

The All-Species Living Tree (Release LTPs108):

July 2012

16S rRNA-based phylogenetic tree harboring all type strains of all species with validly published names up to December 2011.

Type species are highlighted in red. Incorrectly affiliated and ungrouped species are indicated by their valid family.

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living-tree@arb-silva.de

for further information and downloads:
www.elsevier.de/syapm
www.arb-silva.de/projects/living-tree
www.arb-home.de
www.bacterio.cict.fr

References:

R. Munoz, P. Yarza, W. Ludwig, J. Euzéby, R. Amann, K.H. Schleifer, F.O. Glöckner, R. Rosselló-Móra. *Release LTPs104 of the All-Species Living Tree*. Syst. Appl. Microbiol. 34 (2011) 169-170.

<http://dx.doi.org/10.1016/j.syapm.2011.03.001>

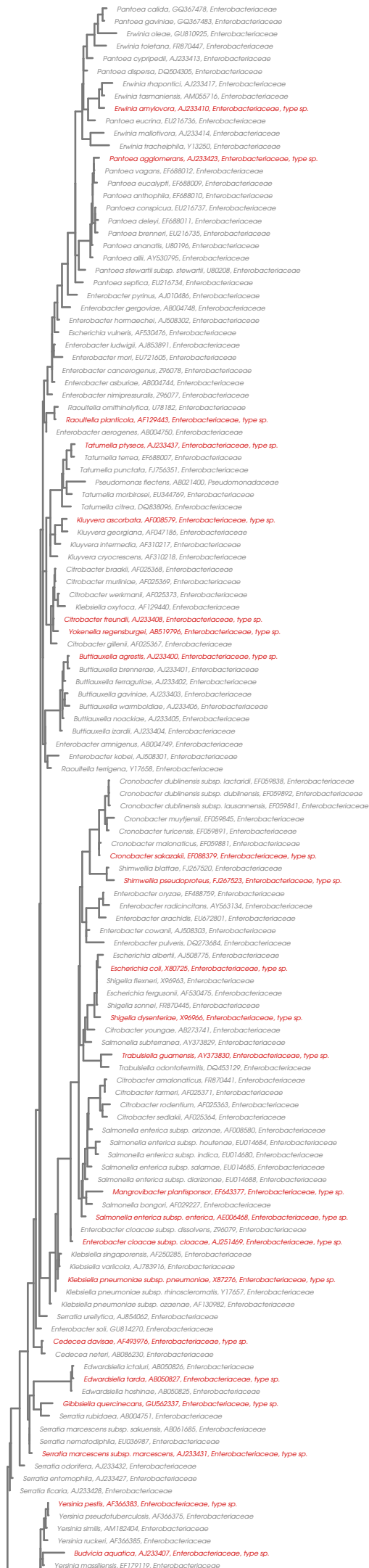
P. Yarza, W. Ludwig, J. Euzéby, R. Amann, K.-H. Schleifer, F.O. Glöckner, R. Rosselló-Móra. *Update of the All-Species Living Tree Project based on 16S and 23S rRNA sequence analyses*. Syst. Appl. Microbiol. 33 (2010) 291-299.

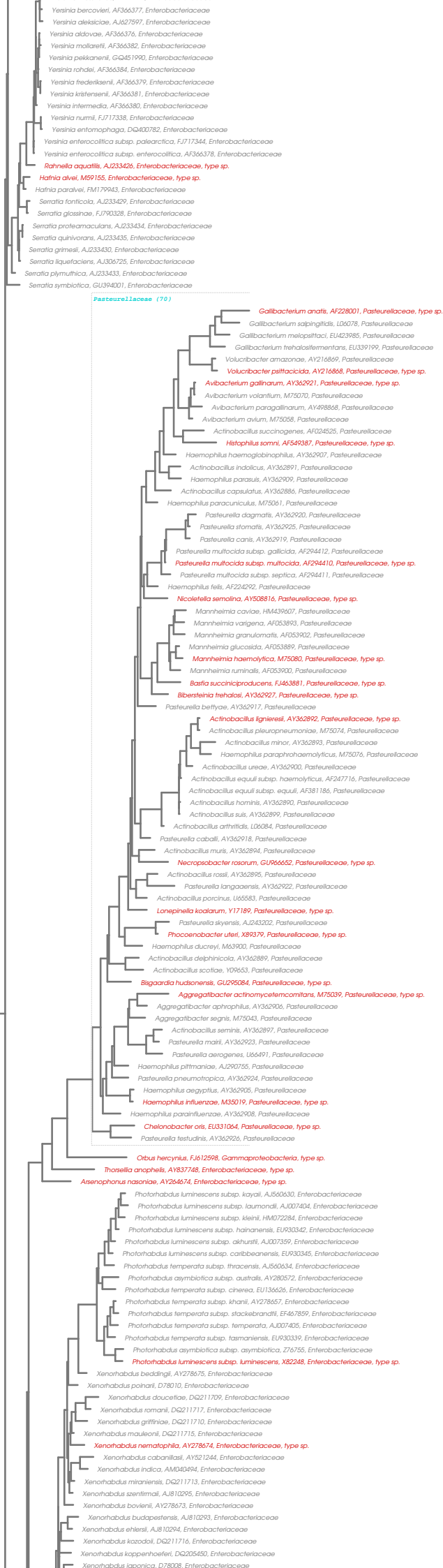
<http://dx.doi.org/10.1016/j.syapm.2010.08.001>

P. Yarza, M. Richter, J. Peplies, J. Euzéby, R. Amann, K.-H. Schleifer, W. Ludwig, F.O. Glöckner, R. Rosselló-Móra. *The All-Species Living Tree Project: a 16S rRNA-based phylogenetic tree of all sequenced type strains*. Syst. Appl. Microbiol. 31 (2008) 241-250.

<http://dx.doi.org/10.1016/j.syapm.2008.07.001>

Enterobacteriaceae and Pasteurellales (298)



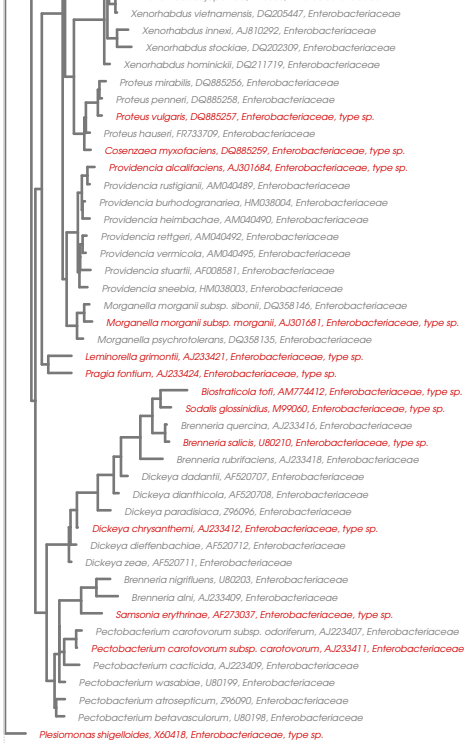


Yersinia bercovieri, AF366377, Enterobacteriaceae
Yersinia aleksici, AJ627697, Enterobacteriaceae
Yersinia aldovae, AF366376, Enterobacteriaceae
Yersinia mollareti, AF366382, Enterobacteriaceae
Yersinia pekkaneni, G645190, Enterobacteriaceae
Yersinia rohdei, AF366384, Enterobacteriaceae
Yersinia frederiksenii, AF366379, Enterobacteriaceae
Yersinia kristensenii, AF366381, Enterobacteriaceae
Yersinia intermedia, AF366380, Enterobacteriaceae
Yersinia rumii, FJ171338, Enterobacteriaceae
Yersinia entomophaga, DQ400782, Enterobacteriaceae
Yersinia enterocolitica subsp. palearctica, FJ171344, Enterobacteriaceae
Yersinia enterocolitica subsp. enterocolitica, AF366378, Enterobacteriaceae
Rahnella aquatilis, AJ233426, Enterobacteriaceae, type sp.
Hafnia alvei, M59155, Enterobacteriaceae, type sp.
Hafnia paralvei, FM179943, Enterobacteriaceae
Serratia fonticola, AJ233429, Enterobacteriaceae
Serratia glossinae, FJ190328, Enterobacteriaceae
Serratia proteamaculans, AJ233434, Enterobacteriaceae
Serratia quinivorans, AJ233435, Enterobacteriaceae
Serratia grimesii, AJ233430, Enterobacteriaceae
Serratia liquefaciens, AJ306725, Enterobacteriaceae
Serratia plymuthica, AJ233433, Enterobacteriaceae
Serratia symbiotica, GU394001, Enterobacteriaceae

Pasteurellales (70)

Gallibacterium anatis, AF228001, Pasteurellales, type sp.
Gallibacterium salpingitidis, LD078, Pasteurellales
Gallibacterium melopittaci, EU429785, Pasteurellales
Gallibacterium trichosilemense, EU339199, Pasteurellales
Volucrobacter amazonae, AY216859, Pasteurellales
Volucrobacter psittacida, AY216868, Pasteurellales, type sp.
Avibacterium gallinarum, AY362921, Pasteurellales, type sp.
Avibacterium volantium, M75070, Pasteurellales
Avibacterium paragallinarum, AY498868, Pasteurellales
Avibacterium avium, M75058, Pasteurellales
Actinobacillus succinogenes, AF024525, Pasteurellales
Histophilus somni, AF549387, Pasteurellales, type sp.
Haemophilus haemoglobinophilus, AY362907, Pasteurellales
Actinobacillus indolicus, AY362891, Pasteurellales
Haemophilus parvus, AY362909, Pasteurellales
Actinobacillus capsulatus, AY362886, Pasteurellales
Haemophilus paracuniculus, M75061, Pasteurellales
Pasteurella dogmatii, AY362920, Pasteurellales
Pasteurella stomatis, AY362925, Pasteurellales
Pasteurella canis, AY362919, Pasteurellales
Pasteurella multocida subsp. gallicida, AF294412, Pasteurellales
Pasteurella multocida subsp. multocida, AF294410, Pasteurellales, type sp.
Pasteurella multocida subsp. septica, AF294411, Pasteurellales
Haemophilus felis, AF224292, Pasteurellales
Nicotella semolina, AY508816, Pasteurellales, type sp.
Mannheimia caviae, HM439607, Pasteurellales
Mannheimia varigena, AF053893, Pasteurellales
Mannheimia granulomatis, AF053902, Pasteurellales
Mannheimia glucosida, AF053889, Pasteurellales
Mannheimia haemolytica, M75080, Pasteurellales, type sp.
Mannheimia ruminalis, AF053900, Pasteurellales
Bastia succiniciproducens, FJ453881, Pasteurellales, type sp.
Bibersteinia trehalosi, AY362927, Pasteurellales, type sp.
Pasteurella berthiae, AY362917, Pasteurellales
Actinobacillus lignieresii, AY362892, Pasteurellales, type sp.
Actinobacillus pleuropneumoniae, M75074, Pasteurellales
Actinobacillus minor, AY362893, Pasteurellales
Haemophilus paraphaemolyticus, M75076, Pasteurellales
Actinobacillus ureae, AY362900, Pasteurellales
Actinobacillus equuli subsp. haemolyticus, AF247716, Pasteurellales
Actinobacillus equuli subsp. equuli, AF381186, Pasteurellales
Actinobacillus hominis, AY362890, Pasteurellales
Actinobacillus suis, AY362899, Pasteurellales
Actinobacillus arthritidis, LD0684, Pasteurellales
Pasteurella caballi, AY362918, Pasteurellales
Actinobacillus mutis, AY362894, Pasteurellales
Necropsobacter rosorum, GU86652, Pasteurellales, type sp.
Actinobacillus rossii, AY362895, Pasteurellales
Pasteurella langaaensis, AY362922, Pasteurellales
Actinobacillus porcini, U65583, Pasteurellales
Lonepinella koalarum, Y17189, Pasteurellales, type sp.
Pasteurella skyensis, AJ243202, Pasteurellales
Phocoanobacter uteri, X89379, Pasteurellales, type sp.
Haemophilus ducreyi, M63900, Pasteurellales
Actinobacillus delphinicola, AY362889, Pasteurellales
Actinobacillus scotiae, Y09653, Pasteurellales
Bigardia hudsonensis, GU295084, Pasteurellales, type sp.
Aggregatibacter actinomycetemcomitans, M75039, Pasteurellales, type sp.
Aggregatibacter aphrophilus, AY362906, Pasteurellales
Aggregatibacter segnis, M75043, Pasteurellales
Actinobacillus seminis, AY362897, Pasteurellales
Pasteurella marii, AY362923, Pasteurellales
Pasteurella aerogenes, U66491, Pasteurellales
Haemophilus pittmaniae, AJ290755, Pasteurellales
Pasteurella pneumotropica, AY362924, Pasteurellales
Haemophilus oegyptus, AY362905, Pasteurellales
Haemophilus influenzae, M35019, Pasteurellales, type sp.
Haemophilus parainfluenzae, AY362908, Pasteurellales
Chelonobacter oris, EU331064, Pasteurellales, type sp.
Pasteurella testudinis, AY362926, Pasteurellales

Orbus hercynius, FJ612598, Gammaproteobacteria, type sp.
Thorsella anophelis, AY837748, Enterobacteriaceae, type sp.
Asenophonus nasoriae, AY264674, Enterobacteriaceae, type sp.
Photobacillus luminescens subsp. kayali, AJ560630, Enterobacteriaceae
Photobacillus luminescens subsp. laumondii, AJ007404, Enterobacteriaceae
Photobacillus luminescens subsp. kleini, HM072284, Enterobacteriaceae
Photobacillus luminescens subsp. hainanensis, EU930342, Enterobacteriaceae
Photobacillus luminescens subsp. alkhurii, AJ007359, Enterobacteriaceae
Photobacillus luminescens subsp. caribbeanensis, EU930345, Enterobacteriaceae
Photobacillus temperata subsp. thracensis, AJ560634, Enterobacteriaceae
Photobacillus asymbiotica subsp. australis, AY280572, Enterobacteriaceae
Photobacillus temperata subsp. cinerea, EU136626, Enterobacteriaceae
Photobacillus temperata subsp. kharii, AY278677, Enterobacteriaceae
Photobacillus temperata subsp. stackebrandtii, EF467859, Enterobacteriaceae
Photobacillus temperata subsp. temperata, AJ007405, Enterobacteriaceae
Photobacillus temperata subsp. tasmaniensis, EU930339, Enterobacteriaceae
Photobacillus asymbiotica subsp. asymbiotica, Z7655, Enterobacteriaceae
Photobacillus luminescens subsp. luminescens, X82248, Enterobacteriaceae, type sp.
Xenorhabdus beddingii, AY278675, Enterobacteriaceae
Xenorhabdus poinarii, D78010, Enterobacteriaceae
Xenorhabdus doucefloae, DQ211709, Enterobacteriaceae
Xenorhabdus romanii, DQ211717, Enterobacteriaceae
Xenorhabdus griffithae, DQ211710, Enterobacteriaceae
Xenorhabdus mauleronii, DQ211715, Enterobacteriaceae
Xenorhabdus nematophila, AY278674, Enterobacteriaceae, type sp.
Xenorhabdus cabanillasi, AY521244, Enterobacteriaceae
Xenorhabdus indica, AM040494, Enterobacteriaceae
Xenorhabdus miraniensis, DQ211713, Enterobacteriaceae
Xenorhabdus szentirmai, AJ810295, Enterobacteriaceae
Xenorhabdus bovienii, AY278673, Enterobacteriaceae
Xenorhabdus budapestensis, AJ810293, Enterobacteriaceae
Xenorhabdus ehlersii, AJ810294, Enterobacteriaceae
Xenorhabdus kazodii, DQ211716, Enterobacteriaceae
Xenorhabdus koppenhoferi, DQ205450, Enterobacteriaceae
Xenorhabdus lapponica, D78008, Enterobacteriaceae



Aeromonadaceae and Succinivibrionaceae (42)

- Aeromonas sanarelli*, FJ230076, Aeromonadaceae
- Aeromonas taiwanensis*, FJ230077, Aeromonadaceae
- Aeromonas enteropelogenes*, X71121, Aeromonadaceae
- Aeromonas punctata* subsp. *punctata*, X60408, Aeromonadaceae
- Aeromonas hydrophila* subsp. *dhakensis*, AJ508765, Aeromonadaceae
- Aeromonas aquariorum*, EU085557, Aeromonadaceae
- Aeromonas punctata* subsp. *caviae*, X74674, Aeromonadaceae
- Aeromonas hydrophila* subsp. *ranae*, AM262151, Aeromonadaceae
- Aeromonas media*, X60410, Aeromonadaceae
- Aeromonas hydrophila* subsp. *hydrophila*, DQ207728, Aeromonadaceae, type sp.
- Aeromonas hydrophila* subsp. *anaerogenes*, F8870443, Aeromonadaceae

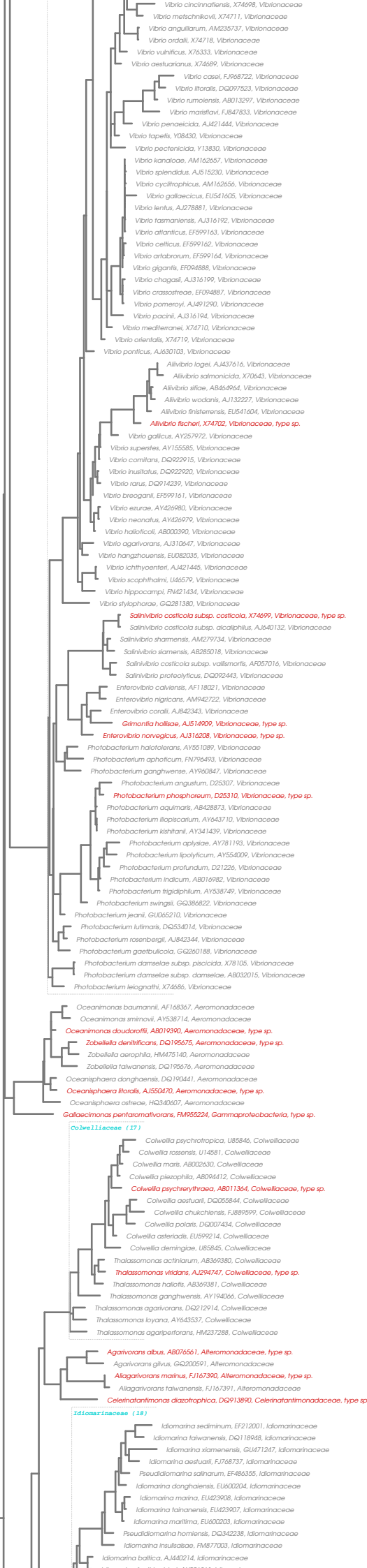
Succinivibrionaceae (6)

- Anaerobispitillum succiniciproducens*, U96412, Succinivibrionaceae, type sp.
- Succinivibrio dextrinosolvens*, Y17400, Succinivibrionaceae, type sp.
- Anaerobispitillum thomasi*, AJ420985, Succinivibrionaceae
- Succinivibrio hippel*, AB470810, Succinivibrionaceae, type sp.
- Succinimonas amylolytica*, Y17599, Succinivibrionaceae, type sp.
- Ruminobacter amylophilus*, Y15992, Succinivibrionaceae, type sp.

- Tolumonas auensis*, X92899, Aeromonadaceae, type sp.
- Tolumonas osanensis*, GU370947, Aeromonadaceae
- Aeromonas shurmanii*, DQ013306, Aeromonadaceae
- Aeromonas piscicola*, FM999971, Aeromonadaceae
- Aeromonas salmonicida* subsp. *smithii*, AJ009859, Aeromonadaceae
- Aeromonas salmonicida* subsp. *masoucida*, AB027542, Aeromonadaceae
- Aeromonas salmonicida* subsp. *achromogenes*, X60407, Aeromonadaceae
- Aeromonas bestiarum*, X60406, Aeromonadaceae
- Aeromonas salmonicida* subsp. *salmonicida*, AY987751, Aeromonadaceae
- Aeromonas salmonicida* subsp. *pectinolytica*, AF134065, Aeromonadaceae
- Aeromonas molluscorum*, AY532690, Aeromonadaceae
- Aeromonas rivuli*, FJ976900, Aeromonadaceae
- Aeromonas enchelela*, AJ224309, Aeromonadaceae
- Aeromonas papoffii*, AJ224308, Aeromonadaceae
- Aeromonas sabria*, X60412, Aeromonadaceae
- Aeromonas bivalvium*, DQ504429, Aeromonadaceae
- Aeromonas eurenophila*, X60411, Aeromonadaceae
- Aeromonas lecta*, AJ458402, Aeromonadaceae
- Aeromonas ichtiopsalmis*, X71120, Aeromonadaceae
- Aeromonas veronii*, X60414, Aeromonadaceae
- Aeromonas fluviatilis*, FJ230078, Aeromonadaceae
- Aeromonas jandaai*, X60413, Aeromonadaceae
- Aeromonas diversa*, GQ365710, Aeromonadaceae
- Aeromonas schubertii*, X60416, Aeromonadaceae
- Aeromonas simigae*, AJ536821, Aeromonadaceae

Vibrionaceae (123)

- Vibrio pelagius*, AJ293802, Vibrionaceae
- Vibrio fortis*, AJ514916, Vibrionaceae
- Vibrio mytili*, X99761, Vibrionaceae
- Vibrio albacillus*, X99762, Vibrionaceae
- Vibrio azureus*, AB428897, Vibrionaceae
- Vibrio sagamiensis*, AB428909, Vibrionaceae
- Vibrio parahaemolyticus*, AF388386, Vibrionaceae
- Vibrio natriegens*, X74714, Vibrionaceae
- Vibrio communis*, GU078672, Vibrionaceae
- Vibrio owensii*, GU018180, Vibrionaceae
- Vibrio harveyi*, AY750575, Vibrionaceae
- Vibrio rotiferianus*, AJ316187, Vibrionaceae
- Vibrio algholyticus*, X56576, Vibrionaceae
- Vibrio campbellii*, X56575, Vibrionaceae
- Vibrio atypicus*, FJ009624, Vibrionaceae
- Vibrio proteolyticus*, X74723, Vibrionaceae
- Vibrio nereis*, X74716, Vibrionaceae
- Vibrio maritimus*, GU929926, Vibrionaceae
- Vibrio variabilis*, GU929924, Vibrionaceae
- Vibrio nigripulchritudo*, X74717, Vibrionaceae
- Vibrio shalensis*, DQ451211, Vibrionaceae
- Vibrio brasiliensis*, AJ316172, Vibrionaceae
- Vibrio corallilyticus*, AJ440005, Vibrionaceae
- Vibrio nephelium*, AJ316171, Vibrionaceae
- Vibrio hepatarius*, AJ345063, Vibrionaceae
- Vibrio fubiashtii*, X74725, Vibrionaceae
- Vibrio xuli*, AJ316181, Vibrionaceae
- Vibrio atbensis*, EF032499, Vibrionaceae
- Vibrio cholerae*, X76337, Vibrionaceae, type sp.
- Vibrio mimicus*, X74713, Vibrionaceae
- Vibrio parresiae*, EF488079, Vibrionaceae
- Vibrio thiozoaphaerae*, DQ847123, Vibrionaceae
- Vibrio ruber*, AF462458, Vibrionaceae
- Vibrio mangrovei*, EU144014, Vibrionaceae
- Vibrio gazogenes*, X74705, Vibrionaceae
- Vibrio fluviatilis*, X76335, Vibrionaceae
- Vibrio furnissii*, X76336, Vibrionaceae
- Vibrio areninigras*, EU143360, Vibrionaceae
- Vibrio hispanicus*, AY254040, Vibrionaceae
- Vibrio diazotrophicus*, X74701, Vibrionaceae



Idiomarina torihataensis, AY526861, Idiomarinaaceae
Idiomarina zobelli, AF052741, Idiomarinaaceae
Idiomarina lahiensis, AF288370, Idiomarinaaceae
Idiomarina rambicola, AY526862, Idiomarinaaceae
***Idiomarina abyssi*, AF052740, Idiomarinaaceae, type sp.**

Psychromonadaceae (14)

Psychromonas agarivorans, AB374544, Psychromonadaceae
Psychromonas hellensis, AB365352, Psychromonadaceae
Psychromonas hadalis, AB094413, Psychromonadaceae
Psychromonas profunda, AJ416756, Psychromonadaceae
Psychromonas kalkoae, AB052160, Psychromonadaceae
Psychromonas marina, AB023378, Psychromonadaceae
Psychromonas arctica, AF374385, Psychromonadaceae
Psychromonas aquimatina, AB304805, Psychromonadaceae
Psychromonas macrocephala, AB304806, Psychromonadaceae
Psychromonas ossibalaensis, AB304808, Psychromonadaceae
Psychromonas japonica, AB304804, Psychromonadaceae
Psychromonas boydii, FJ822615, Psychromonadaceae
Psychromonas ingrahamii, U73721, Psychromonadaceae
***Psychromonas antarctica*, Y14697, Psychromonadaceae, type sp.**

Pseudoalteromonadaceae (37)

Pseudoalteromonas antarctica, X98336, Pseudoalteromonadaceae
Pseudoalteromonas translucida, AY040230, Pseudoalteromonadaceae
Pseudoalteromonas aliensis, AY387858, Pseudoalteromonadaceae
Pseudoalteromonas marina, AY563031, Pseudoalteromonadaceae
Pseudoalteromonas undina, X82140, Pseudoalteromonadaceae
***Pseudoalteromonas haloplanktis*, X67024, Pseudoalteromonadaceae, type sp.**
Pseudoalteromonas nigrifaciens, X82146, Pseudoalteromonadaceae
Pseudoalteromonas arctica, DQ787199, Pseudoalteromonadaceae
Pseudoalteromonas elyakovii, AF082562, Pseudoalteromonadaceae
Pseudoalteromonas parargyrola, AY040229, Pseudoalteromonadaceae
Pseudoalteromonas distincta, AF082564, Pseudoalteromonadaceae
Pseudoalteromonas agarivorans, AJ417594, Pseudoalteromonadaceae
Pseudoalteromonas atlantica, X82134, Pseudoalteromonadaceae
Pseudoalteromonas espijana, X82143, Pseudoalteromonadaceae
Pseudoalteromonas carageenovora, X82136, Pseudoalteromonadaceae
Pseudoalteromonas issachenkonii, AF316144, Pseudoalteromonadaceae
Pseudoalteromonas tetradonis, AF214730, Pseudoalteromonadaceae
Pseudoalteromonas maringlutinosa, AJ507251, Pseudoalteromonadaceae
Pseudoalteromonas prydzensis, U85855, Pseudoalteromonadaceae
Pseudoalteromonas donghaensis, FJ754319, Pseudoalteromonadaceae
Pseudoalteromonas lipolytica, FJ404721, Pseudoalteromonadaceae
Pseudoalteromonas flavipulchra, AF297958, Pseudoalteromonadaceae
Pseudoalteromonas maricolaris, AF144036, Pseudoalteromonadaceae
Pseudoalteromonas lunicata, J25522, Pseudoalteromonadaceae
Pseudoalteromonas ulvae, AF172987, Pseudoalteromonadaceae
Pseudoalteromonas piscicida, AB090232, Pseudoalteromonadaceae
Pseudoalteromonas peptidolytica, AF007286, Pseudoalteromonadaceae
Pseudoalteromonas rubra, X82147, Pseudoalteromonadaceae
Pseudoalteromonas aurantia, X82135, Pseudoalteromonadaceae
Pseudoalteromonas citrea, X82137, Pseudoalteromonadaceae
Pseudoalteromonas denitrificans, X82138, Pseudoalteromonadaceae
Pseudoalteromonas phenolica, AF332880, Pseudoalteromonadaceae
Pseudoalteromonas spongiae, AY769918, Pseudoalteromonadaceae
Pseudoalteromonas luteoviolacea, X82144, Pseudoalteromonadaceae
Pseudoalteromonas byrsonensis, DQ011289, Pseudoalteromonadaceae
Pseudoalteromonas rutherfordii, AF316891, Pseudoalteromonadaceae
***Psychrosphaera saromensis*, AB545807, Pseudoalteromonadaceae, type sp.**

Moritellaceae (8)

