

## The All-Species Living Tree (Release LTPs104):

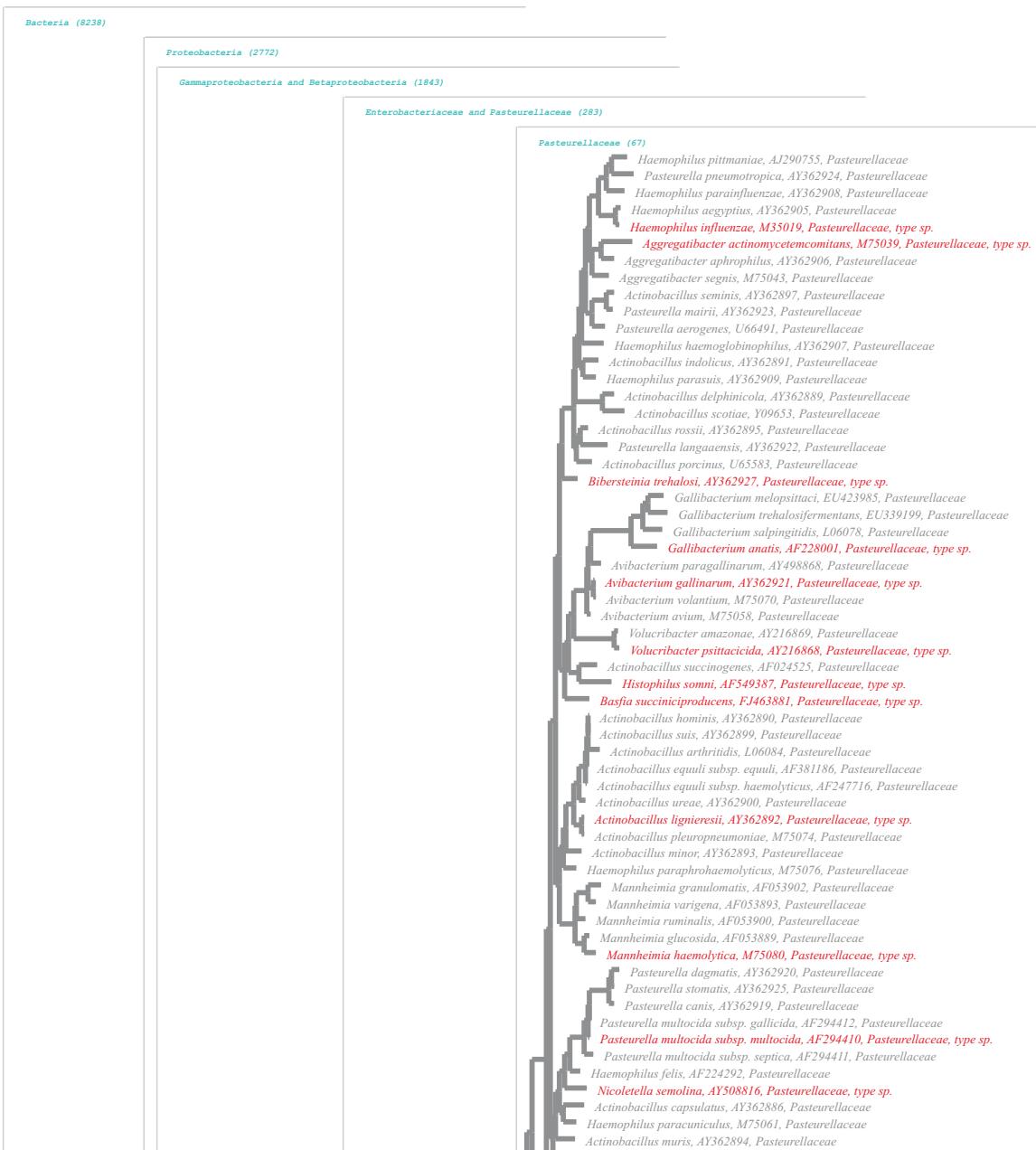
16S rRNA-based phylogenetic tree harboring all type strains of all species with validly published names up to December 2010. Type species are highlighted in red. Incorrectly affiliated and ungrouped species are indicated by their valid family.

P. Yarza, W. Ludwig, J. Euzeby, R. Amann, K.-H. Schleifer, F.O. Glöckner, R. Rossello-Mora.  
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. Euzeby, R. Amann, K.-H. Schleifer, W. Ludwig, F.O. Glöckner, R. Rossello-Mora.  
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>

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[www.bacterio.cict.fr](http://www.bacterio.cict.fr)





*Pantoea gavimiae*, GJ367483, Enterobacteriaceae  
*Pantoea calida*, GQ367478, Enterobacteriaceae  
*Enterobacter pulveris*, DQ273684, Enterobacteriaceae  
*Salmonella subterranea*, AY373829, Enterobacteriaceae  
*Klebsiella singaporesis*, AF250285, Enterobacteriaceae  
*Klebsiella varicola*, AJ783916, Enterobacteriaceae  
*Klebsiella pneumoniae* subsp. *pneumoniae*, X87276, Enterobacteriaceae, type sp.  
*Klebsiella pneumoniae* subsp. *ozaenae*, AF130982, Enterobacteriaceae  
*Klebsiella pneumoniae* subsp. *rhinoscleromatis*, Y17657, Enterobacteriaceae  
*Enterobacter cloacae* subsp. *dissolvens*, Z96079, Enterobacteriaceae  
*Enterobacter cloacae* subsp. *cloacae*, AJ251469, Enterobacteriaceae, type sp.  
*Enterobacter asburiae*, AB004744, Enterobacteriaceae  
*Erwinia amylovora*, AJ233410, Enterobacteriaceae, type sp.  
*Erwinia pyrifoliae*, EF122435, Enterobacteriaceae  
*Erwinia tasmaniensis*, AM055716, Enterobacteriaceae  
*Erwinia persicina*, U80205, Enterobacteriaceae  
*Erwinia rhamontici*, AJ233417, Enterobacteriaceae  
*Erwinia mallotivora*, AJ233414, Enterobacteriaceae  
*Erwinia papayae*, AY131237, Enterobacteriaceae  
*Erwinia psidii*, Z96085, Enterobacteriaceae  
*Erwinia tracheiphila*, Y13250, Enterobacteriaceae  
*Pantoea dispersa*, DQ504305, Enterobacteriaceae  
*Pantoea eucrina*, EU216736, Enterobacteriaceae  
*Pantoea cyripedii*, AJ233413, Enterobacteriaceae  
*Pantoea septica*, EU216734, Enterobacteriaceae  
*Tatumella citrea*, DQ838096, Enterobacteriaceae  
*Pseudomonas flectens*, AB021400, Pseudomonadaceae  
*Tatumella morbirsei*, EU344769, Enterobacteriaceae  
*Tatumella terrestris*, EF688007, Enterobacteriaceae  
*Tatumella ptyseos*, AJ233437, Enterobacteriaceae, type sp.  
*Tatumella punctata*, FJ756351, Enterobacteriaceae  
*Pantoea agglomerans*, AJ233423, Enterobacteriaceae, type sp.  
*Pantoea anthophila*, EF688010, Enterobacteriaceae  
*Pantoea eucalypti*, EF688009, Enterobacteriaceae  
*Pantoea vagans*, EF688012, Enterobacteriaceae  
*Pantoea deleyi*, EF688011, Enterobacteriaceae  
*Pantoea conspicua*, EU216737, Enterobacteriaceae  
*Pantoea brenneri*, EU216735, Enterobacteriaceae  
*Pantoea amanatis*, U80196, Enterobacteriaceae  
*Pantoea stewartii* subsp. *stewartii*, U80208, Enterobacteriaceae  
*Enterobacter pyrinus*, AJ010486, Enterobacteriaceae  
*Escherichia vulneris*, AF530476, Enterobacteriaceae  
*Enterobacter hormaechei*, AJ508302, Enterobacteriaceae  
*Enterobacter ludwigii*, AJ853891, Enterobacteriaceae  
*Enterobacter cancerogenus*, Z96078, Enterobacteriaceae  
*Enterobacter nimipressuralis*, Z96077, Enterobacteriaceae  
*Buttiauxella agrestis*, AJ233400, Enterobacteriaceae, type sp.  
*Buttiauxella brennerae*, AJ233401, Enterobacteriaceae  
*Buttiauxella ferrugutiae*, AJ233402, Enterobacteriaceae  
*Buttiauxella gaviniae*, AJ233403, Enterobacteriaceae  
*Buttiauxella warmboldiae*, AJ233406, Enterobacteriaceae  
*Buttiauxella noackiae*, AJ233405, Enterobacteriaceae  
*Buttiauxella izardii*, AJ233404, Enterobacteriaceae  
*Enterobacter kobei*, AJ508301, Enterobacteriaceae  
*Yokenella regensburguei*, AB519796, Enterobacteriaceae, type sp.  
*Raoultella terrigena*, Y17658, Enterobacteriaceae  
*Enterobacter amnigenus*, AB004749, Enterobacteriaceae  
*Raoultella ornithinolytica*, U78182, Enterobacteriaceae  
*Raoultella planticola*, AF129443, Enterobacteriaceae, type sp.  
*Citrobacter braakii*, AF025368, Enterobacteriaceae  
*Citrobacter murliniae*, AF025369, Enterobacteriaceae  
*Citrobacter werkmanii*, AF025373, Enterobacteriaceae  
*Citrobacter freundii*, AJ233408, Enterobacteriaceae, type sp.  
*Klebsiella oxytoca*, AF129440, Enterobacteriaceae  
*Citrobacter gillenii*, AF025367, Enterobacteriaceae  
*Kluyvera ascorbata*, AF008579, Enterobacteriaceae, type sp.  
*Kluyvera georgiana*, AF047186, Enterobacteriaceae  
*Kluyvera cryocrescens*, AF310218, Enterobacteriaceae  
*Kluyvera intermedia*, AF310217, Enterobacteriaceae  
*Enterobacter aerogenes*, AB004750, Enterobacteriaceae  
*Serratia ureilytica*, AJ854062, Enterobacteriaceae  
*Brenneria nigrifluens*, U80203, Enterobacteriaceae  
*Brenneria alni*, AJ233409, Enterobacteriaceae  
*Samsomia erythrinae*, AF273037, Enterobacteriaceae, type sp.  
*Pectobacterium atrosepticum*, Z96090, Enterobacteriaceae  
*Pectobacterium betavasculorum*, U80198, Enterobacteriaceae  
*Pectobacterium wasabiae*, U80199, Enterobacteriaceae  
*Pectobacterium cacticida*, AJ223409, Enterobacteriaceae  
*Pectobacterium carotovorum* subsp. *odoriferum*, AJ223407, Enterobacteriaceae  
*Pectobacterium carotovorum* subsp. *carotovorum*, AJ233411, Enterobacteriaceae, type sp.  
*Leminella grimontii*, AJ233421, Enterobacteriaceae, type sp.  
*Pragia fontium*, AJ233424, Enterobacteriaceae, type sp.  
*Cedecea davisa*, AF493976, Enterobacteriaceae, type sp.  
*Cedecea neteri*, AB086230, Enterobacteriaceae  
*Serratia odorifera*, AJ233432, Enterobacteriaceae  
*Serratia entomophila*, AJ233427, Enterobacteriaceae  
*Serratia ficaria*, AJ233428, Enterobacteriaceae  
*Serratia plymuthica*, AJ233433, Enterobacteriaceae  
*Serratia liquefaciens*, AJ306725, Enterobacteriaceae  
*Serratia grimesii*, AJ233430, Enterobacteriaceae  
*Serratia proteamaculans*, AJ233434, Enterobacteriaceae  
*Serratia quinivorans*, AJ233435, Enterobacteriaceae  
*Yersinia pestis*, AF366383, Enterobacteriaceae, type sp.  
*Yersinia pseudotuberculosis*, AF366375, Enterobacteriaceae  
*Yersinia similis*, AM182404, Enterobacteriaceae  
*Yersinia ruckeri*, AF366385, Enterobacteriaceae  
*Yersinia aleksisiiae*, AJ627597, Enterobacteriaceae  
*Budvicia aquatica*, AJ233407, Enterobacteriaceae, type sp.  
*Yersinia massiliensis*, EF179119, Enterobacteriaceae  
*Yersinia bercoieri*, AF366377, Enterobacteriaceae  
*Yersinia alidovae*, AF366376, Enterobacteriaceae  
*Yersinia mollarettii*, AF366382, Enterobacteriaceae  
*Yersinia frederiksenii*, AF366379, Enterobacteriaceae  
*Yersinia kristensenii*, AF366381, Enterobacteriaceae  
*Yersinia rohdei*, AF366384, Enterobacteriaceae  
*Yersinia intermedia*, AF366380, Enterobacteriaceae  
*Yersinia enterocolitica* subsp. *enterocolitica*, AF366378, Enterobacteriaceae  
*Yersinia enterocolitica* subsp. *paleearctica*, FJ717344, Enterobacteriaceae  
*Rahnella aquatilis*, AJ233426, Enterobacteriaceae, type sp.  
*Hafnia parvalvei*, FM179943, Enterobacteriaceae  
*Hafnia alvei*, M5915, Enterobacteriaceae, type sp.  
*Serratia fonticola*, AJ233429, Enterobacteriaceae

Vibrionaceae (108)

