	6.1	2.8	6.4	0	Non-microbial
<i>Aggregatibacter kilianii</i>	0	0	0	0	17.2	Yes
<i>Escherichia</i> sp. MOD1-EC7003	0	1	16.2	0	0	Yes
<i>Bacillus subtilis</i>	0	0	4	4.9	8.2	Yes
<i>Shigella boydii</i>	4.7	1	7.2	3.7	0	Yes
<i>Neisseria meningitidis</i>	6.6	7.1	0	2.8	0	Yes
<i>Kluyvera georgiana</i>	0	6.5	0	10	0	Yes
<i>Aspergillus ochraceoroseus</i>	0	5	1.9	9.4	0	Yes
<i>Drosophila simulans</i>	2.7	2.7	7.8	2.9	0	Non-microbial
<i>Harpegnathos saltator</i>	4.8	6.6	2.2	2.5	0	Non-microbial
<i>Marinospirillum insulare</i>	8	5.5	2.3	0	0	Non-microbial
<i>Acipenser persicus</i>	1.8	4.5	0	6.8	2.5	Non-microbial
<i>Corvus cornix</i>	12	0	0	3.5	0	Non-microbial
<i>Arthrobacter agilis</i>	0	0	15.5	0	0	Yes
<i>Leptomonas seymouri</i>	4.6	3.8	3.7	3.3	0	Yes
<i>Methylothermaceae</i> bacteria B42	0	3.3	1.9	10.1	0	Yes

Supplementary Material

<i>Erwinia billingiae</i>	0	5.5	0	9.7	0	Yes
<i>alpha proteobacterium Q-1</i>	2	6.8	6.3	0	0	Yes
<i>Haemophilus influenzae</i>	0	6.2	0	8.9	0	Yes
<i>Yersiniaceae bacterium 2016Iso3</i>	0	14.9	0	0	0	Yes
<i>Trichuris trichiura</i>	0	0	11	3.7	0	Yes
<i>Fonticula alba</i>	5.8	1.5	1	6.3	0	Yes
<i>Pantoea wallisii</i>	0	12.7	0	1.9	0	Yes
<i>Arthrobacter crystallopoietes</i>	0	0	14.5	0	0	Yes
<i>Pectobacterium brasiliense</i>	0	4.8	0	9.7	0	Yes
<i>Listeria newyorkensis</i>	0	1	7.3	6.1	0	Yes
<i>Cimex lectularius</i>	3.9	3.5	0	4.4	2.5	Non-microbial
<i>Psychrobacter</i> sp. 4Bb	0	0	0	14.3	0	Yes
<i>Elysia chlorotica</i>	4.5	3.4	2	1	3.3	Non-microbial
<i>Staphylococcus</i> sp. AntiMn-1	0	0	14.2	0	0	Yes
<i>Avibacterium avium</i>	0	0	0	4.3	9.8	Yes
<i>[Eubacterium] rectale</i>	1.4	6.4	4.6	1.7	0	Yes
<i>Pantoea coffeiphila</i>	0	14	0	0	0	Yes
<i>Pseudomonas nitroreducens</i>	14	0	0	0	0	Yes
<i>Erwinia mediterraneensis</i>	0	14	0	0	0	Yes
<i>Cronobacter turicensis</i>	0	14	0	0	0	Yes
<i>Pantoea allii</i>	0	1.2	0	12.6	0	Yes
<i>Camelus bactrianus</i>	0	8.8	0	4.9	0	Non-microbial
<i>Oryzias latipes</i>	0	8.3	0	5.3	0	Non-microbial
<i>Klebsiella oxytoca</i>	0	11.1	0	2.4	0	Yes
<i>Bifidobacterium pseudolongum</i>	3.9	0	6.1	2.4	1	Yes
<i>Veillonellaceae bacterium DNF00626</i>	8.5	0	0	4.9	0	Yes
<i>Schistocephalus solidus</i>	0	2.6	1	9.7	0	Yes
<i>Leclercia adecarboxylata</i>	0	4.1	0	9	0	Yes
<i>Proteus vulgaris</i>	0	13	0	0	0	Yes
<i>Paraburkholderia fungorum</i>	0	13	0	0	0	Yes
<i>Moraxella lincolnii</i>	0	13	0	0	0	Yes
<i>Glaesserella</i> sp. 15-184	0	0	0	0	13	Yes
<i>Staphylococcus succinus</i>	0	0	12.9	0	0	Yes
<i>Plasmodium ovale</i>	11	0	0	1.9	0	Yes
<i>Exiguobacterium</i> sp. Leaf196	0	0	12.9	0	0	Yes
<i>Staphylococcus</i> sp. NAM3COL9	0	0	9.9	2.9	0	Yes
<i>Gardnerella vaginalis</i>	0	7	5.7	0	0	Yes
<i>Lactobacillus sharpeae</i>	8.7	0	2.9	1.1	0	Yes
<i>Pantoea</i> sp. BK028	0	4.9	0	7.7	0	Yes
<i>Streptococcus pneumoniae</i>	4.9	0	0	7.6	0	Yes
<i>Strigomonas oncopelti</i>	0	4.2	3.9	4.3	0	Yes
<i>Arthrobacter oryzae</i>	0	0	12.2	0	0	Yes
<i>Enterobacter ludwigii</i>	0	12.2	0	0	0	Yes
<i>Staphylococcus capitis</i>	0	3.3	8.8	0	0	Yes
<i>Psychrobacter lutiphocae</i>	0	0	8.1	4	0	Yes