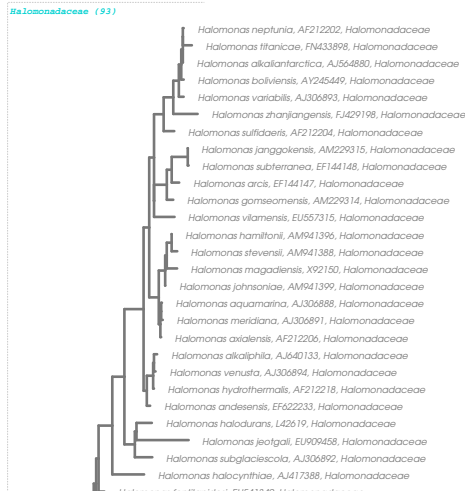
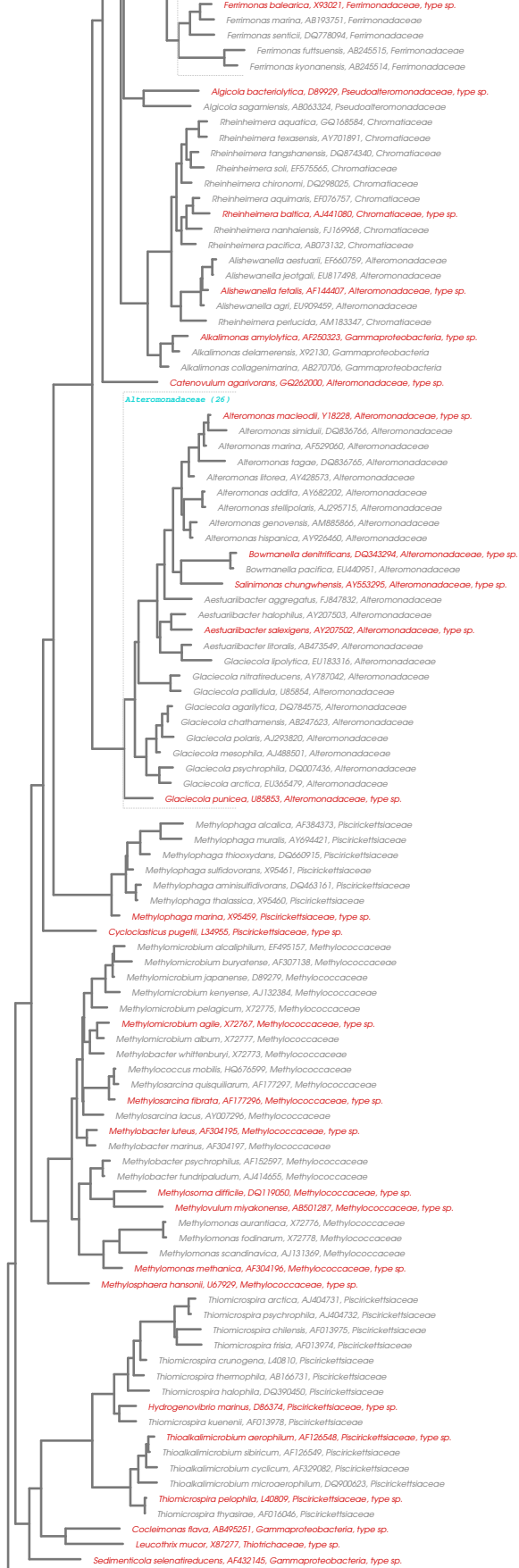
Moritella abyssi, AJ252022, Moritellaceae
Moritella dasanensis, EF192283, Moritellaceae
Moritella profunda, AJ252023, Moritellaceae
Moritella viscosa, AJ132226, Moritellaceae
Moritella yamanashi, AB008797, Moritellaceae
Moritella japonica, D21224, Moritellaceae
***Moritella marina*, AB038033, Moritellaceae, type sp.**
***Paramoritella alkaliphila*, AB364966, Moritellaceae, type sp.**

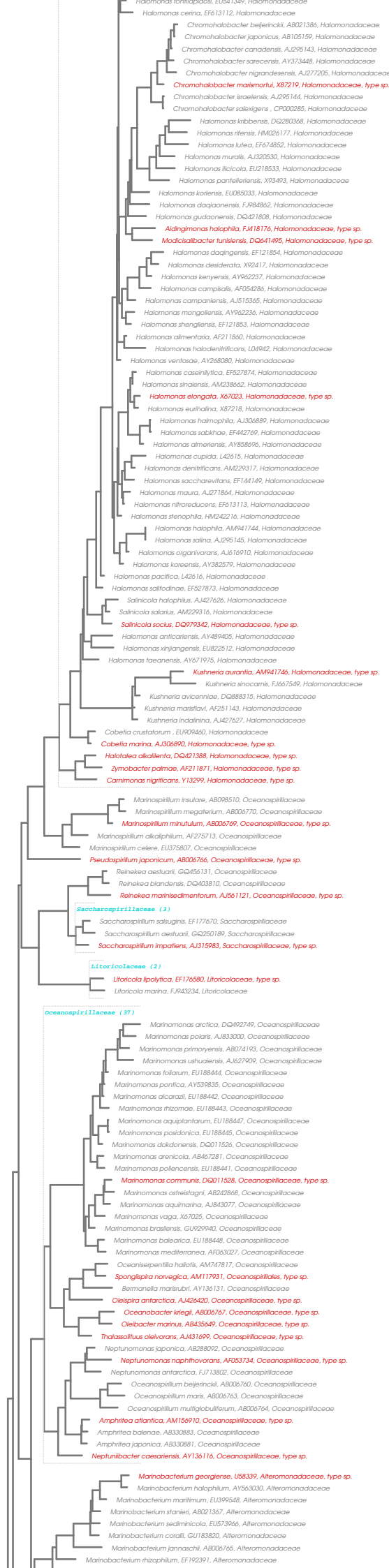
Shewanellaceae (56)

Shewanella halifaxensis, AY579751, Shewanellaceae
Shewanella pealeana, CP000851, Shewanellaceae
Shewanella marinifertina, AB081757, Shewanellaceae
Shewanella saitoae, AB081762, Shewanellaceae
Shewanella pneumatophori, AB204519, Shewanellaceae
Shewanella fidelis, AF420312, Shewanellaceae
Shewanella schlegelliana, AB081760, Shewanellaceae
Shewanella karelica, AB094598, Shewanellaceae
Shewanella psychrophila, AJ551089, Shewanellaceae
Shewanella piezotolerans, AJ551090, Shewanellaceae
Shewanella violacea, D21225, Shewanellaceae
Shewanella benthica, X82131, Shewanellaceae
Shewanella abyssi, AB201475, Shewanellaceae
Shewanella gelidimarina, U85907, Shewanellaceae
Shewanella surugensis, AB094597, Shewanellaceae
Shewanella canadensis, AY579749, Shewanellaceae
Shewanella sediminis, FR733715, Shewanellaceae
Shewanella sediminis, CP000821, Shewanellaceae
Shewanella hanedai, X82132, Shewanellaceae
Shewanella woodyi, CP000961, Shewanellaceae
Shewanella atlantica, AY579752, Shewanellaceae
Shewanella aquimarina, AY485225, Shewanellaceae
Shewanella lobica, DQ286387, Shewanellaceae
Shewanella matsuyvii, AY485224, Shewanellaceae
Shewanella digidipicicola, AB205570, Shewanellaceae
Shewanella colwelliana, AY653177, Shewanellaceae
Shewanella waksmanii, AY170366, Shewanellaceae
Shewanella algae, AF005249, Shewanellaceae
Shewanella indica, HM016084, Shewanellaceae
Shewanella chilkensis, FM210033, Shewanellaceae
Shewanella fodinae, FM203122, Shewanellaceae
Shewanella halliis, EF178282, Shewanellaceae
Shewanella coralli, FJ041083, Shewanellaceae
Shewanella amazonensis, AF005248, Shewanellaceae
Shewanella marina, EU290154, Shewanellaceae
Shewanella donghaensis, AY320275, Shewanellaceae
Shewanella oleyana, AF295592, Shewanellaceae
Shewanella pacifica, AF500075, Shewanellaceae
Shewanella japonica, AF145921, Shewanellaceae
Shewanella glacialispicicola, AB205571, Shewanellaceae
Shewanella marhuae, AB205576, Shewanellaceae
Shewanella batfoca, AJ000214, Shewanellaceae
Shewanella oneidensis, AF005251, Shewanellaceae
Shewanella profunda, FR733713, Shewanellaceae
***Shewanella putrefaciens*, X81623, Shewanellaceae, type sp.**
Shewanella xiamenensis, FJ589031, Shewanellaceae
Shewanella decolorationis, AJ609571, Shewanellaceae
Shewanella hafnienis, AB205566, Shewanellaceae
Shewanella livingstonensis, AJ300834, Shewanellaceae
Shewanella vesiculosa, AM980877, Shewanellaceae
Shewanella frigidimarina, U85903, Shewanellaceae
Shewanella basalis, EU143361, Shewanellaceae
Shewanella denitrificans, AJ311954, Shewanellaceae
Shewanella gaebulii, AY190533, Shewanellaceae
Shewanella icinia, DQ180743, Shewanellaceae
Shewanella spongiae, DQ167234, Shewanellaceae

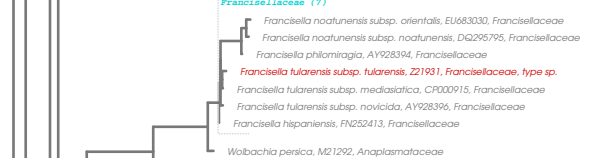
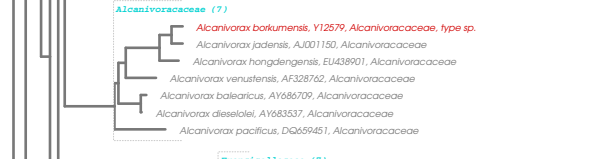
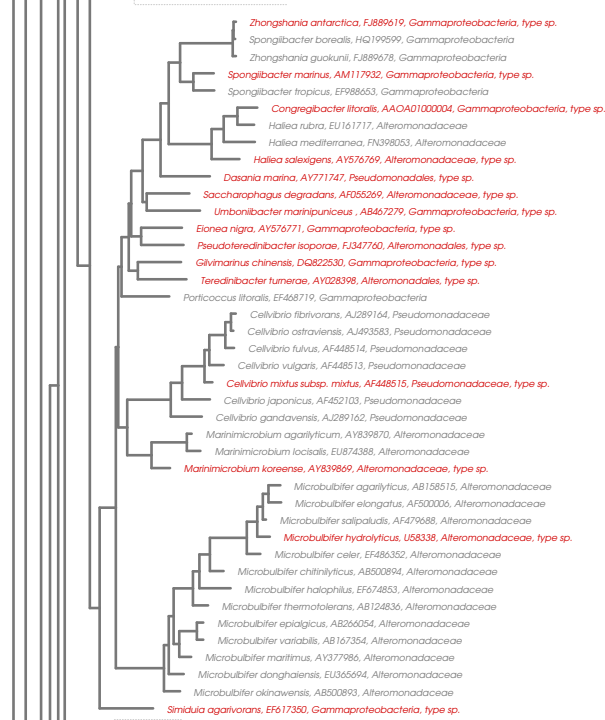
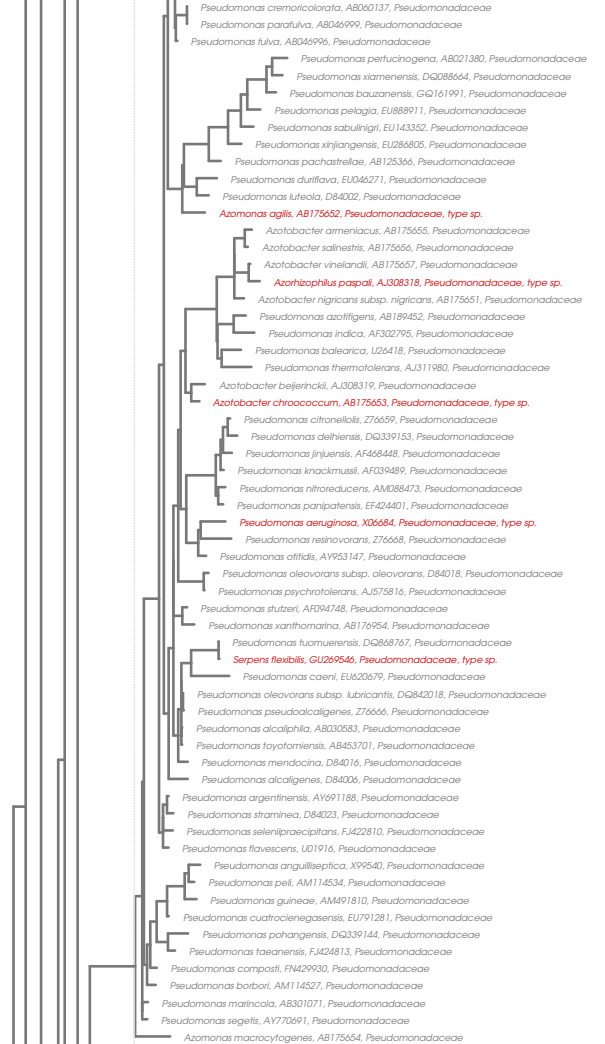
***Parafenimonas sedimenticola*, AB252732, Fenimonadaceae, type sp.**

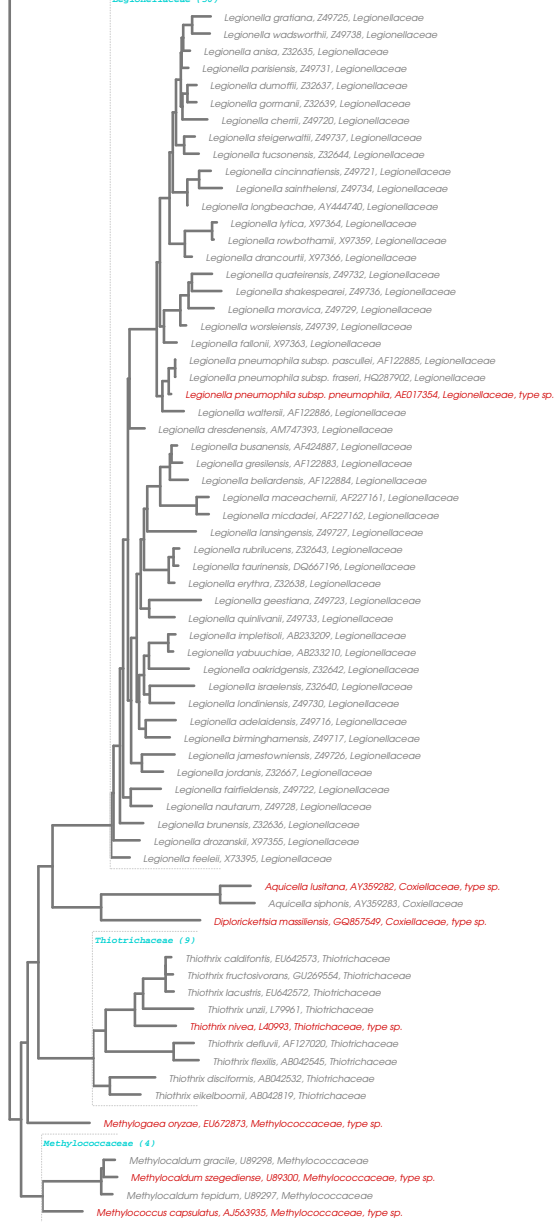
Ferriimonadaceae (5)







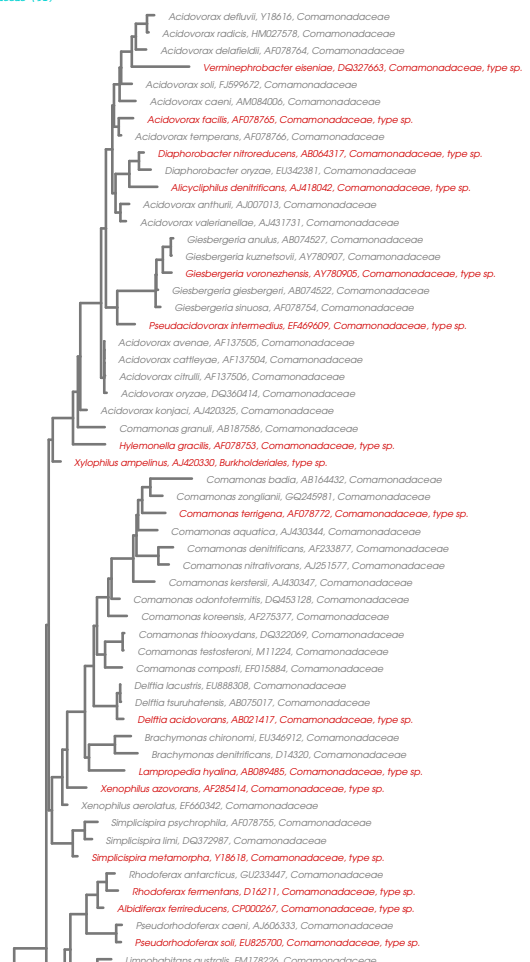


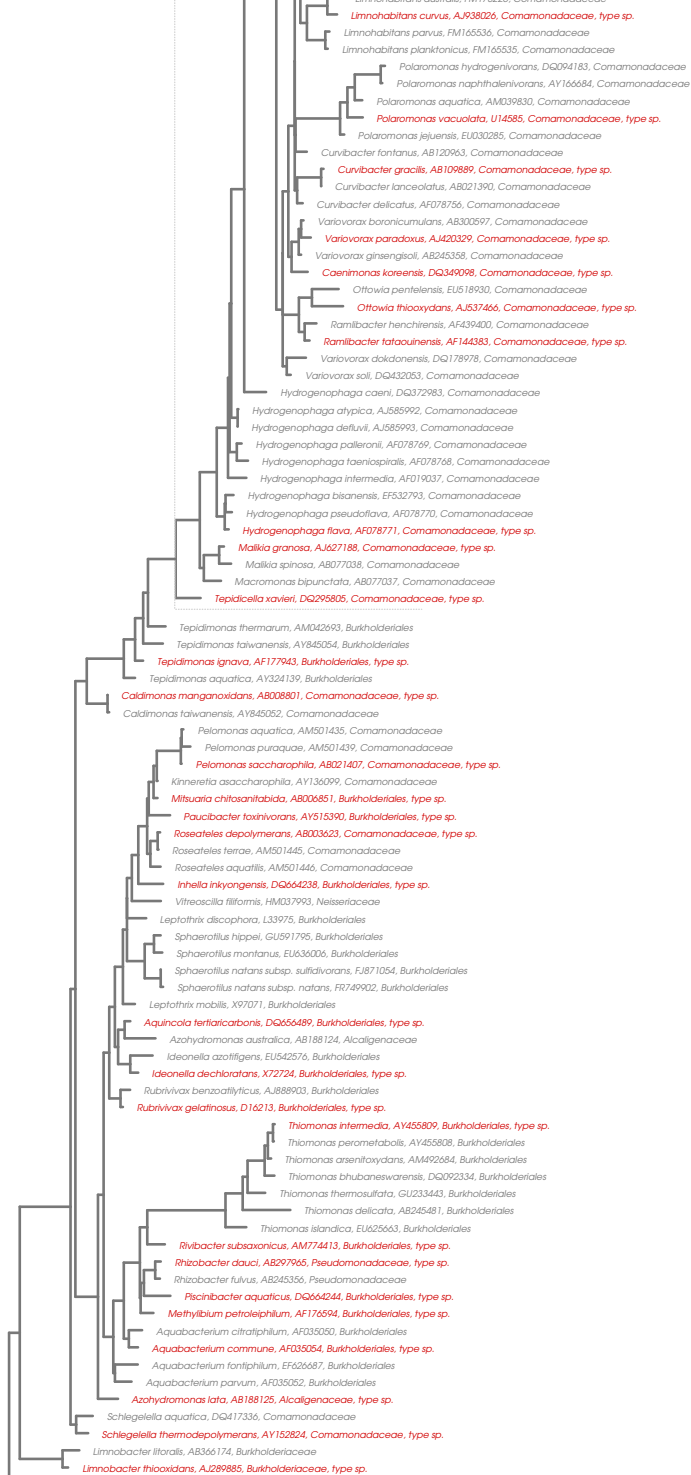


Betaproteobacteria (474)

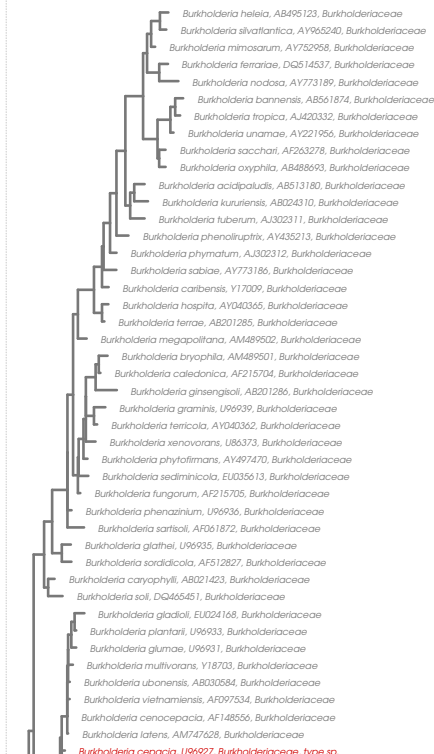
Burkholderiales (335)

Comamonadaceae (91)





Burkholderiaceae (67)



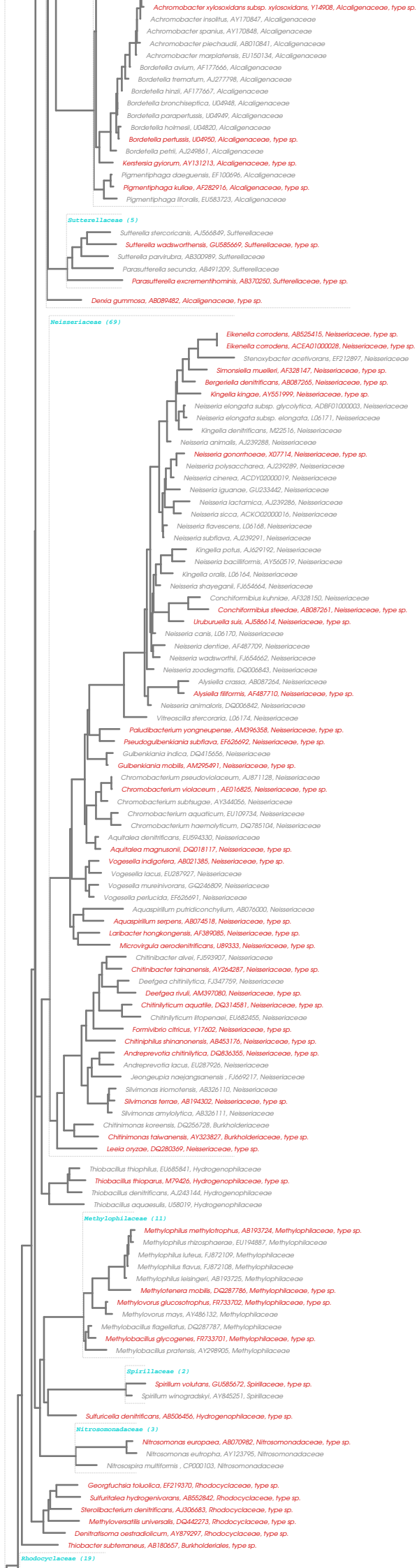
- Burkholderia seminalis, AM74761, Burkholderiaceae
- Burkholderia metallica, AM74763, Burkholderiaceae
- Burkholderia ambigua, AF04302, Burkholderiaceae
- Burkholderia diffusa, AM74762, Burkholderiaceae
- Burkholderia arboris, AM74763, Burkholderiaceae
- Burkholderia lata, CP000150, Burkholderiaceae
- Burkholderia pyrocinia, U96930, Burkholderiaceae
- Burkholderia stabilis, AF097533, Burkholderiaceae
- Burkholderia oklahomensis, DQ108388, Burkholderiaceae
- Burkholderia mallei, AF110188, Burkholderiaceae
- Burkholderia pseudomallei, DQ108392, Burkholderiaceae
- Burkholderia thailandensis, U91838, Burkholderiaceae
- Burkholderia endofungorum, AM420302, Burkholderiaceae
- Burkholderia rhizoxinica, AJ938142, Burkholderiaceae
- Pandoraea apista, AF139173, Burkholderiaceae, type sp.**
- Pandoraea notinbergensis, Y09879, Burkholderiaceae
- Pandoraea vervaeckii, AB510956, Burkholderiaceae
- Pandoraea faecigallinarum, AB510957, Burkholderiaceae
- Pandoraea promuenae, AY268170, Burkholderiaceae
- Pandoraea oxalativorans, AB469785, Burkholderiaceae
- Pandoraea spulorum, AF139176, Burkholderiaceae
- Pandoraea pulmonicola, AF139175, Burkholderiaceae
- Pandoraea thiooxydans, EF397578, Burkholderiaceae

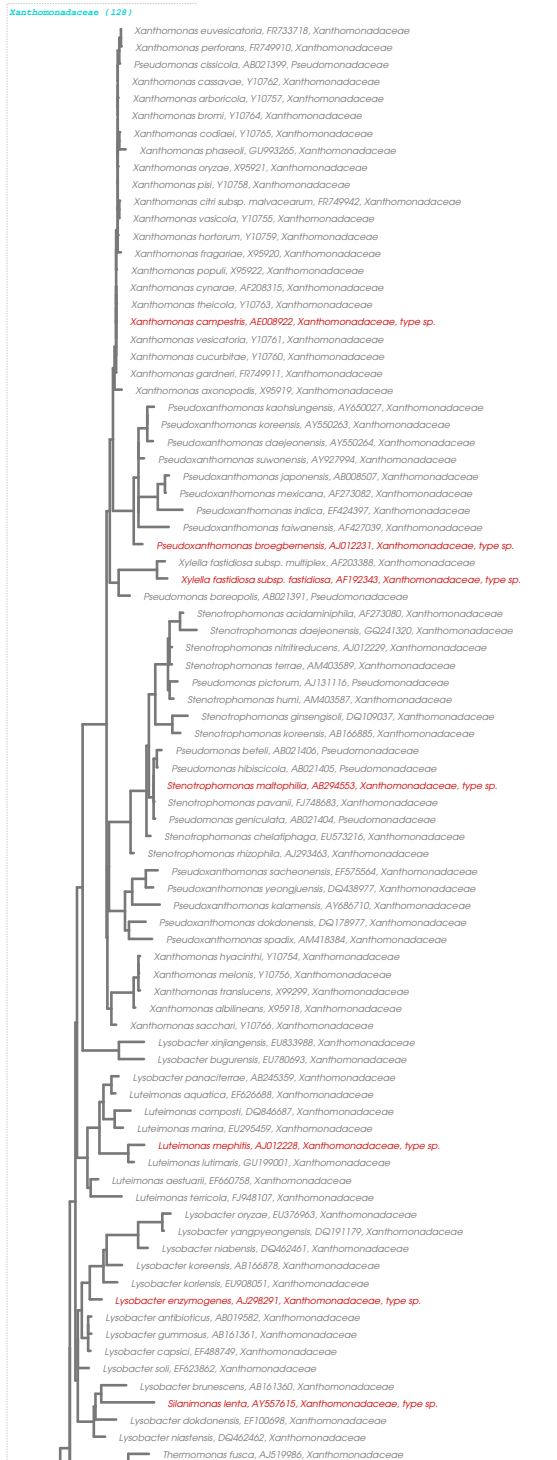
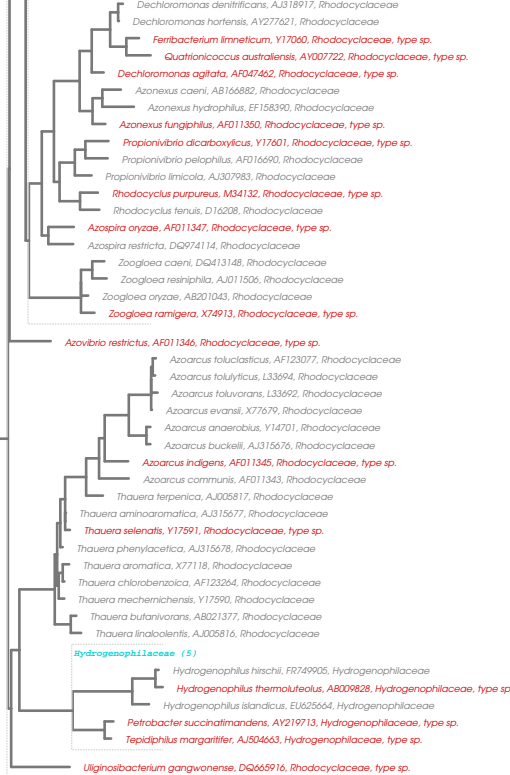
Oxalobacteraceae (52)

