

Additional File 2. Taxa and accession numbers used in the phylogenetic analyses

TAXA	Accession numbers
<i>Rhizobium etli</i>	Q2KA06
<i>Rhizobium leguminosarum</i>	Q1MIT1
<i>Agrobacterium radiobacter</i>	B9JCY4
<i>Agrobacterium tumefaciens</i>	Q8UG67
<i>Rhizobium meliloti</i>	Q8VRZ3
<i>Sinorhizobium medicae</i>	A6U7Q0
<i>Agrobacterium vitis</i>	B9JV82
<i>Brucella abortus</i>	B2S519
<i>Brucella canis</i>	A9MAF1
<i>Brucella ceti</i>	C0G5N5
<i>Brucella melitensis</i>	Q8YGH4
<i>Brucella suis</i>	B0CL96
<i>Brucella ovis</i>	A5VPV3
<i>Ochrobactrum intermedium</i>	C4WFQ4
<i>Ochrobactrum anthropi</i>	Q8VRZ2
<i>Rhizobium loti</i>	Q983A3
<i>Methylocella silvestris</i>	B8ENB6
<i>Beijerinckia indica</i>	B2ICH6
<i>Aurantimonas manganooxydans</i>	ZP_01227325
<i>Stappia aggregata</i>	ZP_01545402
<i>Labrenzia aggregata</i>	A0NMF0
<i>Labrenzia alexandrii</i>	B9QV43
<i>Bradyrhizobium japonicum</i>	Q89K83
<i>Oligotropha carboxidovorans</i>	B6JGI6
<i>Nitrobacter hamburgensis</i>	Q1QLC2
<i>Nitrobacter winogradskyi</i>	Q3SRT3
<i>Rhodopseudomonas palustris</i>	YP_532535
<i>Xanthobacter autotrophicus</i>	YP_001419075
<i>Azorhizobium caulinodans</i>	A8IBH1
<i>Methylobacterium chloromethanicum</i>	B7KUJ9
<i>Methylobacterium extorquens</i>	C5AXH1
<i>Methylobacterium populi</i>	B1ZIM5
<i>Methylobacterium radiotolerans</i>	B1LZA8
<i>Methylobacterium nodulans</i>	B8IPI6
<i>Caulobacter crescentus</i>	NP_420176
<i>Phenylobacterium zucineum</i>	B4RB24
<i>Maricaulis maris</i>	YP_756758

<i>Oceanicaulis alexandrii</i>	A3UCC6
<i>Hyphomonas neptunium</i>	Q0C316
<i>Parvibaculum lavamentivorans</i>	A7HX90
<i>Pelagibacter ubique</i>	Q4FLU2
<i>Candidatus Pelagibacter</i>	Q1UZ93
<i>Rhodospirillum rubrum</i>	YP_426905
<i>Rhodospirillum centenum</i>	B6IMS1
<i>Novosphingobium aromaticivorans</i>	Q2G9G1
<i>Erythrobacter litoralis</i>	YP_457403
<i>Sphingopyxis alaskensis</i>	YP_617067
<i>Sphingomonas wittichii</i>	YP_001263265
<i>Magnetospirillum magneticum</i>	Q2W4S3
<i>Magnetospirillum gryphisdense</i>	A4TZI8
<i>Lawsonia intracellularis</i>	YP_594877
<i>Teredinibacter turnerae</i>	C5BMT0
<i>Verminephrobacter eiseniae</i>	A1WM79
<i>Acidovorax avenae</i>	YP_004235012
<i>Acidovorax ebreus</i>	B9MA49
<i>Polaromonas naphthalenivorans</i>	A1VMY6
<i>Variovorax paradoxus</i>	C5CYM5
<i>Leptothrix cholodnii</i>	B1XZ65
<i>Methylobium petroleiphilum</i>	A2SHN8
<i>Rhodoferrax ferrireducens</i>	Q21YE8
<i>Herminiimonas arsenicoxydans</i>	A4G7X7
<i>Oxalobacter formigenes</i>	C3X6L8
<i>Xanthomonas campestris</i>	NP_638658
<i>Xanthomonas axonopodis</i>	Q8PH20
<i>Stenotrophomonas maltophilia</i>	B2FT52
<i>Vesicomyxococcus okutanii</i>	A5CXT3
<i>Ruthia magnifica</i>	A1AVD4
<i>Gemmatimonas aurantiaca</i>	C1A776
<i>Thiobacillus denitrificans</i>	Q3SIS2
<i>Nitrospira multififormis</i>	Q2YB25
<i>Nitrosomonas eutropha</i>	YP_747021
<i>Geobacter lovleyi</i>	B3E4Y7
<i>Geobacter sulfurreducens</i>	Q747H5
<i>Geobacter metallireducens</i>	Q39QM2
<i>Geobacter bemidjensis</i>	YP_002137390
<i>Geobacter uraniireducens</i>	A5GC38
<i>Pelobacter propionicus</i>	A1ATG4
<i>Desulfococcus oleovorans</i>	A8ZXZ6
<i>Desulfatibacillum alkenivorans</i>	B8FLB6
<i>Chthoniobacter flavus</i>	B4CVZ9
<i>Methylophilum infernorum</i>	B3DZS9
<i>Thermomicrobium roseum</i>	B9KYZ6
<i>Methylococcus capsulatus</i>	Q609P4