<i>Bifidobacterium thermophilum</i>	4	0	4.5	1	2.6	Yes
<i>[Erwinia] teleogrylli</i>	0	12	0	0	0	Yes
<i>Psychrobacter</i> sp. AntiMn-1	0	0	3.8	8.2	0	Yes
<i>Pluralibacter gergoviae</i>	0	12	0	0	0	Yes
<i>Arthrobacter</i> sp. Hiyo8	0	0	12	0	0	Yes
<i>Xanthomonas oryzae</i>	11.9	0	0	0	0	Yes
<i>Acinetobacter</i> sp. RIT592	0	11.9	0	0	0	Yes
<i>Psychrobacter</i> sp. 4Dc	0	0	6.3	5.5	0	Yes
<i>Chryseobacterium piscium</i>	0	0	11.8	0	0	Yes
<i>Wolbachia</i> endosymbiont of <i>Tachinid</i> sp.	0	3.3	0	3.3	5	Yes
<i>Pseudarthrobacter phenanthrenivorans</i>	0	0	11.6	0	0	Yes
<i>Leishmania major</i>	6	3.6	1.9	0	0	Yes
<i>Pantoea stewartii</i>	0	8.5	0	2.9	0	Yes
<i>Raoultella planticola</i>	0	0	0	11.4	0	Yes
<i>Psychrobacter pygoscelis</i>	0	6.1	0	5.3	0	Yes
<i>Cyrtomium guizhouense</i>	0	4.8	0	6.5	0	Non-microbial
<i>Rubrivivax</i> sp.	6.7	4.6	0	0	0	Yes
<i>Psychrobacter urativorans</i>	0	5.3	0	6	0	Yes
<i>Staphylococcus vitulinus</i>	0	0	11.3	0	0	Yes
<i>Bifidobacterium longum</i>	0	0	11.3	0	0	Yes
<i>Anaplasma phagocytophilum</i>	6.1	0	0	5.2	0	Yes
<i>Wolbachia</i> sp. wMel_KL	4.4	0	2.3	2.9	1.5	Yes
<i>Superficieibacter electus</i>	0	9.1	2	0	0	Yes
<i>Pantoea alhagi</i>	0	11.1	0	0	0	Yes
<i>Caballeronia glathei</i>	1.4	3.6	1.5	2.9	1.6	Yes
<i>Lactobacillus vaginalis</i>	0	2	5.4	3.6	0	Yes
<i>Achromobacter spanius</i>	0	11	0	0	0	Yes
<i>Citrobacter</i> sp. FDAARGOS_156	0	11	0	0	0	Yes
<i>Escherichia</i> phage L AB-2017	0	11	0	0	0	Yes
<i>Erwinia amylovora</i>	0	0	0	11	0	Yes
<i>Phaeobacter inhibens</i>	0	6.9	1.3	2.7	0	Yes
<i>Cyanobacterium aponinum</i>	1.2	0	3.6	1.5	4.5	Non-microbial
<i>Morganella morganii</i>	0	3.9	4.9	2	0	Yes
<i>Cardiobacterium hominis</i>	0	0	0	10.7	0	Yes
<i>Piliocolobus tephrosceles</i>	0	9	0	1.7	0	Non-microbial
<i>Eoetvoesia caeni</i>	0	1	0	0	9.6	Yes
<i>Xiphophorus maculatus</i>	0	2.6	1.4	6.4	0	Non-microbial
<i>Arthrobacter</i> sp. MYb227	0	0	10.4	0	0	Yes
<i>Plasmodium falciparum</i>	0	7.1	0	3.3	0	Yes
<i>Bacteroidetes</i> bacterium GWC2_40_22	5.7	3.2	0	1.4	0	Yes
<i>Psychrobacter alimentarius</i>	0	0	0	10.3	0	Yes
<i>Acinetobacter seifertii</i>	0	2.5	2.8	4.9	0	Yes
<i>Trichechus manatus</i>	0	6.5	0	3.7	0	Non-microbial
<i>Staphylococcus sciuri</i>	0	0	2.6	7.4	0	Yes
<i>Bifidobacterium catenulatum</i>	0	0	10	0	0	Yes
<i>Rhodanobacter</i> sp. FW104-R8	5.4	4.5	0	0	0	Yes

Supplementary Material

<i>Citrobacter portucalensis</i>	0	9.9	0	0	0	Yes
<i>Exiguobacterium</i> sp. KRL4	0	0	9.9	0	0	Yes
<i>Pectobacterium punjabense</i>	0	9.9	0	0	0	Yes
<i>Galeopterus variegatus</i>	0	9.8	0	0	0	Non-microbial
<i>Subdoligranulum</i> sp. APC924/74	1	0	8.8	0	0	Yes
<i>Shewanella</i> sp. ANA-3	0	9.8	0	0	0	Yes
<i>Metarhizium acridum</i>	0	0	0	0	9.6	Yes
<i>Psychrobacter</i> sp. PRwf-1	0	0	0	9.5	0	Yes
<i>Aeromonas veronii</i>	0	9.5	0	0	0	Yes
<i>Dorea phocaeensis</i>	6.4	1.4	1.7	0	0	Yes
<i>Cicer arietinum</i>	6.2	1.8	1.5	0	0	Non-microbial
<i>Neomonachus schauinslandi</i>	0	6.5	0	3	0	Non-microbial
<i>Izhakiella capsodis</i>	0	0	0	9.4	0	Yes
<i>Stenotrophomonas rhizophila</i>	9.1	0	0	0	0	Yes
<i>Eufriesea mexicana</i>	4.7	1	3.3	0	0	Non-microbial
<i>Pantoea</i> sp. A4	0	9	0	0	0	Yes
<i>Mixta gaviniae</i>	0	0	0	9	0	Yes
<i>Bifidobacterium adolescentis</i> CAG:119	2.9	0	6.1	0	0	Yes
<i>Callorhinchus milii</i>	0	4.9	0	4	0	Non-microbial
<i>Staphylococcus kloosii</i>	0	0	8.9	0	0	Yes
<i>Corvus brachyrhynchos</i>	4.4	0	0	4.5	0	Non-microbial
<i>Glutamicibacter soli</i>	0	0	8.9	0	0	Yes
<i>Acinetobacter</i> sp. ACNIH2	0	8.9	0	0	0	Yes
<i>Rhodovulum sulfidophilum</i>	0	3.3	3.5	2	0	Yes
<i>Felis catus</i>	0	5.4	0	3.3	0	Non-microbial
<i>Acinetobacter radioresistens</i>	0	3	5.7	0	0	Yes
<i>Pectobacterium fontis</i>	0	0	0	8.7	0	Yes
<i>Paeniglutamicibacter antarcticus</i>	0	0	8.7	0	0	Yes
<i>Cedecea lapagei</i>	0	8.5	0	0	0	Yes
<i>Acinetobacter junii</i>	0	4.6	0	3.9	0	Yes
<i>Moraxella boevei</i>	0	1	0	7.5	0	Yes
<i>Drosophila bipectinata</i>	0	2.8	0	5.7	0	Non-microbial
<i>Emiliana huxleyi</i>	0	1.2	0	7.2	0	Non-microbial
<i>Bacillus sporothermodurans</i>	0	3.2	1.5	1	2.7	Yes
<i>Megachile rotundata</i>	0	2.9	1	4.4	0	Non-microbial
<i>Kocuria</i> sp. UCD-OTCP	0	0	8.3	0	0	Yes
<i>Acinetobacter</i> sp. CIP 102129	0	8.2	0	0	0	Yes
<i>Acinetobacter ursingii</i>	0	8.2	0	0	0	Yes
<i>Neisseria cinerea</i>	0	8.2	0	0	0	Yes
<i>Leucobacter</i> sp. OH1287	0	0	8.2	0	0	Yes
<i>Rouxiella silvae</i>	0	8.1	0	0	0	Yes
<i>Paeniglutamicibacter gangotriensis</i>	0	0	8	0	0	Yes
<i>Pseudomonas capeferrum</i>	0	8	0	0	0	Yes
<i>Rhodanobacter denitrificans</i>	8	0	0	0	0	Yes
<i>Acinetobacter</i> sp. ANC 5318	0	8	0	0	0	Yes