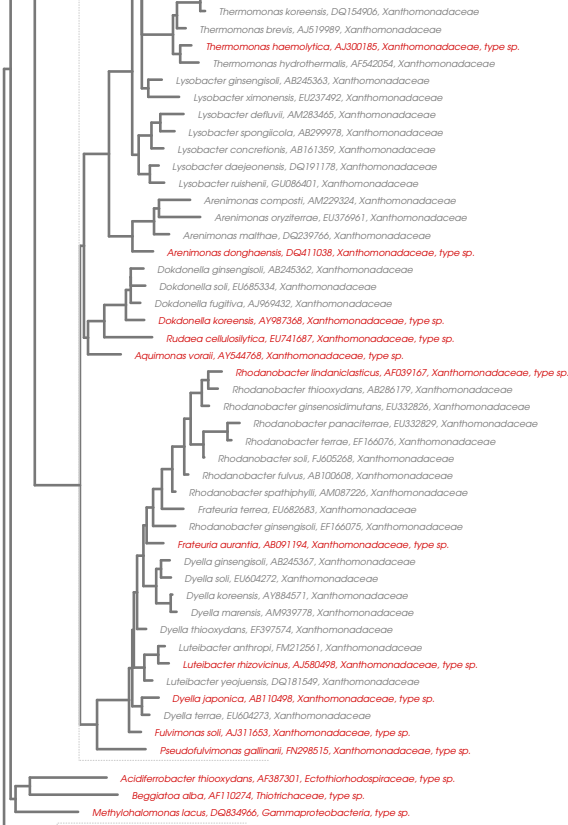
- Massilia niarfenis, EU808005, Oxalobacteraceae
- Massilia consociata, FN814307, Oxalobacteraceae
- Massilia aerolata, EF688526, Oxalobacteraceae
- Massilia aurea, AM231588, Oxalobacteraceae
- Massilia brevitata, EF546777, Oxalobacteraceae
- Massilia jejuniensis, FJ96486, Oxalobacteraceae
- Massilia niabensis, EU808006, Oxalobacteraceae
- Massilia alkalitolerans, AY679161, Oxalobacteraceae
- Massilia varians, AM774587, Oxalobacteraceae
- Massilia haematophila, AM774589, Oxalobacteraceae
- Massilia suwonensis, FJ96487, Oxalobacteraceae
- Telluria chitryiolytica, X65590, Oxalobacteraceae
- Telluria mixta, X65589, Oxalobacteraceae, type sp.**
- Massilia timonae, U54470, Oxalobacteraceae, type sp.**
- Massilia atlatiflora, AY65999, Oxalobacteraceae
- Massilia lutea, AY966001, Oxalobacteraceae
- Duganella violaceinigra, AY376163, Oxalobacteraceae
- Massilia dura, AY965998, Oxalobacteraceae
- Massilia pilcata, AY966000, Oxalobacteraceae
- Duganella zoogbeoides, D14256, Oxalobacteraceae, type sp.**
- Rugamonas rubra, HM038005, Pseudomonadaceae, type sp.**
- Janthinobacterium agaricidammum, Y08845, Oxalobacteraceae
- Janthinobacterium lividum, Y08846, Oxalobacteraceae, type sp.**
- Aquaspirillum arcticum, AB074523, Neisseriaceae
- Undibacterium pigrum, AM97630, Oxalobacteraceae, type sp.**
- Undibacterium parvum, AM97629, Oxalobacteraceae
- Undibacterium oligocarboniphilum, GQ379228, Oxalobacteraceae
- Hermiminomonas glaciel, EU489741, Oxalobacteraceae
- Hermiminomonas saxobidensis, AM493906, Oxalobacteraceae
- Hermiminomonas arsenic oxydans, AY728038, Oxalobacteraceae
- Hermiminomonas aquatilis, AM085762, Oxalobacteraceae
- Hermiminomonas fonticola, AY676462, Oxalobacteraceae, type sp.**
- Oxalicibacterium faecigallinarum, AB49788, Oxalobacteraceae
- Oxalicibacterium flavum, AY061962, Oxalobacteraceae, type sp.**
- Oxalicibacterium horti, AB49786, Oxalobacteraceae
- Oxalicibacterium solutis, AB008503, Oxalobacteraceae
- Herbaspirillum huttiense subsp. putai, AB109890, Oxalobacteraceae
- Herbaspirillum huttiense subsp. huttiense, AB021366, Oxalobacteraceae
- Herbaspirillum aquaticum, FJ267649, Oxalobacteraceae
- Herbaspirillum chlorophenicum, AB094401, Oxalobacteraceae
- Herbaspirillum frisingense, AJ238358, Oxalobacteraceae
- Herbaspirillum rubisubalbanicum, AF137508, Oxalobacteraceae
- Herbaspirillum seropedicaceae, Y10146, Oxalobacteraceae, type sp.**
- Herbaspirillum hillneri, DQ150563, Oxalobacteraceae
- Herbaspirillum kustanum, AF543312, Oxalobacteraceae
- Herbaspirillum thizosphaerae, DQ188986, Oxalobacteraceae
- Herbaspirillum autotrophicum, AB074524, Oxalobacteraceae
- Collimonas arenae, AY281146, Oxalobacteraceae
- Collimonas pratensis, AY281137, Oxalobacteraceae
- Collimonas fungivorans, AJ310394, Oxalobacteraceae, type sp.**
- Oxalobacter formigenes, U49757, Oxalobacteraceae, type sp.
- Oxalobacter vibriofarmis, FR733700, Oxalobacteraceae
- Glaucimonas immobilis, GU441679, Oxalobacteraceae, type sp.**
- Paucimonas lemoignei, X92555, Burkholderiaceae, type sp.**
- Cupriavidus oxalaticus, AF155567, Burkholderiaceae
- Cupriavidus taiwanensis, AF300324, Burkholderiaceae
- Cupriavidus laharti, AB054981, Burkholderiaceae
- Cupriavidus pinatubonensis, AB121221, Burkholderiaceae
- Cupriavidus basiliensis, AF312022, Burkholderiaceae
- Cupriavidus campinensis, AF312020, Burkholderiaceae
- Cupriavidus nector, AF191737, Burkholderiaceae, type sp.**
- Wautersia numazuensis, AB104447, Burkholderiaceae
- Cupriavidus respiraculi, AF500583, Burkholderiaceae
- Cupriavidus metallidurans, D87999, Burkholderiaceae
- Cupriavidus pauculus, AF085226, Burkholderiaceae
- Cupriavidus gilardi, AF076645, Burkholderiaceae
- Cupriavidus pampae, FN430567, Burkholderiaceae
- Ralstonia solanacearum, EF016361, Burkholderiaceae
- Ralstonia syzygii, AB021403, Burkholderiaceae
- Ralstonia insidiosa, AF488779, Burkholderiaceae
- Ralstonia mannitolilytica, AJ270258, Burkholderiaceae
- Ralstonia pickettii, AY741342, Burkholderiaceae, type sp.**
- Polynucleobacter necessarius subsp. necessarius, AM97067, Burkholderiaceae, type sp.**
- Polynucleobacter necessarius subsp. asymbioticus, AJ879783, Burkholderiaceae
- Polynucleobacter acidiphobus, FM208180, Burkholderiaceae
- Polynucleobacter cosmopolitanus, AJ550672, Burkholderiaceae
- Polynucleobacter rarus, FM208182, Burkholderiaceae

Alcaligenaceae (44)

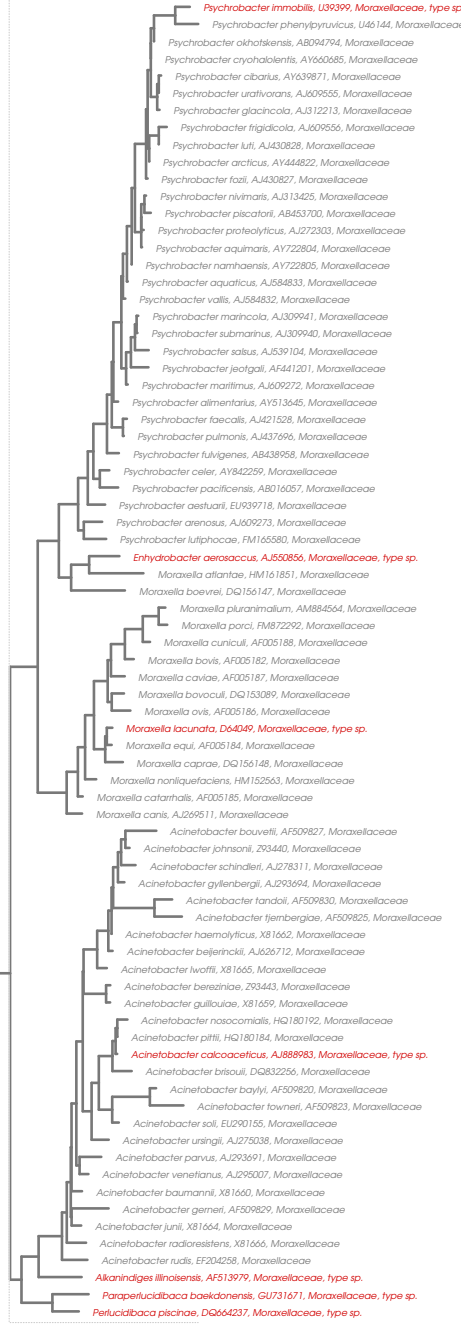
- Advenella incenata, AM944734, Alcaligenaceae, type sp.**
- Advenella kashmirensis, AJ864470, Alcaligenaceae
- Advenella minigardefordensis, AY880023, Alcaligenaceae
- Oligella ureolytica, AJ261912, Alcaligenaceae
- Oligella urethralis, AF133538, Alcaligenaceae, type sp.**
- Brackiella oedipods, AJ277742, Alcaligenaceae, type sp.**
- Taylorella asinigenitalis, AF067229, Alcaligenaceae
- Taylorella equigenitalis, X68645, Alcaligenaceae, type sp.**
- Candidimonas nitroreducens, FN556191, Alcaligenaceae, type sp.**
- Candidimonas humi, FN556192, Alcaligenaceae
- Parapusillimonas granuli, DQ466075, Alcaligenaceae, type sp.**
- Pusillimonas ginsengitoli, EF672088, Alcaligenaceae
- Pusillimonas harenae, GQ232740, Alcaligenaceae
- Pusillimonas soli, GQ241322, Alcaligenaceae
- Pusillimonas noertermanni, AY65828, Alcaligenaceae, type sp.**
- Paratcaligenes urelyticus, FJ793551, Alcaligenaceae, type sp.**
- Castellaniella coeni, AB166879, Alcaligenaceae
- Castellaniella ginsengitoli, EU873313, Alcaligenaceae
- Castellaniella denitrificans, U82826, Alcaligenaceae
- Castellaniella doejonensis, GQ241321, Alcaligenaceae
- Castellaniella defragrans, AJ005447, Alcaligenaceae, type sp.**
- Alcaligenes faecalis subsp. phenolicus, AY296718, Alcaligenaceae
- Alcaligenes faecalis subsp. faecalis, D88008, Alcaligenaceae, type sp.**
- Alcaligenes faecalis subsp. parafaecalis, AJ242986, Alcaligenaceae
- Poenalcaligenes hominis, FN391024, Alcaligenaceae, type sp.**
- Achromobacter denitrificans, AJ278451, Alcaligenaceae
- Achromobacter ruhlandii, AB010840, Alcaligenaceae





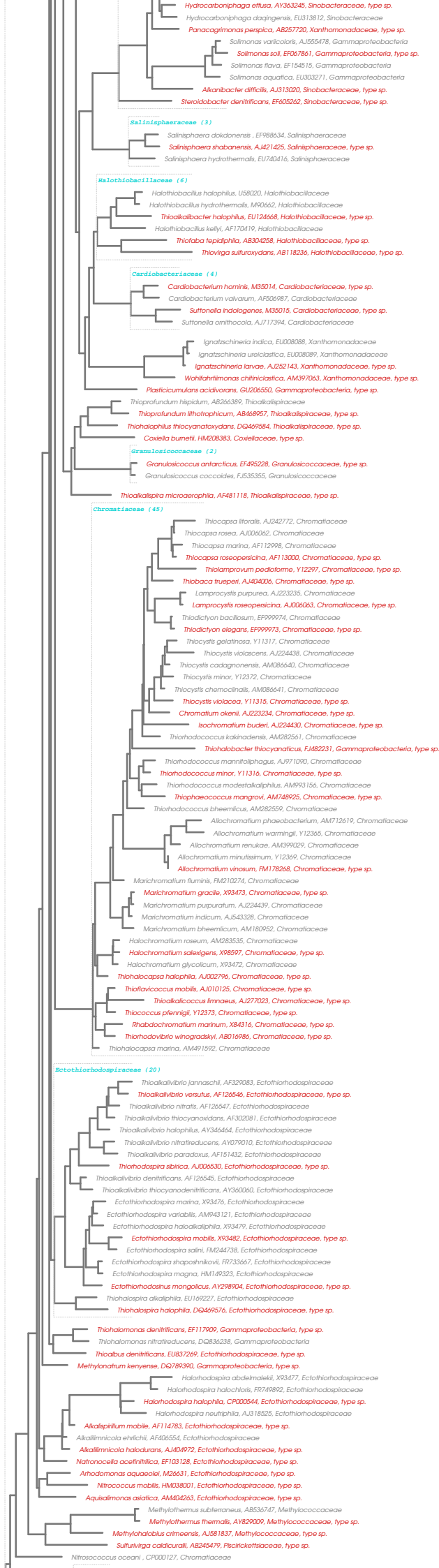


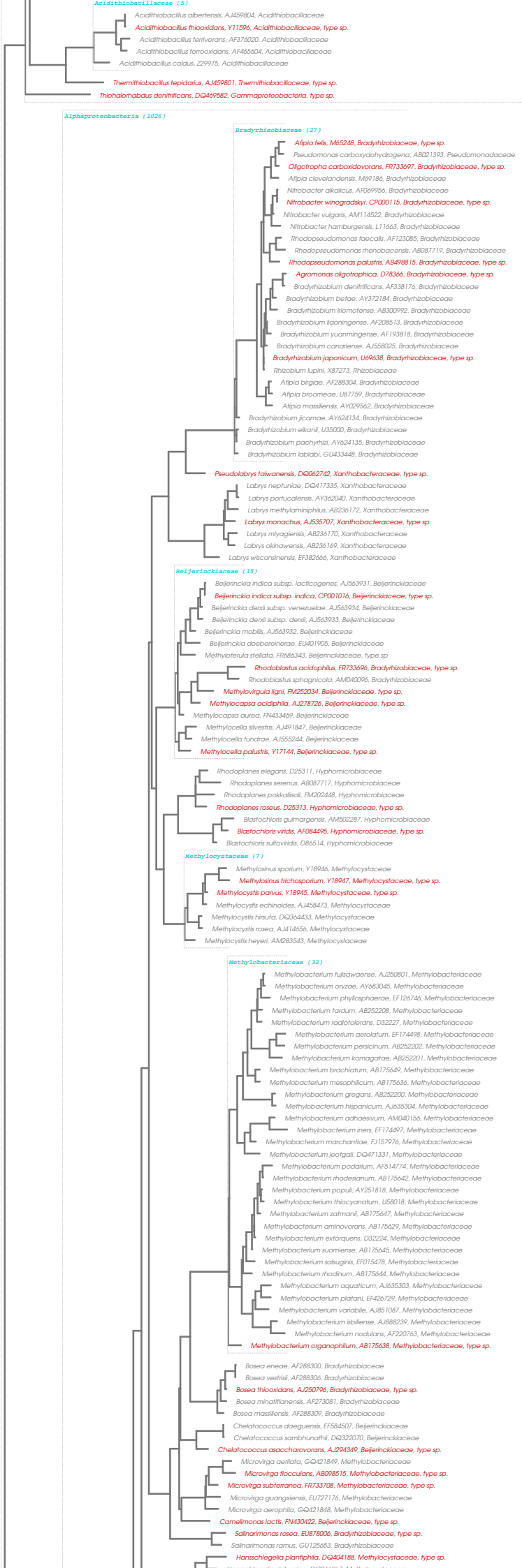
Moraxellaceae (77)

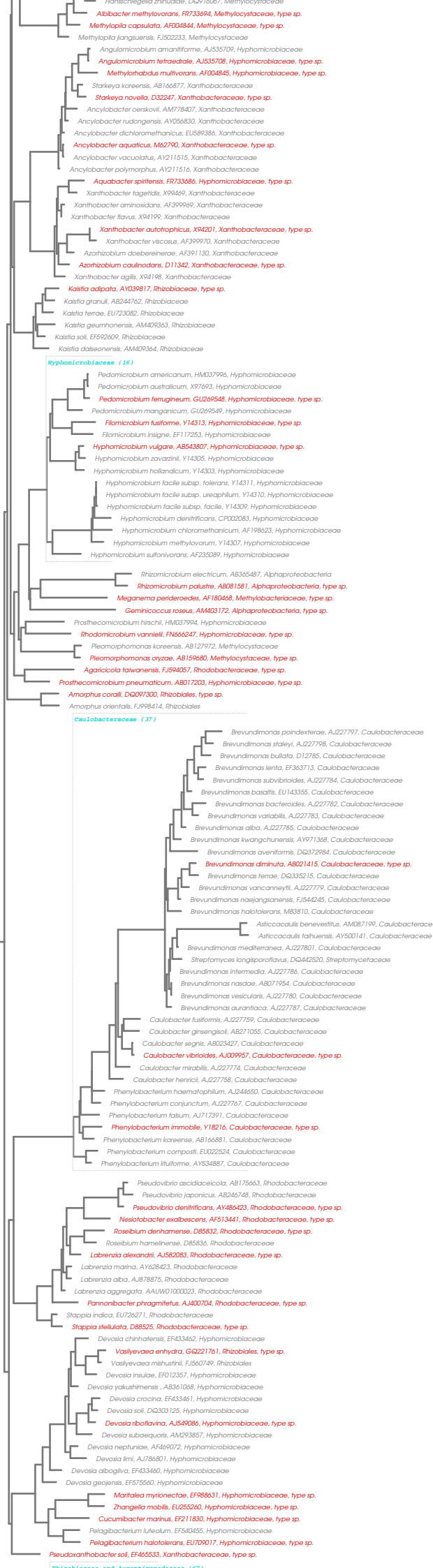


Sinobacteraceae (12)

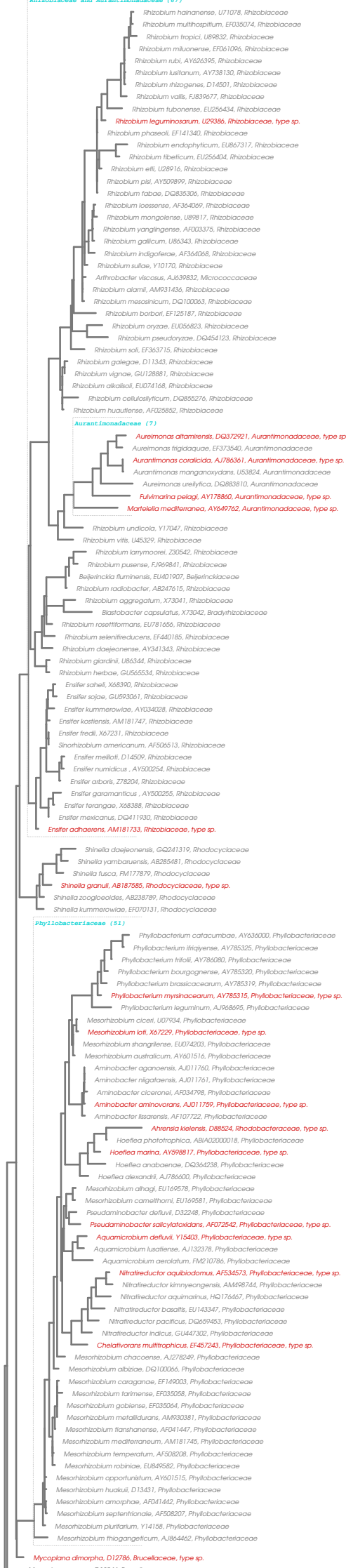


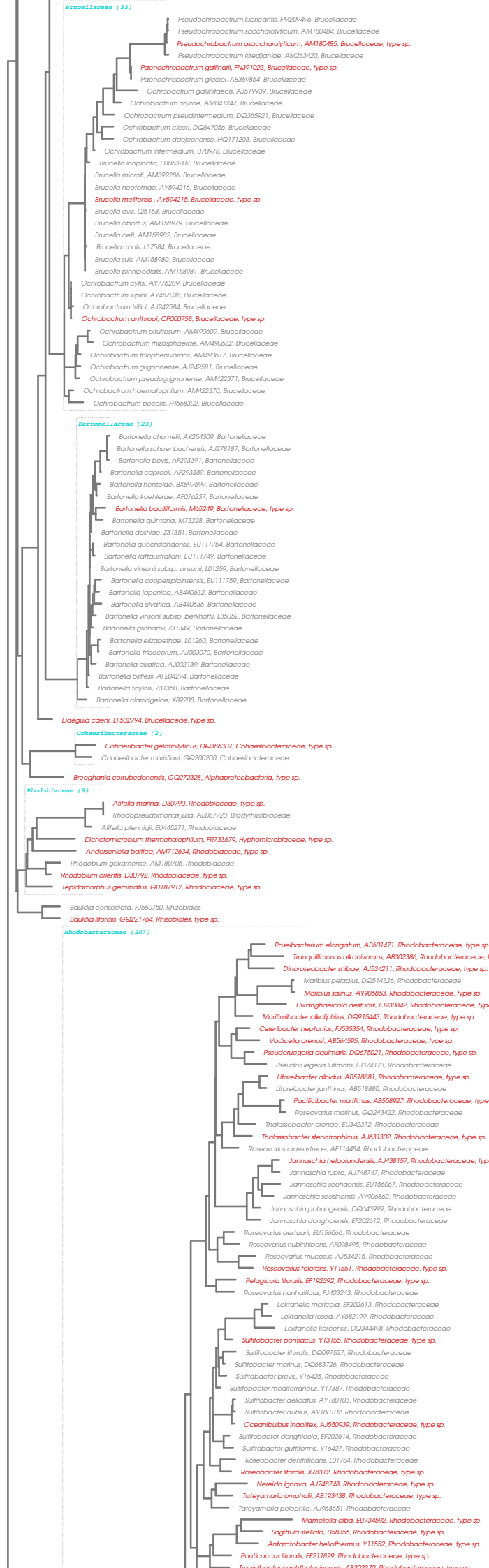


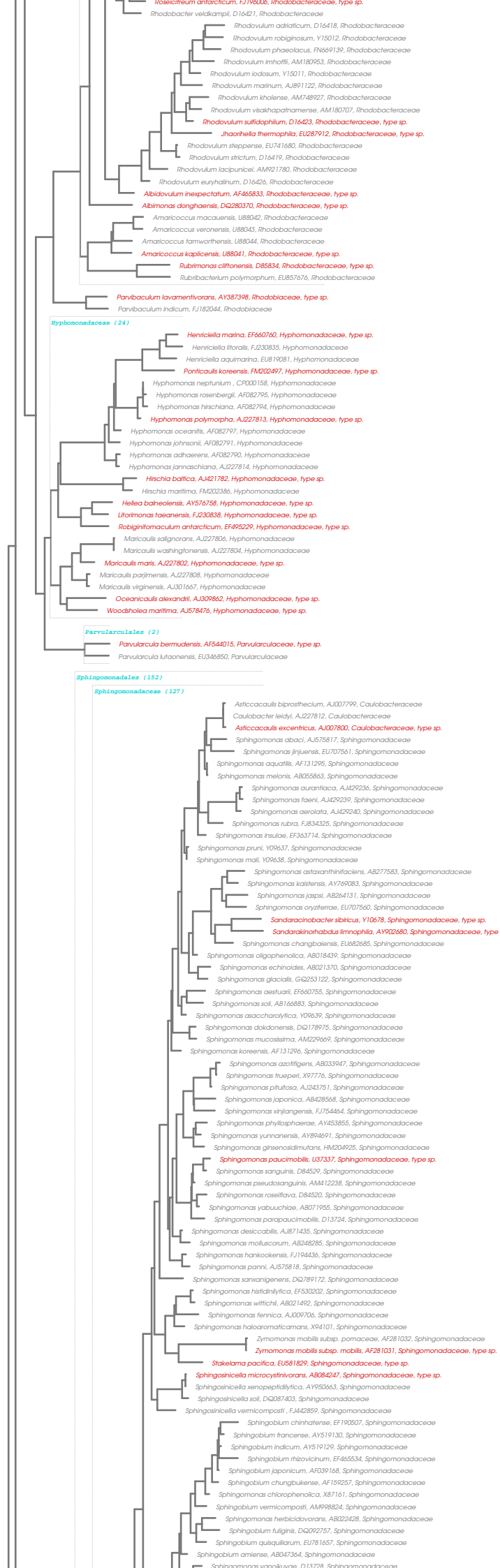


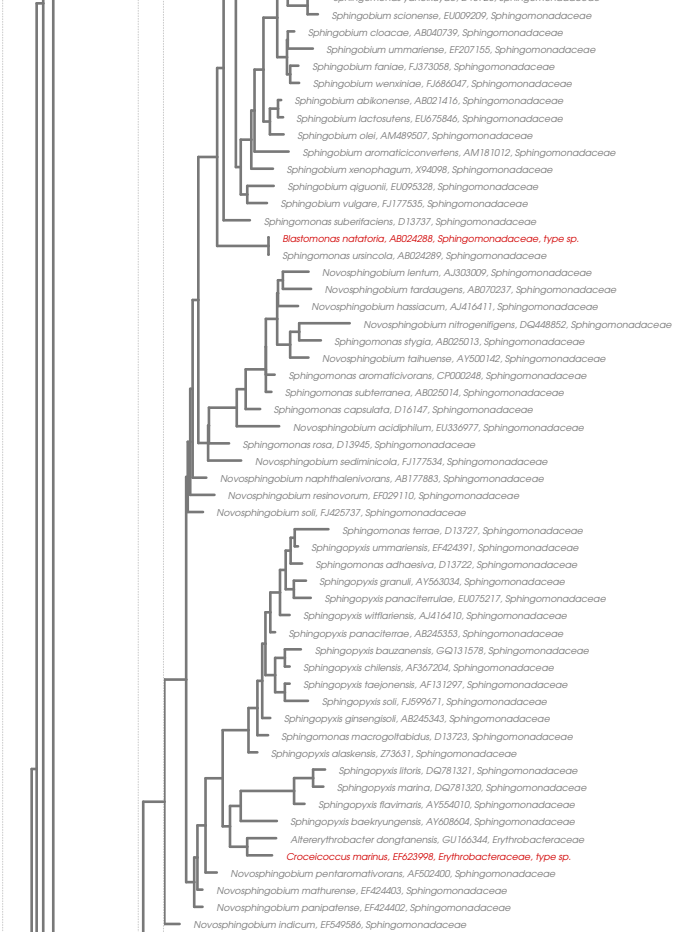


Hyphomicrobiales and Rhodospirillales (16)

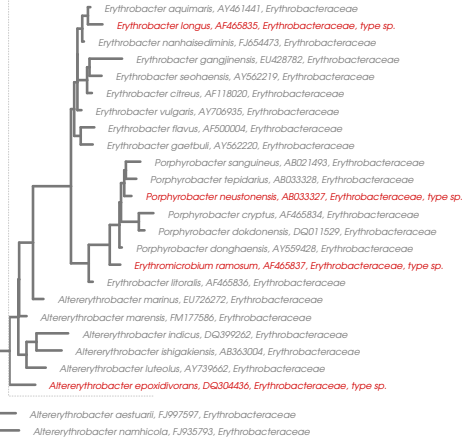




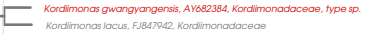




Erythrobacteraceae (23)



Kordimonadaceae (2)



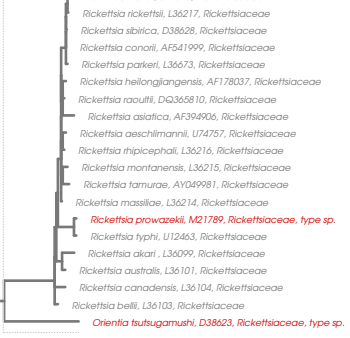
Rhodothalassum saxilegens, D14431, Rhodobacteraceae, type sp.

Sneathiellales (2)

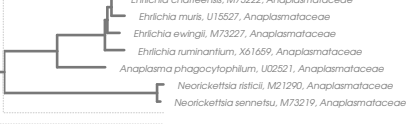


Rickettsiales (27)

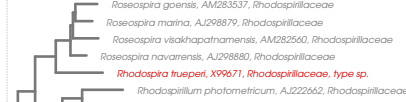
Rickettsiaceae (20)

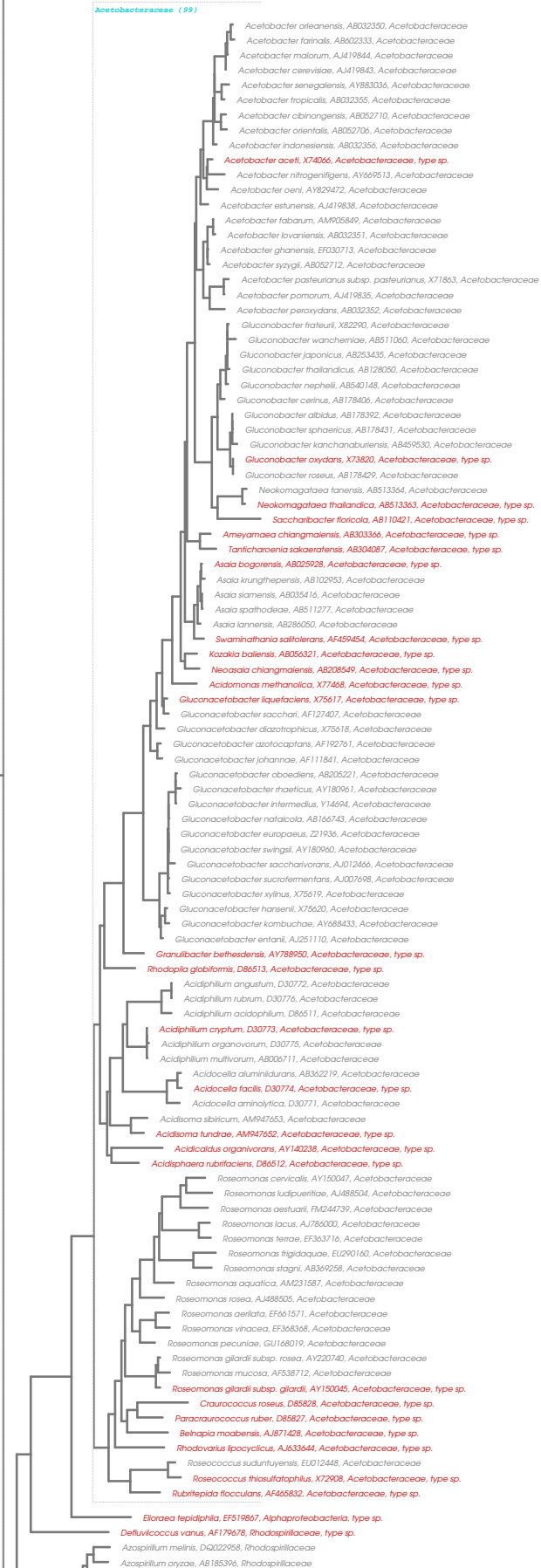
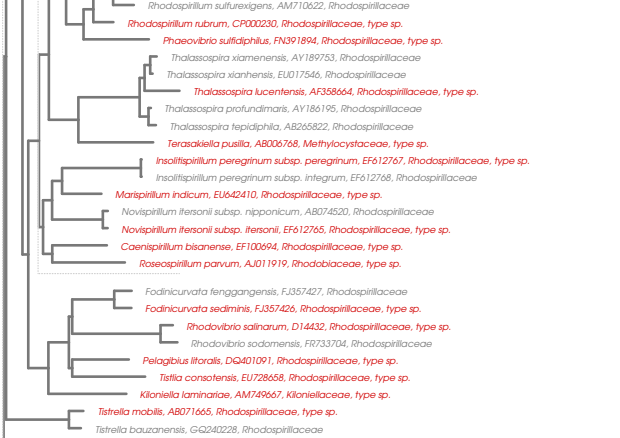


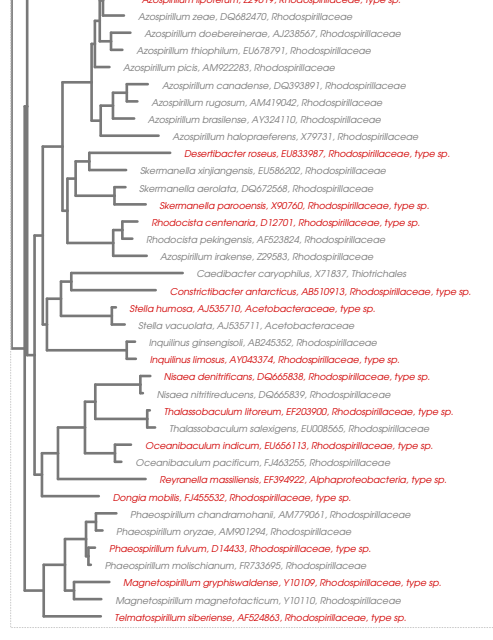
Anaplasmataceae (7)



Rhodospirillaceae (22)



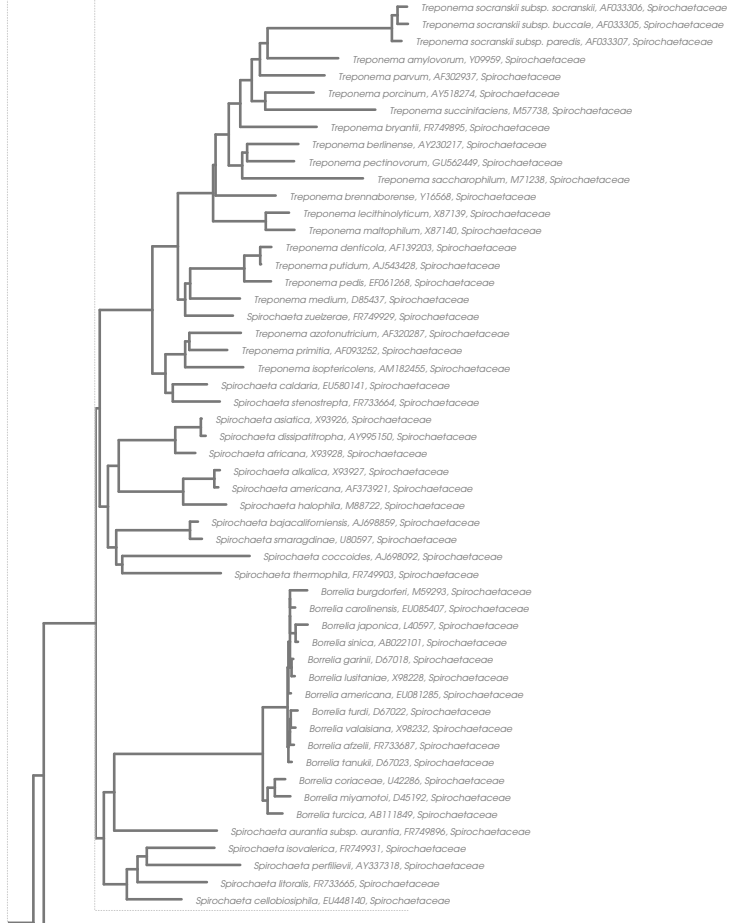




Mariprofundus ferrooxydans, EF493243, Mariprofundaceae, type sp.