<i>Syntrophobacter fumaroxidans</i>	A0LML7
<i>Desulforudis audaxviator</i>	B1I0V1
<i>Methanococcoides burtonii</i>	YP_565684
<i>Kordia algicida</i>	A9DJK7
<i>Gramella forsetii</i>	A0LY38
<i>Dokdonia donghaensis</i>	A2TSB0
<i>Croceibacter atlanticus</i>	YP_003715950
<i>Polaribacter irgensii</i>	A4BZY9
<i>Flavobacterium johnsoniae</i>	A5FJW6
<i>Leeuwenhoekiella blandensis</i>	ZP_01060378
<i>Amoebophilus asiaticus</i>	B3ES25
<i>Chryseobacterium gleum</i>	C0YJW4
<i>Microscilla marina</i>	A1ZEZ2
<i>Acetabularia mediterranea</i>	BAA83103
<i>Acetabularia acetabulum</i>	Q9STC8
<i>Robiginitalea biformata</i>	YP_003196855
<i>Prosthecochloris vibrioformis</i>	A4SE64
<i>Elodictyon luteolum</i>	Q3B3L7
<i>Chlorobaculum parvum</i>	B3QP07
<i>Prosthecochloris aestuarii</i>	B4S8L2
<i>Chloroherpeton thalassium</i>	B3QVV1
<i>Plesiocystis pacifica</i>	A6GBL9
<i>Hordeum brevisubulatum</i>	Q84QI7
<i>Triticum aestivum</i>	A9LRZ1
<i>Hordeum vulgare</i>	Q9FS12
<i>Chenopodium rubrum</i>	Q8L5B2
<i>Chenopodium glaucum</i>	Q1W2P4
<i>Halostachys caspica</i>	A4LAP4
<i>Kalidium foliatum</i>	A1E9B0
<i>Phaseolus aureus</i>	P21616
<i>Vigna radiata</i>	O22124
<i>Medicago truncatula</i>	B6DXD7
<i>Pyrus communis</i>	Q8GT22
<i>Cucurbita moschata</i>	BAA33149
<i>Hevea brasiliensis</i>	Q6R4U3
<i>Nicotiana rustica</i>	Q197Z6
<i>Thellungiella salsuginea</i>	Q6T553
<i>Malus domestica</i>	A9X9A3
<i>Zygophyllum xanthoxylum</i>	A7XY78
<i>Picea sitchensis</i>	C0PRN4
<i>Chara corallina</i>	Q9ZW18
<i>Chlamydomonas reinhardtii</i>	CAC44451
<i>Leishmania infantum</i>	A4I6P8
<i>Leishmania major</i>	Q4Q6E1
<i>Leishmania braziliensis</i>	A4HJA5
<i>Trypanosoma cruzi</i>	Q9NDF0