- Vibrio harveyi*, AY750575, Vibrionaceae  
*Vibrio rotiferianus*, AJ316187, Vibrionaceae  
*Vibrio owensii*, GU018180, Vibrionaceae  
*Vibrio alginolyticus*, X56576, Vibrionaceae  
*Vibrio campbellii*, X56575, Vibrionaceae  
*Vibrio azureus*, AB428897, Vibrionaceae  
*Vibrio parahaemolyticus*, AF388386, Vibrionaceae  
*Vibrio natriegens*, X74714, Vibrionaceae  
*Vibrio diabolicus*, X99762, Vibrionaceae  
*Vibrio mytili*, X99761, Vibrionaceae  
*Vibrio atypicus*, FJ009624, Vibrionaceae  
*Vibrio nigripulchrifudo*, X74717, Vibrionaceae  
*Vibrio sinaloensis*, DQ451211, Vibrionaceae  
*Vibrio brasiliensis*, AJ316172, Vibrionaceae  
*Vibrio nereis*, X74716, Vibrionaceae  
*Vibrio proteolyticus*, X74723, Vibrionaceae  
*Vibrio corallilyticus*, AJ440005, Vibrionaceae  
*Vibrio neptunius*, AJ316171, Vibrionaceae  
*Vibrio hepatarius*, AJ345063, Vibrionaceae  
*Vibrio tubiashii*, X74725, Vibrionaceae  
*Vibrio xuii*, AJ316181, Vibrionaceae  
*Vibrio albensis*, EF032499, Vibrionaceae  
*Vibrio cholerae*, X76337, Vibrionaceae, type sp.  
*Vibrio mimicus*, X74713, Vibrionaceae  
*Vibrio porteresiae*, EF488079, Vibrionaceae  
*Vibrio rhizospherae*, DQ847123, Vibrionaceae  
*Vibrio ruber*, AF462458, Vibrionaceae  
*Vibrio gazogenes*, X74705, Vibrionaceae  
*Vibrio fluvialis*, X76335, Vibrionaceae  
*Vibrio furnissii*, X76336, Vibrionaceae  
*Vibrio ponticus*, AJ630103, Vibrionaceae  
*Vibrio orientalis*, X74719, Vibrionaceae  
*Vibrio areninigrae*, EU143360, Vibrionaceae  
*Vibrio hispanicus*,AY254040, Vibrionaceae  
*Vibrio diazotrophicus*, X74701, Vibrionaceae  
*Vibrio cincinnatensis*, X74698, Vibrionaceae  
*Vibrio pacini*, AJ316194, Vibrionaceae  
*Vibrio metschnikovii*, X74711, Vibrionaceae  
*Listonella anguillarum*, AM235737, Vibrionaceae, type sp.  
*Vibrio ordalii*, X74718, Vibrionaceae  
*Vibrio ichthyoenteri*, AJ421445, Vibrionaceae  
*Vibrio scophthalmi*, U46579, Vibrionaceae  
*Vibrio vulnificus*, X76333, Vibrionaceae  
*Vibrio aestuarium*, X74689, Vibrionaceae  
*Vibrio litoralis*, DQ097523, Vibrionaceae  
*Vibrio rumoensis*, AB013297, Vibrionaceae  
*Vibrio casei*, FJ968722, Vibrionaceae  
*Vibrio penaeicida*, AJ421444, Vibrionaceae  
*Vibrio tapetus*, Y08430, Vibrionaceae  
*Vibrio pectenicida*, Y13830, Vibrionaceae  
*Vibrio mediterranei*, X74710, Vibrionaceae  
*Listonella pelagia*, AJ293802, Vibrionaceae  
*Vibrio fiorii*, AJ514916, Vibrionaceae  
*Vibrio chagasi*, AJ316199, Vibrionaceae  
*Vibrio kanaloae*, AM162657, Vibrionaceae  
*Vibrio lento*, AJ278881, Vibrionaceae  
*Vibrio cyclitrophicus*, AM162656, Vibrionaceae  
*Vibrio splendidus*, AJ515230, Vibrionaceae  
*Vibrio tasmaniensis*, AJ316192, Vibrionaceae  
*Vibrio gigantis*, EF094884, Vibrionaceae  
*Vibrio gallaecicus*, EU541605, Vibrionaceae  
*Vibrio crassostreae*, EF094887, Vibrionaceae  
*Vibrio pomeroysi*, AJ491290, Vibrionaceae  
*Vibrio hippocampi*, FN421434, Vibrionaceae  
*Vibrio comitanus*, DQ922915, Vibrionaceae  
*Vibrio superstes*, AY155585, Vibrionaceae  
*Vibrio breogani*, EF599161, Vibrionaceae  
*Vibrio inusitatus*, DQ922920, Vibrionaceae  
*Vibrio rarus*, DQ914239, Vibrionaceae  
*Vibrio neonatus*, AY426979, Vibrionaceae  
*Vibrio czurae*, AY426980, Vibrionaceae  
*Vibrio haliotcoli*, AB000390, Vibrionaceae  
*Vibrio agarivorans*, AJ310647, Vibrionaceae  
*Vibrio hangzhouensis*, EU082035, Vibrionaceae  
*Vibrio gallicus*, AT257972, Vibrionaceae  
*Allivibrio fischeri*, X74702, Vibrionaceae, type sp.  
*Allivibrio finisterrensis*, EU541604, Vibrionaceae  
*Allivibrio logei*, AJ437616, Vibrionaceae  
*Allivibrio salmonicida*, X70643, Vibrionaceae  
*Allivibrio wodanis*, AJ132227, Vibrionaceae  
*Enterovibrio nigricans*, AM942722, Vibrionaceae  
*Enterovibrio calviniensis*, AF118021, Vibrionaceae  
*Enterovibrio norvegicus*, AJ316208, Vibrionaceae, type sp.  
*Enterovibrio coralii*, AJ842343, Vibrionaceae  
*Grimontia hollisae*, AJ514909, Vibrionaceae, type sp.  
*Salinivibrio costicola* subsp. *alcaliphilus*, AJ640132, Vibrionaceae  
*Salinivibrio costicola* subsp. *costicola*, X74699, Vibrionaceae, type sp.  
*Salinivibrio costicola* subsp. *vallis-mortis*, AF057016, Vibrionaceae  
*Salinivibrio proteolyticus*, DQ092443, Vibrionaceae  
*Salinivibrio siamensis*, AB285018, Vibrionaceae  
*Photobacterium ganghwense*, AY960847, Vibrionaceae  
*Photobacterium halotolerans*, AY551089, Vibrionaceae  
*Photobacterium damsela* subsp. *damsela*, AB032015, Vibrionaceae  
*Photobacterium damsela* subsp. *piscicida*, X78105, Vibrionaceae  
*Photobacterium lutimaris*, DQ534014, Vibrionaceae  
*Photobacterium rosenbergii*, AJ842344, Vibrionaceae  
*Photobacterium gaetulicola*, GQ260188, Vibrionaceae  
*Photobacterium leiognathi*, X74686, Vibrionaceae  
*Photobacterium angustum*, D25307, Vibrionaceae  
*Photobacterium iliopiscarium*, AY643710, Vibrionaceae  
*Photobacterium kishitanii*, AY341439, Vibrionaceae  
*Photobacterium phosphoreum*, D25310, Vibrionaceae, type sp.  
*Photobacterium aquimaris*, AB428873, Vibrionaceae  
*Photobacterium indicum*, AB016982, Vibrionaceae  
*Photobacterium aplysiiae*, AY781193, Vibrionaceae  
*Photobacterium lipolyticum*, AY54009, Vibrionaceae  
*Photobacterium profundum*, D21226, Vibrionaceae

Aeromonadaceae and Succinivibrionaceae (46)

*Aeromonas aquariorum*, EU085557, Aeromonadaceae  
*Aeromonas punctata* subsp. *caviae*, X74674, Aeromonadaceae  
*Aeromonas punctata* subsp. *punctata*, X60408, Aeromonadaceae  
*Aeromonas hydrophila* subsp. *dhabensis*, AJ508765, Aeromonadaceae  
*Aeromonas enteropelogenes*, X71121, Aeromonadaceae  
*Aeromonas sanarellii*, FJ230076, Aeromonadaceae  
*Aeromonas taiwanensis*, FJ230077, Aeromonadaceae  
*Aeromonas hydrophila* subsp. *raniae*, AM262151, Aeromonadaceae  
*Aeromonas media*, X60410, Aeromonadaceae  
***Aeromonas hydrophila* subsp. *hydrophila*, DQ207728, Aeromonadaceae, type sp.**  
*Aeromonas popoffii*, AJ224308, Aeromonadaceae  
*Aeromonas sobria*, X60412, Aeromonadaceae  
*Aeromonas simiae*, AJ536821, Aeromonadaceae  
*Aeromonas diversa*, GQ365710, Aeromonadaceae  
*Aeromonas schubertii*, X60416, Aeromonadaceae  
*Aeromonas jandaei*, X60413, Aeromonadaceae  
*Aeromonas fluvialis*, FJ230078, Aeromonadaceae  
*Aeromonas ichthiosmia*, X71120, Aeromonadaceae  
*Aeromonas veronii*, X60414, Aeromonadaceae  
*Aeromonas tecta*, AJ458402, Aeromonadaceae  
*Aeromonas eucrenophila*, X60411, Aeromonadaceae  
*Aeromonas bivalvium*, DQ504429, Aeromonadaceae  
*Aeromonas enchelleia*, AJ224309, Aeromonadaceae  
*Aeromonas salmonicida* subsp. *salmonicida*, AY987751, Aeromonadaceae  
*Aeromonas salmonicida* subsp. *pepticolytica*, AF134065, Aeromonadaceae  
*Aeromonas bestiarum*, X60406, Aeromonadaceae  
*Aeromonas salmonicida* subsp. *masoucida*, AB027542, Aeromonadaceae  
*Aeromonas salmonicida* subsp. *achromogenes*, X60407, Aeromonadaceae  
*Aeromonas salmonicida* subsp. *smithii*, AJ009859, Aeromonadaceae  
*Aeromonas piscicola*, FM999971, Aeromonadaceae  
*Aeromonas molluscorum*, AY532690, Aeromonadaceae

Succinivibrionaceae (6)

*Anaerobiospirillum thomasii*, AJ420985, Succinivibrionaceae  
***Succinimonas hippie*, AB490810, Succinivibrionaceae, type sp.**  
*Anaerobiospirillum succiniciproducens*, U96412, Succinivibrionaceae, type sp.  
*Succinivibrio dextrinosolvens*, Y17600, Succinivibrionaceae, type sp.  
***Ruminobacter amylophilus*, Y15992, Succinivibrionaceae, type sp.**  
***Succinimonas amylolytica*, Y17599, Succinivibrionaceae, type sp.**

*Tolumonas auensis*, X92889, Aeromonadaceae, type sp.

*Aeromonas sharmana*, DQ013306, Aeromonadaceae  
*Oceanimona baumannii*, AF168367, Aeromonadaceae  
*Oceanimonas smirnovii*, AY538714, Aeromonadaceae  
*Oceanimonas doudoroffii*, AB019390, Aeromonadaceae, type sp.  
***Zobellella denitrificans*, DQ195675, Aeromonadaceae, type sp.**  
*Zobellella taiwanensis*, DQ195676, Aeromonadaceae  
*Oceanisphaera donghaensis*, DQ190441, Aeromonadaceae  
*Oceanisphaera litoralis*, AJ550470, Aeromonadaceae, type sp.

*Gallaecimonas pentaromaticivorans*, FM955224, unclassified Gammaproteobacteria, type sp.

Shewanellaceae (53)

*Shewanella halifaxensis*, AY579751, Shewanellaceae  
*Shewanella pealeana*, CP000851, Shewanellaceae  
*Shewanella marinintestina*, AB081757, Shewanellaceae  
*Shewanella sairae*, AB081762, Shewanellaceae  
*Shewanella benthica*, X82131, Shewanellaceae  
*Shewanella violacea*, D21225, Shewanellaceae  
*Shewanella piezotolerans*, AJ551090, Shewanellaceae  
*Shewanella pneumatophori*, AB204519, Shewanellaceae  
*Shewanella abyssi*, AB201475, Shewanellaceae  
*Shewanella gelidimarina*, U85907, Shewanellaceae  
*Shewanella surugensis*, AB094597, Shewanellaceae  
*Shewanella fidelis*, AF420312, Shewanellaceae  
*Shewanella schlegeliana*, AB081760, Shewanellaceae  
*Shewanella kaireitica*, AB094598, Shewanellaceae  
*Shewanella psychrophila*, AJ551089, Shewanellaceae  
*Shewanella canadensis*, AY579749, Shewanellaceae  
*Shewanella sediminis*, CP000821, Shewanellaceae  
*Shewanella hanedai*, X82132, Shewanellaceae  
*Shewanella woodyi*, CP000961, Shewanellaceae  
*Shewanella atlantica*, AY579752, Shewanellaceae  
*Shewanella aquimarina*, AY485225, Shewanellaceae  
*Shewanella loihica*, DQ286387, Shewanellaceae  
*Shewanella marisflavi*, AY485224, Shewanellaceae  
*Shewanella algipiscicola*, AB205570, Shewanellaceae  
*Shewanella colwelliana*, AY653177, Shewanellaceae  
*Shewanella waksmanii*, AY170366, Shewanellaceae  
*Shewanella algae*, AF005249, Shewanellaceae  
*Shewanella halotis*, EF178282, Shewanellaceae  
*Shewanella chilensis*, FM210033, Shewanellaceae  
*Shewanella fodinae*, FM203122, Shewanellaceae  
*Shewanella corallii*, FJ041083, Shewanellaceae  
*Shewanella amazonensis*, AF005248, Shewanellaceae  
*Shewanella marina*, EU290154, Shewanellaceae  
*Shewanella glacialpiscicola*, AB205571, Shewanellaceae  
*Shewanella morrhuae*, AB205576, Shewanellaceae  
*Shewanella baltica*, AJ000214, Shewanellaceae  
*Shewanella oneidensis*, AF005251, Shewanellaceae  
*Shewanella xiamenensis*, FJ589031, Shewanellaceae  
***Shewanella putrefaciens*, X81623, Shewanellaceae, type sp.**  
*Shewanella decolorationis*, AJ609571, Shewanellaceae  
*Shewanella hafniensis*, AB205566, Shewanellaceae  
*Shewanella basaltis*, EU143361, Shewanellaceae  
*Shewanella livingstonensis*, AJ300834, Shewanellaceae  
*Shewanella vesiculosa*, AM980877, Shewanellaceae  
*Shewanella frigidimarina*, U85903, Shewanellaceae  
*Shewanella donghaensis*, AY326275, Shewanellaceae  
*Shewanella olleyana*, AF295592, Shewanellaceae  
*Shewanella pacifica*, AF500075, Shewanellaceae  
*Shewanella japonica*, AF145921, Shewanellaceae  
*Shewanella denitrificans*, AJ311964, Shewanellaceae  
*Shewanella gaetuli*, AY190533, Shewanellaceae  
*Shewanella inciniae*, DQ180743, Shewanellaceae  
*Shewanella spongiae*, DQ167234, Shewanellaceae

Moritellaceae (8)

*Moritella abyssi*, AJ252022, Moritellaceae

*Moritella abyssi*, AB21252, Moritellaceae  
*Moritella yayanosii*, AB008797, Moritellaceae  
*Moritella japonica*, D21224, Moritellaceae  
*Moritella viscosa*, AJ132226, Moritellaceae  
*Moritella dasanensis*, EF192283, Moritellaceae  
*Moritella profunda*, AJ252023, Moritellaceae  
*Moritella marina*, AB038033, Moritellaceae, type sp.  
*Paramoritella alkaliphila*, AB364966, Moritellaceae, type sp.