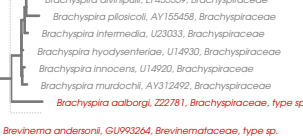
Spirochaetes (80)

Spirochaetaceae (53)



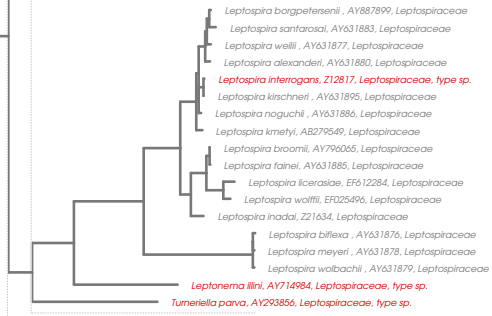
Exilispa thermophila, AB364473, Spirochaetales, type sp.

Brachyspiraceae (7)



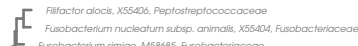
Brevinema andersonii, GU993264, Brevinemataceae, type sp.

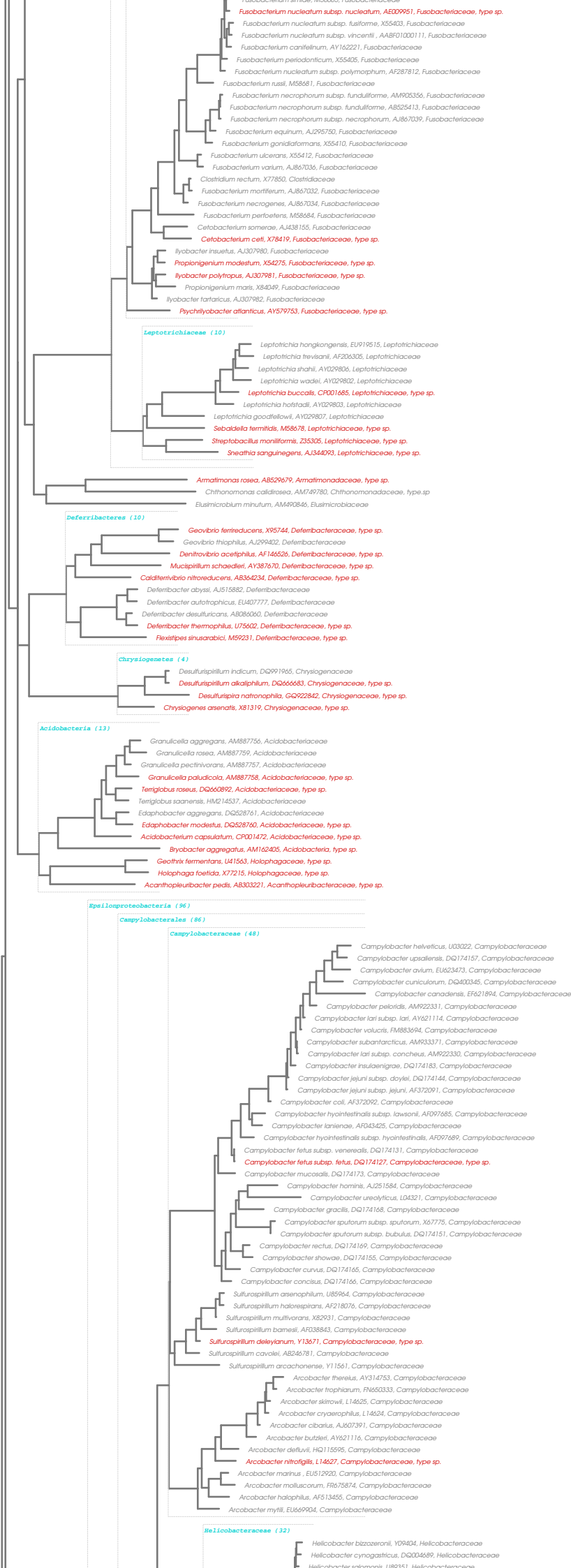
Leptospiraceae (18)

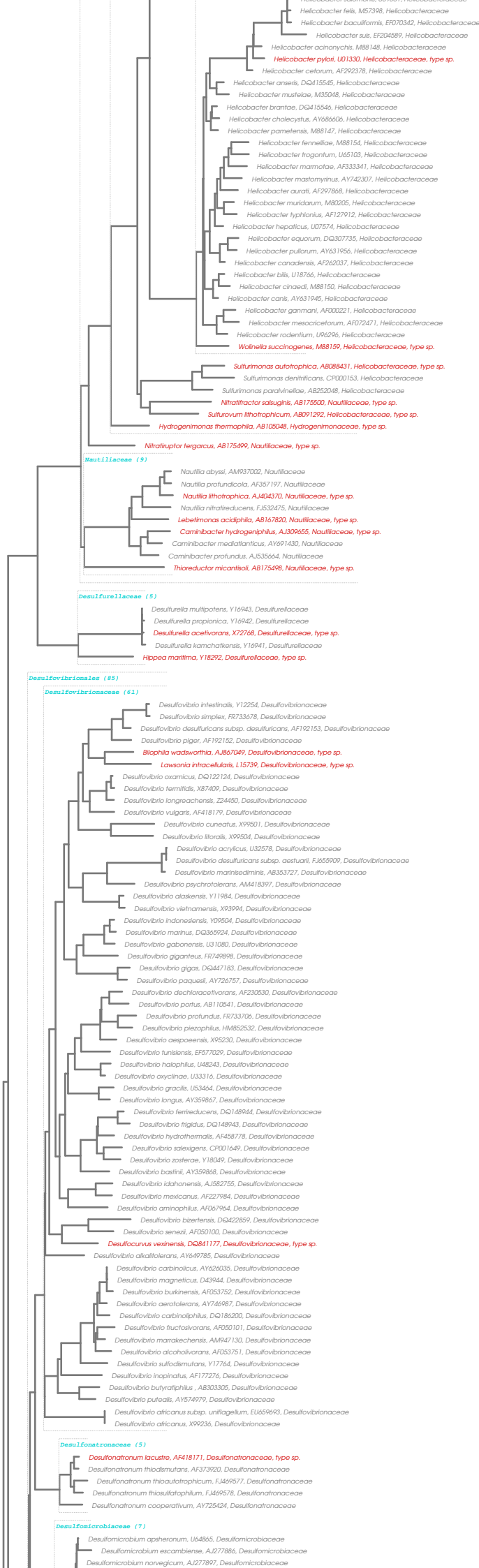


Fusobacteria (39)

Fusobacteriaceae (29)







Desulfomicrobium macaei, AJ237604, Desulfomicrobiaceae
Desulfomicrobium baculatum, AJ277894, Desulfomicrobiaceae, type sp.
Desulfomicrobium arale, AJ251623, Desulfomicrobiaceae
Desulfomicrobium thermophilum, AY464939, Desulfomicrobiaceae

Desulfobacteriia (12)

Desulfonauticus autotrophicus, FJ194951, Desulfobacteriia
Desulfonauticus submarinus, AF524933, Desulfobacteriia, type sp.
Desulfothermus naphthae, X82922, Desulfobacteriia, type sp.
Desulfothermus okinawensis, AB264617, Desulfobacteriia
Desulfovernificus halophilus, DG139408, Desulfobacteriia, type sp.
Desulfohalobium utahense, DG067421, Desulfobacteriia
Desulfohalobium reibaense, X99235, Desulfobacteriia, type sp.
Desulfonatronovibrio magnus, GU196831, Desulfobacteriia
Desulfonatronovibrio thiodismutans, FJ469579, Desulfobacteriia
Desulfonatronovibrio hydrogenovorans, X99234, Desulfobacteriia, type sp.
Desulfonatronospira delicata, EU296539, Desulfobacteriia
Desulfonatronospira thiodismutans, EU296537, Desulfobacteriia, type sp.

Desulfoproteobacteria (41)

Desulfobacteraceae (41)
Desulfococcus blaueus, AJ277887, Desulfobacteraceae
Desulfococcus multivorans, AF418173, Desulfobacteraceae, type sp.
Desulfonema magnum, U45989, Desulfobacteraceae
Desulfonema limicola, U45990, Desulfobacteraceae, type sp.
Desulfonema ishimotoi, U45992, Desulfobacteraceae
Desulfosalmonas propionica, DQ067422, Desulfobacteraceae, type sp.
Desulfosarcina ovata, Y17285, Desulfobacteraceae
Desulfosarcina variabilis, M34407, Desulfobacteraceae, type sp.
Desulfosarcina cefonica, AJ237603, Desulfobacteraceae
Desulfatibaculum aliphaticivorans, AY184360, Desulfobacteraceae, type sp.
Desulfatibaculum akenivorans, AY493562, Desulfobacteraceae
Desulfobacterium indolicum, AJ237607, Desulfobacteraceae, type sp.
Desulfatirhabdium butyrivorans, DG146482, Desulfobacteraceae, type sp.
Desulfobotulus sapovorans, FR733666, Desulfobacteraceae, type sp.
Desulfobotulus sapovorans, FJ789839, Desulfobacteraceae, type sp.
Desulfobotulus alkaliphilus, FJ788523, Desulfobacteraceae
Desulfocella halophila, AF022936, Desulfobacteraceae, type sp.
Desulforegula conservatrix, AF243334, Desulfobacteraceae, type sp.
Desulfatiferula olefinivorans, DQ826724, Desulfobacteraceae, type sp.
Desulfotriglus fragilis, AF099065, Desulfobacteraceae
Desulfotriglus oceanense, AF099064, Desulfobacteraceae, type sp.
Desulfoluna butyratoydans, AB110540, Desulfobacteraceae, type sp.
Desulfoluna spongiphila, EF187256, Desulfobacteraceae
Desulfofaba gelida, AF099063, Desulfobacteraceae, type sp.
Desulfofaba hansenii, AF321820, Desulfobacteraceae
Desulfofaba fastidiosa, AY268891, Desulfobacteraceae
Desulfobacter curvatus, AF418175, Desulfobacteraceae
Desulfobacter postgatei, AF418180, Desulfobacteraceae, type sp.
Desulfobacter halotolerans, Y14745, Desulfobacteraceae
Desulfobacter latus, AJ441315, Desulfobacteraceae
Desulfobacter hydrogenophilus, FR733673, Desulfobacteraceae
Desulfobacter vibriiformis, U12254, Desulfobacteraceae
Desulfospira joergensenii, X99637, Desulfobacteraceae, type sp.
Desulfotignum balticum, AF418176, Desulfobacteraceae, type sp.
Desulfotignum toluenicum, EF207157, Desulfobacteraceae
Desulfotignum phosphitoxidans, AF420288, Desulfobacteraceae
Desulfobacula phenolica, AJ237606, Desulfobacteraceae
Desulfobacula foetalica, AJ441316, Desulfobacteraceae, type sp.
Desulfobacterium niacini, FR733668, Desulfobacteraceae
Desulfobacterium vacuolatum, AF418178, Desulfobacteraceae
Desulfobacterium autotrophicum, AF418177, Desulfobacteraceae

Syntrophaceae (4)

Syntrophus buswellii, X85131, Syntrophaceae, type sp.
Syntrophus gentianae, X85132, Syntrophaceae
Syntrophus aciditrophicus, CP000252, Syntrophaceae
Smithella propionica, AF126282, Syntrophaceae, type sp.
Bdellovibrio bacteriovorus, AJ292789, Bdellovibrionaceae, type sp.

Syntrophobacteraceae (11)

Syntrophobacter fumaroxidans, X82874, Syntrophobacteraceae
Syntrophobacter pferingii, X82875, Syntrophobacteraceae
Desulfotirhabdus amnigena, X83274, Syntrophobacteraceae, type sp.
Desulfotirhabdus adipica, AJ237605, Syntrophobacteraceae, type sp.
Syntrophobacter wolnii, X70905, Syntrophobacteraceae, type sp.
Syntrophobacter sulfatireducens, AY651787, Syntrophobacteraceae
Desulfosoma caldarum, FJ491989, Syntrophobacteraceae, type sp.
Thermodesulfotirhabdus norvegica, U25627, Syntrophobacteraceae, type sp.
Desulfacinum infernum, L27426, Syntrophobacteraceae, type sp.
Desulfacinum hydrothermale, AF170417, Syntrophobacteraceae
Desulfoglaeba alkanevedens, DQ303457, Syntrophobacteraceae, type sp.
Desulfobacca acetoxidans, AF002671, Syntrophaceae, type sp.
Desulfobacterium anilini, AJ237601, Desulfobacteraceae
Desulfarculus baarsii, AF418174, Desulfarculaceae, type sp.
Desulfomonile liminaris, AF230531, Syntrophaceae
Desulfomonile tiedjei, AM086646, Syntrophaceae, type sp.

Desulfobulbaceae (16)

Desulfobulbus singaporensis, AF118453, Desulfobulbaceae
Desulfobulbus glycolicus, X99707, Desulfobulbaceae, type sp.
Desulfobulbus vacuolatus, L2613, Desulfobulbaceae, type sp.
Desulfobacterium catecholicum, AJ237602, Desulfobulbaceae
Desulfocapsa sulfatigena, Y13672, Desulfobulbaceae
Desulfocapsa thiaymogenes, X95181, Desulfobulbaceae, type sp.
Desulfopila inferna, AM774321, Desulfobulbaceae
Desulfopila aestuarii, AB110542, Desulfobulbaceae, type sp.
Desulfotalea arctica, AF099061, Desulfobulbaceae
Desulfotalea psychrophila, AF099062, Desulfobulbaceae, type sp.
Desulfobulbus elongatus, X95180, Desulfobulbaceae
Desulfobulbus propionicus, AY548789, Desulfobulbaceae, type sp.
Desulfobulbus rhodoferrum, U12253, Desulfobulbaceae
Desulfobulbus japonicus, AB110549, Desulfobulbaceae
Desulfobulbus mediterraneus, AF354663, Desulfobulbaceae
Desulfurivibrio alkaliphilus, EF422413, Desulfobulbaceae, type sp.

Bacteriovoraceae (4)

Bacteriovorax illorali, AF084859, Bacteriovoraceae
Bacteriovorax marinus, AF084854, Bacteriovoraceae
Bacteriovorax stolpii, AJ288899, Bacteriovoraceae, type sp.
Pereobacter starii, AF084852, Bacteriovoraceae, type sp.

Desulfuromonadales (37)

Desulfuromonadaceae (22)

Desulfuromusa bakii, X79412, Desulfuromonadaceae
Desulfuromusa kysingii, X79414, Desulfuromonadaceae, type sp.
Desulfuromusa succinioxidans, X79415, Desulfuromonadaceae
Desulfuromusa ferrireducens, AY835392, Desulfuromonadaceae
Geopyschobacter electrodiphilus, AY187303, Geobacteraceae, type sp.
Malonomonas rubra, Y17712, Desulfuromonadaceae, type sp.
Pelobacter selenigenes, DQ991964, Desulfuromonadaceae
Pelobacter acidigalici, X77216, Desulfuromonadaceae, type sp.
Pelobacter massiliensis, FR749901, Desulfuromonadaceae
Geothermobacter ehrlichii, AY155599, Geobacteraceae, type sp.
Geoalkalibacter ferrihydricus, DQ303032, Geobacteraceae, type sp.
Geoalkalibacter subterraneus, EU182247, Geobacteraceae
Desulfuromonas palmifolia, U28172, Desulfuromonadaceae
Desulfuromonas acetivivens, U23140, Desulfuromonadaceae
Desulfuromonas chloroethenica, U49748, Desulfuromonadaceae
Desulfuromonas michiganensis, AF357915, Desulfuromonadaceae
Pelobacter acetylenicus, X70905, Desulfuromonadaceae

Pelobacter venefianus, U41562, Desulfuromonadaceae
Pelobacter carbinolicus, CP000142, Desulfuromonadaceae
***Desulfuromonas acetoxidans*, AAEW02000008, Desulfuromonadaceae, type sp.**
Desulfuromonas svalbardensis, AY835388, Desulfuromonadaceae
Desulfuromonas thiophila, Y11560, Desulfuromonadaceae

Geobacteraceae (15)

Geobacter bemidjensis, AY187307, Geobacteraceae
Geobacter brennensis, U9917, Geobacteraceae
Geobacter uraniumreducens, EF527427, Geobacteraceae
Geobacter daffoni, EU665616, Geobacteraceae
Geobacter chapellei, U41561, Geobacteraceae
Pelobacter propionicus, CP000482, Desulfuromonadaceae
Geobacter psychrophilus, AY653549, Geobacteraceae
Geobacter thiogenes, AF223382, Geobacteraceae
Geobacter pelophilus, U9918, Geobacteraceae
Geobacter argillaceus, DQ145534, Geobacteraceae
Geobacter hydrogenophilus, U28173, Geobacteraceae
***Geobacter metallireducens*, U07834, Geobacteraceae, type sp.**
Geobacter grificiae, AF335183, Geobacteraceae
Geobacter sulfurreducens, U13928, Geobacteraceae
Geobacter pickeringii, DQ145535, Geobacteraceae

Myxococcales (32)

Cystobacteraceae and Myxococcaceae (20)

Myxococcaceae (8)
Myxococcus virescens, DQ768119, Myxococcaceae
Myxococcus xanthus, DQ768116, Myxococcaceae
Corallococcus macrosporus, AJ811623, Myxococcaceae
***Myxococcus fulvus*, DQ768117, Myxococcaceae, type sp.**
***Pyxidicoccus fallax*, DQ768123, Myxococcaceae, type sp.**
***Corallococcus coralloides*, AJ811588, Myxococcaceae, type sp.**
Mellitangium lichenicola, DQ768126, Cystobacteraceae
Corallococcus exiguus, AJ811598, Myxococcaceae

Cystobacter badius, DQ768108, Cystobacteraceae
***Cystobacter fuscus*, DQ768109, Cystobacteraceae, type sp.**
Cystobacter velatus, DQ768115, Cystobacteraceae
Cystobacter armeniacae, DQ768107, Cystobacteraceae
Cystobacter miniatus, DQ768111, Cystobacteraceae
***Archangium gephyra*, DQ768106, Cystobacteraceae, type sp.**
Cystobacter violaceus, DQ768114, Cystobacteraceae
***Hyalangium minutum*, DQ768124, Cystobacteraceae, type sp.**
***Stigmatella aurantiaca*, DQ768127, Cystobacteraceae, type sp.**
Stigmatella erecta, AJ970180, Cystobacteraceae
Stigmatella hybrida, DQ768129, Cystobacteraceae
***Aneroomyxobacter dehalogenans*, AF382396, Cystobacteraceae, type sp.**

Nannocystaceae (4)

Enhygmomyxa salina, AB097590, Nannocystaceae, type sp.
Plesiocystis pacifica, AB083432, Nannocystaceae, type sp.
Nannocystis exedens, AB084253, Nannocystaceae, type sp.
Nannocystis pullia, FR74907, Nannocystaceae

Haliangiaceae (2)

Haliangium ochraceum, AB016470, Haliangiaceae, type sp.
Haliangium lepidum, AB062751, Haliangiaceae

Koferliaceae (1)

***Koferlia flava*, AJ233944, Koferliaceae, type sp.**

Phaselicystidae (1)

Phaselicystis flava, EU645827, Phaselicystidae, type sp.

Sorangium cellulosum (1)

***Sorangium cellulosum*, EU240497, Polyangiaceae, type sp.**

Chondromyces robustus (1)

Chondromyces robustus, AJ233942, Polyangiaceae

Jahnella thaxteri (1)

Jahnella thaxteri, GU207876, Polyangiaceae

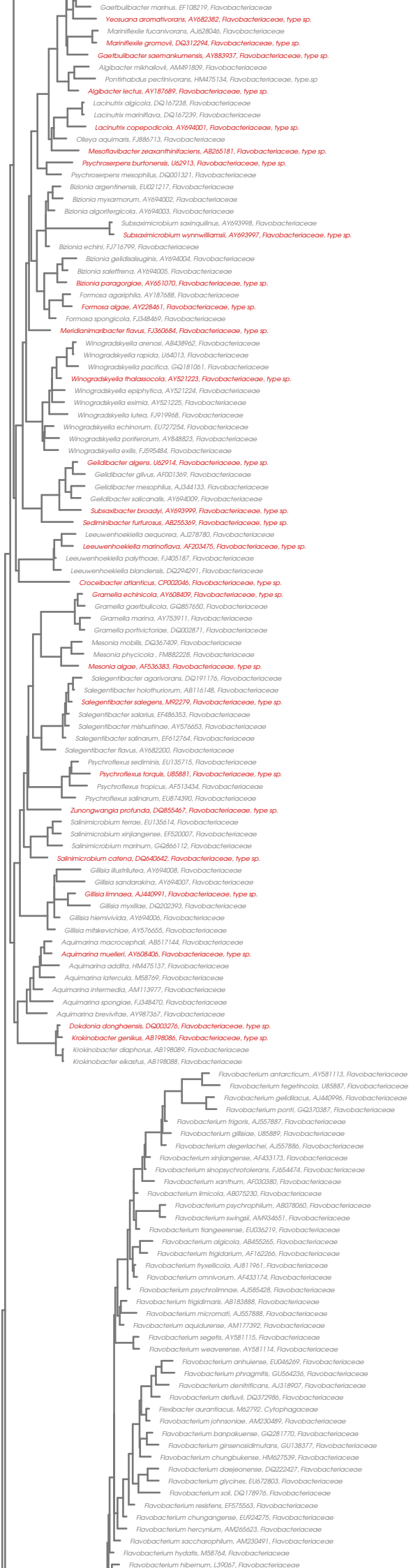
Syntrophobacter aromaticivorans (1)

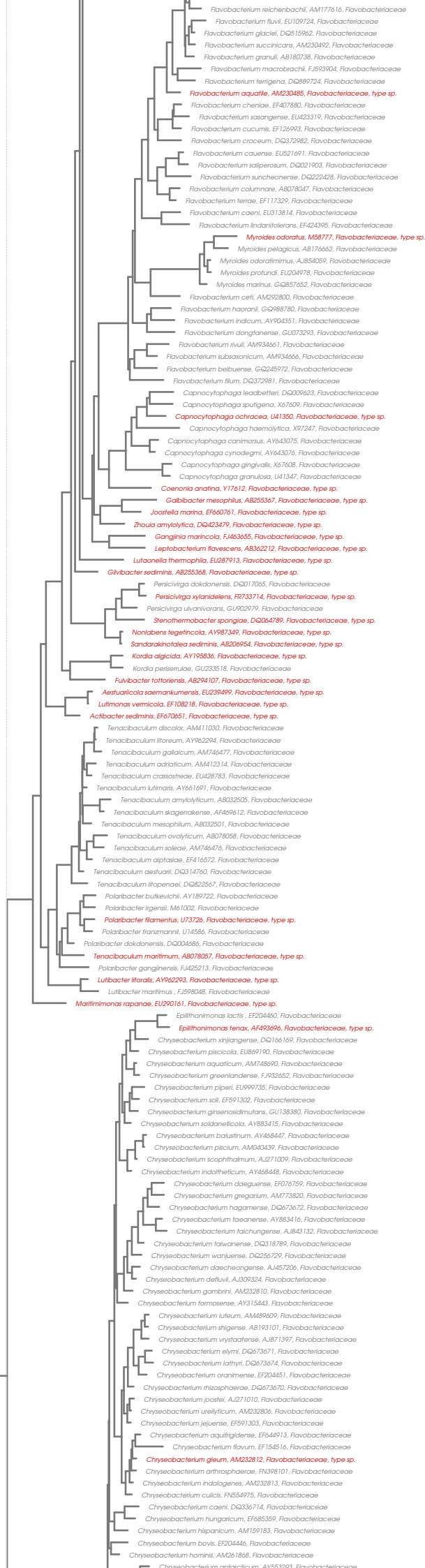
***Syntrophobacter aromaticivorans*, AB212873, Syntrophobacteraceae, type sp.**

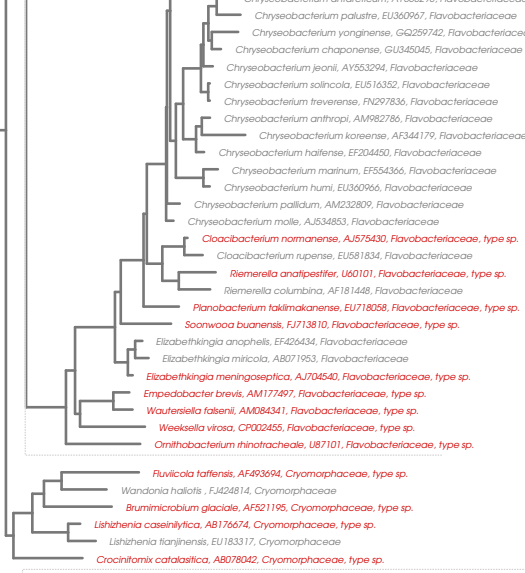
Bacteroidetes (769)

Flavobacteriaceae (351)

Muricauda flavescens, AY445073, Flavobacteriaceae
***Muricauda ruestringensis*, AF218782, Flavobacteriaceae, type sp.**
Muricauda lutimaris, EU156065, Flavobacteriaceae
Muricauda aquimatina, AY445075, Flavobacteriaceae
Muricauda lufanensis, EU564844, Flavobacteriaceae
Muricauda olearia, EU888117, Flavobacteriaceae
Croceitalea dokdonensis, DQ191182, Flavobacteriaceae
***Croceitalea eckloniae*, DQ191183, Flavobacteriaceae, type sp.**
***Flagellimonas eckloniae*, DQ191180, Flavobacteriaceae, type sp.**
***Casterlonia aggregata*, DQ167246, Flavobacteriaceae, type sp.**
Zobellia amurskyensis, AB121974, Flavobacteriaceae
Zobellia laminatae, AB121975, Flavobacteriaceae
Zobellia russelli, AB121976, Flavobacteriaceae
Zobellia uliginosa, M62799, Flavobacteriaceae
***Zobellia galactivorans*, AF208293, Flavobacteriaceae, type sp.**
***Kriegella aquimaris*, AB084262, Flavobacteriaceae, type sp.**
Euzebellia saccharophila, FN554868, Flavobacteriaceae, type sp.
Pseudozobellia thermophila, AB084261, Flavobacteriaceae, type sp.
Muricauda jejuensis, EU443206, Flavobacteriaceae, type sp.
***Zeaxanthinibacter enoshimensis*, AB264057, Flavobacteriaceae, type sp.**
Eudoraea adriatica, AM745437, Flavobacteriaceae, type sp.
Robiginitalea biformata, CP001712, Flavobacteriaceae, type sp.
Robiginitalea myxofaciens, AB270585, Flavobacteriaceae
Maribacter dokdonensis, AY960749, Flavobacteriaceae
***Maribacter sedimenticola*, AY271623, Flavobacteriaceae, type sp.**
Maribacter stanieri, EU246491, Flavobacteriaceae
Maribacter forsetii, AM712900, Flavobacteriaceae
Maribacter ulvicola, AY271626, Flavobacteriaceae
Maribacter orientalis, AY271624, Flavobacteriaceae
Maribacter aquivivus, AY271625, Flavobacteriaceae
***Pibocella ponti*, AY576654, Flavobacteriaceae, type sp.**
Maribacter antarcticus, EU512921, Flavobacteriaceae
Maribacter arcticus, AY771762, Flavobacteriaceae
Maribacter polyisophoniceae, AM497875, Flavobacteriaceae
Arenibacter pallidensis, AJ575643, Flavobacteriaceae
Arenibacter tritensis, AB080771, Flavobacteriaceae
Arenibacter echinorum, EF536748, Flavobacteriaceae
Arenibacter certesi, AY271622, Flavobacteriaceae
***Arenibacter lateralis*, AF062742, Flavobacteriaceae, type sp.**
Arenibacter nanhalicus, EU999955, Flavobacteriaceae
Cellulophaga algicola, AF001366, Flavobacteriaceae
Cellulophaga baltica, AJ006972, Flavobacteriaceae
Cellulophaga pacifica, AB100840, Flavobacteriaceae
Cellulophaga tyrosinoydans, EU443205, Flavobacteriaceae
***Sedimnicola luteus*, AB209957, Flavobacteriaceae, type sp.**
Cellulophaga fucicola, AJ005973, Flavobacteriaceae
***Cellulophaga lytica*, CP002534, Flavobacteriaceae, type sp.**
Aequorivita crocea, AY027806, Flavobacteriaceae
Aequorivita lipolytica, AY027805, Flavobacteriaceae
***Aequorivita antarctica*, AY027802, Flavobacteriaceae, type sp.**
Aequorivita capsosiphonae, EU290153, Flavobacteriaceae
Aequorivita subhalincola, AF170749, Flavobacteriaceae
Vitellibacter cestuarii, EU642844, Flavobacteriaceae
***Vitellibacter vadivostokensis*, AB071382, Flavobacteriaceae, type sp.**
***Marixanthomonas ophuroae*, AB261012, Flavobacteriaceae, type sp.**
Ulvibacter antarcticus, EF554364, Flavobacteriaceae
***Ulvibacter itoralis*, AY243096, Flavobacteriaceae, type sp.**
Tarlana agarivorans, EU221275, Flavobacteriaceae
***Tarlana crocinea*, AM286230, Flavobacteriaceae, type sp.**
***Raviramus basalis*, DQ361033, Flavobacteriaceae, type sp.**
Hyunsonieella jejuensis, EF217419, Flavobacteriaceae, type sp.
Jejuia pallidifera, EU443204, Flavobacteriaceae, type sp.
Shuella lapsa, HM475133, Flavobacteriaceae, type sp.