<i>Tetrahymena thermophila</i>	XP_001011583
<i>Toxoplasma gondii</i>	AAK38077
<i>Leptospira borgpetersenii</i>	Q04U06
<i>Leptospira interrogans</i>	YP_002219
<i>Leptospira biflexa</i>	B0S8X5
<i>Salinibacter ruber</i>	Q2S4D3
<i>Aciduliprofundum boonei</i>	B5IDA5
<i>Bacteroides ovatus</i>	A7LVP2
<i>Bacteroides caccae</i>	A5ZKN0
<i>Bacteroides fragilis</i>	Q5LIL5
<i>Bacteroides xylanisolvens</i>	CBK67775
<i>Bacteroides thetaiotaomicron</i>	Q8A294
<i>Bacteroides intestinalis</i>	B3C7L3
<i>Bacteroides uniformis</i>	A7UYB2
<i>Bacteroides stercoris</i>	B0NSQ0
<i>Bacteroides eggerthii</i>	B7ALD5
<i>Bacteroides dorei</i>	C3R6Q7
<i>Bacteroides vulgatus</i>	A6L2M4
<i>Bacteroides plebeius</i>	B5CYN8
<i>Bacteroides coprocola</i>	B3JI04
<i>Parabacteroides merdae</i>	A7AD83
<i>Parabacteroides distasonis</i>	A6LIE5
<i>Akkermansia muciniphila</i>	B2ULG2
<i>Verrucomicrobiae bacterium</i>	B5JQT8
<i>Blastopirellula marina</i>	A3ZRC4
<i>Planctomyces maris</i>	A6BZZ1
<i>Candidatus Kuenenia</i>	Q1PZR6
<i>Candidatus Cloacamonas</i>	B0VHS9
<i>Brachyspira hyodysenteriae</i>	C0R142
<i>Clostridium phytofermentans</i>	A9KSE9
<i>Clostridium leptum</i>	A7VNH8
<i>Clostridium methylpentosum</i>	C0EI34
<i>Bacteroides capillosus</i>	A6NPF7
<i>Shuttleworthia satelles</i>	C4GBA7
<i>Thermotoga petrophila</i>	A5IKP7
<i>Marinitoga piezophila</i>	B7RDQ4
<i>Thermotoga naphthophila</i>	YP_003346312
<i>Thermotoga maritima</i>	Q9S5X0
<i>Thermotoga neapolitana</i>	Q5CBQ3
<i>Thermosipho melanesiensis</i>	A6LP21
<i>Thermosipho africanus</i>	B7IEX6
<i>Thermotoga lettingae</i>	A8F6U1
<i>Petrotoga mobilis</i>	YP_001568076
<i>Bacteroides pectinophilus</i>	B7ASN2
<i>Eubacterium eligens</i>	C4Z6Y1
<i>Kosmotoga olearia</i>	C5CIC6

<i>Dictyoglomus turgidum</i>	B8E0W5
<i>Dictyoglomus thermophilum</i>	B5YF34
<i>Fervidobacterium nodosum</i>	A7HMQ6
<i>Coprothermobacter proteolyticus</i>	B5Y802
<i>Pyrobaculum aerophilum</i>	NP_559532
<i>Pyrobaculum arsenaticum</i>	A4WIY1
<i>Pyrobaculum islandicum</i>	A1RV93
<i>Pyrobaculum calidifontis</i>	A3MTK8
<i>Thermoproteus tenax</i>	A9JQI4
<i>Caldivirga maquilingensis</i>	YP_001540035
<i>Nitrosopumilus maritimus</i>	A9A1E8
<i>Cenarchaeum symbiosum</i>	A0RW83
<i>Clostridium thermocellum</i>	YP_001037849
<i>Nitrosococcus oceani</i>	Q3J9Y1
<i>Nitrococcus mobilis</i>	A4BSF8
<i>Methylophaga thiooxidans</i>	C0N833
<i>Congregibacter litoralis</i>	A4A7F7
<i>Pelobacter carbinolicus</i>	Q3A315
<i>Desulfuromonas acetoxidans</i>	Q1JY39
<i>Myxococcus xanthus</i>	YP_629923
<i>Bdellovibrio bacteriovorus</i>	Q6MMC1
<i>Anaerococcus lactolyticus</i>	C2BHH2
<i>Anaerococcus tetradius</i>	C2CHX6
<i>Anaerococcus hydrogenalis</i>	B6W7C5
<i>Abiotrophia defectiva</i>	C4G773
<i>Clostridium novyi</i>	A0PYP6
<i>Clostridium tetani</i>	Q898Q9
<i>Clostridium butyricum</i>	C4IDY6
<i>Alkaliphilus oremlandii</i>	YP_001512518
<i>Alkaliphilus metalliredigens</i>	YP_001321355
<i>Ruminococcus lactaris</i>	B5CSC0
<i>Dorea formicigenerans</i>	B0GAF9
<i>Coprococcus comes</i>	C0B9C7
<i>Ruminococcus gnavus</i>	A7B1Z7
<i>Clostridium hylemonae</i>	C0C4K6
<i>Clostridium scindens</i>	B0NDR2
<i>Dorea longicatena</i>	A6BFT7
<i>Eubacterium hallii</i>	C0EVH8
<i>Blautia hydrogenotrophica</i>	C0CPB6
<i>Oribacterium sinus</i>	C2KZ86
<i>Pelotomaculum thermopropionicum</i>	YP_001213266
<i>Desulfotomaculum reducens</i>	YP_001114313
<i>Carboxydotherrmus hydrogenoformans</i>	YP_359158
<i>Heliobacterium modesticaldum</i>	B0TGJ8
<i>Desulfitobacterium hafniense</i>	YP_521069
<i>Natranaerobius thermophilus</i>	B2A6Y9