**Psychromonadaceae (14)**

*Psychromonas agarivorans*, AB374544, Psychromonadaceae  
*Psychromonas heitensis*, AB365352, Psychromonadaceae  
*Psychromonas hadalis*, AB094413, Psychromonadaceae  
*Psychromonas profunda*, AJ416756, Psychromonadaceae  
*Psychromonas marina*, AB023378, Psychromonadaceae  
*Psychromonas kaiyao*, AB052160, Psychromonadaceae  
*Psychromonas arctica*, AF374385, Psychromonadaceae  
*Psychromonas aquimarinus*, AB304805, Psychromonadaceae  
*Psychromonas macrocephali*, AB304806, Psychromonadaceae  
*Psychromonas ossibalaenae*, AB304808, Psychromonadaceae  
*Psychromonas japonica*, AB304804, Psychromonadaceae  
*Psychromonas boydii*, FJ822615, Psychromonadaceae  
*Psychromonas ingrahamii*, U73721, Psychromonadaceae  
*Psychromonas antarctica*, Y14697, Psychromonadaceae, type sp.

**Ferrimonadaceae (6)**

*Ferrimonas balearica*, X93021, Ferrimonadaceae, type sp.  
*Ferrimonas marina*, AB193751, Ferrimonadaceae  
*Ferrimonas senticii*, DQ778094, Ferrimonadaceae  
*Ferrimonas fuituensis*, AB245515, Ferrimonadaceae  
*Ferrimonas kyonanensis*, AB245514, Ferrimonadaceae  
*Paraferrimonas sedimenticola*, AB252732, Ferrimonadaceae, type sp.

*Rheinheimera tangshanensis*, DQ874340, Chromatiaceae

*Rheinheimera soli*, EF575565, Chromatiaceae

*Rheinheimera texensis*, AY701891, Chromatiaceae

*Rheinheimera chironomi*, DQ298025, Chromatiaceae

*Rheinheimera aquamaris*, EF076757, Chromatiaceae

*Rheinheimera baltica*, AJ441080, Chromatiaceae, type sp.

*Rheinheimera pacifica*, AB073132, Chromatiaceae

*Alishewanella aestuarii*, EF660759, Alteromonadaceae

*Alishewanella jeorgali*, EU817498, Alteromonadaceae

*Alishewanella agri*, EU909459, Alteromonadaceae

*Alishewanella fetalis*, AF144407, Alteromonadaceae, type sp.

*Rheinheimera perlucida*, AM183347, Chromatiaceae

*Alkalimonas amylolytica*, AF250323, unclassified Gammaproteobacteria, type sp.

*Alkalimonas delamerensis*, X92130, unclassified Gammaproteobacteria

*Alkalimonas collagenimarinaria*, AB270706, unclassified Gammaproteobacteria

**Pseudoalteromonadaceae (35)**

*Pseudoalteromonas marina*, AY563031, Pseudoalteromonadaceae  
*Pseudoalteromonas undina*, X82140, Pseudoalteromonadaceae  
*Pseudoalteromonas haloplankis*, X67024, Pseudoalteromonadaceae, type sp.  
*Pseudoalteromonas antarctica*, X98336, Pseudoalteromonadaceae  
*Pseudoalteromonas translucida*, AY040230, Pseudoalteromonadaceae  
*Pseudoalteromonas aliena*, AY387858, Pseudoalteromonadaceae  
*Pseudoalteromonas nigrifaciens*, X82146, Pseudoalteromonadaceae  
*Pseudoalteromonas distincta*, AF082564, Pseudoalteromonadaceae  
*Pseudoalteromonas elyakovii*, AF082562, Pseudoalteromonadaceae  
*Pseudoalteromonas arctica*, DQ787199, Pseudoalteromonadaceae  
*Pseudoalteromonas paragoricola*, AY040229, Pseudoalteromonadaceae  
*Pseudoalteromonas agarivorans*, AJ417594, Pseudoalteromonadaceae  
*Pseudoalteromonas atlantica*, X82134, Pseudoalteromonadaceae  
*Pseudoalteromonas espejiana*, X82143, Pseudoalteromonadaceae  
*Pseudoalteromonas carrageenovora*, X82136, Pseudoalteromonadaceae  
*Pseudoalteromonas issachenkoi*, AF316144, Pseudoalteromonadaceae  
*Pseudoalteromonas tetrodonis*, AF214730, Pseudoalteromonadaceae  
*Pseudoalteromonas mariniglutinosa*, AJ507251, Pseudoalteromonadaceae  
*Pseudoalteromonas prydensis*, U85855, Pseudoalteromonadaceae  
*Pseudoalteromonas lipolytica*, FJ404721, Pseudoalteromonadaceae  
*Pseudoalteromonas hyunsanensis*, DQ011289, Pseudoalteromonadaceae  
*Pseudoalteromonas flavigulpha*, AF297958, Pseudoalteromonadaceae  
*Pseudoalteromonas maricaloris*, AF144036, Pseudoalteromonadaceae  
*Pseudoalteromonas piscicida*, AB090232, Pseudoalteromonadaceae  
*Pseudoalteromonas peptidolytica*, AF007286, Pseudoalteromonadaceae  
*Pseudoalteromonas rubra*, X82147, Pseudoalteromonadaceae  
*Pseudoalteromonas luteoviolacea*, X82144, Pseudoalteromonadaceae  
*Pseudoalteromonas ruthenica*, AF316891, Pseudoalteromonadaceae  
*Pseudoalteromonas spongiae*, AY769918, Pseudoalteromonadaceae  
*Pseudoalteromonas aurantia*, X82135, Pseudoalteromonadaceae  
*Pseudoalteromonas citrea*, X82137, Pseudoalteromonadaceae  
*Pseudoalteromonas phenolica*, AF332880, Pseudoalteromonadaceae  
*Pseudoalteromonas denitrificans*, X82138, Pseudoalteromonadaceae  
*Pseudoalteromonas tunicata*, Z25522, Pseudoalteromonadaceae  
*Pseudoalteromonas ulvae*, AF172987, Pseudoalteromonadaceae

**Colwelliaceae (15)**

*Colwellia psychrotropica*, U85846, Colwelliaceae  
*Colwellia rossensis*, U14581, Colwelliaceae  
*Colwellia maris*, AB002630, Colwelliaceae  
*Colwellia piezophila*, AB094412, Colwelliaceae  
*Colwellia psychrerythraea*, AB011364, Colwelliaceae, type sp.  
*Colwellia demingiae*, U85845, Colwelliaceae  
*Colwellia asteriadis*, EU599214, Colwelliaceae  
*Colwellia aestuarii*, DQ055844, Colwelliaceae  
*Colwellia polaris*, DQ007434, Colwelliaceae  
*Thalassomonas actiniarum*, AB369380, Colwelliaceae  
*Thalassomonas viridans*, AJ294747, Colwelliaceae, type sp.  
*Thalassomonas haliotis*, AB369381, Colwelliaceae  
*Thalassomonas agarivorans*, DQ212914, Colwelliaceae  
*Thalassomonas loyana*, AY643537, Colwelliaceae  
*Thalassomonas ganghwensis*, AY194066, Colwelliaceae

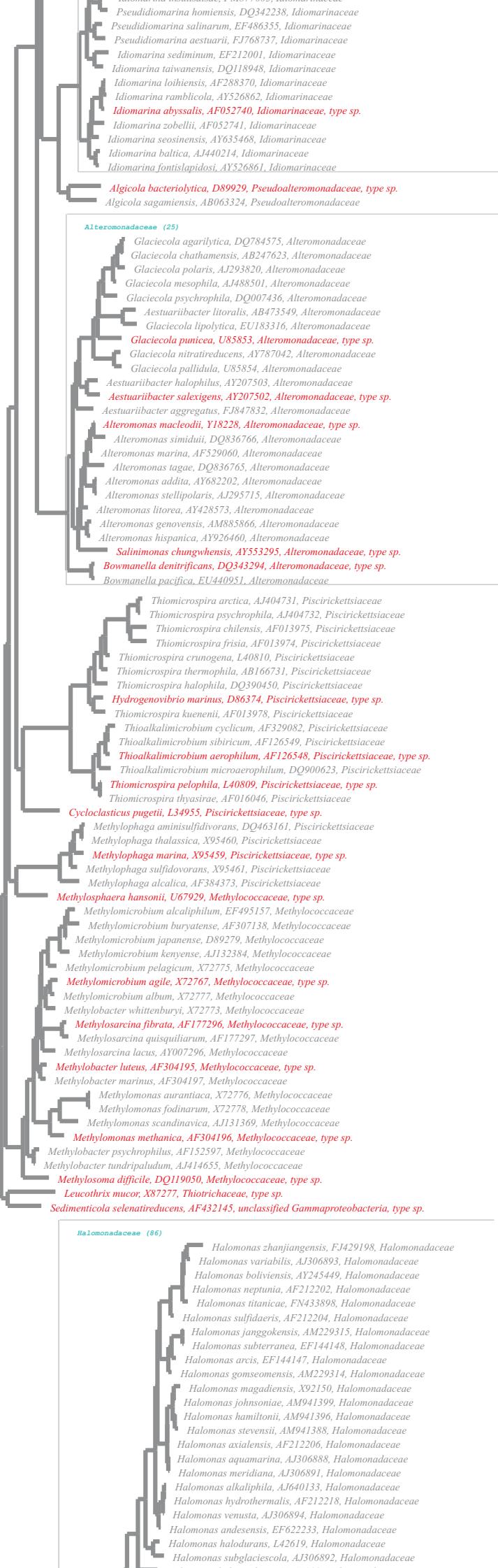
*Aliagarivorans marinus*, FJ167390, Alteromonadaceae, type sp.

*Aliagarivorans taiwanensis*, FJ167391, Alteromonadaceae

*Agarivorans albus*, AB076561, Alteromonadaceae, type sp.

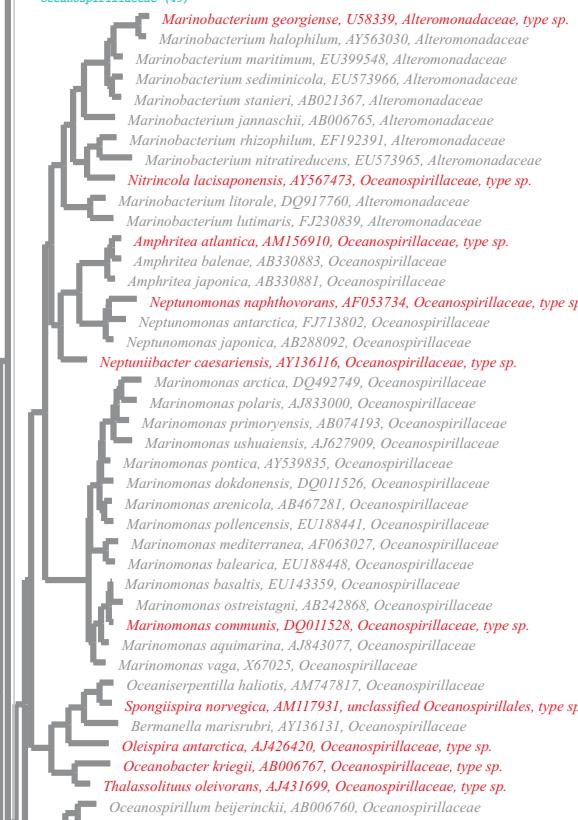
**Idiomarinaceae (17)**

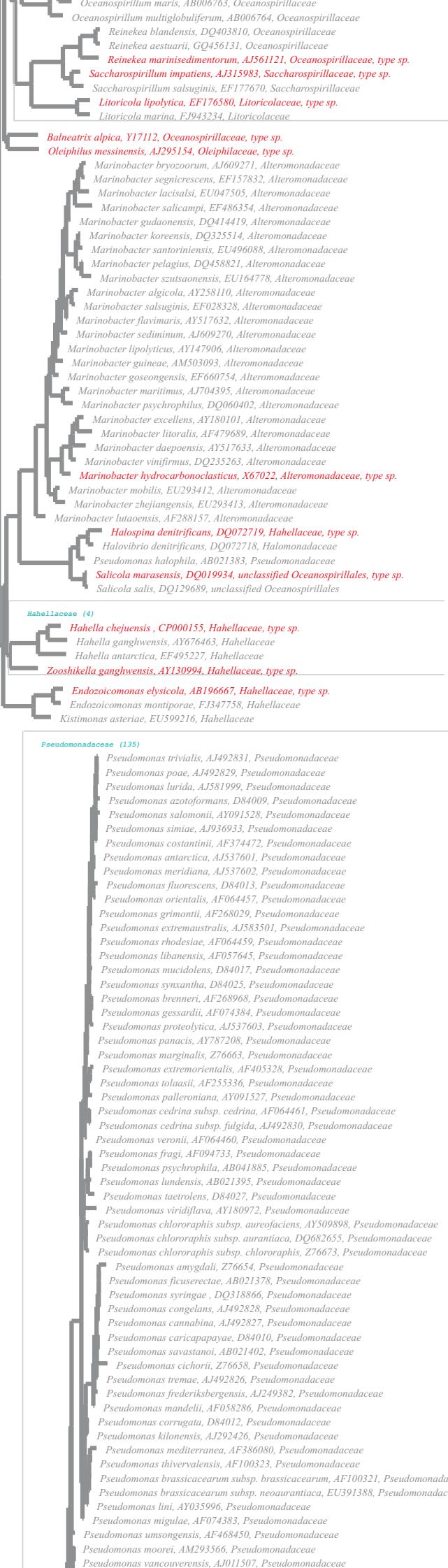
*Idiomarina maritima*, EU600203, Idiomarinaceae  
*Idiomarina tainanensis*, EU423907, Idiomarinaceae  
*Idiomarina marina*, EU423908, Idiomarinaceae  
*Idiomarina donghaiensis*, EU600204, Idiomarinaceae  
*Idiomarina insulsulae*, FM877003, Idiomarinaceae