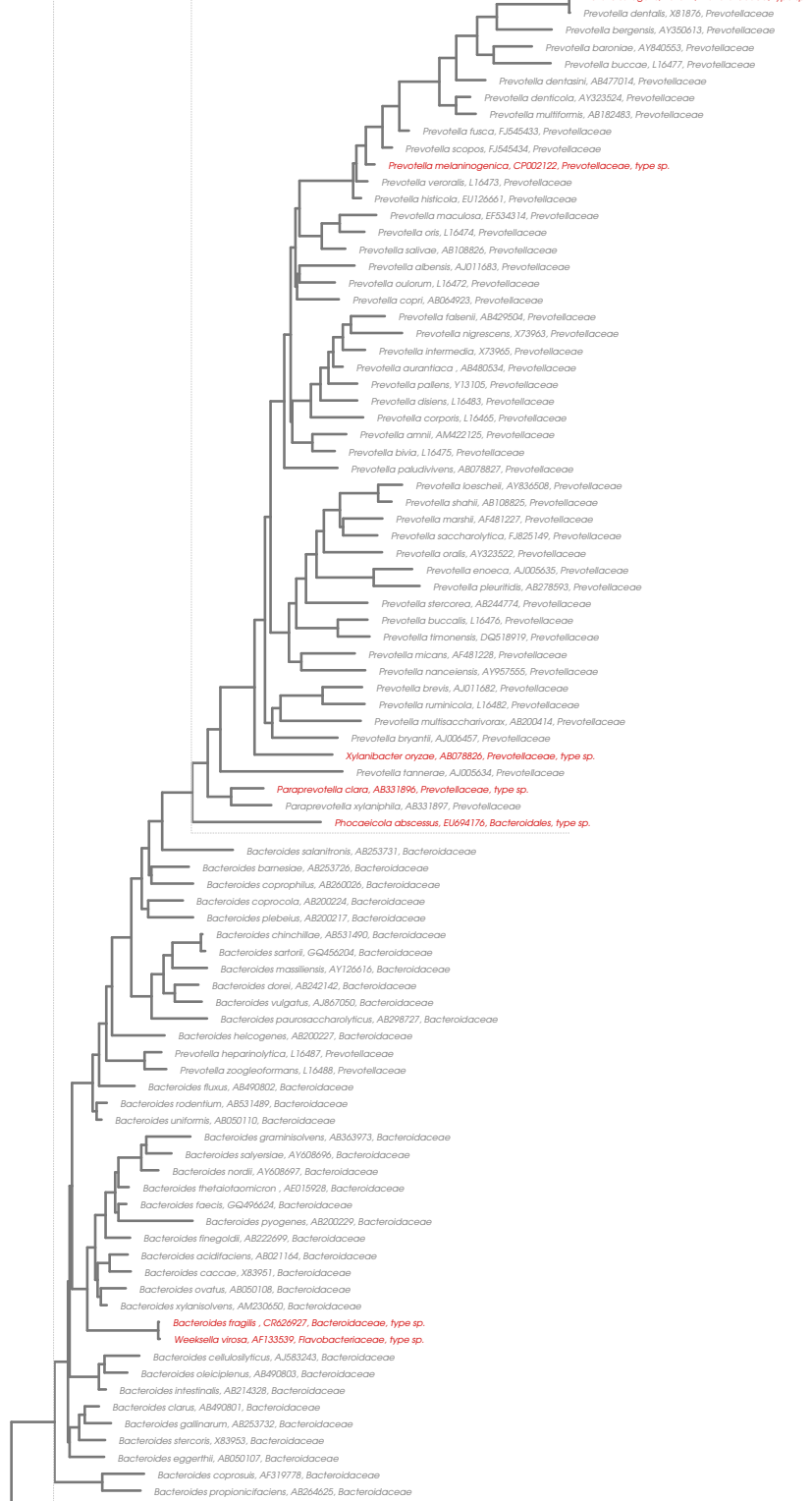




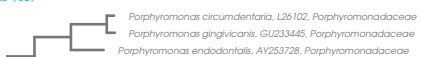
Bacteroidales (139)

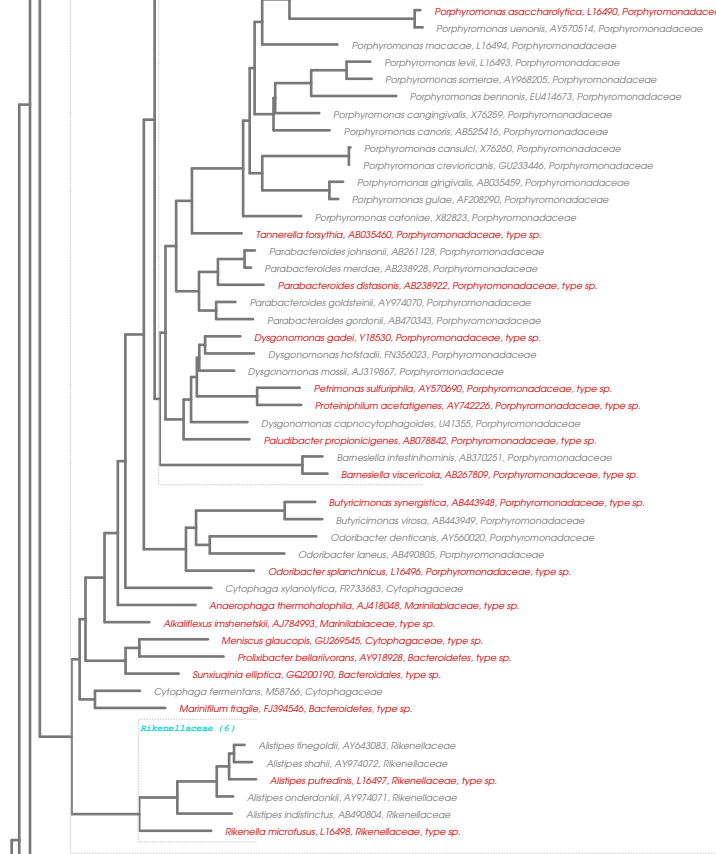
Bacteroidaceae and Prevotellaceae (89)

Prevotellaceae (50)



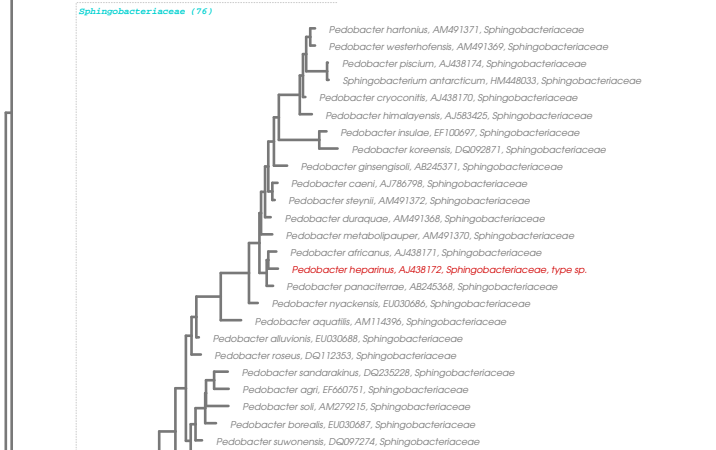
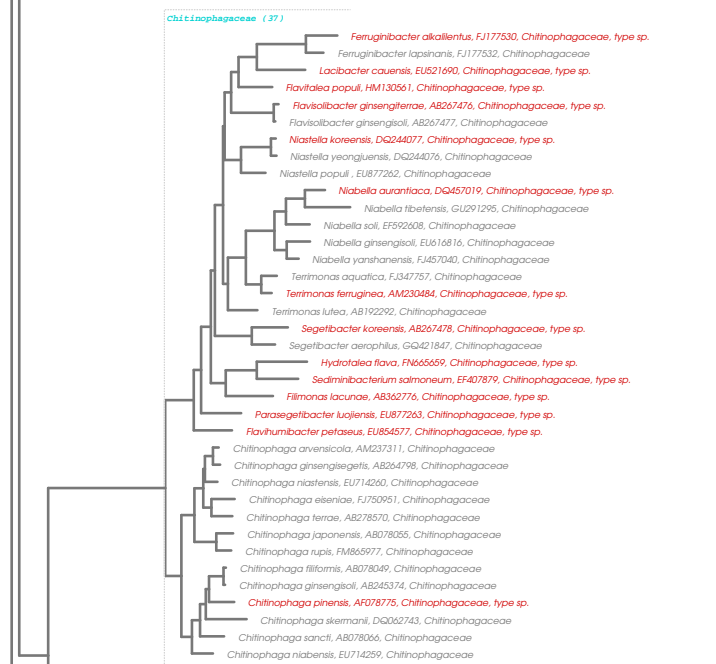
Porphyromonadaceae (31)

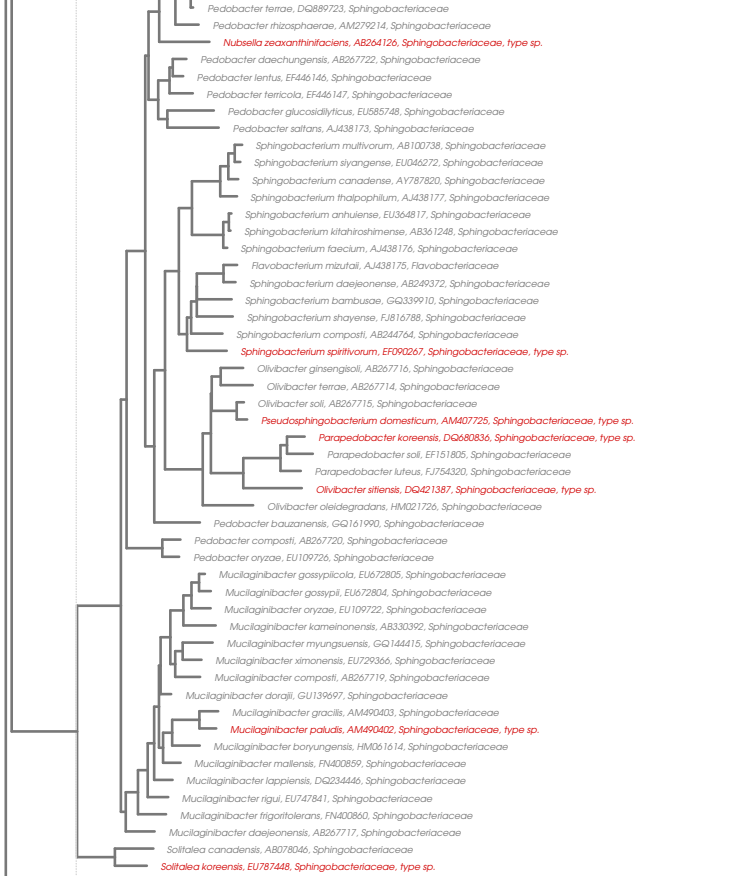




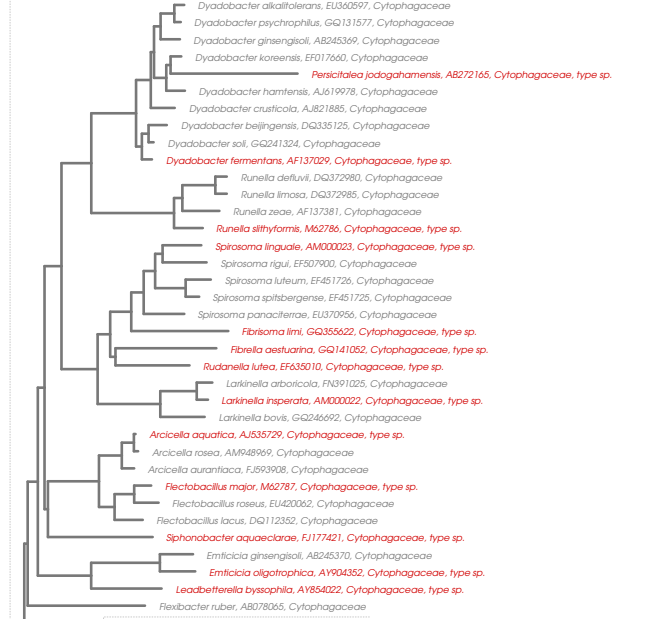
Cryomorphaceae (2)

- Cryomorpha ignava*, AF170738, Cryomorphaceae, type sp.
- Owenweeksia hongkongensis*, AB126062, Cryomorphaceae, type sp.

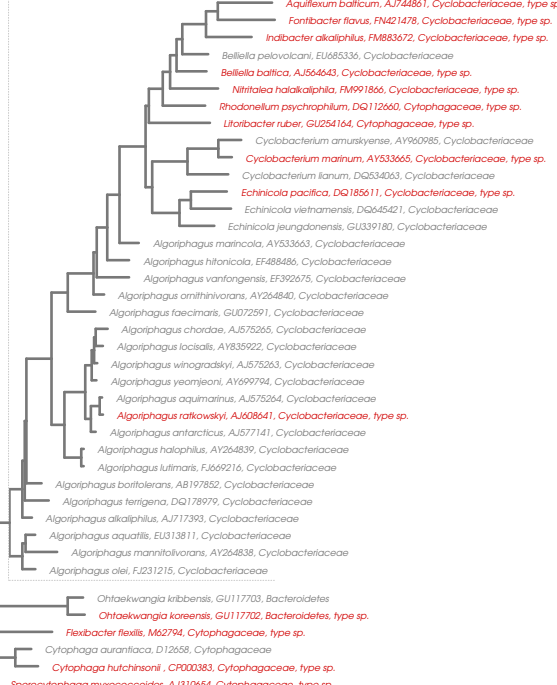


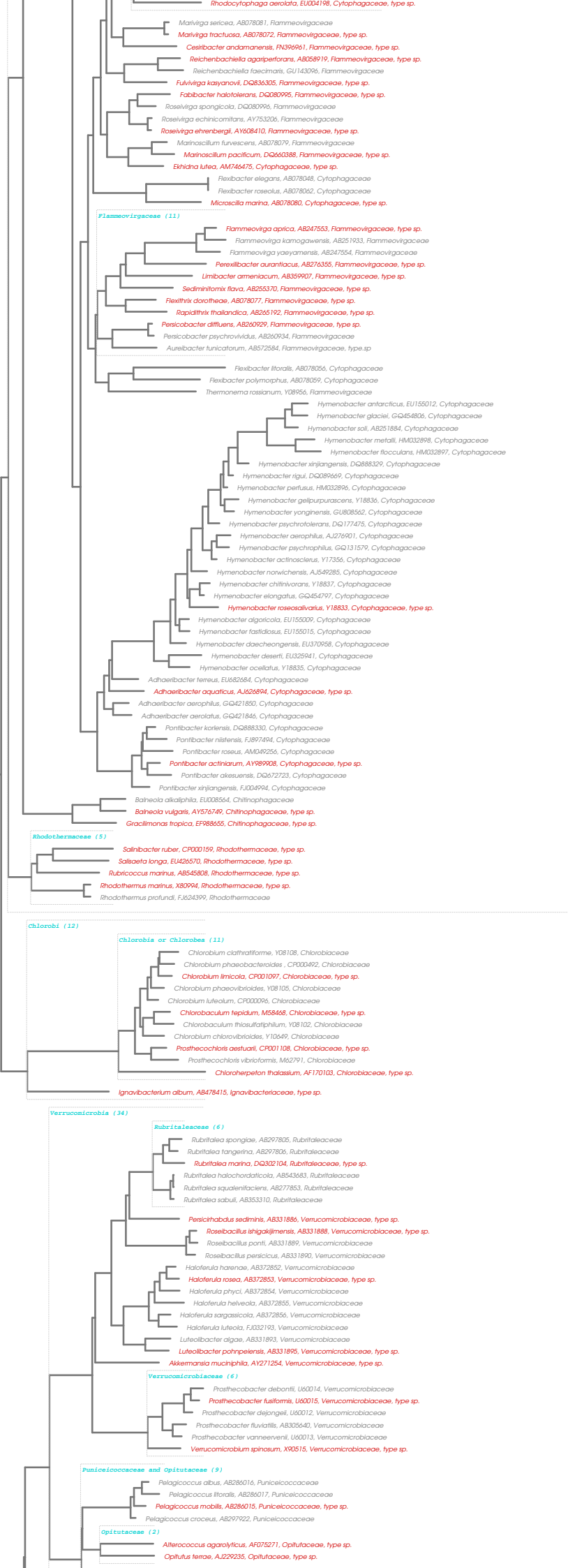


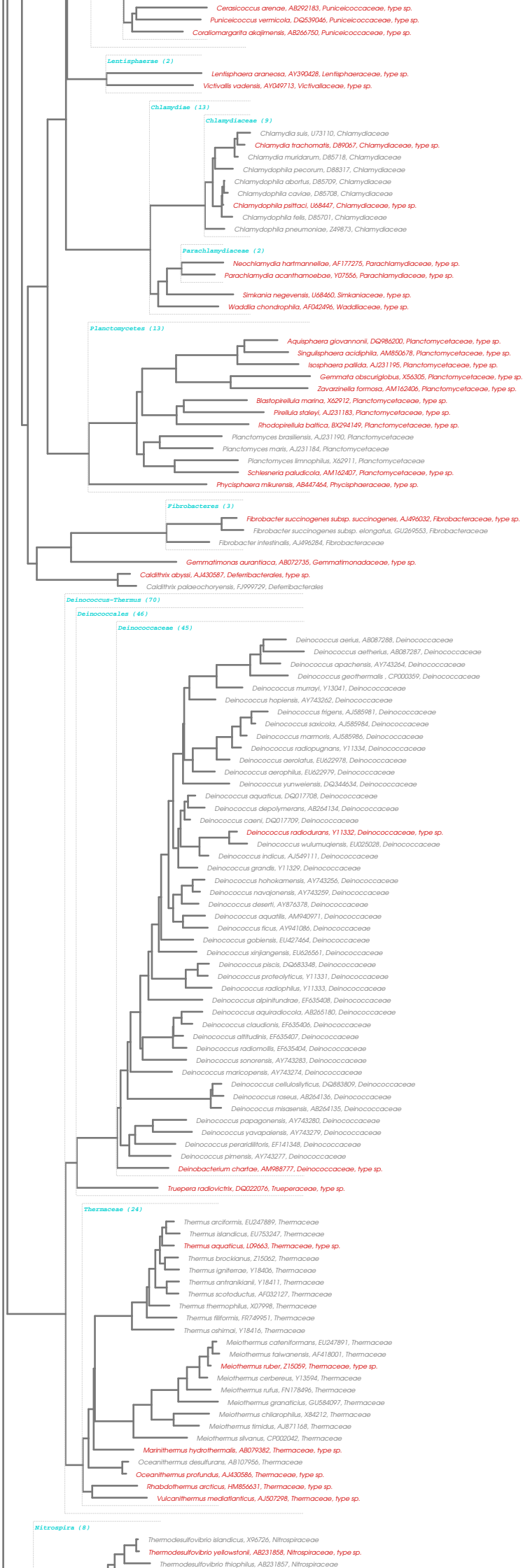
Cytophagaceae and Cylobacteriaceae (77)

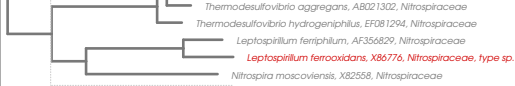


Cylobacteriaceae (34)





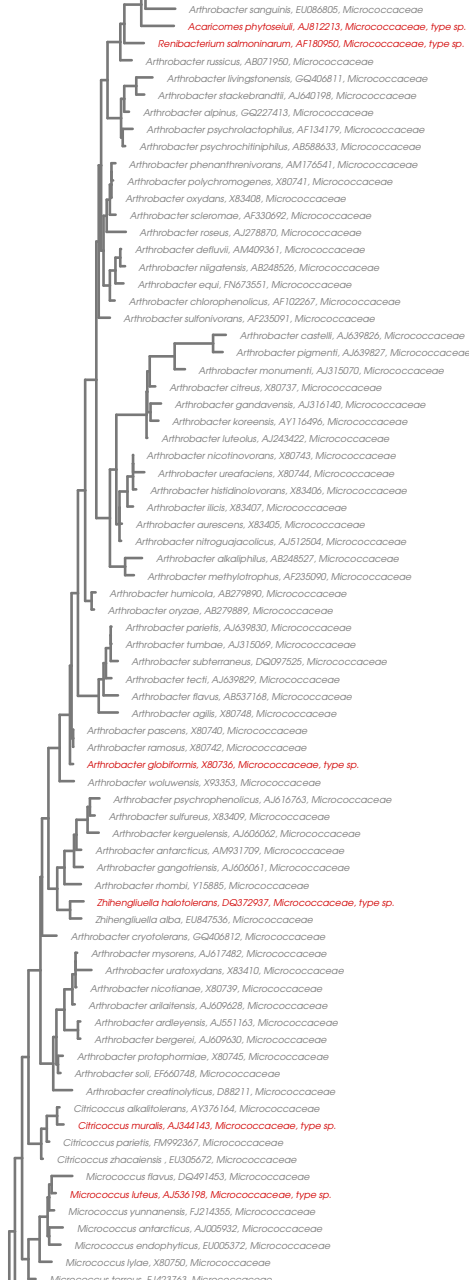


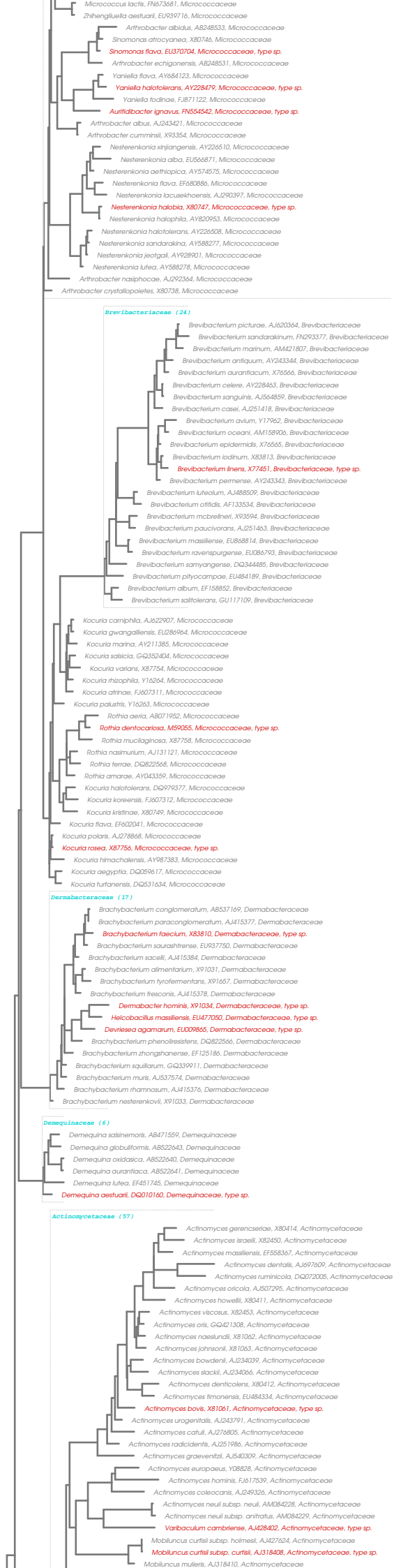


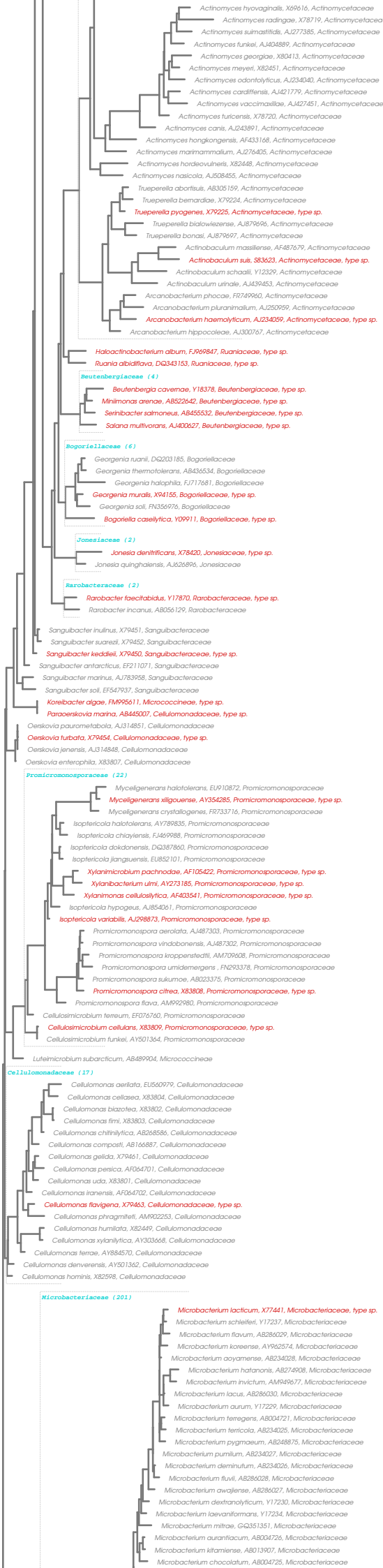
Actinobacteria (2350)

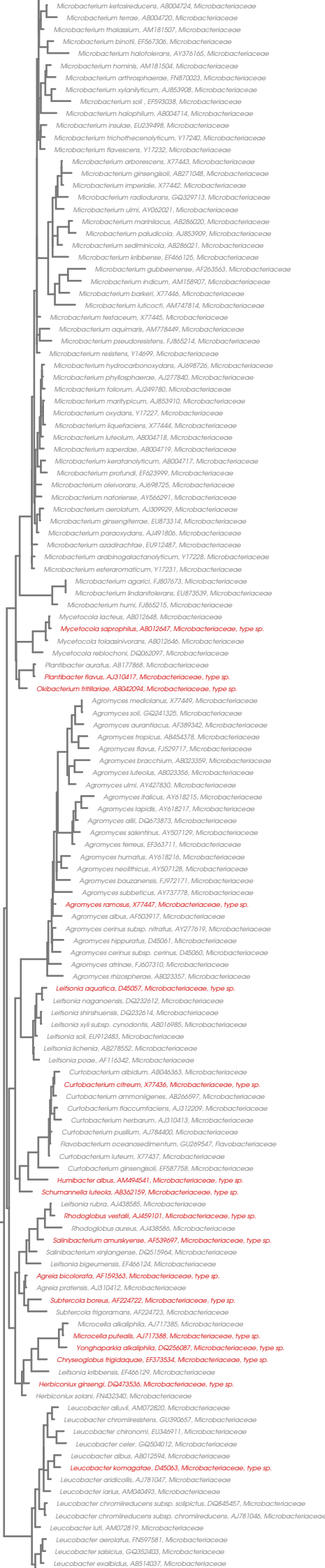
Micrococcales and Bifidobacteriaceae (146)