<i>Curvibacter</i> sp. PAE-UM	0	0	0	0	8	Yes
<i>Pedobacter</i> sp. SM1810	0	0	7.9	0	0	Yes
<i>Pantoea</i> sp. GL120224-02	0	7.9	0	0	0	Yes
<i>Haematomicrobium sanguinis</i>	0	0	7.9	0	0	Yes
<i>Terrapene carolina</i>	0	7.8	0	0	0	Non-microbial
<i>Erwinia iniecta</i>	0	0	0	7.8	0	Yes
<i>Enterobacter</i> sp. HP19	0	7.8	0	0	0	Yes
<i>Lactobacillus ruminis</i>	1.1	0	4.7	0	1.9	Yes
<i>Candidatus Moranbacteria</i> bacterium CG23_combo_of_CG06-09_8_20_14_all_39_10	0	7.7	0	0	0	Yes
<i>Bacillus cereus</i>	0	0	7.7	0	0	Yes
<i>Acinetobacter haemolyticus</i>	0	7.7	0	0	0	Yes
<i>Pseudoclavibacter helvolus</i>	0	0	7.7	0	0	Yes
<i>Brenneria roseae</i>	0	0	0	7.6	0	Yes
<i>Burkholderiales</i> bacterium RIFCSPHIGH02_01_FULLL_63_240	0	7.6	0	0	0	Yes
<i>Pectobacterium parmentieri</i>	0	7.6	0	0	0	Yes
<i>Arthrobacter</i> sp. MYb221	0	0	7.6	0	0	Yes
<i>Venturia inaequalis</i>	3.2	0	2.8	1.5	0	Yes
<i>Candidimonas</i> sp.	0	0	7.5	0	0	Yes
<i>Citricoccus muralis</i>	0	0	7.5	0	0	Yes
<i>Corynebacterium efficiens</i>	0	0	7.4	0	0	Yes
<i>Enterobacteriaceae</i> bacterium JKS000234	0	0	0	7.4	0	Yes
<i>Bifidobacterium bifidum</i>	0	0	7.4	0	0	Yes
<i>Leishmania tarentolae</i>	0	1.1	0	6.3	0	Yes
<i>Riemerella anatipestifer</i>	0	0	7.3	0	0	Yes
<i>Klebsiella</i> cf. <i>planticola</i> B43	0	7.3	0	0	0	Yes
<i>Acinetobacter</i> sp. CIP 101966	0	7.2	0	0	0	Yes
<i>Acinetobacter</i> sp. ANC 4216	0	7.2	0	0	0	Yes
<i>Moraxella catarrhalis</i>	0	7.2	0	0	0	Yes
<i>Spodoptera litura</i>	0	2.2	0	5	0	Non-microbial
<i>Photorhabdus australis</i>	0	7.2	0	0	0	Yes
<i>Acinetobacter calcoaceticus</i>	0	0	0	7.2	0	Yes
<i>Arthrobacter</i> sp. RT-1	0	0	7.2	0	0	Yes
<i>Pantoea</i> sp.	0	7.2	0	0	0	Yes
<i>Trypanosoma equiperdum</i>	5.2	2	0	0	0	Yes
<i>Ochotona princeps</i>	0	5.4	0	1.7	0	Non-microbial
<i>Pristionchus pacificus</i>	4.3	2.8	0	0	0	Yes
<i>Acidovorax citrulli</i>	0	2	0	0	5.1	Yes
<i>Streptococcus suis</i>	0	0	0	0	7.1	Yes
<i>Pseudomonas kunmingensis</i>	7	0	0	0	0	Yes
<i>Parabacteroides merdae</i>	0	7	0	0	0	Yes
<i>Acinetobacter</i> sp. CIP 102136	0	3.6	3.4	0	0	Yes
<i>Glutamicibacter</i> sp. ZJUTW	0	0	6.9	0	0	Yes