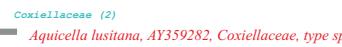
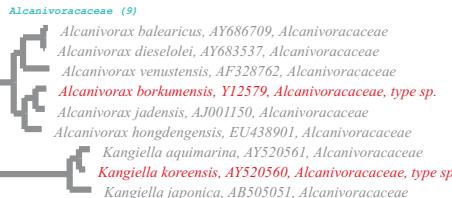


#### Oceanospirillaceae (49)

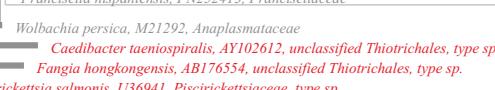




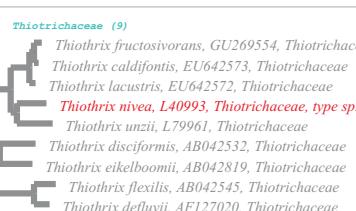




**Marinicella litoralis, AB500095, unclassified Gammaproteobacteria, type sp.**



**Piscirickettsia salmonis, U36941, Piscirickettsiaceae, type sp.**



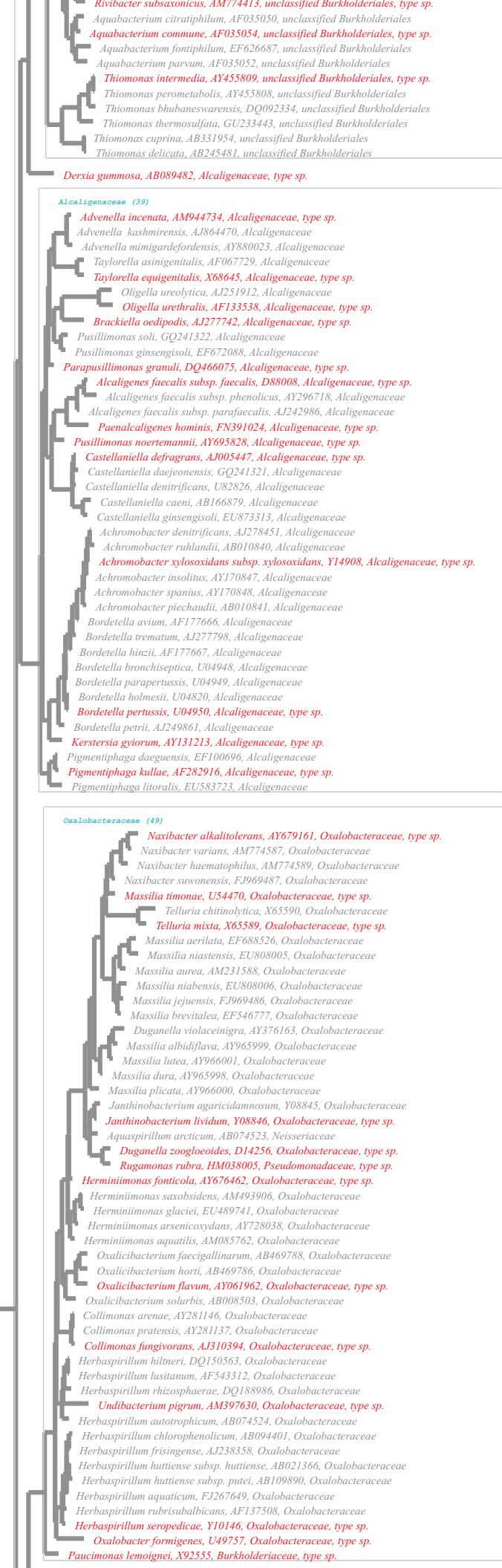
**Betaproteobacteria (439)**

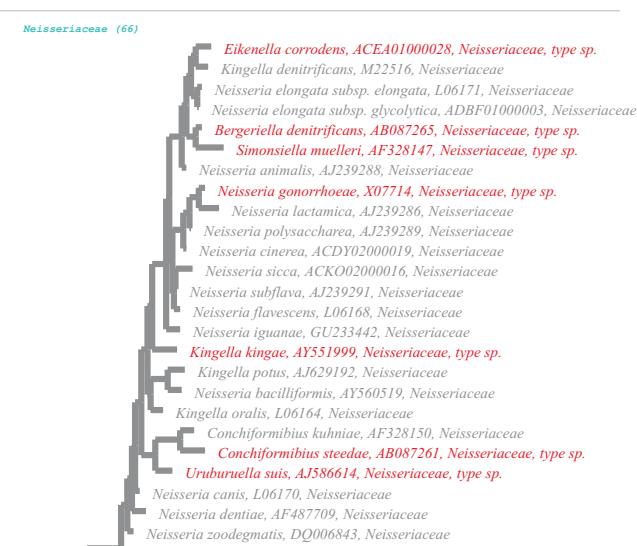
**Burkholderiales (305)**

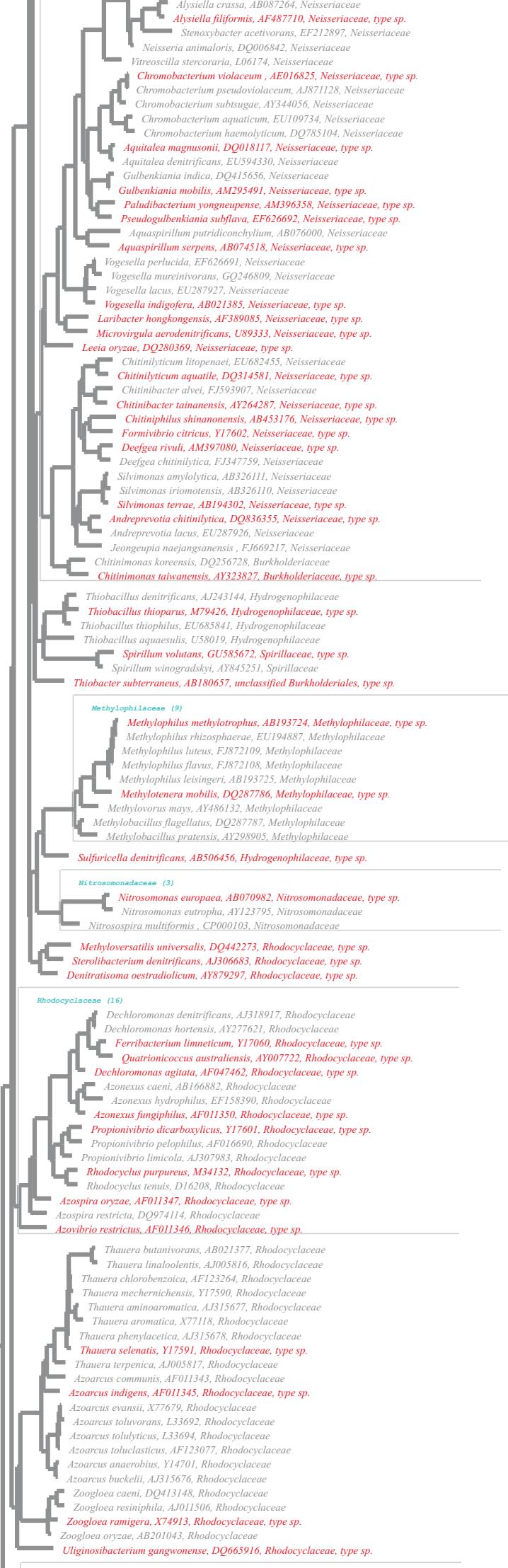
Comamonadaceae (128)

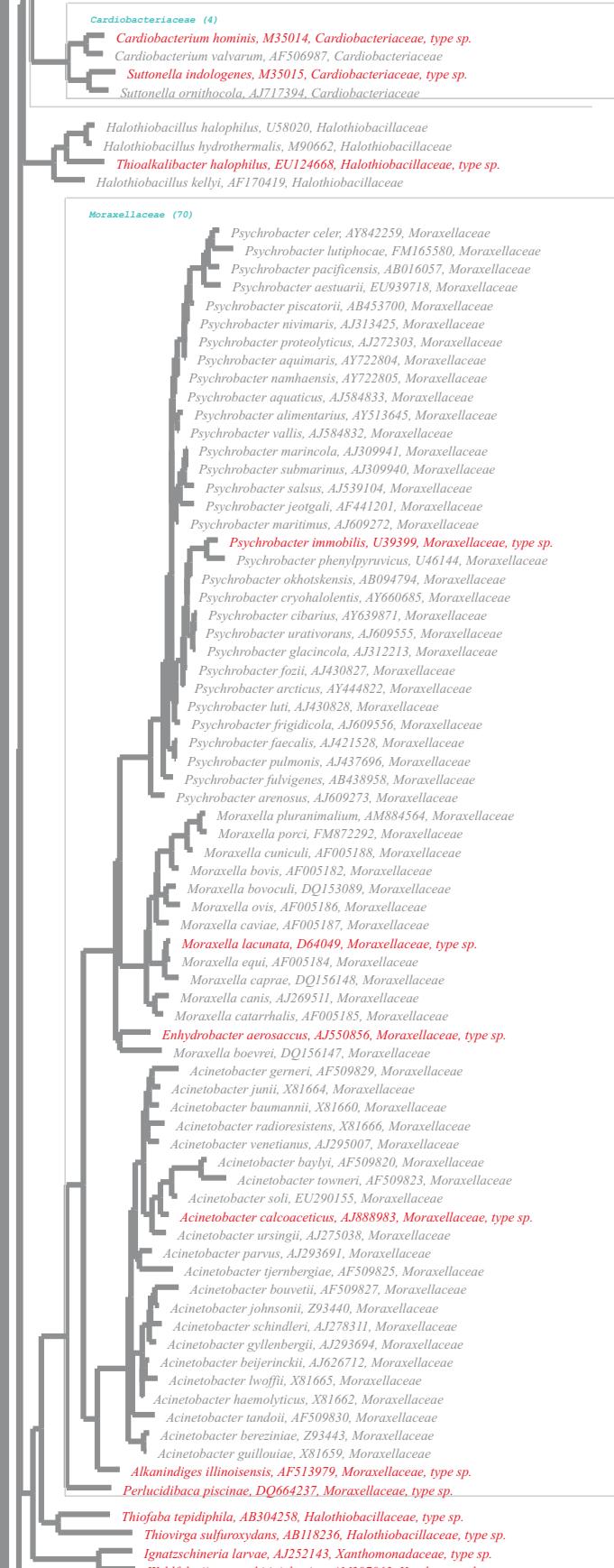
Brachymonas chironomi, EU346912, Comamonadaceae  
Brachymonas denitrificans, D14320, Comamonadaceae  
**Lampromedea hyalina, AB089485, Comamonadaceae, type sp.**  
Comamonas composti, EF015884, Comamonadaceae  
Delftia lacustris, EU888308, Comamonadaceae  
Delftia tsuruhatensis, AB075017, Comamonadaceae