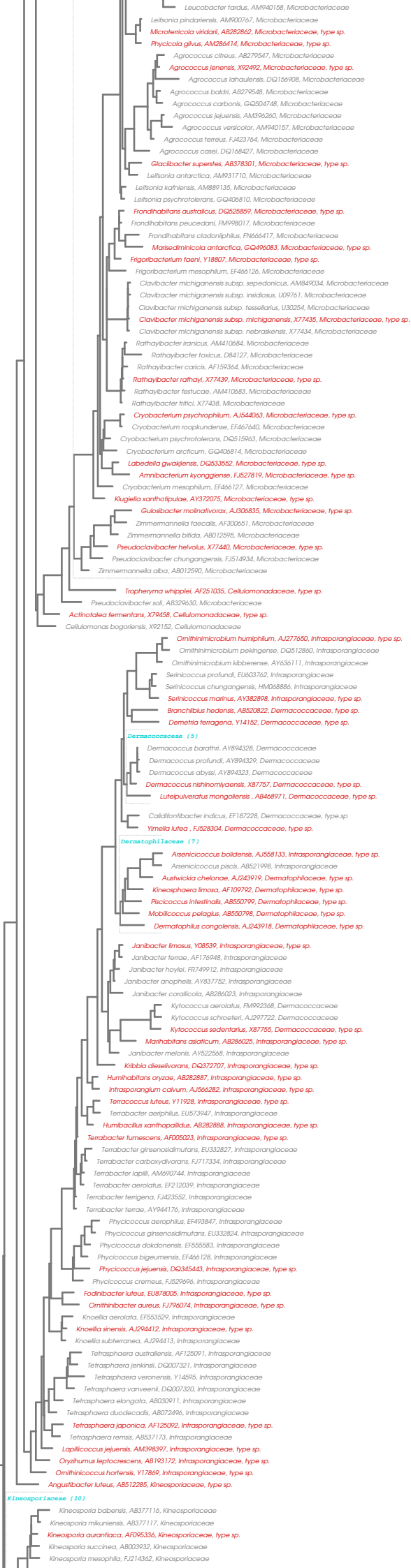
Bifidobacteriaceae (46)







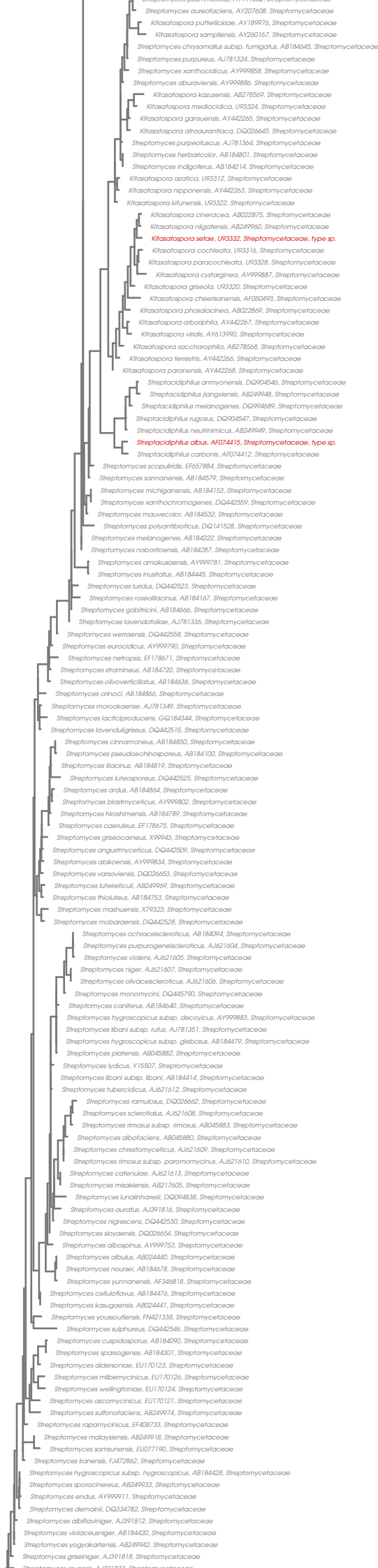


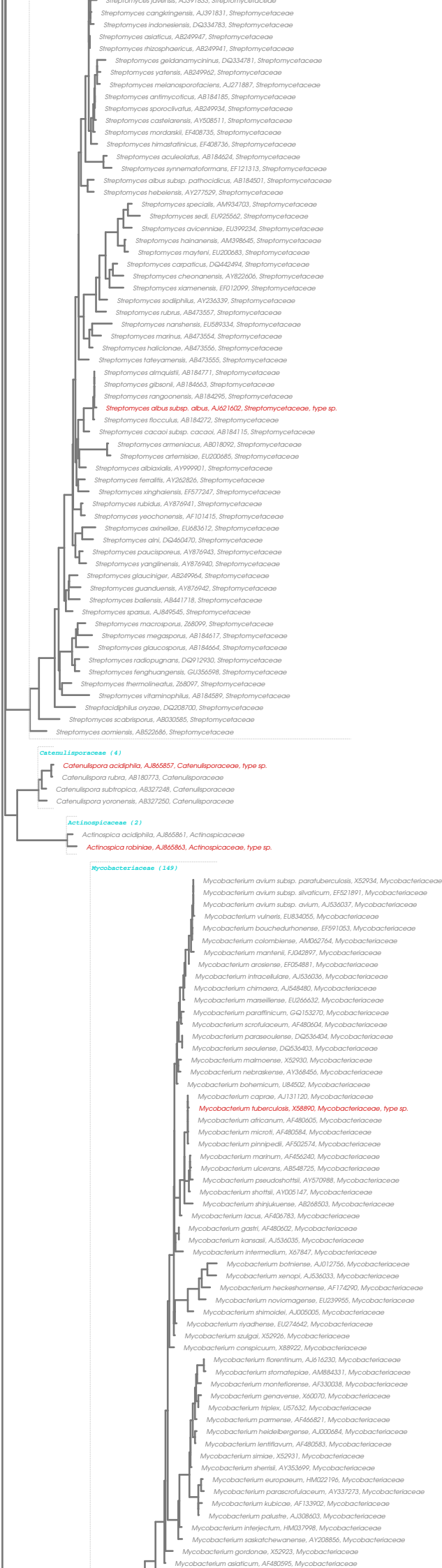


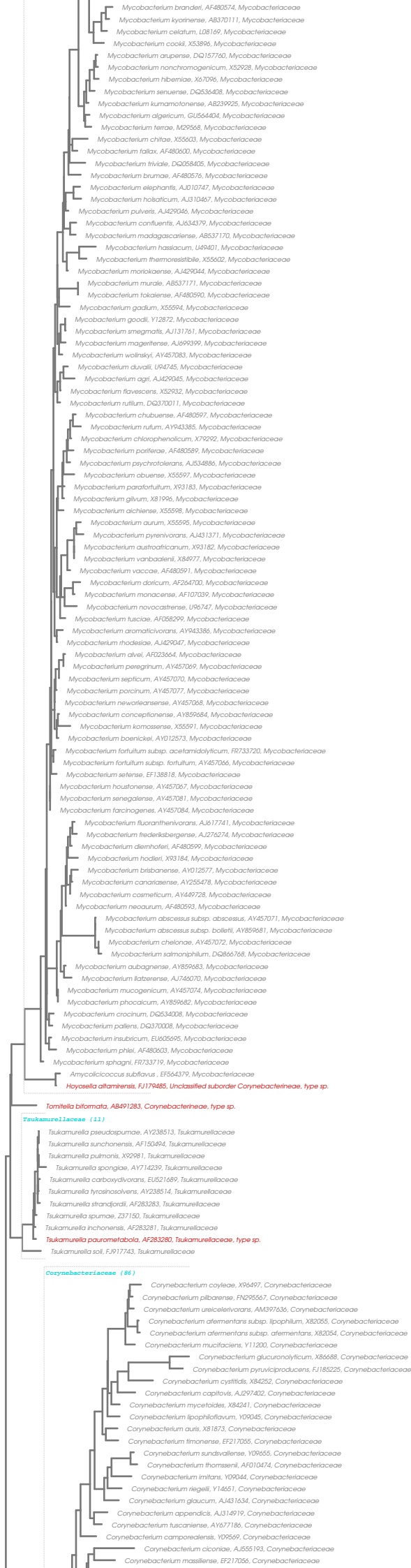


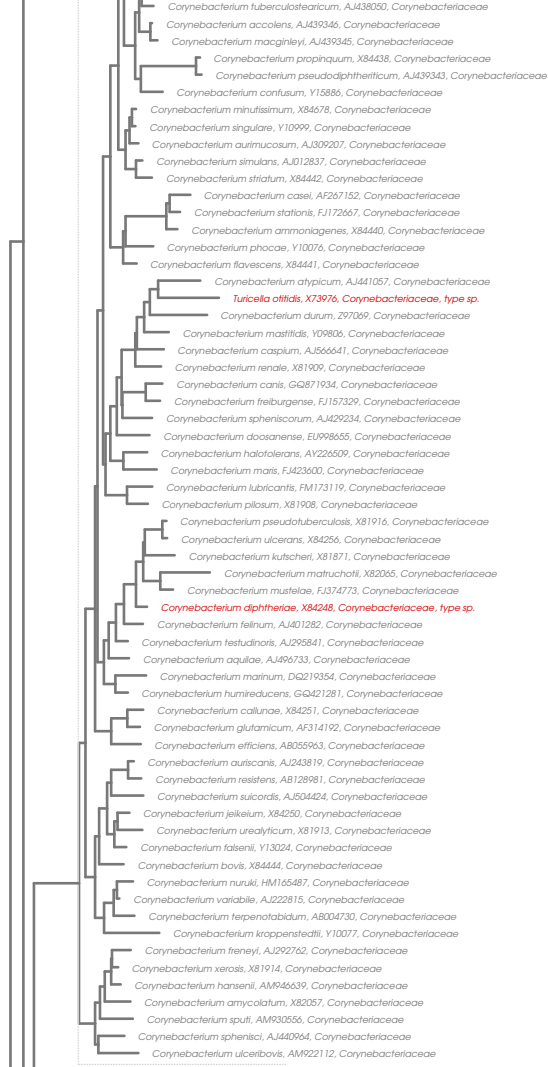
Streptomyces *indianus*, AB184553, Streptomycesaceae
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Streptomyces lakynus, AB184487, Streptomycesaceae
Streptomyces coeruleus, AY999720, Streptomycesaceae
Streptomyces bellus, AB184849, Streptomycesaceae
Streptomyces lusitanus, AB184424, Streptomycesaceae
Streptomyces thermocarboxylus, U94490, Streptomycesaceae
Streptomyces spelbonae, AF452714, Streptomycesaceae
Streptomyces longisporuber, AB184440, Streptomycesaceae
Streptomyces viridiclasticus, AY999852, Streptomycesaceae
Streptomyces coeruleorubidus, AY999719, Streptomycesaceae
Streptomyces malachitaspinus, AB249954, Streptomycesaceae
Streptomyces parvulus, AB184326, Streptomycesaceae
Streptomyces spinoverucosus, AB184578, Streptomycesaceae
Streptomyces olivaceus, AB184743, Streptomycesaceae
Streptomyces pactum, AB184398, Streptomycesaceae
Streptomyces anthracinus, AB184631, Streptomycesaceae
Streptomyces tricolor, AB184687, Streptomycesaceae
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Streptomyces humifusus, AF503491, Streptomycesaceae
Streptomyces violaceolatus, AF503497, Streptomycesaceae
Streptomyces violaceoruber, AF503492, Streptomycesaceae
Streptomyces coelicollis, AB184650, Streptomycesaceae
Streptomyces fragilis, AY999917, Streptomycesaceae
Streptomyces rubrogriseus, AB184681, Streptomycesaceae
Streptomyces violaceorubidus, AJ781374, Streptomycesaceae
Streptomyces fendae, DQ3873, Streptomycesaceae
Streptomyces diastolicus subsp. *ardesiacus*, DQ026631, Streptomycesaceae
Streptomyces fitiflorans, DQ345779, Streptomycesaceae
Streptomyces chattanoogaensis, AY295791, Streptomycesaceae
Streptomyces lianomycini, AJ781353, Streptomycesaceae
Streptomyces albogriseolus, AY177662, Streptomycesaceae
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Streptomyces malachitofuscus, AB184282, Streptomycesaceae
Streptomyces griseoflavus, AJ781322, Streptomycesaceae
Streptomyces gaugerotti, AB184742, Streptomycesaceae
Streptomyces ruggerensis, AB184170, Streptomycesaceae
Streptomyces diastolicus subsp. *disialticus*, AB184785, Streptomycesaceae
Streptomyces intermedium, AB184277, Streptomycesaceae
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Streptomyces helveticus, AB184347, Streptomycesaceae
Streptomyces hypolithicus, EU196762, Streptomycesaceae
Streptomyces albosporeus subsp. *labitomycticus*, AB184638, Streptomycesaceae
Streptomyces nashvillensis, AB184286, Streptomycesaceae
Streptomyces cinereoruber subsp. *cinereoruber*, AY999771, Streptomycesaceae
Streptomyces hitatus, DQ442506, Streptomycesaceae
Streptomyces violaceoerectus, AB184314, Streptomycesaceae
Streptomyces bikiniensis, X79851, Streptomycesaceae
Streptomyces vietnamensis, DQ311081, Streptomycesaceae
Streptomyces ilmocidini, AB184149, Streptomycesaceae
Streptomyces yerevanensis, EF178684, Streptomycesaceae
Streptomyces omlyoensis, EF178697, Streptomycesaceae
Streptomyces wedmorensis, DQ442557, Streptomycesaceae
Streptomyces zaomycticus, EF178685, Streptomycesaceae
Streptomyces exfoliatus, AB184324, Streptomycesaceae
Streptomyces narbonneis, DQ445794, Streptomycesaceae
Streptomyces lateriflus, AJ781326, Streptomycesaceae
Streptomyces venezuelae, AB045890, Streptomycesaceae
Streptomyces najfiensis, AJ781355, Streptomycesaceae
Streptomyces vinaceus, AB184394, Streptomycesaceae
Streptomyces sporocaeus, AJ781370, Streptomycesaceae
Streptomyces xanthophaeus, DQ442560, Streptomycesaceae
Streptomyces ciratus, AY999794, Streptomycesaceae
Streptomyces avdini, AB184395, Streptomycesaceae
Streptomyces subrufus, X80825, Streptomycesaceae
Streptomyces lavendulae subsp. *grasserius*, AY999841, Streptomycesaceae
Streptomyces sporoverrucosus, DQ442544, Streptomycesaceae
Streptomyces gashkensis, EF178693, Streptomycesaceae
Streptomyces colombiensis, DQ026646, Streptomycesaceae
Streptomyces lavendulae subsp. *lavendulae*, D85116, Streptomycesaceae
Streptomyces cinnamomensis, AB184707, Streptomycesaceae
Streptomyces virginiae, AB184175, Streptomycesaceae
Streptomyces globosus, AJ781330, Streptomycesaceae
Streptomyces taxitricini, DQ442548, Streptomycesaceae
Streptomyces flavitricini, AY999915, Streptomycesaceae
Streptomyces polychromogenes, AB184292, Streptomycesaceae
Streptomyces racemochromogenes, DQ026656, Streptomycesaceae
Streptomyces katrae, AB184409, Streptomycesaceae
Streptomyces clavuligerus, AY999718, Streptomycesaceae
Streptomyces kussanovi, AB184325, Streptomycesaceae
Streptomyces xanthoflicus, AB184349, Streptomycesaceae
Streptomyces peucefius, AB045887, Streptomycesaceae
Streptomyces samyensis, FJ261948, Streptomycesaceae
Streptomyces cremeus, AY999744, Streptomycesaceae
Streptomyces spirovericillatus, AB184814, Streptomycesaceae
Streptomyces sanglieri, AB249945, Streptomycesaceae
Streptomyces yanii, AB006159, Streptomycesaceae
Streptomyces atratus, DQ026638, Streptomycesaceae
Streptomyces gelaticus, DQ026636, Streptomycesaceae
Streptomyces pulveraceus, AB184806, Streptomycesaceae
Streptomyces beijiangensis, AF385681, Streptomycesaceae
Streptomyces drozdowiczii, AB249957, Streptomycesaceae
Streptomyces abovinceus, AB249958, Streptomycesaceae
Streptomyces globisporus, EF178686, Streptomycesaceae
Streptomyces rubiginosohelvalis, AB184240, Streptomycesaceae
Streptomyces fanashanensis, AY999856, Streptomycesaceae
Streptomyces puruloclaesens, DQ442540, Streptomycesaceae
Streptomyces flavogriseus, AJ94884, Streptomycesaceae
Streptomyces flavovirens, DQ026635, Streptomycesaceae
Streptomyces nitrosporeus, EF178680, Streptomycesaceae
Streptomyces griseolus, AB184768, Streptomycesaceae
Streptomyces halstedii, EF178695, Streptomycesaceae
Streptomyces cinereorectus, AB184646, Streptomycesaceae
Streptomyces fulvorangeus, AB184711, Streptomycesaceae
Streptomyces microflavus, DQ445795, Streptomycesaceae
Streptomyces griseus, AY207604, Streptomycesaceae
Streptomyces cyaneofuscatus, AB184860, Streptomycesaceae
Streptomyces arulatus, DQ026637, Streptomycesaceae
Streptomyces chrysomallus subsp. *chrysomallus*, AB184120, Streptomycesaceae
Streptomyces fomicatus, AY999784, Streptomycesaceae
Streptomyces griseoplanus, AY999894, Streptomycesaceae
Streptomyces badius, AY999783, Streptomycesaceae
Streptomyces sindensis, AB184759, Streptomycesaceae
Streptomyces parvus, DQ442537, Streptomycesaceae
Streptomyces atroolivaceus, AJ781320, Streptomycesaceae
Streptomyces clavifer, DQ026670, Streptomycesaceae
Streptomyces mutomycinii, AB249951, Streptomycesaceae
Streptomyces linkayi, AY999788, Streptomycesaceae
Streptomyces candidus, DQ026663, Streptomycesaceae
Streptomyces albolongus, AB184425, Streptomycesaceae
Streptomyces cavourensis, DQ445791, Streptomycesaceae
Streptomyces bacillaris, AB184439, Streptomycesaceae
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Streptomyces ovellianus, AB184413, Streptomycesaceae
Streptomyces osmyticus, AY999862, Streptomycesaceae

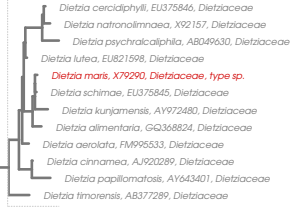




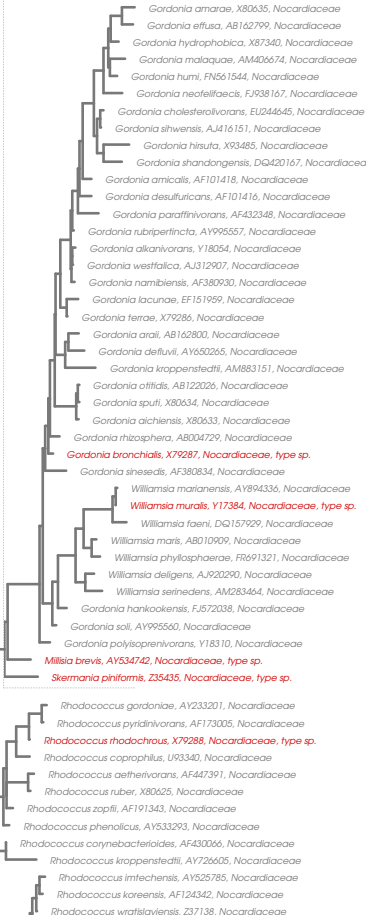




Dietziaceae (12)



Nocardiaceae 2 (40)

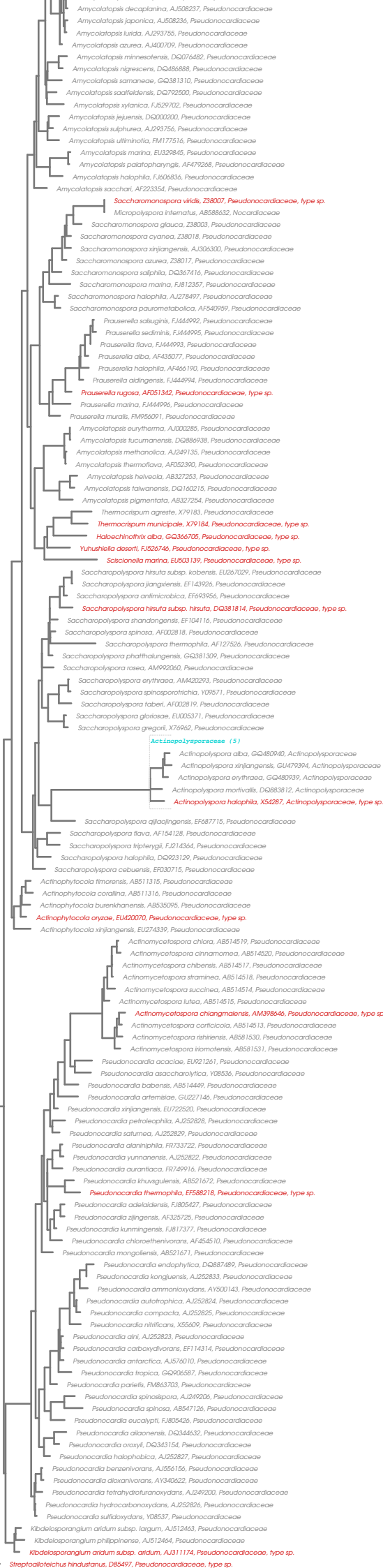


Rhodococcus opacus, X8303, Nocardiaceae
Rhodococcus percolatus, X92114, Nocardiaceae
Rhodococcus marinitorrens, X82617, Nocardiaceae
Rhodococcus jostii, AB046357, Nocardiaceae
Rhodococcus maanshanensis, AF416566, Nocardiaceae
Rhodococcus tukisamuensis, AB067734, Nocardiaceae
Rhodococcus jialingiae, DQ185597, Nocardiaceae
Rhodococcus qingshengii, DQ000961, Nocardiaceae
Rhodococcus balkonenensis, AB071951, Nocardiaceae
Nocardia coeliaca, FR733721, Nocardiaceae
Rhodococcus erythropolis, X79289, Nocardiaceae
Nocardia globetula, FR749915, Nocardiaceae
Rhodococcus globetulus, X80619, Nocardiaceae
Rhodococcus kytolenensis, AB299261, Nocardiaceae
Rhodococcus yunnanensis, AY042219, Nocardiaceae
Rhodococcus fascians, X79186, Nocardiaceae
Rhodococcus rhodnii, X82621, Nocardiaceae
Rhodococcus triatomae, AJ854055, Nocardiaceae

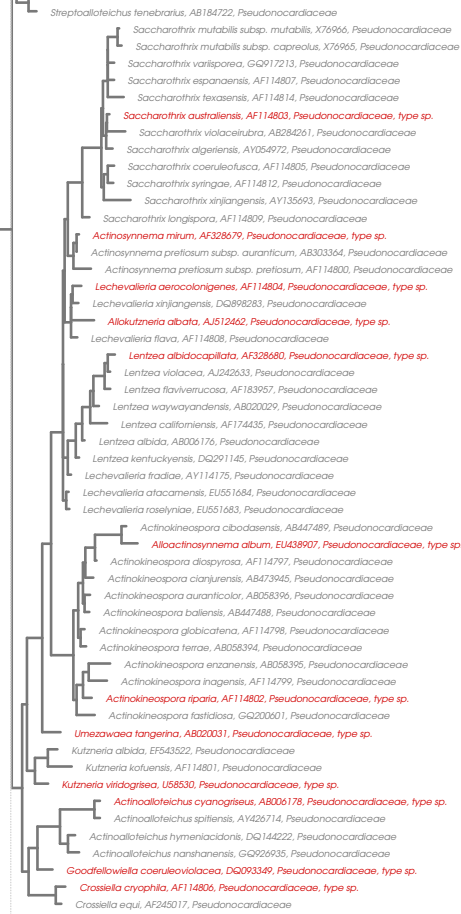
Nocardiaceae 1 (83)
Nocardia concava, AB126880, Nocardiaceae
Nocardia senata, AF430039, Nocardiaceae
Nocardia otitidiscaviarum, AF430067, Nocardiaceae
Nocardia uniformis, AF430044, Nocardiaceae
Nocardia inohaniensis, AB092560, Nocardiaceae
Nocardia yamanashiensis, AB092561, Nocardiaceae
Nocardia nigatensis, DQ659910, Nocardiaceae
Nocardia acidivorans, AM422972, Nocardiaceae
Nocardia crassostreae, AF430049, Nocardiaceae
Nocardia nova, AF430028, Nocardiaceae
Nocardia mexicana, FR733723, Nocardiaceae
Nocardia artemisiae, GU367157, Nocardiaceae
Nocardia terpenica, AB201298, Nocardiaceae
Nocardia pseudobrasiliensis, AF430042, Nocardiaceae
Nocardia jiangxiensis, AY639902, Nocardiaceae
Nocardia miyuniensis, AY639901, Nocardiaceae
Nocardia iliangensis, AY779043, Nocardiaceae
Nocardia polyresistens, AY626158, Nocardiaceae
Nocardia xishanensis, AY333115, Nocardiaceae
Nocardia fakedensis, AB158277, Nocardiaceae
Nocardia exalbidula, AB187522, Nocardiaceae
Nocardia gamkenensis, DQ235272, Nocardiaceae
Nocardia altamirensis, EU060490, Nocardiaceae
Nocardia brasiliensis, AF430038, Nocardiaceae
Nocardia lowensis, DQ925490, Nocardiaceae
Nocardia teneriffensis, AJ556157, Nocardiaceae
Nocardia cummideleensis, AF430052, Nocardiaceae
Nocardia soli, AF430051, Nocardiaceae
Nocardia fluminea, AF277204, Nocardiaceae
Nocardia salmonicida, AF430050, Nocardiaceae
Nocardia coubleae, DQ235688, Nocardiaceae
Nocardia ignorata, AJ303008, Nocardiaceae
Nocardia jejuensis, AY964666, Nocardiaceae
Nocardia nihao, DQ235687, Nocardiaceae
Nocardia alba, AY222321, Nocardiaceae
Nocardia pseudovaccinii, AF430046, Nocardiaceae
Nocardia vinacea, AB024312, Nocardiaceae
Nocardia ananiasae, AB162801, Nocardiaceae
Nocardia castriensis, AF459443, Nocardiaceae
Nocardia neocaledoniensis, AY282603, Nocardiaceae
Nocardia asteroides, AF430019, Nocardiaceae, type sp.
Nocardia senata, AB121770, Nocardiaceae
Nocardia festucae, AB192415, Nocardiaceae
Nocardia carnea, AF430035, Nocardiaceae
Nocardia pigritifera, AF219974, Nocardiaceae
Nocardia flavovirens, Z46754, Nocardiaceae
Nocardia callitridis, FJ805428, Nocardiaceae
Nocardia endophytica, HM153801, Nocardiaceae
Nocardia jinensis, DQ462650, Nocardiaceae
Nocardia spelunca, AM422449, Nocardiaceae
Nocardia harenae, DQ282122, Nocardiaceae
Nocardia brevicatena, AF430040, Nocardiaceae
Nocardia paucivorans, AF430041, Nocardiaceae
Nocardia cytaeogeorgica, AF430027, Nocardiaceae
Nocardia abscessus, AF218292, Nocardiaceae
Nocardia aobensis, AB126876, Nocardiaceae
Nocardia cerasidensis, AF060790, Nocardiaceae
Nocardia mikami, EU484388, Nocardiaceae
Nocardia kruzakiae, AY441974, Nocardiaceae
Nocardia veterana, AF430055, Nocardiaceae
Nocardia africana, AF430054, Nocardiaceae
Nocardia elegans, AJ854057, Nocardiaceae
Nocardia vermiculata, AB126873, Nocardiaceae
Nocardia vaccinii, AF430045, Nocardiaceae
Nocardia thailandica, AB126874, Nocardiaceae
Nocardia shimofusensis, AB108775, Nocardiaceae
Nocardia higoensis, AB108778, Nocardiaceae
Nocardia puris, AJ608748, Nocardiaceae
Nocardia ananiasae, AB108779, Nocardiaceae
Nocardia niwae, FJ765056, Nocardiaceae
Nocardia arthritidis, AB108781, Nocardiaceae
Nocardia armariensis, AB275164, Nocardiaceae
Nocardia pneumoniae, AB108780, Nocardiaceae
Streptomyces gardneri, AB184754, Streptomycetaceae
Nocardia beijingensis, AF154129, Nocardiaceae
Nocardia asiatica, AB092566, Nocardiaceae
Nocardia blacklockiae, EU099360, Nocardiaceae
Nocardia transvalensis, AF430047, Nocardiaceae
Nocardia wallacei, EU099357, Nocardiaceae
Nocardia farcinica, Z36936, Nocardiaceae
Rhodococcus kummingensis, DQ997045, Nocardiaceae
Rhodococcus equi, AF490539, Nocardiaceae

Smaragdicoccus nigatensis, AB243007, Nocardiaceae, type sp.
Segniliparaceae (2)
Segniliparus rotundus, AY608918, Segniliparaceae, type sp.
Segniliparus rugosus, AY608920, Segniliparaceae