Supplementary Material

<i>Tatumella morbirosei</i>	0	6.9	0	0	0	Yes
<i>Pantoea</i> sp. YR343	0	6.8	0	0	0	Yes
<i>Arthrobacter</i> sp. EpRS71	0	0	6.8	0	0	Yes
<i>Proteus mirabilis</i>	0	0	0	6.8	0	Yes
<i>Moraxella canis</i>	0	0	3.7	3	0	Yes
<i>Acinetobacter</i> sp. MF4642	0	6.7	0	0	0	Yes
<i>Psychrobacter</i> sp. 1501(2011)	0	6.7	0	0	0	Yes
<i>Serratia odorifera</i>	0	0	0	6.7	0	Yes
<i>Paenibacillus popilliae</i>	0	0	6.7	0	0	Yes
<i>Arthrobacter glacialis</i>	0	0	6.6	0	0	Yes
<i>Enterobacteriaceae</i> bacterium B14	0	6.6	0	0	0	Yes
<i>Escherichia</i> sp. MOD1-EC7011	0	0	6.5	0	0	Yes
<i>Chlamydia psittaci</i>	5.5	0	0	1	0	Yes
<i>Shimwellia blattae</i>	0	6.5	0	0	0	Non-microbial
<i>Aurantimicrobium</i> sp. MWH-Mo1	0	0	6.5	0	0	Yes
<i>Rothia mucilaginosa</i>	0	0	6.5	0	0	Yes
<i>Penaeus vannamei</i>	0	2	0	4.4	0	Non-microbial
<i>Psychrobacter pacificensis</i>	0	0	6.4	0	0	Yes
<i>Idiomarina aestuarii</i>	4.2	0	0	2.2	0	Yes
<i>Varibaculum cambriense</i>	0	0	6.4	0	0	Yes
<i>Erwinia gerundensis</i>	0	0	0	6.4	0	Yes
<i>Enterobacterales</i> bacterium CwR94	0	4.3	0	2	0	Yes
<i>Corynebacterium pseudopelargi</i>	0	0	6.3	0	0	Yes
<i>Pseudomonas kuykendallii</i>	0	0	0	2.4	3.9	Yes
<i>Acinetobacter</i> sp. ANC 4218	0	6.2	0	0	0	Yes
<i>Chryseobacterium</i> sp. 5_R23647	0	0	6.2	0	0	Yes
<i>Candidatus Wolfeybacteria</i> bacterium	3.3	2.9	0	0	0	Yes
<i>Nannospalax galili</i>	0	4.5	0	1.6	0	Non-microbial
<i>Cycloclasticus pugetii</i>	0	0	0	6.1	0	Yes
<i>Citrobacter</i> sp. BIDMC107	0	6.1	0	0	0	Yes
<i>Chryseobacterium</i> sp. YR460	0	0	6.1	0	0	Yes
<i>Citrobacter koseri</i>	0	6.1	0	0	0	Yes
<i>Cyanistes caeruleus</i>	0	6.1	0	0	0	Non-microbial
<i>Theropithecus gelada</i>	0	4.3	0	1.8	0	Non-microbial
<i>Enterobacter</i> sp. FY-07	0	2.2	0	3.8	0	Yes
<i>Mycobacterium tuberculosis</i>	0	6	0	0	0	Yes
<i>Acinetobacter</i> sp. 883425	0	6	0	0	0	Yes
<i>Acinetobacter</i> sp. WCHA55	0	6	0	0	0	Yes
<i>Rhodoferrax</i> sp. OTU1	0	1	0	0	5	Yes
<i>Acinetobacter</i> sp. ACNIH3	0	6	0	0	0	Yes
<i>Otolemur garnettii</i>	0	4.4	0	1.6	0	Non-microbial
<i>Moraxella caviae</i>	0	5.9	0	0	0	Yes
<i>Coproccoccus catus</i>	0	1.8	2.8	0	1.3	Yes
<i>Staphylococcus</i> sp. ZWU0021	0	0	2.8	3	0	Yes
<i>Cephalophus adersi</i>	4.8	0	0	1	0	Non-microbial

<i>Enterobacter</i> sp. R1(2018)	0	0	0	5.8	0	Yes
<i>Sporosarcina</i> sp. P18a	0	0	5.8	0	0	Yes
<i>Bemisia tabaci</i>	1	1.9	0	1.9	1	Non-microbial
<i>Yersinia rohdei</i>	0	5.8	0	0	0	Yes
<i>Staphylococcus felis</i>	0	0	5.8	0	0	Yes
<i>Microcystis aeruginosa</i>	0	0	0	5.8	0	Non-microbial
<i>Escherichia</i> virus P1	0	5.7	0	0	0	Yes
<i>Psychrobacter</i> sp. B29-1	0	0	4.6	1.1	0	Yes
<i>Candidatus Nitrosotalea bavarica</i>	0	5.6	0	0	0	Yes
<i>Avibacterium gallinarum</i>	0	0	0	2.9	2.7	Yes
<i>Paracoccus</i> sp. N5	0	0	0	0	5.6	Yes
<i>Pantoea</i> sp. AV62	0	5.6	0	0	0	Yes
<i>Variovorax</i> sp. Root473	0	1.8	0	0	3.8	Yes
<i>Pseudoalteromonas</i> sp. TB64	0	0	0	5.5	0	Yes
<i>Acinetobacter</i> sp. AR2-3	0	5.5	0	0	0	Yes
<i>Enterococcus hirae</i>	5.5	0	0	0	0	Yes
<i>Bifidobacterium merycicum</i>	0	0	4	0	1.5	Yes
<i>Paenibacillus</i> sp. VT-16-81	0	0	5.4	0	0	Yes
<i>Vibrio tasmaniensis</i>	0	0	0	5.4	0	Yes
<i>Enhydrobacter</i> sp. 8BJ	0	5.4	0	0	0	Yes
<i>Yersinia frederiksenii</i>	0	2	0	3.4	0	Yes
<i>Carlito syrichta</i>	0	5.4	0	0	0	Non-microbial
<i>Acinetobacter</i> sp. CIP 51.11	0	5.4	0	0	0	Yes
<i>Pantoea</i> sp. OXWO6B1	0	0	0	5.4	0	Yes
<i>Arthrobacter</i> sp. Y81	0	0	5.3	0	0	Yes
<i>Brachyspira murdochii</i>	5.3	0	0	0	0	Yes
<i>Arthrobacter</i> sp. ok362	0	0	5.3	0	0	Yes
<i>Undibacterium parvum</i>	0	5.3	0	0	0	Yes
<i>Fusicatenibacter saccharivorans</i>	0	0	4.3	1	0	Yes
<i>Ralstonia insidiosa</i>	0	5.3	0	0	0	Yes
<i>Sphingomonas endophytica</i>	0	0	0	5.3	0	Yes
<i>Staphylococcus</i> virus Sextaec	0	0	1.8	3.5	0	Yes
<i>Ruegeria</i> sp. ANG-S4	5.2	0	0	0	0	Yes
<i>Agathobaculum butyriciproducens</i>	2.7	0	1.5	0	1	Yes
<i>Chryseobacterium</i> sp. CBo1	0	0	5.2	0	0	Yes
<i>Paroedura picta</i>	4.2	0	0	1	0	Non-microbial
SAR324 cluster bacterium	0	0	0	5.1	0	Yes
<i>Pseudomonas mendocina</i>	0	5.1	0	0	0	Yes
<i>Pantoea rodasii</i>	0	5.1	0	0	0	Yes
<i>Xanthomonas citri</i>	5.1	0	0	0	0	Yes
<i>Leishmania mexicana</i>	5.1	0	0	0	0	Yes
Type-D symbiont of <i>Plautia stali</i>	0	0	0	5	0	Yes
<i>Alligator mississippiensis</i>	0	3.6	0	1.4	0	Non-microbial
<i>Mycolicibacterium malmesburyense</i>	5	0	0	0	0	Yes
<i>Gallibacterium anatis</i>	0	5	0	0	0	Yes
<i>Acinetobacter</i> sp. MYb10	0	5	0	0	0	Yes