*Deltiella acidovorans*, *AB021417*, *Comamonadaceae*, type sp.  
*Comamonas odontotermitis*, *DQ453128*, *Comamonadaceae*  
*Comamonas koreensis*, *AF275377*, *Comamonadaceae*  
*Comamonas denitrificans*, *AF233877*, *Comamonadaceae*  
*Comamonas nitrativorans*, *AJ251577*, *Comamonadaceae*  
*Comamonas aquatica*, *AJ430344*, *Comamonadaceae*  
*Comamonas kerstesii*, *AJ430347*, *Comamonadaceae*  
*Comamonas terrigena*, *AF078772*, *Comamonadaceae*, type sp.  
*Alicyclophilus denitrificans*, *AJ418042*, *Comamonadaceae*, type sp.  
*Comamonas badia*, *AB164432*, *Comamonadaceae*  
*Acidovorax caeni*, *AM084006*, *Comamonadaceae*  
*Diaphorobacter nitroreducens*, *AB064317*, *Comamonadaceae*, type sp.  
*Diaphorobacter oryzae*, *EU342381*, *Comamonadaceae*  
*Acidovorax defelfieldii*, *AF078764*, *Comamonadaceae*  
*Acidovorax soli*, *FJ599672*, *Comamonadaceae*  
*Verminephrobacter eiseniae*, *DQ327663*, *Comamonadaceae*, type sp.  
*Acidovorax defluvii*, *Y18616*, *Comamonadaceae*  
*Acidovorax facilis*, *AF078765*, *Comamonadaceae*, type sp.  
*Acidovorax temperans*, *AF078766*, *Comamonadaceae*  
*Acidovorax anthurii*, *AJ007013*, *Comamonadaceae*  
*Acidovorax valerianellae*, *AJ431731*, *Comamonadaceae*  
*Giesbergeria anulus*, *AB074527*, *Comamonadaceae*  
*Giesbergeria kuznetsovii*, *AY780907*, *Comamonadaceae*  
*Giesbergeria voronezhensis*, *AY780905*, *Comamonadaceae*, type sp.  
*Giesbergeria giesbergeri*, *AB074522*, *Comamonadaceae*  
*Giesbergeria sinuosa*, *AF078754*, *Comamonadaceae*  
*Pseudacidovorax intermedius*, *EF469609*, *Comamonadaceae*, type sp.  
*Acidovorax avenae*, *AF137505*, *Comamonadaceae*  
*Acidovorax cattleyae*, *AF137504*, *Comamonadaceae*  
*Acidovorax citrulli*, *AF137506*, *Comamonadaceae*  
*Acidovorax oryzae*, *DQ360414*, *Comamonadaceae*  
*Acidovorax konjacii*, *AJ420325*, *Comamonadaceae*  
*Simplicispira psychrophila*, *AF078755*, *Comamonadaceae*  
*Simplicispira limi*, *DQ372987*, *Comamonadaceae*  
*Simplicispira metamorpha*, *Y18618*, *Comamonadaceae*, type sp.  
*Xenophilus aerolatus*, *EF660342*, *Comamonadaceae*  
*Xenophilus azovorans*, *AF285414*, *Comamonadaceae*, type sp.  
*Xylophilus amplus*, *AJ420330*, unclassified *Burkholderiales*, type sp.  
*Hylemonella gracilis*, *AF078753*, *Comamonadaceae*, type sp.  
*Ottovia thiooxydans*, *AJ537466*, *Comamonadaceae*, type sp.  
*Ramlibacter henchirensis*, *AF439400*, *Comamonadaceae*  
*Ramlibacter tataouinensis*, *AF144383*, *Comamonadaceae*, type sp.  
*Caenimonas koreensis*, *DQ349098*, *Comamonadaceae*, type sp.  
*Variovorax boronicumulans*, *AB300597*, *Comamonadaceae*  
*Variovorax ginsengisoli*, *AB245358*, *Comamonadaceae*  
*Variovorax paradoxus*, *AJ420329*, *Comamonadaceae*, type sp.  
*Variovorax dokdonensis*, *DQ178978*, *Comamonadaceae*  
*Variovorax soli*, *DQ432053*, *Comamonadaceae*  
*Polaromonas aquatica*, *AM039830*, *Comamonadaceae*  
*Polaromonas vacuolata*, *U14585*, *Comamonadaceae*, type sp.  
*Polaromonas hydrogenivorans*, *DQ094183*, *Comamonadaceae*  
*Polaromonas naphthalenivorans*, *AY166684*, *Comamonadaceae*  
*Polaromonas jejuensis*, *EU030285*, *Comamonadaceae*  
*Curvibacter gracilis*, *AB109889*, *Comamonadaceae*, type sp.  
*Curvibacter lanceolatus*, *AB021390*, *Comamonadaceae*  
*Curvibacter delicatus*, *AF078756*, *Comamonadaceae*  
*Curvibacter fontanus*, *AB120963*, *Comamonadaceae*  
*Rhodoferax antarcticus*, *GU233447*, *Comamonadaceae*  
*Rhodoferax fermentans*, *D16211*, *Comamonadaceae*, type sp.  
*Albidiferax ferriducens*, *CP000267*, *Comamonadaceae*, type sp.  
*Pseudorhodoferax soli*, *EU825700*, *Comamonadaceae*, type sp.  
*Pseudorhodoferax caeni*, *AF606333*, *Comamonadaceae*  
*Limnohabitans australis*, *FM178226*, *Comamonadaceae*  
*Limnohabitans curvus*, *AJ938026*, *Comamonadaceae*, type sp.  
*Limnohabitans planktonicus*, *FM165535*, *Comamonadaceae*  
*Limnohabitans parvus*, *FM165536*, *Comamonadaceae*  
*Hydrogenophaga caeni*, *DQ372983*, *Comamonadaceae*  
*Hydrogenophaga defluvii*, *AJ585993*, *Comamonadaceae*  
*Hydrogenophaga atypica*, *AJ585992*, *Comamonadaceae*  
*Hydrogenophaga palleronii*, *AF078769*, *Comamonadaceae*  
*Hydrogenophaga taeniopiralis*, *AF078768*, *Comamonadaceae*  
*Hydrogenophaga intermedia*, *AF019037*, *Comamonadaceae*  
*Hydrogenophaga bisanensis*, *EF532793*, *Comamonadaceae*  
*Hydrogenophaga pseudoflava*, *AF078770*, *Comamonadaceae*  
*Hydrogenophaga flava*, *AF078771*, *Comamonadaceae*, type sp.  
*Malikia granosa*, *AJ627188*, *Comamonadaceae*, type sp.  
*Malikia spinosa*, *AB077038*, *Comamonadaceae*  
*Macromonas bipunctata*, *AB077037*, *Comamonadaceae*  
*Tepidimona xavieri*, *DQ295805*, *Comamonadaceae*, type sp.  
*Tepidimona aquatica*, *AT324139*, unclassified *Burkholderiales*  
*Tepidimona ignava*, *AF177943*, unclassified *Burkholderiales*, type sp.  
*Tepidimona taiwanensis*, *AY845054*, unclassified *Burkholderiales*  
*Tepidimona thermarum*, *AM042693*, unclassified *Burkholderiales*  
*Caldimonas manganoxidans*, *AB008801*, *Comamonadaceae*, type sp.  
*Caldimonas taiwanensis*, *AY845052*, *Comamonadaceae*  
*Schlegelella aquatica*, *DQ417336*, *Comamonadaceae*  
*Schlegelella thermodepolymerans*, *AY152824*, *Comamonadaceae*, type sp.  
*Roseateles depolymerans*, *AB003623*, *Comamonadaceae*, type sp.  
*Roseateles traeae*, *AM501445*, *Comamonadaceae*  
*Roseateles aquatilis*, *AM501446*, *Comamonadaceae*  
*Kinneretia asaccharophila*, *AT136099*, *Comamonadaceae*  
*Mitsuriaria chitosanitabida*, *AB006851*, unclassified *Burkholderiales*, type sp.  
*Pelomonas aquatica*, *AM501435*, *Comamonadaceae*  
*Pelomonas saccharophila*, *AB021407*, *Comamonadaceae*, type sp.  
*Pelomonas puraque*, *AM501439*, *Comamonadaceae*  
*Pauicibacter toxinivorans*, *AY515390*, unclassified *Burkholderiales*, type sp.  
*Inhella inkyngensis*, *DQ664238*, unclassified *Burkholderiales*, type sp.  
*Vitreoscilla filiformis*, *HM037993*, *Neisseriaceae*  
*Leptothrix discophora*, *L33975*, unclassified *Burkholderiales*  
*Ideonella dechloratans*, *X72724*, unclassified *Burkholderiales*, type sp.  
*Ideonella azotifigens*, *EU542576*, unclassified *Burkholderiales*  
*Aquincola tertiaricarbonis*, *DQ656489*, unclassified *Burkholderiales*, type sp.  
*Azohydromonas australica*, *AB188124*, *Alcaligenaceae*  
*Rubrivivax benzoatilyticus*, *AJ888903*, unclassified *Burkholderiales*  
*Rubrivivax gelatinosus*, *D16213*, unclassified *Burkholderiales*, type sp.  
*Azohydromonas lata*, *AB188125*, *Alcaligenaceae*, type sp.  
*Leptothrix mobilis*, *X97071*, unclassified *Burkholderiales*  
*Rhizobacter fulvis*, *AB245356*, *Pseudomonadaceae*  
*Rhizobacter dauci*, *AB297965*, *Pseudomonadaceae*, type sp.  
*Piscinibacter aquaticus*, *DQ664244*, unclassified *Burkholderiales*, type sp.  
*Methylibium petroleiphilum*, *AT176594*, unclassified *Burkholderiales*, type sp.  
*Thiotricha* sp., *AT176595*, unclassified *Burkholderiales*, type sp.

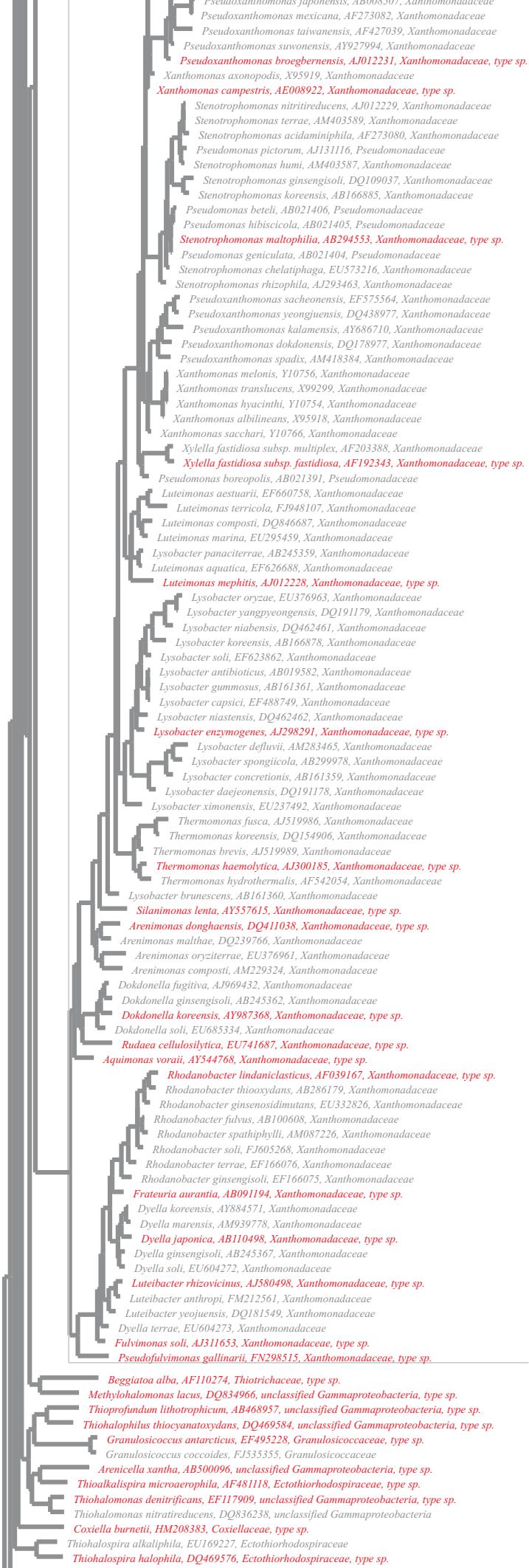


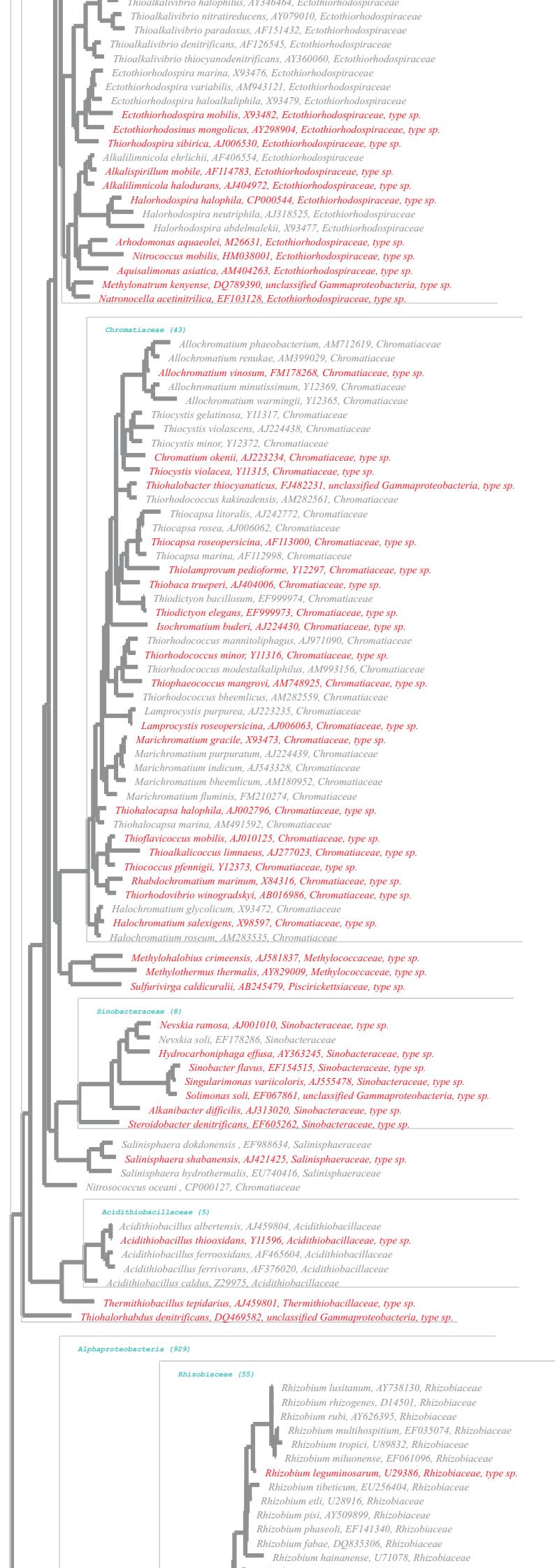


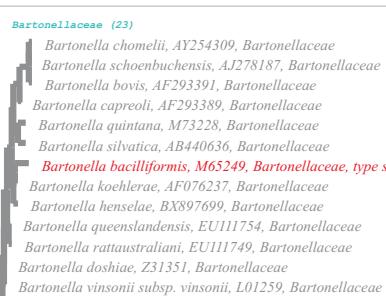
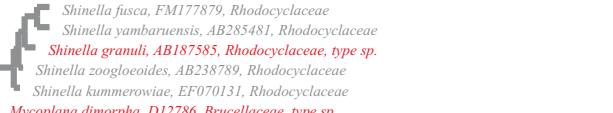