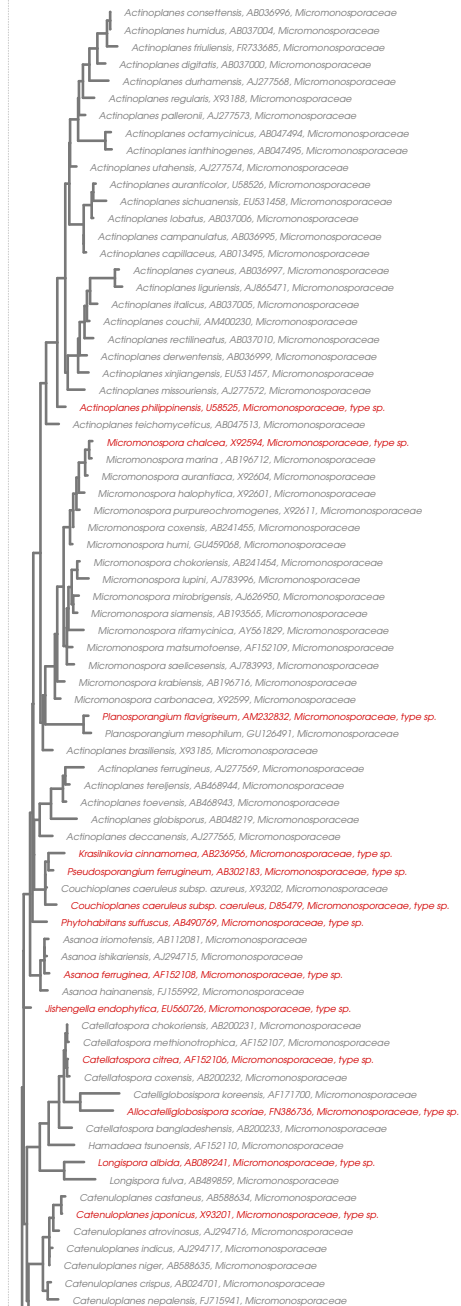
Pseudonocardiaceae (205)
Amycolatopsis benzoatilytica, AY957506, Pseudonocardiaceae
Amycolatopsis nigatensis, AB248537, Pseudonocardiaceae
Amycolatopsis echigenensis, AB248535, Pseudonocardiaceae
Amycolatopsis abditiflavus, AJ252832, Pseudonocardiaceae
Amycolatopsis halotolerans, DQ000196, Pseudonocardiaceae
Amycolatopsis rubida, AF222022, Pseudonocardiaceae
Amycolatopsis vancoresmycina, AJ508240, Pseudonocardiaceae
Amycolatopsis felypomycina, AJ293757, Pseudonocardiaceae
Amycolatopsis plumensis, AY262825, Pseudonocardiaceae
Amycolatopsis levingtonensis, AY183358, Pseudonocardiaceae
Amycolatopsis pretoriensis, AY183356, Pseudonocardiaceae
Amycolatopsis ritamycinica, AY083603, Pseudonocardiaceae
Amycolatopsis kentuckyensis, AY183357, Pseudonocardiaceae
Amycolatopsis bathymycinica, AJ508239, Pseudonocardiaceae
Amycolatopsis mediterranea, AJ293754, Pseudonocardiaceae
Amycolatopsis australiensis, AY129753, Pseudonocardiaceae
Amycolatopsis coloradensis, AJ293753, Pseudonocardiaceae
Amycolatopsis alba, AF051340, Pseudonocardiaceae
Amycolatopsis thailandensis, FJ581021, Pseudonocardiaceae
Amycolatopsis orientalis, AJ400711, Pseudonocardiaceae, type sp.
Amycolatopsis regiflaucum, AY129760, Pseudonocardiaceae
Amycolatopsis keratiniphila subsp. nogabecina, AJ508238, Pseudonocardiaceae
Amycolatopsis keratiniphila subsp. keratiniphila, AJ278496, Pseudonocardiaceae

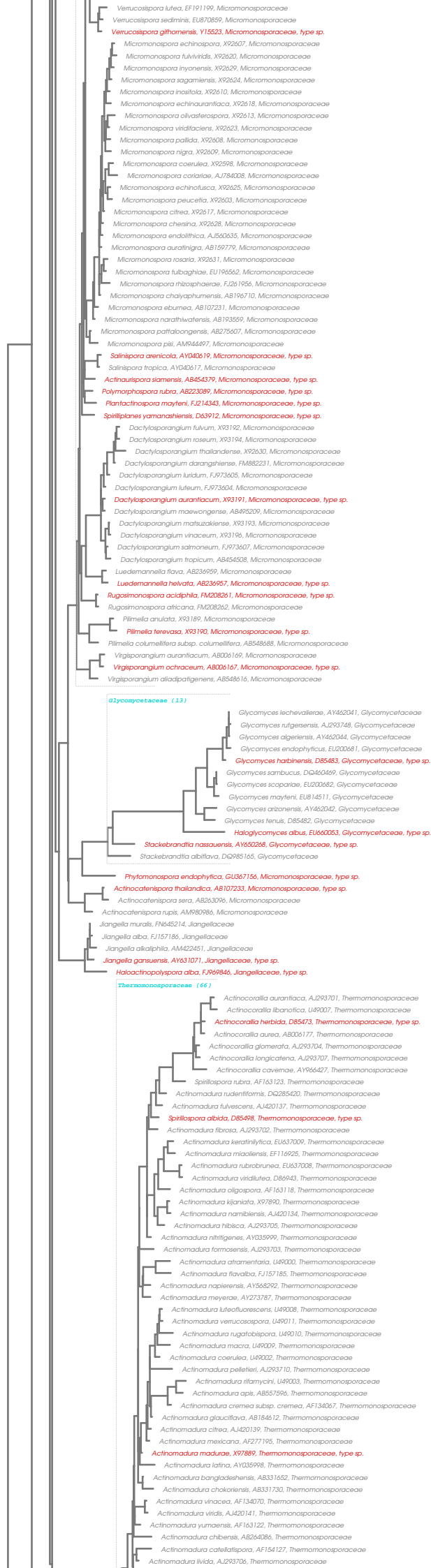


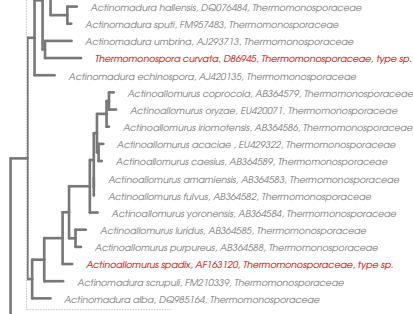
Streptotolichus hindustanus, D85497, Pseudonocardiales, type sp.



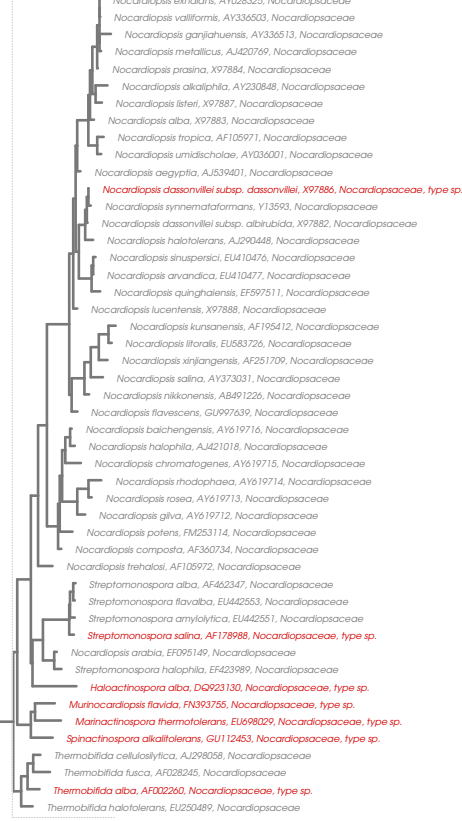
Micromonosporaceae (133)



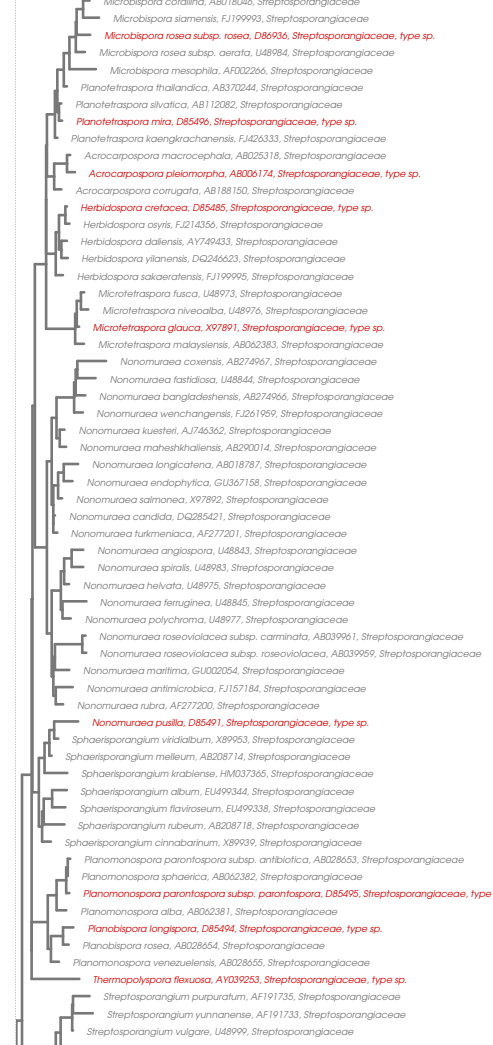


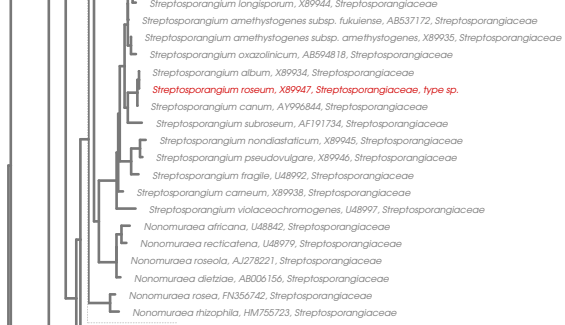


Nocardioseae (48)



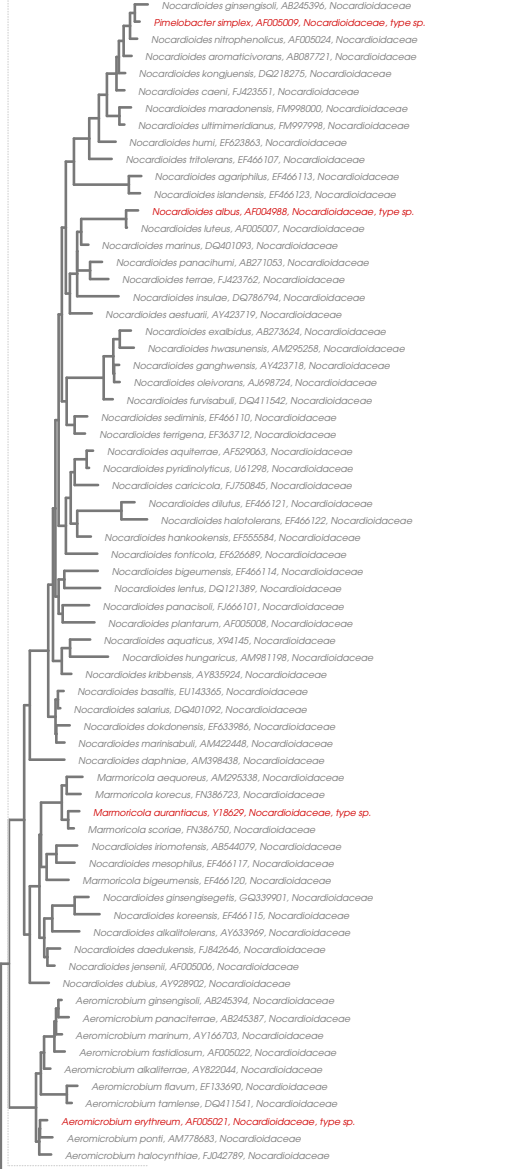
Streptosporangiaceae (80)





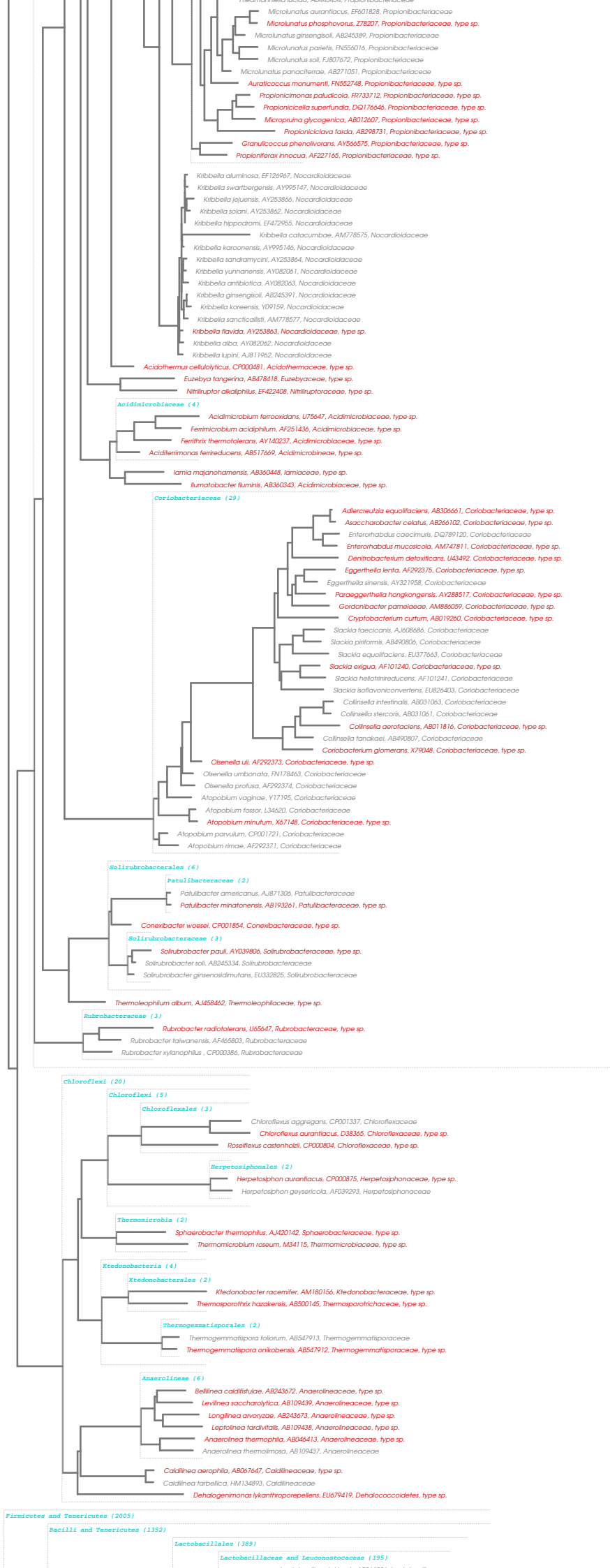
- Sinosporangium album**, EU438912, Streptosporangiaceae, type sp.
- Thermomonaspora chromogena, AF116558, Thermomonasporaceae
- Thermobispora bispora**, U58523, Pseudonocardiaceae, type sp.
- Actinopolymorpha cephalotaxi, EU438909, Nocardioidaceae
- Actinopolymorpha rutila, EF601829, Nocardioidaceae
- Actinopolymorpha singaporensis**, AF237815, Nocardioidaceae, type sp.
- Actinopolymorpha pittospori, FJ805429, Nocardioidaceae
- Actinopolymorpha alba, EU706350, Nocardioidaceae
- Thermasporomyces composti**, AB535715, Nocardioidaceae, type sp.
- Findersiella endophytica**, FJ805430, Nocardioidaceae, type sp.

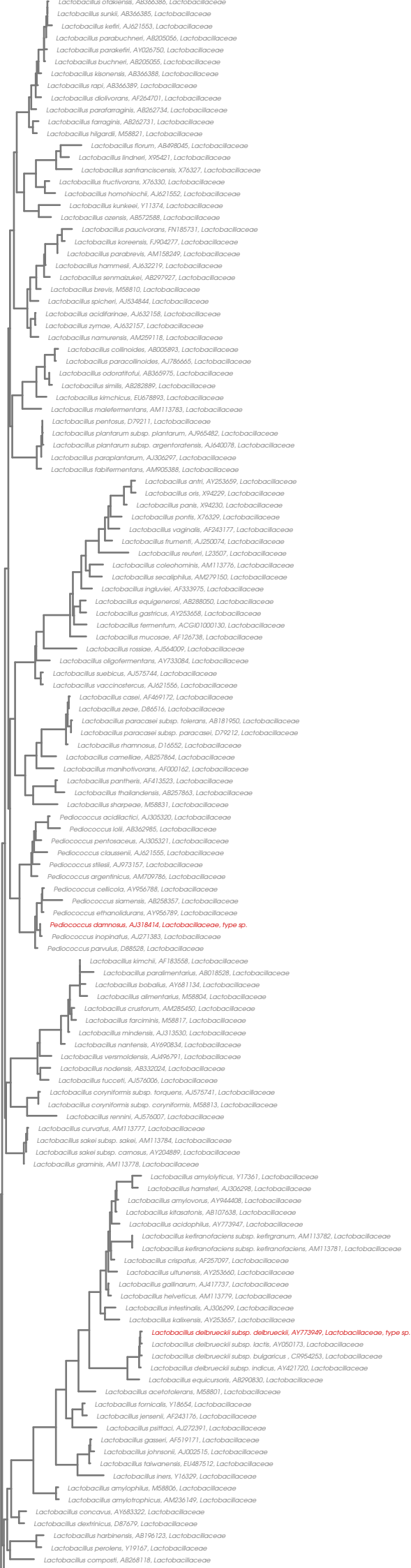
Nocardioidaceae (68)



Propionibacteriaceae (44)

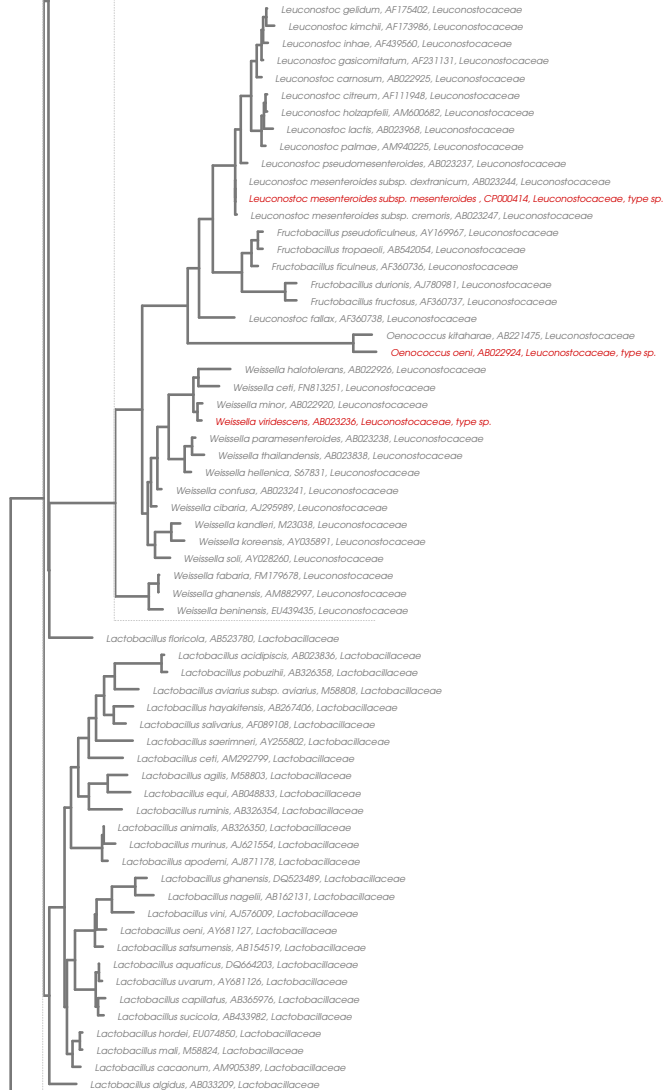






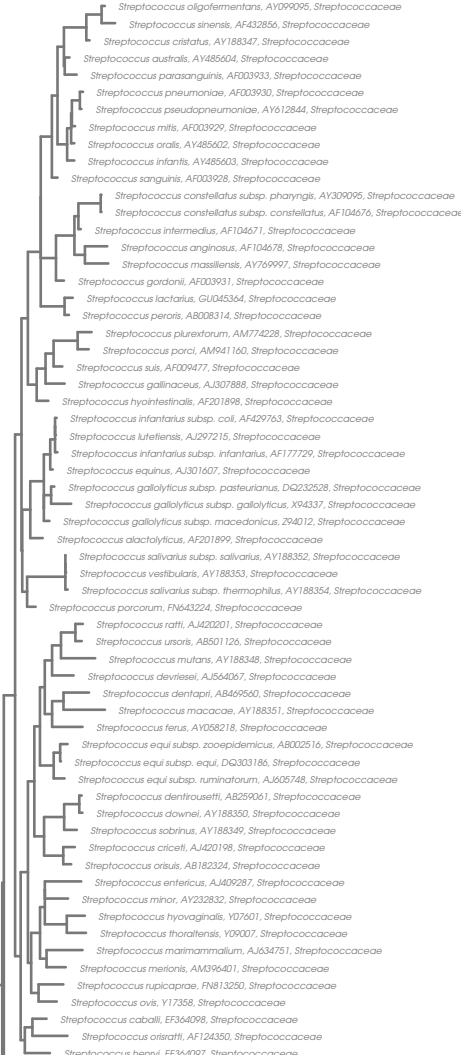
Lactobacillus selangorensis, AF049745, Lactobacillaceae

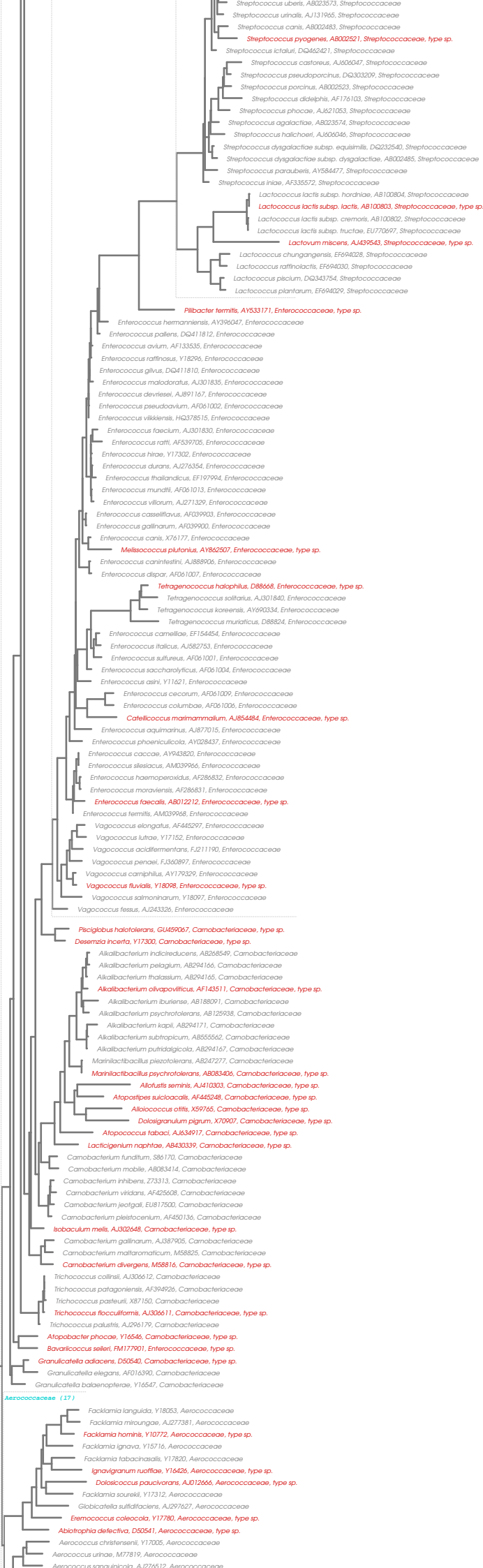
Leuconostocaceae (36)

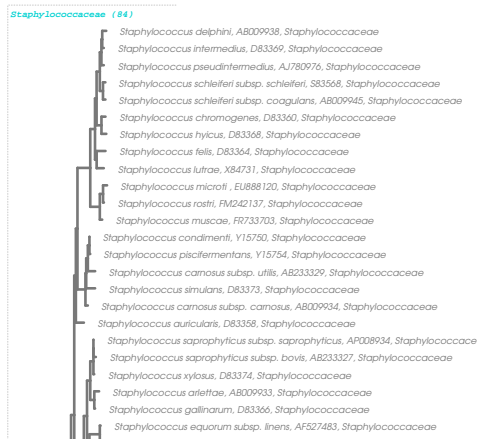
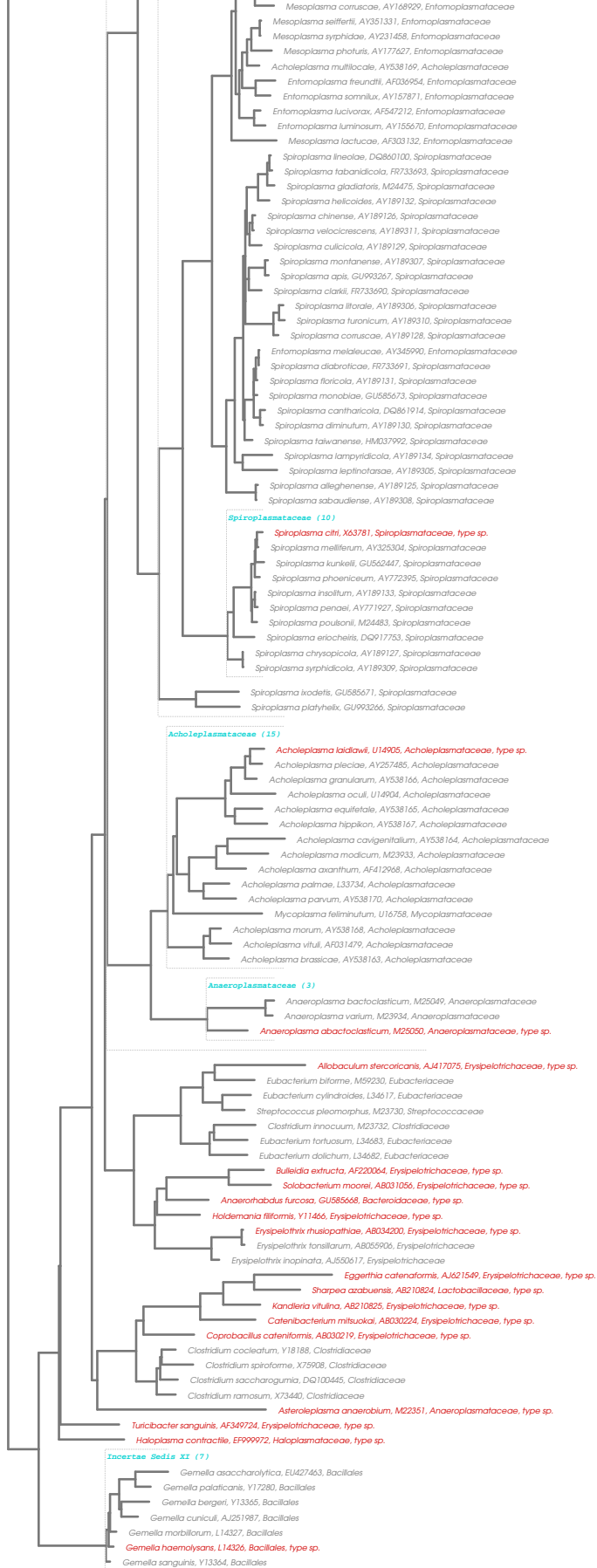


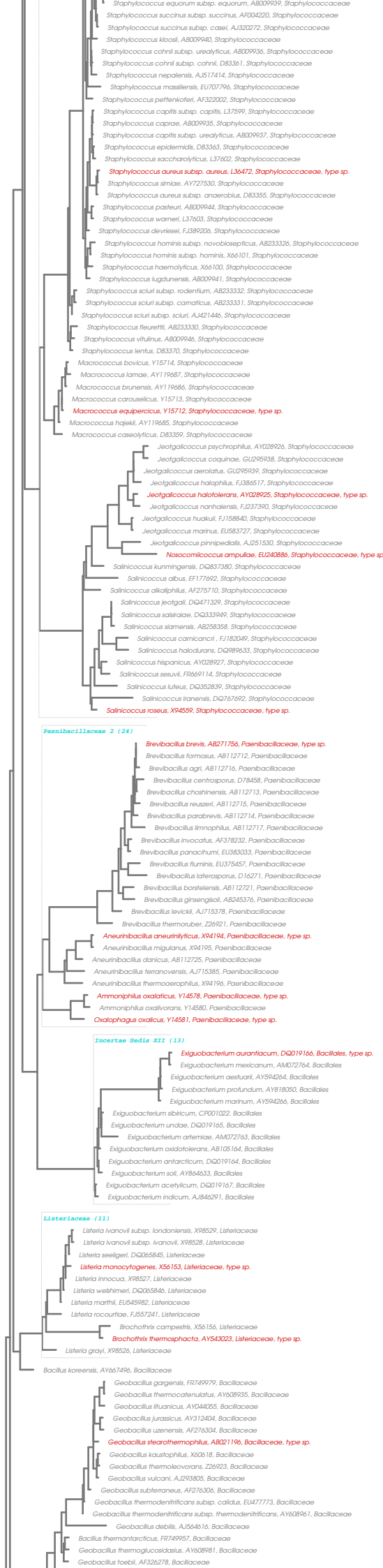
Enterococaceae and Streptococaceae (138)

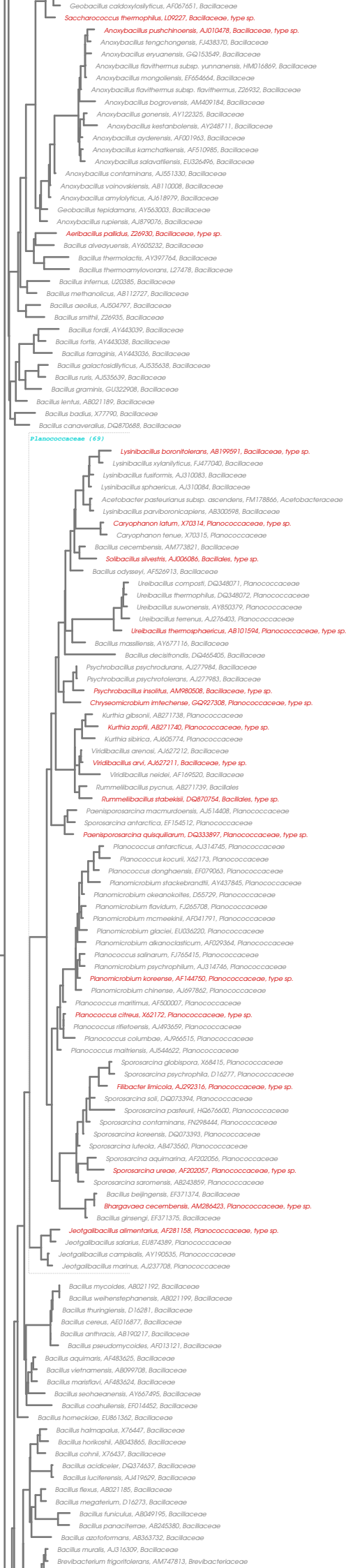
Streptococaceae (87)