Supplementary Material

<i>Neisseria lactamica</i>	0	0	0	5	0	Yes
<i>Apis dorsata</i>	0	2	0	2.9	0	Non-microbial
<i>Acinetobacter</i> sp. WCHAc060041	0	4.9	0	0	0	Yes
<i>Bos taurus</i>	1	3.9	0	0	0	Non-microbial
<i>Gordonia polyisoprenivorans</i>	0	0	4.8	0	0	Yes
<i>Xenopus tropicalis</i>	0	4.8	0	0	0	Non-microbial
<i>Nitrosovibrio</i> sp. Nv17	1	0	0	3.8	0	Yes
<i>Bifidobacterium angulatum</i>	1	0	1.8	0	2	Yes
<i>Moraxella</i> sp. RCAD0137	0	4.7	0	0	0	Yes
<i>Acinetobacter schindleri</i>	0	4.7	0	0	0	Yes
<i>Meriones unguiculatus</i>	0	4.7	0	0	0	Non-microbial
<i>Bacillus lacisalsi</i>	0	0	0	4.7	0	Yes
<i>Bifidobacterium</i> sp. N4G05	0	0	4.7	0	0	Yes
<i>Proteus</i> sp. HMSC14B05	0	0	0	4.7	0	Yes
<i>Abrus precatorius</i>	0	0	0	4.7	0	Non-microbial
<i>Acinetobacter</i> sp. ANC 4862	0	4.7	0	0	0	Yes
<i>Streptomyces violaceusniger</i>	4.6	0	0	0	0	Yes
<i>Macrococcus caseolyticus</i>	0	0	3.6	1	0	Yes
<i>Clostridioides difficile</i>	1	0	0	3.6	0	Yes
<i>Brachybacterium</i> sp. UMB0905	0	0	4.6	0	0	Yes
<i>Cajanus cajan</i>	0	4.6	0	0	0	Non-microbial
<i>Dickeya dadantii</i>	0	0	0	4.6	0	Yes
<i>Arthrobacter</i> sp. yr096	0	0	4.6	0	0	Yes
<i>Staphylococcus nepalensis</i>	0	0	4.6	0	0	Yes
<i>Roseburia inulinivorans</i>	0	4.6	0	0	0	Yes
<i>Escherichia</i> sp. MOD1-EC5189	0	0	4.6	0	0	Yes
<i>Drosophila buzzatii</i>	0	1	0	0	3.5	Non-microbial
<i>Acinetobacter tandoii</i>	0	4.5	0	0	0	Yes
<i>Pectobacterium aquaticum</i>	0	0	0	4.5	0	Yes
<i>Alicyclophilus</i> sp. B1	0	0	0	0	4.4	Yes
<i>Bacillus glycinifermentans</i>	0	0	4.4	0	0	Yes
<i>Streptomyces</i> sp. ZS0098	0	0	4.4	0	0	Yes
<i>Bartonella quintana</i>	0	0	0	4.4	0	Yes
<i>Kosakonia radicincitans</i>	0	4.4	0	0	0	Yes
<i>Acinetobacter pittii</i>	0	4.4	0	0	0	Yes
<i>Corynebacterium</i> sp. HMSC073H12	0	0	4.4	0	0	Yes
<i>Exiguobacterium</i> sp. RIT594	0	0	4.3	0	0	Yes
<i>Microbacterium</i> sp. Leaf159	0	0	4.2	0	0	Yes
<i>Tatumella citrea</i>	0	0	0	4.2	0	Yes
<i>Collinsella tanakaei</i>	0	0	4.2	0	0	Yes
<i>Betaproteobacteria</i> bacterium HGW-Betaproteobacteria-18	0	1.1	0	0	3.1	Yes
<i>Patescibacteria</i> group bacterium	0	4.1	0	0	0	Yes
<i>Moraxella bovis</i>	0	0	4.1	0	0	Yes
<i>[Ruminococcus]</i> torques	0	1	2.1	1	0	Yes