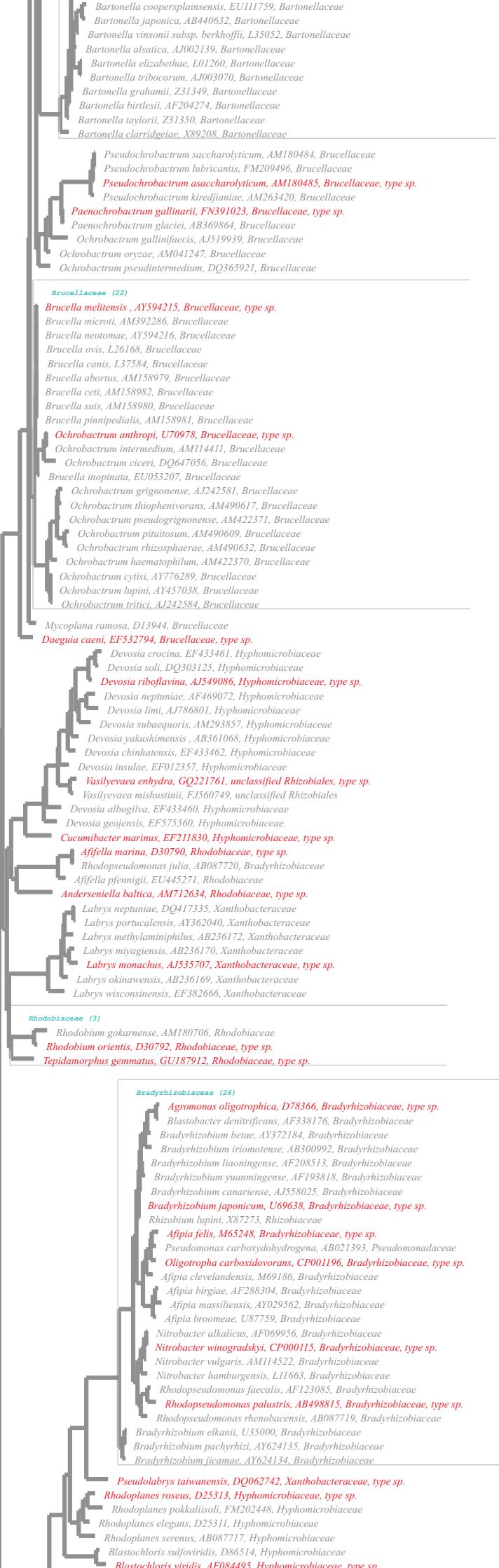


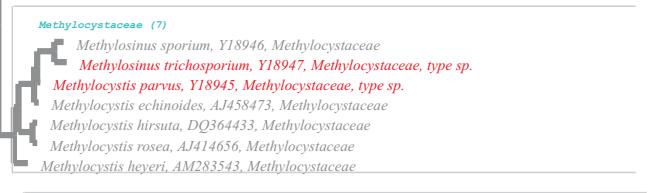
*Thiobaba tepidiphila*, AB304258, *Halothiobacillaceae*, type sp.  
*Thiovirga sulfuroxydans*, AB118236, *Halothiobacillaceae*, type sp.  
*Ignatzschineria larvae*, AJ252143, *Xanthomonadaceae*, type sp.  
*Wolffahrtiimonas chitiniclastica*, AM397063, *Xanthomonadaceae*, type sp.





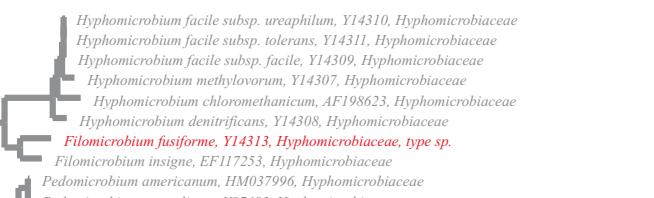
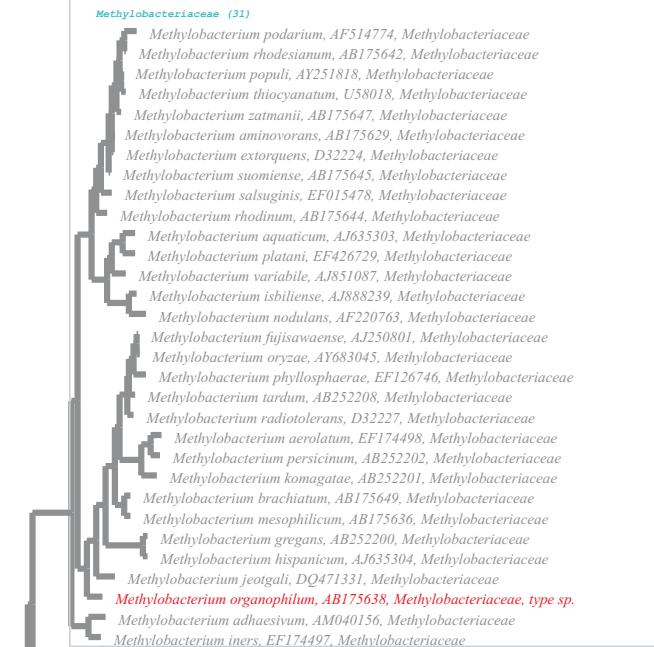


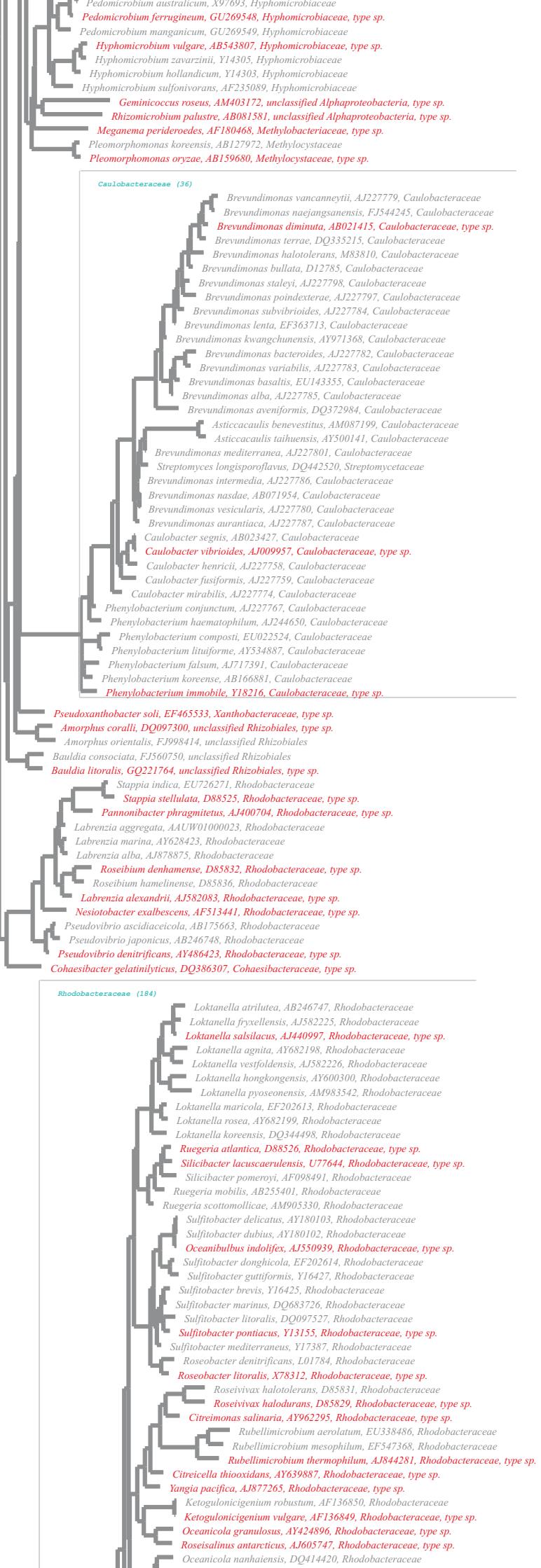




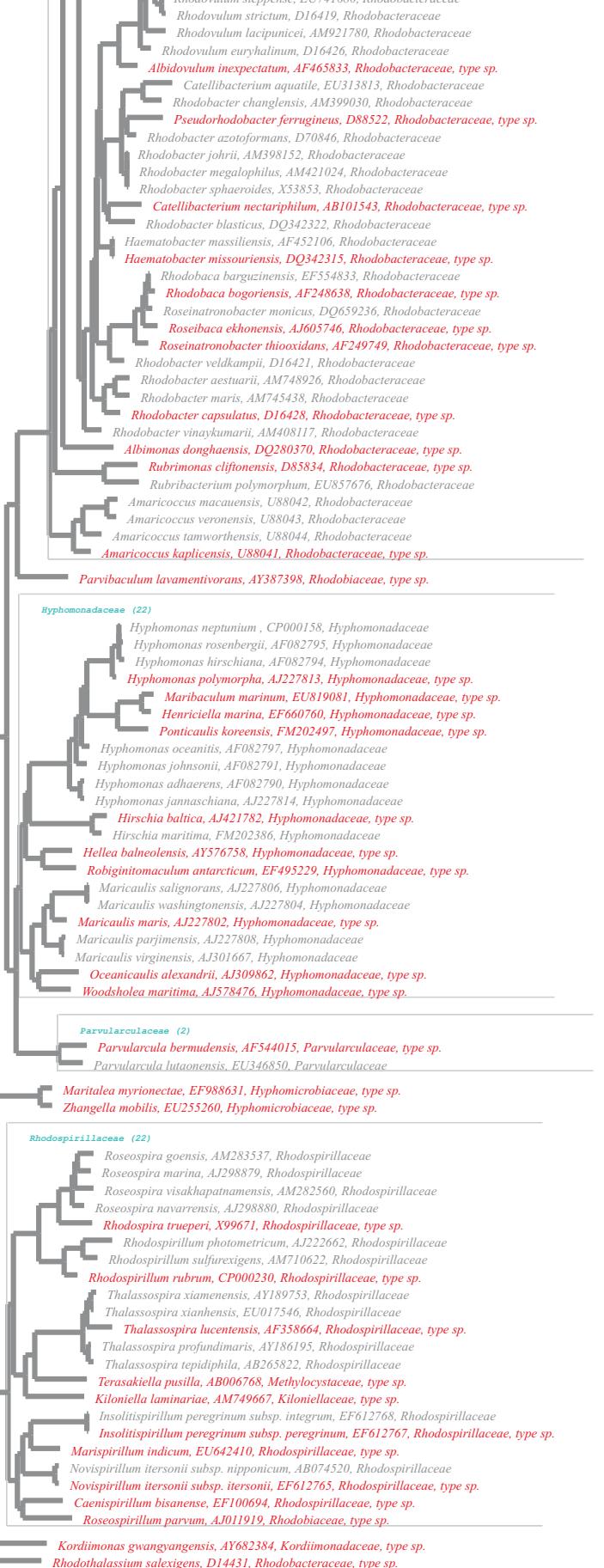
Rhodoblastus sphagnicola, AM040096, Bradyrhizobiaceae

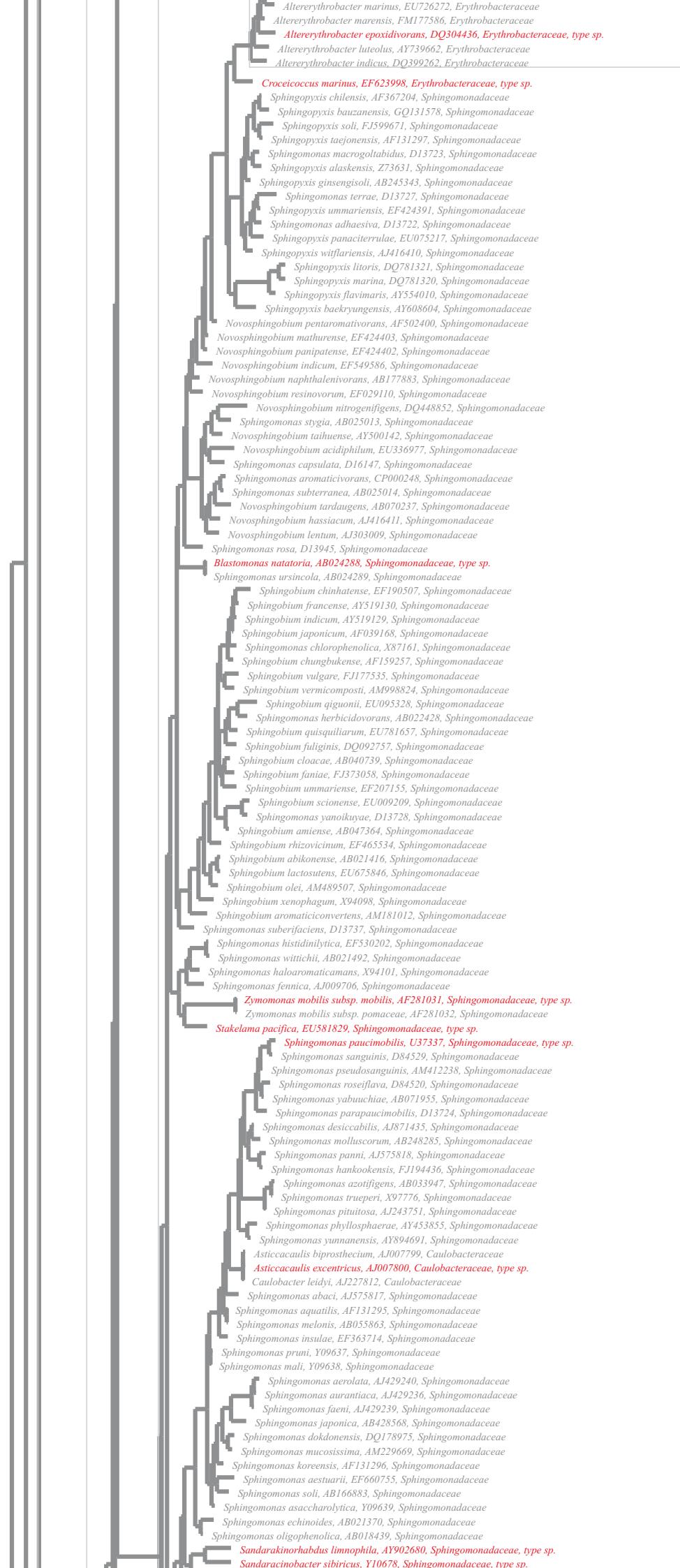
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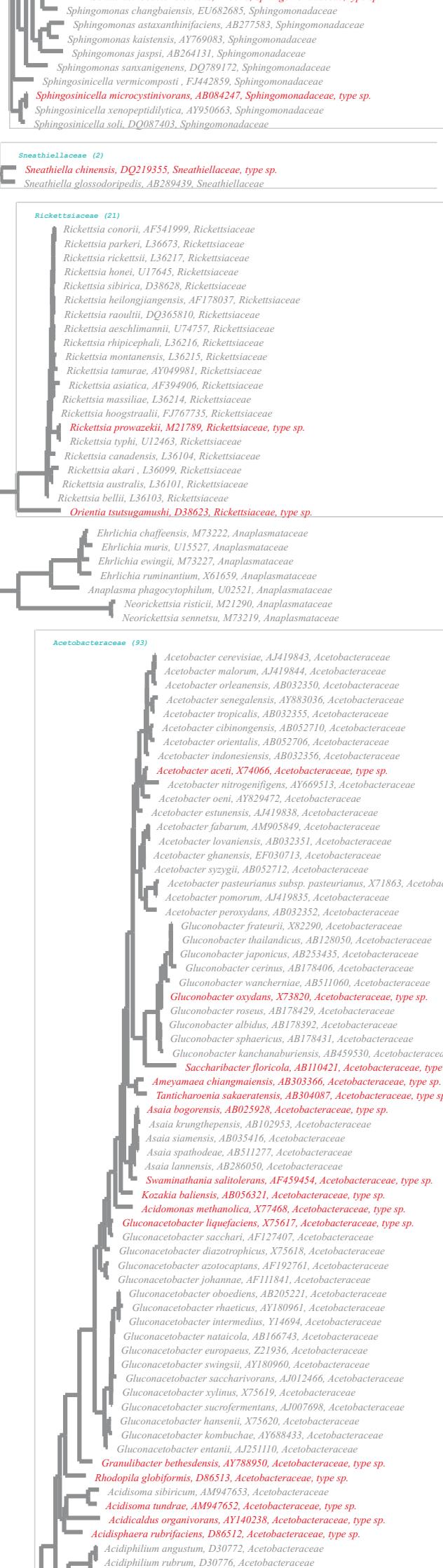