<i>Dethiobacter alkaliphilus</i>	C0GFB8
<i>Halothermothrix orenii</i>	B8CYF6
<i>Methanoculleus marisnigri</i>	YP_001045961
<i>Methanosarcina acetivorans</i>	NP_618750
<i>Methanocorpusculum labreanum</i>	YP_001029450
<i>Methanospirillum hungatei</i>	YP_503835
<i>Thermoanaerobacter mathranii</i>	YP_003676510
<i>Thermoanaerobacter pseudethanolicus</i>	B0KB46
<i>Anaerofustis stercorihominis</i>	B1C820
<i>Finegoldia magna</i>	B0S160
<i>Parvimonas micra</i>	A8SMK6
<i>Ostreococcus lucimarinus</i>	A4RRD6
<i>Symbiobacterium thermophilum</i>	Q67L99
<i>Eubacterium ventriosum</i>	A5Z5M2
<i>Anaerostipes caccae</i>	B0M926
<i>Fusobacterium nucleatum</i>	ZP_04969641
<i>Caldicellulosiruptor saccharolyticus</i>	A4XHY4
<i>Caldicellulosiruptor kronotskyensis</i>	YP_004024560
<i>Anaerocellum thermophilum</i>	B9MQ79
<i>Carboxydibrachium pacificum</i>	B7R706
<i>Thermoanaerobacter tengcongensis</i>	Q8RCX1
<i>Clostridium beijerinckii</i>	A6M3H6
<i>Methanosphaerula palustris</i>	B8GJH9
<i>Methanoregula boonei</i>	A7I486
<i>Acidobacterium capsulatum</i>	C1F569
<i>Plasmodium chabaudi</i>	Q4Y125
<i>Cyanidioschyzon merolae</i>	Q4AC87
<i>Korarchaeum cryptofilum</i>	B1L5G5
<i>Chloroflexus aurantiacus</i>	Q8VNW3
<i>Chloroflexus aggregans</i>	YP_002463789
<i>Roseiflexus castenholzii</i>	A7NPW2
<i>Elusimicrobium minutum</i>	B2KCY8
<i>Syntrophomonas wolfei</i>	Q0AY30
<i>Clostridium cellulolyticum</i>	B8I4X7
<i>Azobacteroides pseudotrichonymphae</i>	B6YQJ7
<i>Opitutus terrae</i>	B1ZTP5
<i>Candidatus Koribacter versatilis</i>	YP_590993
<i>Solibacter usitatus</i>	Q023J7
<i>Chlorobium ferrooxidans</i>	Q0YT89
<i>Pelodictyon phaeoclathratiforme</i>	B4SGM2
<i>Chlorobium tepidum</i>	Q8KDT8
<i>Stigmatella aurantiaca</i>	Q08ZE0
<i>Mobiluncus mulieris</i>	C2KPK8
<i>Propionibacterium acnes</i>	Q6A7G5
<i>Beutenbergia cavernae</i>	C5BY02
<i>Kineococcus radiotolerans</i>	YP_001360239

<i>Saccharopolyspora erythraea</i>	YP_001102649
<i>Salinispora arenicola</i>	A8M5X3
<i>Salinispora tropica</i>	A4XC03
<i>Acidothermus cellulolyticus</i>	A0LWD5
<i>Streptomyces coelicolor</i>	Q6BCL0
<i>Streptomyces sviveus</i>	ZP_06918746
<i>Streptomyces avermitilis</i>	NP_825793
<i>Streptomyces pristinaespiralis</i>	B5HA91
<i>Streptomyces clavuligerus</i>	B5GPP4
<i>Streptomyces griseus</i>	B1VM24
<i>Thermobifida fusca</i>	YP_288195
<i>Frankia alni</i>	YP_716705