<i>Flammeovirga yaeyamensis</i>	0	2.4	1.6	0	0	Yes
<i>Acinetobacter soli</i>	0	4	0	0	0	Yes
<i>Candidatus Kaiserbacteria bacterium</i> CG10_big_fil_rev_8_21_14_0_10_49_17	2.4	1.6	0	0	0	Yes
<i>Acinetobacter baylyi</i>	0	4	0	0	0	Yes
<i>Psychrobacter</i> sp. JCM 18900	0	0	1	3	0	Yes
<i>Pseudarthrobacter sulfonivorans</i>	0	0	0	3.9	0	Yes
<i>Marinomonas aquimarina</i>	0	3.9	0	0	0	Yes
<i>Acinetobacter wuhouensis</i>	0	3.9	0	0	0	Yes
<i>Acinetobacter calcoaceticus/baumannii</i> complex sp. ABNIH27	0	3.9	0	0	0	Yes
<i>Dendroctonus ponderosae</i>	0	3.9	0	0	0	Non-microbial
<i>Bartonella tribocorum</i>	0	0	2.9	1	0	Yes
<i>Achromobacter pulmonis</i>	0	1.4	0	0	2.5	Yes
<i>Brugia malayi</i>	3.9	0	0	0	0	Yes
<i>Comamonadaceae bacterium</i> CG17_big_fil_post_rev_8_21_14_2_50_60_13	0	1.1	0	0	2.7	Yes
<i>Klebsiella aerogenes</i>	0	1	2.8	0	0	Yes
<i>Arthrobacter enclensis</i>	0	0	3.8	0	0	Yes
<i>Acinetobacter</i> sp. ANC 4281	0	3.8	0	0	0	Yes
<i>Yersinia enterocolitica</i>	0	0	0	3.7	0	Yes
<i>Pseudoalteromonas</i> phage PHS3	0	0	0	3.7	0	Yes
<i>Desertihabitans brevis</i>	0	0	3.7	0	0	Yes
<i>Staphylococcus</i> phage VB-SauS-SA2	0	0	0	3.7	0	Yes
<i>Limnohabitans</i> sp. G3-2	0	1.4	0	0	2.3	Yes
<i>Pasteurella multocida</i>	0	0	1.6	1	1	Yes
<i>Arcobacter trophiarum</i>	0	0	0	3.6	0	Yes
<i>Pseudorhodoferax</i> sp. Leaf267	0	0	0	0	3.6	Yes
<i>Marinobacter pelagius</i>	0	0	3.6	0	0	Yes
Orf virus	3.6	0	0	0	0	Yes
<i>Staphylococcus petrasii</i>	0	0	3.6	0	0	Yes
<i>Psychrobacter piscatorii</i>	0	0	0	3.6	0	Yes
<i>Dysgonamonadaceae bacterium</i>	0	0	3.6	0	0	Yes
<i>Toxoplasma gondii</i>	1.7	0	0	0	1.9	Yes
<i>Cavia porcellus</i>	0	3.5	0	0	0	Non-microbial
<i>Stenotrophomonas indicatrix</i>	3.5	0	0	0	0	Yes
<i>Symbiodinium microadriaticum</i>	0	1.6	0	1.9	0	Non-microbial
<i>Novosphingobium</i> sp.	0	3.5	0	0	0	No
<i>Acinetobacter</i> sp. ANC 5324	0	3.4	0	0	0	Yes
<i>Bifidobacterium animalis</i>	0	0	3.4	0	0	Yes
<i>Psychrobacter</i> sp. TB47	0	0	0	3.4	0	Yes
<i>Acinetobacter guillouiae</i>	0	3.4	0	0	0	Yes
<i>Trabulsiella odontotermis</i>	0	0	3.4	0	0	Yes
<i>Vibrio splendidus</i>	0	0	0	3.4	0	Yes

Supplementary Material

<i>Pseudomonadales</i> bacterium 32-42-5	0	3.4	0	0	0	Yes
<i>Paenibacillus macerans</i>	0	3.4	0	0	0	Yes
<i>Methyloversatilis</i> sp. 12-65-5	0	2	0	0	1.4	Yes
<i>Acinetobacter</i> sp. ACNIH4	0	3.3	0	0	0	Yes
<i>Erinaceus europaeus</i>	0	2.3	0	1	0	Non-microbial
<i>Mycetocola</i> sp. 622	0	0	3.3	0	0	Yes
<i>Eubacterium eligens</i>	3.2	0	0	0	0	Yes
<i>Sulfurospirillum arcachonense</i>	0	3.2	0	0	0	Yes
<i>Chryseobacterium aquaticum</i>	0	0	3.2	0	0	Yes
<i>Serratia</i> sp. S40	0	0	0	3.2	0	Yes
<i>Rhodopirellula sallentina</i>	0	3.2	0	0	0	Yes
<i>Haemophilus massiliensis</i>	0	3.2	0	0	0	Yes
<i>Acinetobacter</i> sp. ANC 5347	0	3.2	0	0	0	Yes
<i>Psychrobacter</i> sp. P11G3	0	0	0	3.2	0	Yes
<i>Escherichia</i> sp. MOD1-EC5495	0	0	3.2	0	0	Yes
<i>Psychrobacter</i> sp. Choline-3u-12	0	0	0	3.1	0	Yes
<i>Macrococcus goetzii</i>	0	0	3.1	0	0	Yes
<i>Acinetobacter</i> sp. ANC 4204	0	3.1	0	0	0	Yes
<i>Acinetobacter</i> phage vB_AbaM_B9	0	0	0	3.1	0	Yes
<i>Escherichia</i> sp. MOD1-EC5287	0	0	3.1	0	0	Yes
<i>Curvibacter gracilis</i>	0	0	0	0	3	Yes
<i>Xanthomonas arboricola</i>	3	0	0	0	0	Yes
<i>Albidiferax</i> sp. OV413	0	0	0	0	3	Yes
<i>Ewingella americana</i>	0	0	3	0	0	Yes
<i>Actinobacillus seminis</i>	0	0	3	0	0	Yes
<i>Enterobacter roggkampii</i>	0	0	0	3	0	Yes
<i>Octodon degus</i>	0	1.9	0	1	0	Non-microbial
<i>Xanthomonadales</i> bacterium CG_4_9_14_3_um_filter_62_6	0	2.9	0	0	0	Yes
<i>Exiguobacterium</i> sp. N4-1P	0	0	2.9	0	0	Yes
<i>Candidatus Kaiserbacteria</i> bacterium RIFCSPHIGH02_02_FULLL_56_30	1.9	1	0	0	0	Yes
<i>Acinetobacter</i> sp. CIP 102159	0	2.9	0	0	0	Yes
<i>Serratia</i> sp. S1B	0	2.9	0	0	0	Yes
<i>Psychrobacter</i> phage pOW20-A	0	0	0	2.8	0	Yes
Cloning vector pUC18_LexA+Cp190	0	0	2.8	0	0	Yes
<i>Arthrobacter alpinus</i>	0	0	2.8	0	0	Yes
<i>Citrobacter amalonaticus</i>	0	0	2.8	0	0	Yes
<i>Burkholderia</i> sp. HI2714	2.8	0	0	0	0	Yes
<i>Firmicutes</i> bacterium CAG:24	0	0	0	0	2.8	Yes
<i>Bacillus</i> sp. LYL4	0	0	0	2.7	0	Yes
<i>Bifidobacterium scaligerum</i>	0	0	0	2.7	0	Yes
<i>Burkholderiales</i> bacterium RIFCSPLOW02_12_FULLL_61_40	0	0	0	0	2.7	Yes