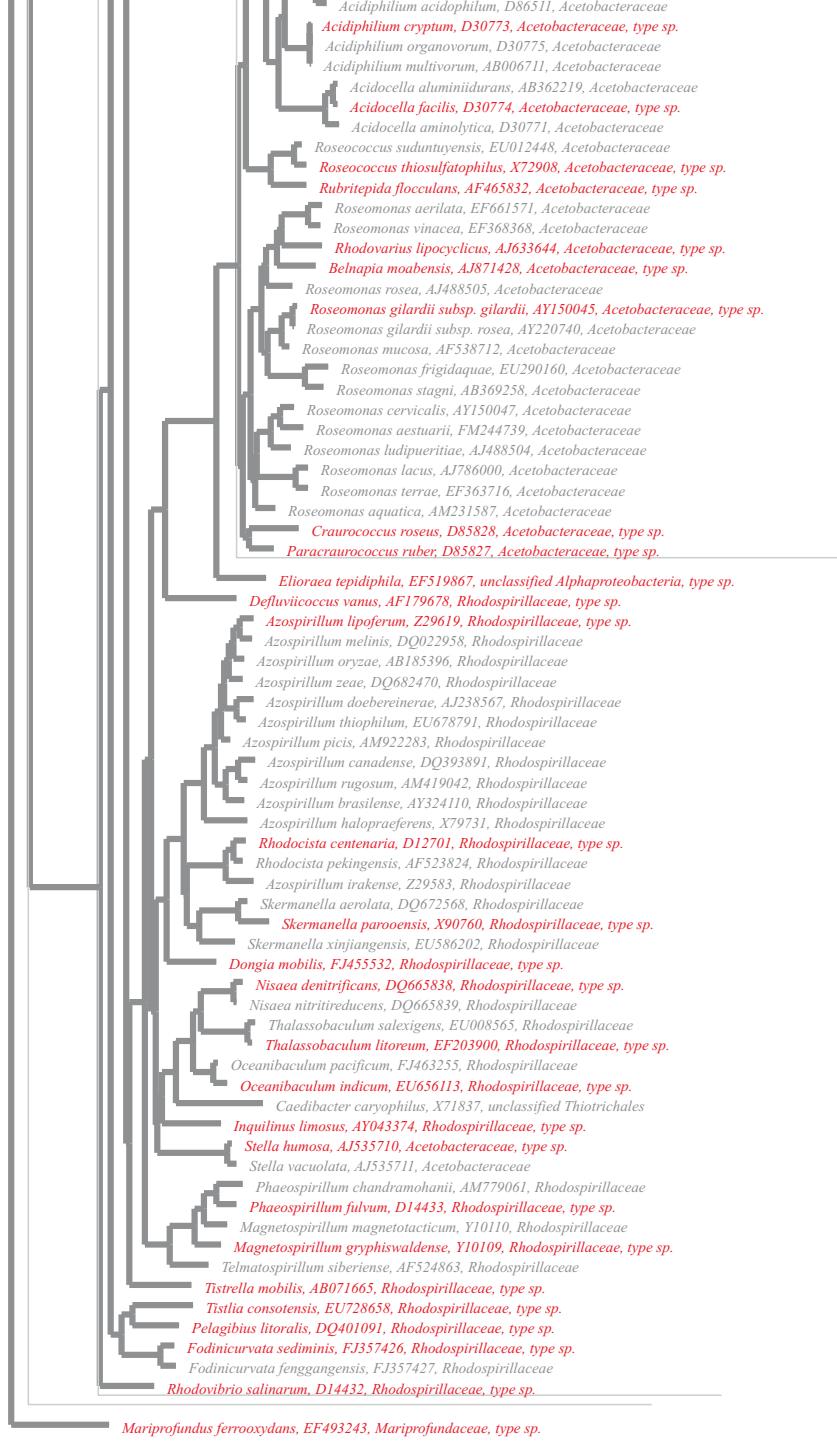




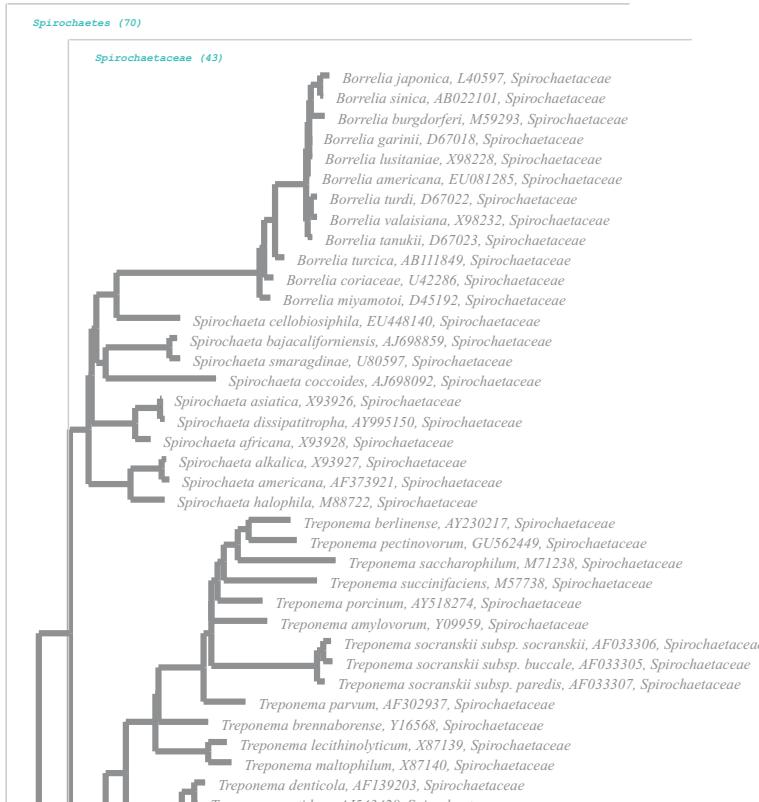


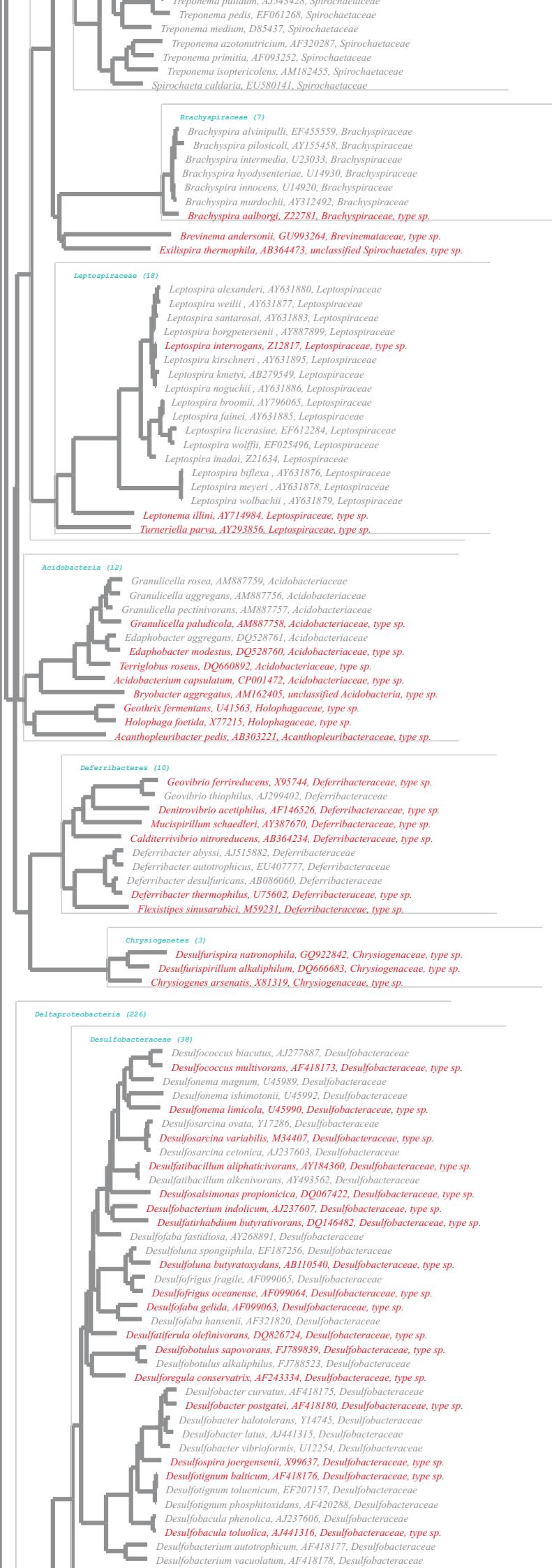


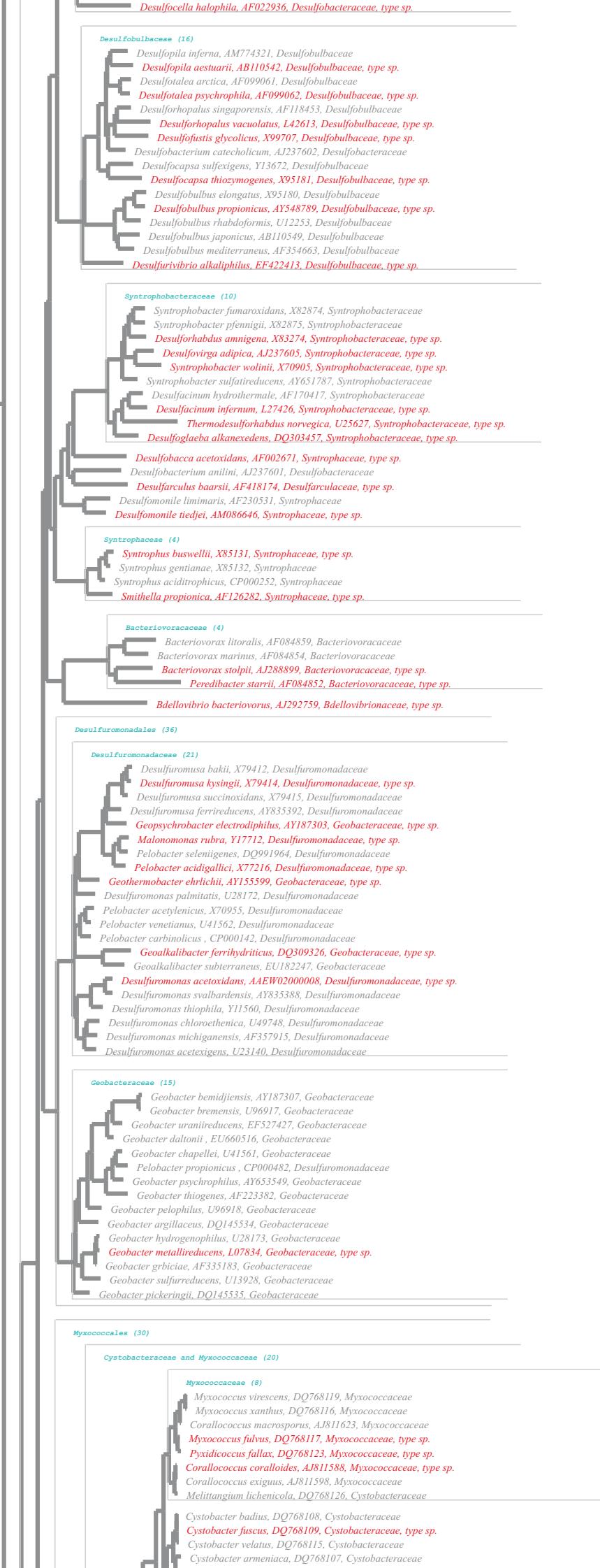


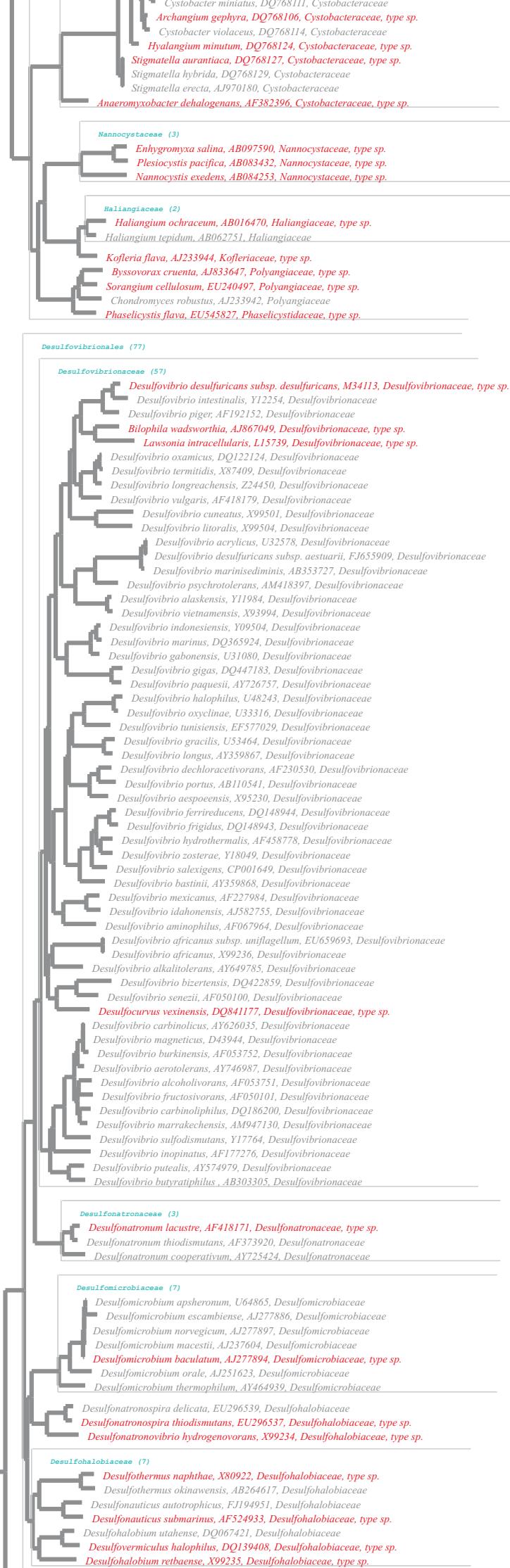