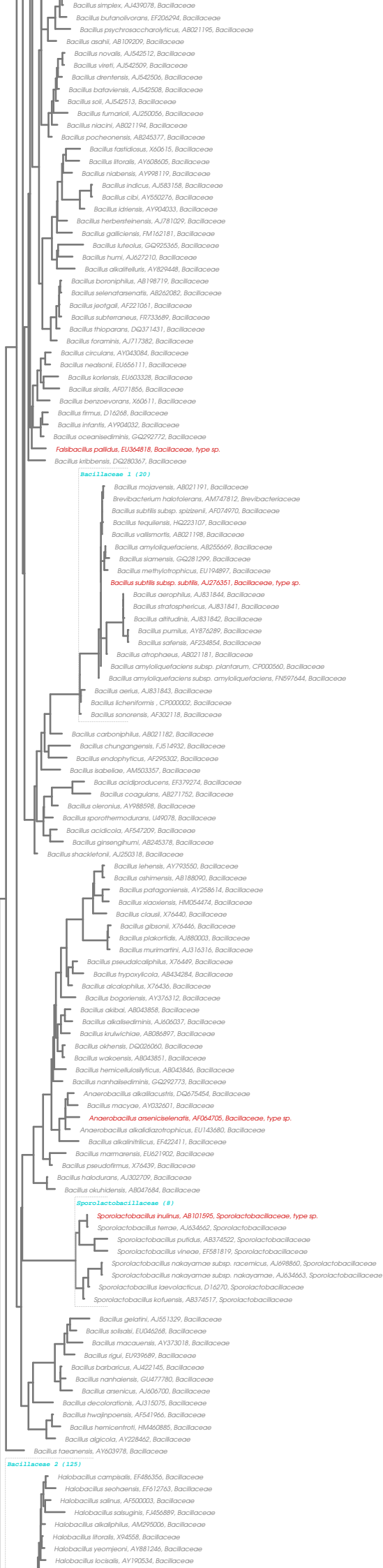


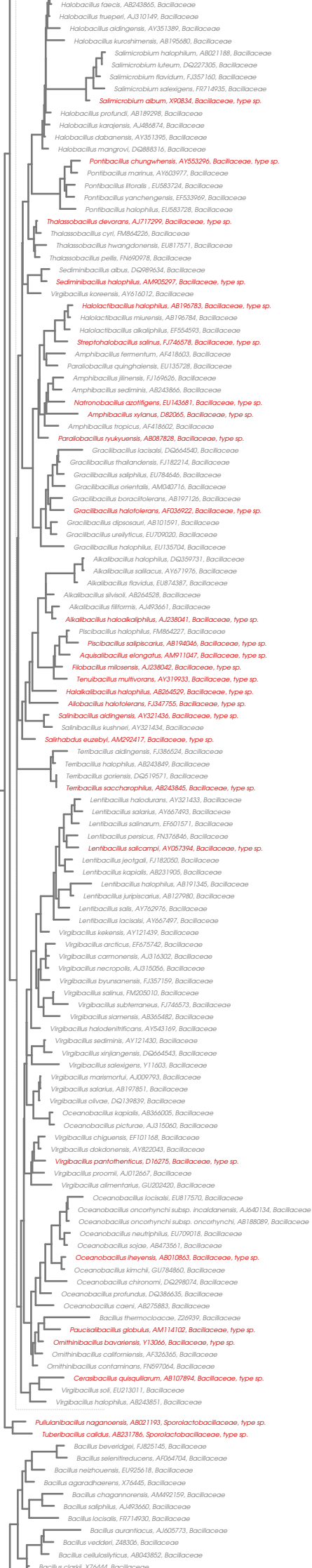


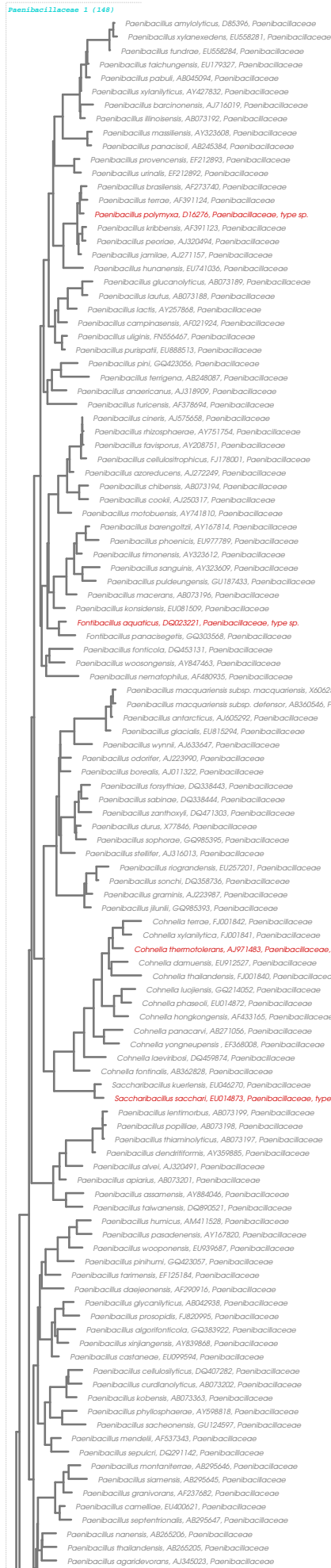
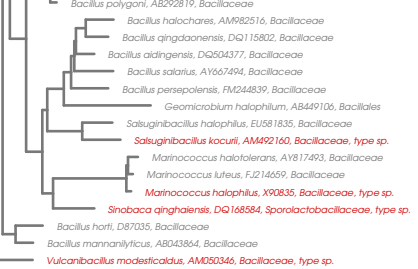












Paenibacillus chungangensis, GU187432, Paenibacillaceae
Paenibacillus spuri, FN394513, Paenibacillaceae
Paenibacillus alkaliferus, AY960748, Paenibacillaceae
Paenibacillus harense, AY839867, Paenibacillaceae
Paenibacillus agarewedens, AJ345020, Paenibacillaceae
Paenibacillus contaminans, EF626990, Paenibacillaceae
Paenibacillus residui, FN293173, Paenibacillaceae
Paenibacillus chinjuensis, AF144345, Paenibacillaceae
Paenibacillus filicis, GQ423065, Paenibacillaceae
Paenibacillus mucilaginosus, AF006077, Paenibacillaceae
Paenibacillus rigui, EU939688, Paenibacillaceae
Paenibacillus soli, DQ309072, Paenibacillaceae
Paenibacillus ginsengihumi, EF452662, Paenibacillaceae
Paenibacillus pueri, EU391156, Paenibacillaceae
Paenibacillus naphthalenovorans, AF353681, Paenibacillaceae
Paenibacillus validus, AB073203, Paenibacillaceae
Paenibacillus edaphicus, AF006076, Paenibacillaceae
Paenibacillus ehimensis, AY116665, Paenibacillaceae
Paenibacillus korensis, AF130254, Paenibacillaceae
Paenibacillus elgii, AYD90110, Paenibacillaceae
Paenibacillus fiammensis, FJ719490, Paenibacillaceae
Paenibacillus aestuarii, EU570250, Paenibacillaceae
Paenibacillus pocheonensis, AB245386, Paenibacillaceae
Paenibacillus oligolyticus, AB073362, Paenibacillaceae
Paenibacillus chondroitini, D82064, Paenibacillaceae
Paenibacillus pectinolyticus, EU391157, Paenibacillaceae
Paenibacillus chitinolyticus, AB045100, Paenibacillaceae
Paenibacillus gansuensis, AY839866, Paenibacillaceae
Paenibacillus ginsengarii, AB271057, Paenibacillaceae
Paenibacillus hodogayensis, AB179866, Paenibacillaceae
Paenibacillus koleovorans, AB041720, Paenibacillaceae
Paenibacillus larvae, AY530294, Paenibacillaceae
Thermobacillus composti, AB254031, Paenibacillaceae
***Thermobacillus xylinolyticus*, AJ025795, Paenibacillaceae, type sp.**

Alicyclobacillaceae (21)

Alicyclobacillus hesperidum, AJ133633, Alicyclobacillaceae
Alicyclobacillus sacchari, AB264020, Alicyclobacillaceae
Alicyclobacillus acidiphilus, AB076640, Alicyclobacillaceae
Alicyclobacillus acidoterrestis, AB042057, Alicyclobacillaceae
Alicyclobacillus fastidiosus, AB264021, Alicyclobacillaceae
Alicyclobacillus acidocaldarius subsp. rittmannii, AB059674, Alicyclobacillaceae
Alicyclobacillus sendaiensis, AB084128, Alicyclobacillaceae
***Alicyclobacillus acidocaldarius subsp. acidocaldarius*, AJ496806, Alicyclobacillaceae, type sp.**
Alicyclobacillus vulcanalis, AY425985, Alicyclobacillaceae
Alicyclobacillus macrosporangidus, AB264025, Alicyclobacillaceae
Alicyclobacillus cycloheptanicus, AB042059, Alicyclobacillaceae
Alicyclobacillus kakegawensis, AB264022, Alicyclobacillaceae
Alicyclobacillus shizukensis, AB264024, Alicyclobacillaceae
Alicyclobacillus herbarius, AB042055, Alicyclobacillaceae
Bacillus fuscae, AB042062, Bacillaceae
Alicyclobacillus disulfidoxidans, AB089843, Alicyclobacillaceae
Alicyclobacillus tolerans, Z11979, Alicyclobacillaceae
Alicyclobacillus contaminans, AB264026, Alicyclobacillaceae
Alicyclobacillus pomorum, AB089840, Alicyclobacillaceae
Alicyclobacillus ferrooxidans, EU137838, Alicyclobacillaceae
Alicyclobacillus aeris, FM179383, Alicyclobacillaceae

Tumebacillus ginsengisoli, AB245375, Bacillaceae
***Tumebacillus permanentifigoris*, DG444975, Bacillaceae, type sp.**
Alicyclobacillus pathiae, AJ564766, Alicyclobacillaceae

***Microaerobacter geothermalis*, FN552009, Bacillaceae, type sp.**
***Thermicanus oegyptius*, AJ242495, Bacillales, type sp.**
***Caldalkalibacillus therrum*, AY753654, Bacillaceae, type sp.**
Caldalkalibacillus uzonensis, DQ221694, Bacillaceae

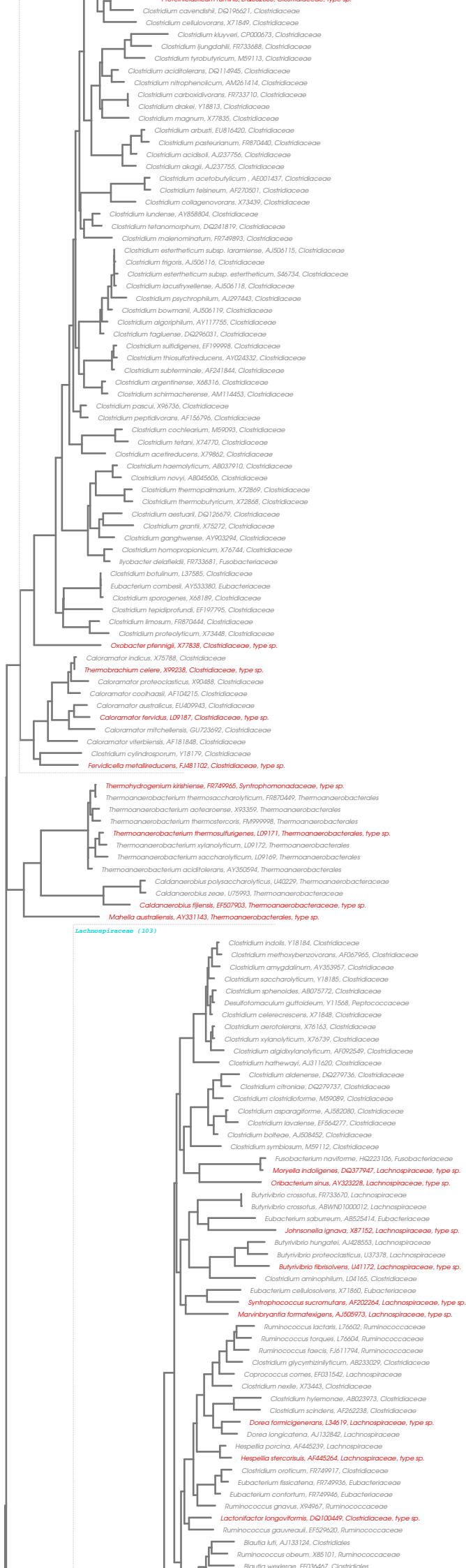
Thermoactinomycetaceae (15)

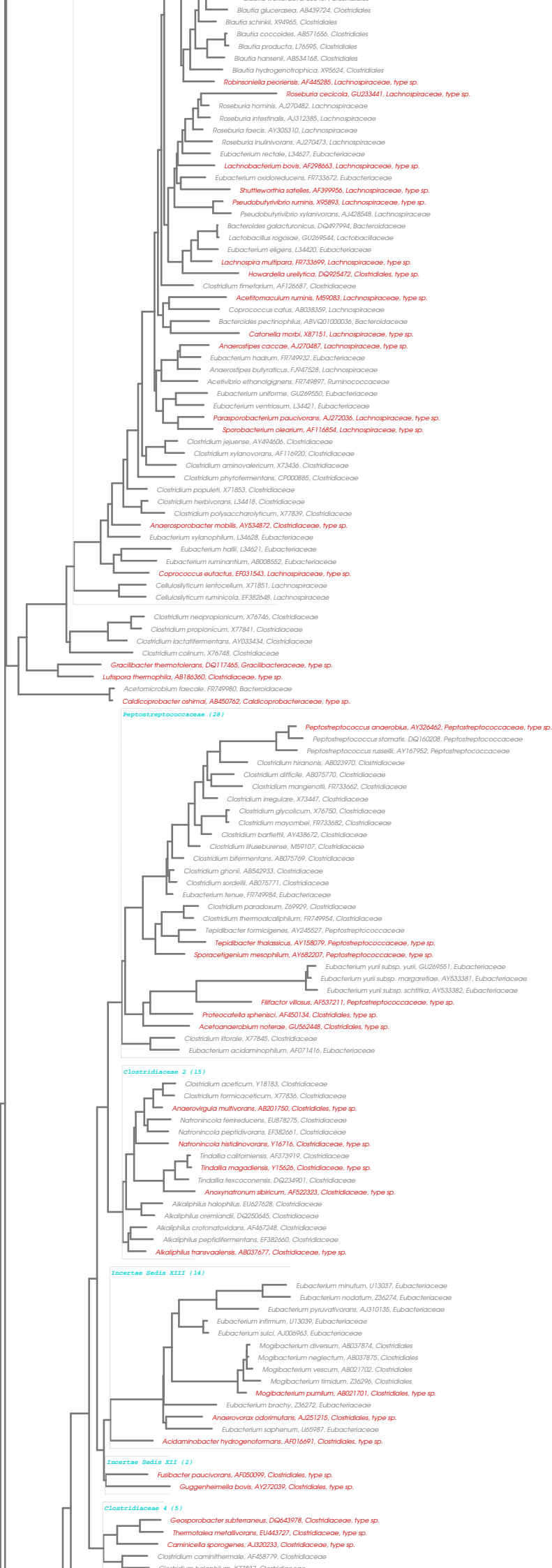
Desmospora activa, AM940019, Thermoactinomycetaceae, type sp.
Kroppenstedtia eburnea, FN655556, Thermoactinomycetaceae, type sp.
Mechercharimyces asparaphigenens, AB239532, Thermoactinomycetaceae
Mechercharimyces mesophilus, AB239529, Thermoactinomycetaceae, type sp.
Seinonella peptonophila, AF138735, Thermoactinomycetaceae, type sp.
Shimazuelia kribbensis, AB049939, Thermoactinomycetaceae, type sp.
***Laceyella sacchari*, AJ251779, Thermoactinomycetaceae, type sp.**
Laceyella tengchongensis, FJ426598, Thermoactinomycetaceae
Laceyella putida, AF138736, Thermoactinomycetaceae
Thermoactinomycetes intermedius, AF138734, Thermoactinomycetaceae
***Thermoactinomycetes vulgaris*, AF138739, Thermoactinomycetaceae, type sp.**
***Thermoflavimicrobium dichotomicum*, AF138733, Thermoactinomycetaceae, type sp.**
Planifilum fulgidum, AB088362, Thermoactinomycetaceae
Planifilum yunnanense, DQ119659, Thermoactinomycetaceae
***Planifilum fimeticola*, AB088364, Thermoactinomycetaceae, type sp.**
***Calditerricola satsumensis*, AB250968, Bacillaceae, type sp.**
Calditerricola yamamurae, AB308475, Bacillaceae
Bacillus schlegelii, AB042060, Bacillaceae

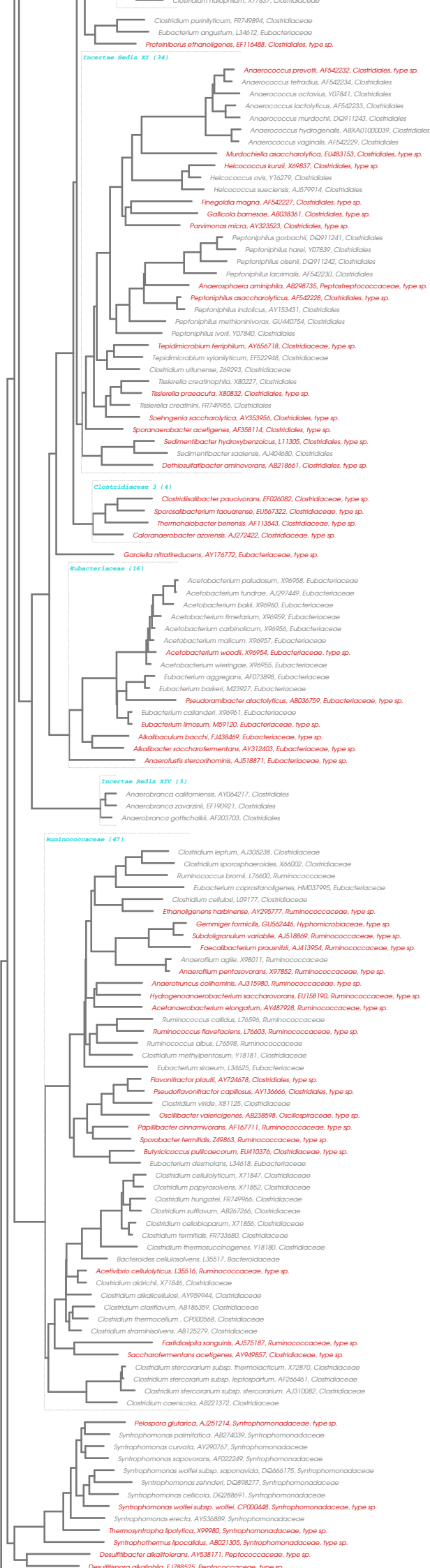
Clostridia (589)

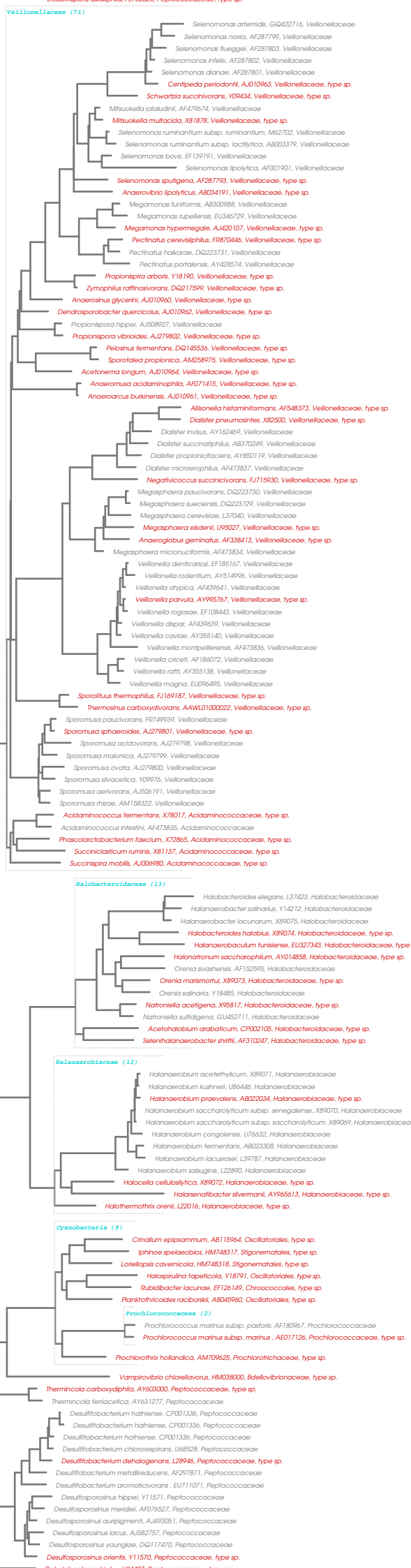
Clostridiaceae 1 (108)

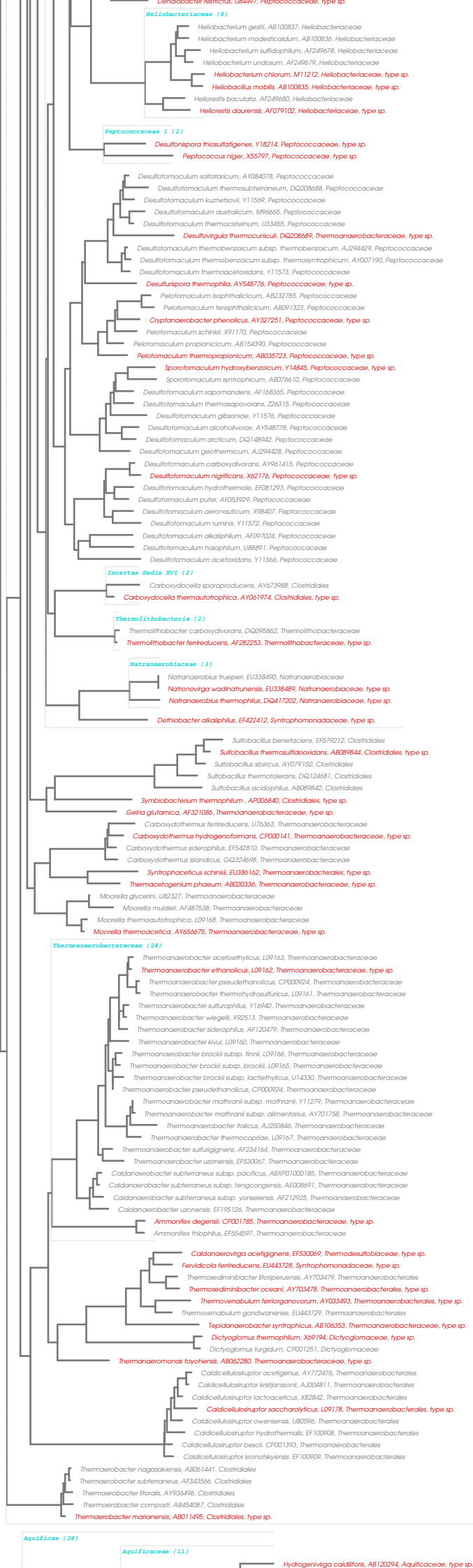
Eubacterium multiforme, AB018184, Eubacteriaceae
Eubacterium nitrifigens, AB018185, Eubacteriaceae
Eubacterium budoyi, AB018183, Eubacteriaceae
Clostridium baratii, X68174, Clostridiaceae
Clostridium sardinense, AB161367, Clostridiaceae
Clostridium colicans, AJ420008, Clostridiaceae
Clostridium aurantibutylicum, X68183, Clostridiaceae
Clostridium chartatabidum, X71850, Clostridiaceae
Clostridium vincentii, X97432, Clostridiaceae
Clostridium paraputrificum, X75907, Clostridiaceae
Clostridium diolis, AJ458418, Clostridiaceae
Clostridium roseum, Y18171, Clostridiaceae
Clostridium beijerinckii, X68179, Clostridiaceae
Clostridium saccharoperbutylacetonicum, U16122, Clostridiaceae
Clostridium saccharobutylicum, U16147, Clostridiaceae
Clostridium puniceum, X71857, Clostridiaceae
***Clostridium butyricum*, AJ458420, Clostridiaceae, type sp.**
Clostridium chromireducens, A1228334, Clostridiaceae
Clostridium gasigenes, AF092548, Clostridiaceae
Clostridium uliginosum, AJ276992, Clostridiaceae
Clostridium chauvoei, U51843, Clostridiaceae
Clostridium septicum, U59278, Clostridiaceae
Clostridium isotidis, X98395, Clostridiaceae
Clostridium canis, M59091, Clostridiaceae
Clostridium feritum, Y18174, Clostridiaceae
Clostridium sartagofforme, Y18175, Clostridiaceae
Clostridium celatum, X77844, Clostridiaceae
Clostridium disparicum, Y18176, Clostridiaceae
Clostridium quini, X76745, Clostridiaceae
Sarcina maxima, X76650, Clostridiaceae
***Sarcina ventriculi*, X76649, Clostridiaceae, type sp.**
Eubacterium tarantellae, FR733677, Eubacteriaceae
Clostridium perfringens, CP000246, Clostridiaceae
Clostridium frigidicams, AF069742, Clostridiaceae
Clostridium hydrogeniformans, DQ196623, Clostridiaceae
Clostridium intestinale, X76740, Clostridiaceae
Clostridium algidicams, AF127023, Clostridiaceae
Clostridium putrefaciens, AF127024, Clostridiaceae
Clostridium fallax, M59088, Clostridiaceae
***Anaerobacter polyendosporus*, Y18189, Clostridiaceae, type sp.**
Clostridium amyolyticum, EU037903, Clostridiaceae
Clostridium cadaveris, AB542932, Clostridiaceae
Acetivibrio multivorans, FR749900, Ruminooccocaceae
***Penteliniastrium ruminis*, DQ852338, Clostridiaceae, type sp.**

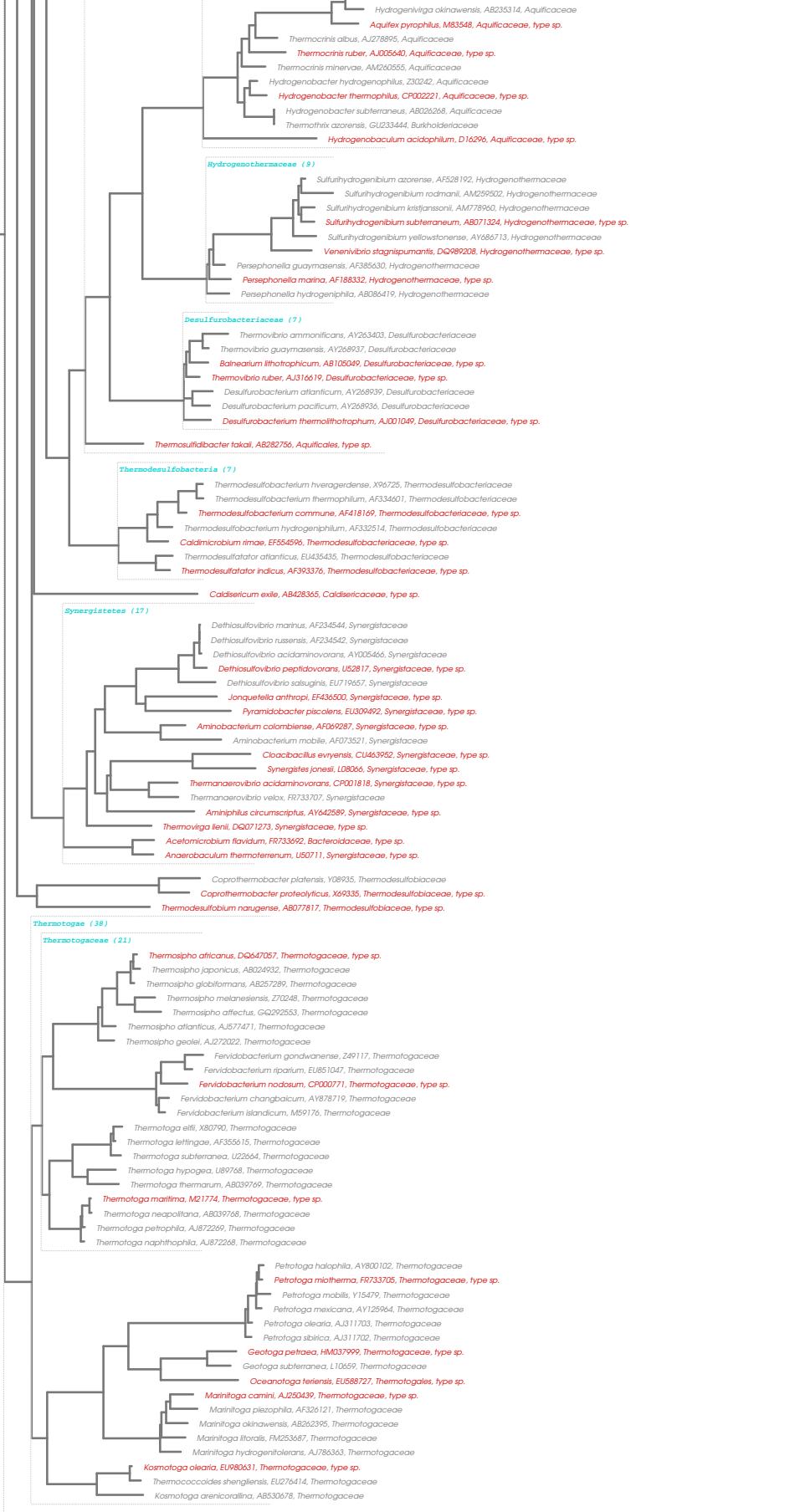












Archaea (348)

Buryarchaeota (300)





Methanomicrobialia (69)