<i>Citrobacter freundii</i> complex sp. CFNIH2	1	0	1.7	0	0	Yes
<i>Polaromonas</i> sp. AER18D-145	0	0	0	0	2.7	Yes
<i>Chryseobacterium scophthalmum</i>	0	0	2.7	0	0	Yes
<i>Acinetobacter</i> sp. ACNIH1	0	2.5	0	0	0	Yes
<i>Moraxella equi</i>	0	0	0	2.5	0	Yes
<i>Bacillus amyloliquefaciens</i>	0	0	0	2.5	0	Yes
<i>Exiguobacterium antarcticum</i>	0	0	2.5	0	0	Yes
<i>Verrucomicrobia bacterium</i>	0	2.5	0	0	0	Yes
<i>Chryseobacterium taichungense</i>	0	0	2.5	0	0	Yes
<i>Bordetella bronchiseptica</i>	2.4	0	0	0	0	Yes
<i>Parcubacteria group</i> bacterium GW2011_GWB1_40_14	2.4	0	0	0	0	Yes
<i>Planctomycetes</i> bacterium RBG_13_62_9	0	0	0	0	2.4	Yes
<i>Acinetobacter</i> sp. VT 511	0	0	2.4	0	0	Yes
<i>Blautia obeum</i>	0	0	0	0	2.4	Yes
<i>Firmicutes</i> bacterium AF16-15	0	0	0	0	2.4	Yes
<i>Lachnospiraceae</i> bacterium AM26-1LB	2.4	0	0	0	0	Yes
<i>Shinella</i> sp. JR1-6	0	2.3	0	0	0	Yes
<i>Eubacterium</i> sp. CAG76_36_125	0	0	2.3	0	0	Yes
<i>Aquabacterium parvum</i>	0	2.3	0	0	0	Yes
<i>Rhizobiales</i> bacterium	0	2.2	0	0	0	Yes
<i>Avibacterium endocarditidis</i>	0	0	0	0	2.2	Yes
<i>Candidatus Nitrosotalea okcheonensis</i>	0	2.2	0	0	0	Yes
<i>Chryseobacterium gambrini</i>	0	0	2.2	0	0	Yes
<i>Tyzzerella nexilis</i>	0	0	0	0	2.2	Yes
<i>Paenibacillus</i> sp. IHB B 3084	0	2.2	0	0	0	Yes
<i>Gracilibacillus dipsosauri</i>	0	0	0	2.2	0	Yes
<i>Bifidobacterium pseudocatenulatum</i> CAG:263	0	0	2.1	0	0	Yes
<i>Citrobacter</i> sp. CFNIH10	0	0	2.1	0	0	Yes
<i>Salmonella bongori</i>	0	0	2.1	0	0	Yes
Phage DP-2017a	0	0	2.1	0	0	Yes
<i>Desmodus rotundus</i>	0	2	0	0	0	Non-microbial
<i>Serratia liquefaciens</i>	0	2	0	0	0	Yes
<i>Pseudomonas mandelii</i>	0	0	0	2	0	Yes
<i>Bifidobacterium</i> sp. N5G01	0	0	2	0	0	Yes
<i>Odocoileus virginianus</i>	2	0	0	0	0	Non-microbial
<i>Flavobacterium aquariorum</i>	0	0	2	0	0	Yes
<i>Xanthomonas hortorum</i>	2	0	0	0	0	Yes
<i>Drosophila serrata</i>	0	0	0	2	0	Non-microbial
<i>Lipotes vexillifer</i>	0	2	0	0	0	Non-microbial
<i>Streptococcus equi</i>	0	0	2	0	0	Yes
<i>Escherichia</i> sp. MOD1-EC4550	0	0	2	0	0	Yes
<i>Lactococcus lactis</i>	0	0	2	0	0	Yes

Supplementary Material

<i>Salpingoeca rosetta</i>	1	1	0	0	0	Yes
<i>Sanguibacter massiliensis</i>	0	0	2	0	0	Yes
<i>Bacillus</i> sp. JFL15	0	0	0	0	2	Yes
<i>Acinetobacter</i> sp. 51m	0	1.9	0	0	0	Yes
<i>Dasytus novemcinctus</i>	0	1.9	0	0	0	Non-microbial
<i>Smittium megazygosporum</i>	0	1.9	0	0	0	Yes
<i>Bacteroides thetaiotaomicron</i>	0	1.9	0	0	0	Yes
<i>Gulosibacter</i> sp. 10	0	0	1.9	0	0	Yes
<i>Blochmannia endosymbiont of Camponotus (Colobopsis) obliquus</i>	0	1.9	0	0	0	Yes
<i>Citrobacter rodentium</i>	0	0	1.8	0	0	Yes
<i>Eimeria brunetti</i>	0	0	0	0	1.8	Yes
<i>Haemophilus paraphrohaemolyticus</i>	0	1.7	0	0	0	Yes
<i>Variovorax</i> sp. OV084	0	0	0	0	1.7	Yes
<i>Gallibacterium genomsp. 2</i>	0	0	0	0	1.7	Yes
<i>Methylibium</i> sp. CF059	0	1.7	0	0	0	Yes
<i>Shinella</i> sp. HZN7	0	1.6	0	0	0	Yes
<i>Zhihengliuella halotolerans</i>	0	0	1.6	0	0	Yes
<i>Acinetobacter</i> sp. 1239920	0	1.6	0	0	0	Yes
<i>Echinococcus granulosus</i>	0	1.6	0	0	0	Yes
<i>Xanthomonas theicola</i>	1.6	0	0	0	0	Yes
<i>Pantoea</i> sp. PNA 14-12	0	1.6	0	0	0	Yes
<i>Chryseobacterium hispalense</i>	0	0	1.5	0	0	Yes
<i>Faecalibacterium prausnitzii</i>	0	1.5	0	0	0	Yes
<i>Bacillus swezeyi</i>	0	0	0	0	1.4	Yes
<i>Staphylococcus edaphicus</i>	0	0	0	1.4	0	Yes
<i>Perlucidibaca aquatica</i>	0	1.4	0	0	0	Yes
<i>Erwinia</i> phage ENT90	0	0	0	1.2	0	Yes
<i>Escherichia</i> sp. R18	0	0	0	1	0	Yes
<i>Corynebacterium diphtheriae</i>	0	0	0	1	0	Yes
<i>Pseudomonas litoralis</i>	0	0	1	0	0	Yes
<i>Citrobacter freundii</i> complex sp. CFNIH9	0	0	1	0	0	Yes
<i>Acidocella aminolytica</i>	0	1	0	0	0	Yes
<i>Acinetobacter</i> sp. HA	0	1	0	0	0	Yes
<i>Onchocerca flexuosa</i>	1	0	0	0	0	Yes
<i>Oreochromis niloticus</i>	1	0	0	0	0	Yes
<i>Parafilimonas terrae</i>	1	0	0	0	0	Yes
<i>Klebsiella quasipneumoniae</i>	0	1	0	0	0	Yes
<i>Calypte anna</i>	0	0	1	0	0	Non-microbial
<i>Herbaspirillum</i> sp. VT-16-41	0	0	0	0	1	Yes
<i>Glycine soja</i>	0	1	0	0	0	Non-microbial
<i>Acidovorax ebreus</i>	0	0	0	0	1	Yes
<i>Haemonchus contortus</i>	1	0	0	0	0	Yes
<i>Leishmania amazonensis</i>	0	1	0	0	0	Yes

<i>Corchorus olitorius</i>	0	1	0	0	0	Non-microbial
<i>Francisella haliotica</i>	0	0	1	0	0	Yes
<i>Enterobacter</i> sp. R4-368	0	1	0	0	0	Yes
<i>Pseudomonas caeni</i>	0	0	0	1	0	Yes
<i>Branchiostoma belcheri</i>	0	1	0	0	0	Non-microbial
<i>Chryseobacterium culicis</i>	0	0	1	0	0	Yes
<i>Marinomonas</i> sp.	0	0	1	0	0	Yes
<i>Bos indicus</i> x <i>Bos taurus</i>	0	0	0	1	0	Non-microbial
<i>Dickeya zeae</i>	0	0	1	0	0	Yes

AT-1: Urumqi, *M. ovinus*; AT-2: Kuqa City, *M. ovinus*; AT-3: Yecheng County, *M. ovinus*; AT-4: Qira County, *M. ovinus*; AT-5: Qira County, Pupae.

2 Additional File 2 (Supplementary Figure)

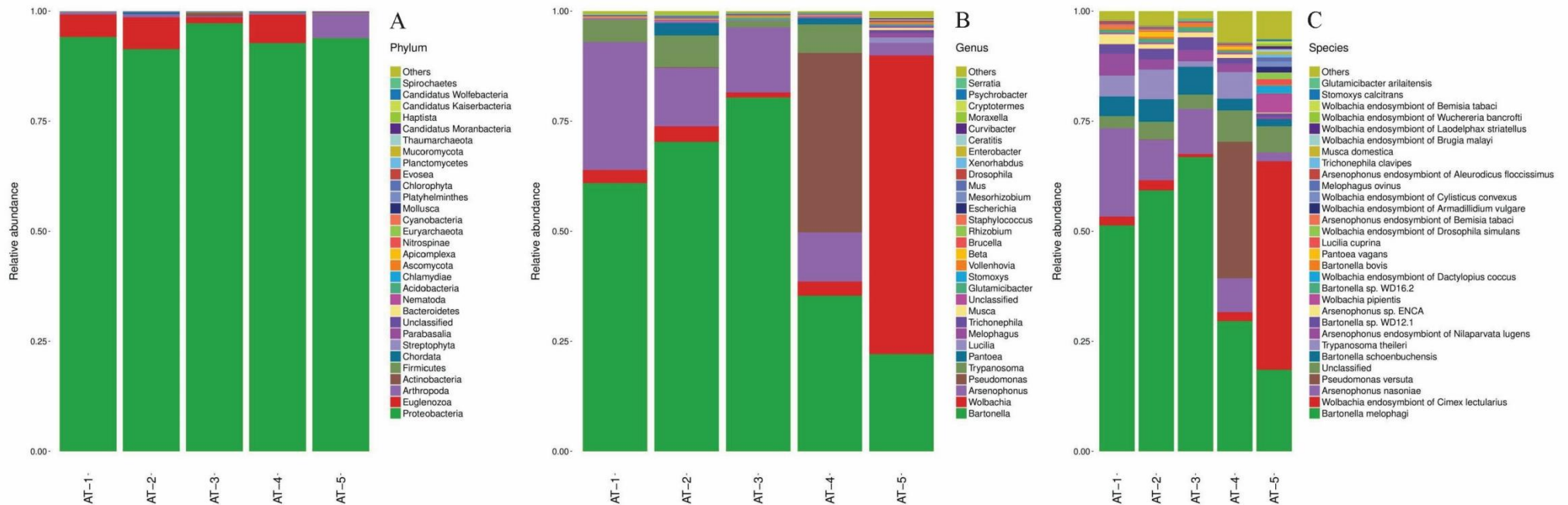


Figure S1. A bar plot presenting the microbial community detected in the five samples (**A** Microbial phylum; **B** Microbial Genus; **C** Microbial species).