*Mariprofundus ferrooxydans*, EF493243, Mariprofundaceae, type sp.

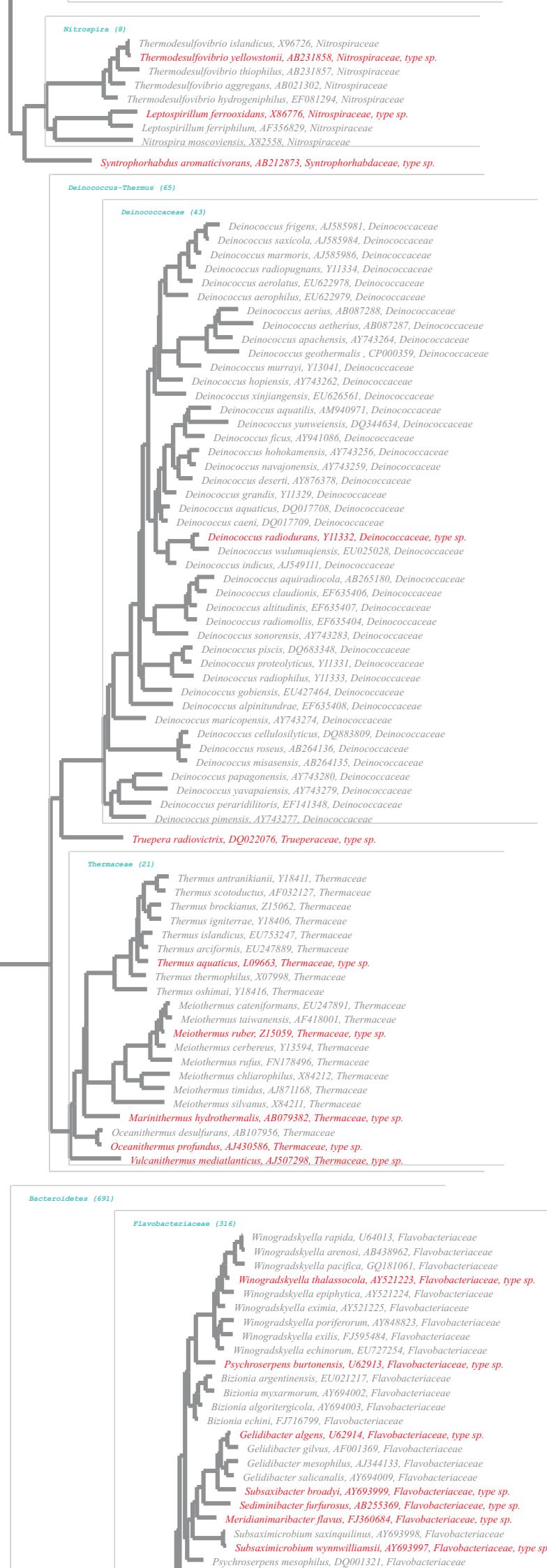


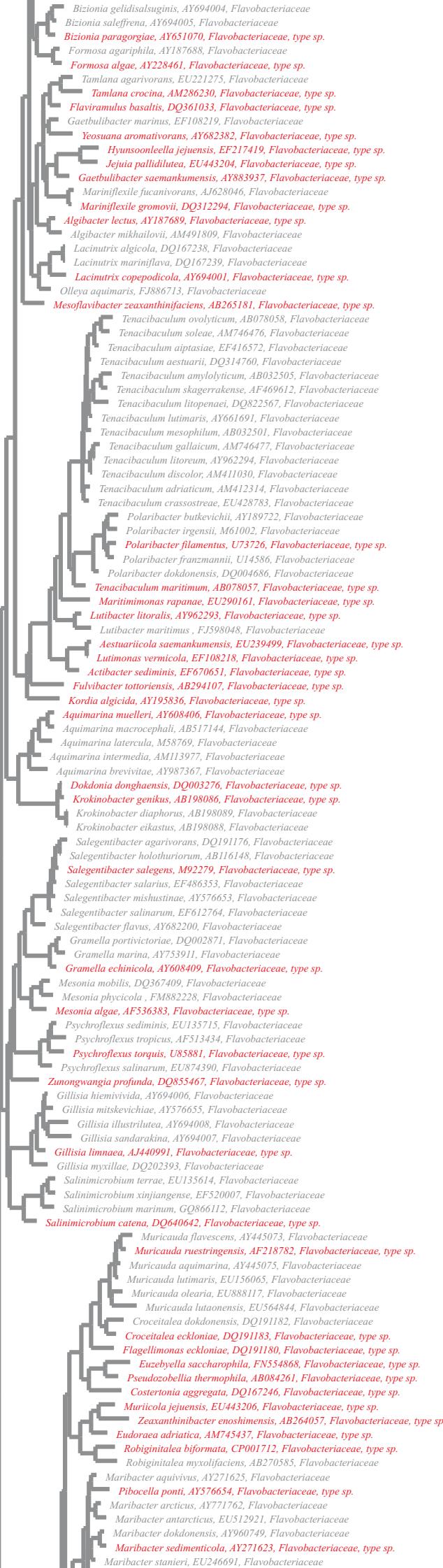


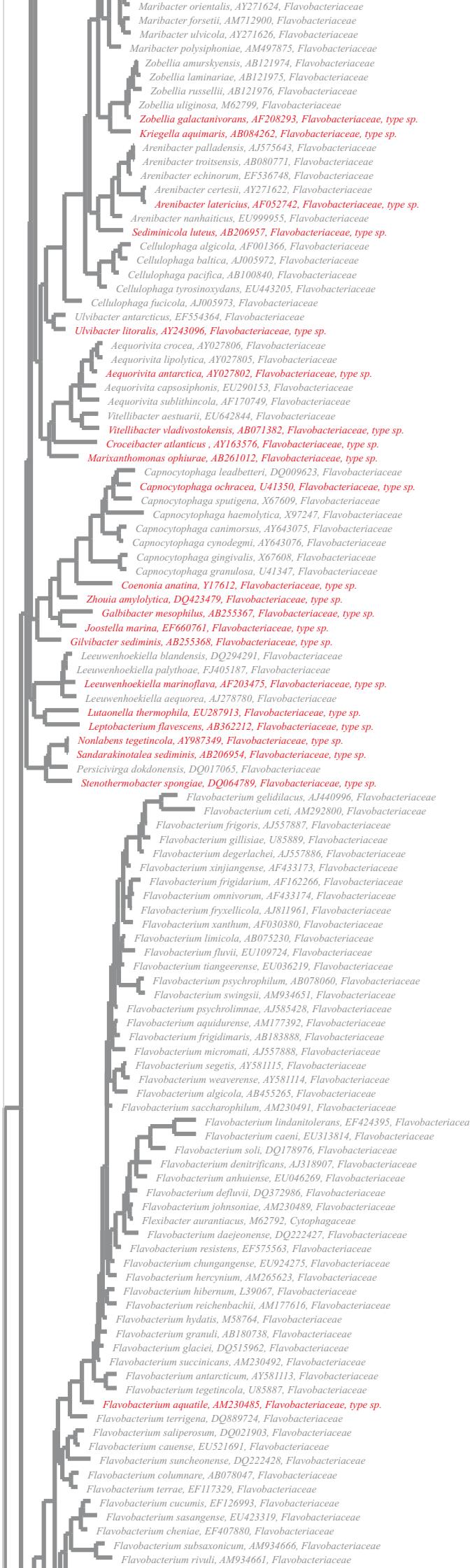




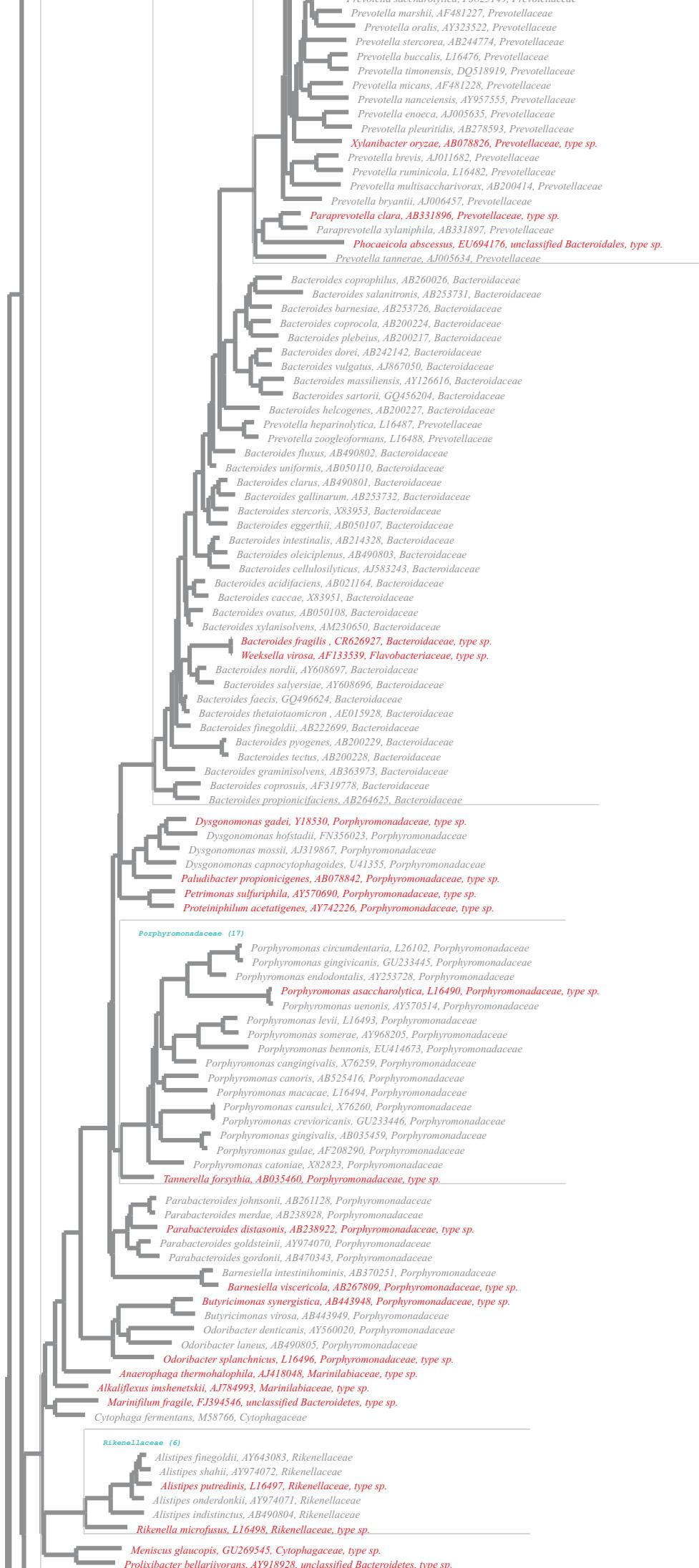


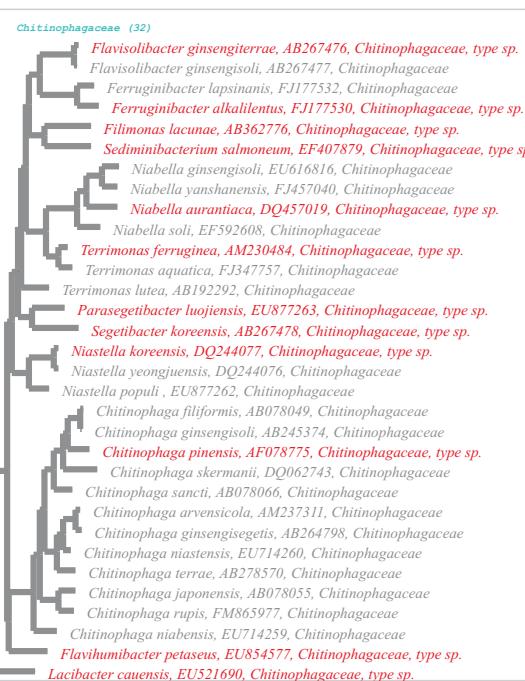
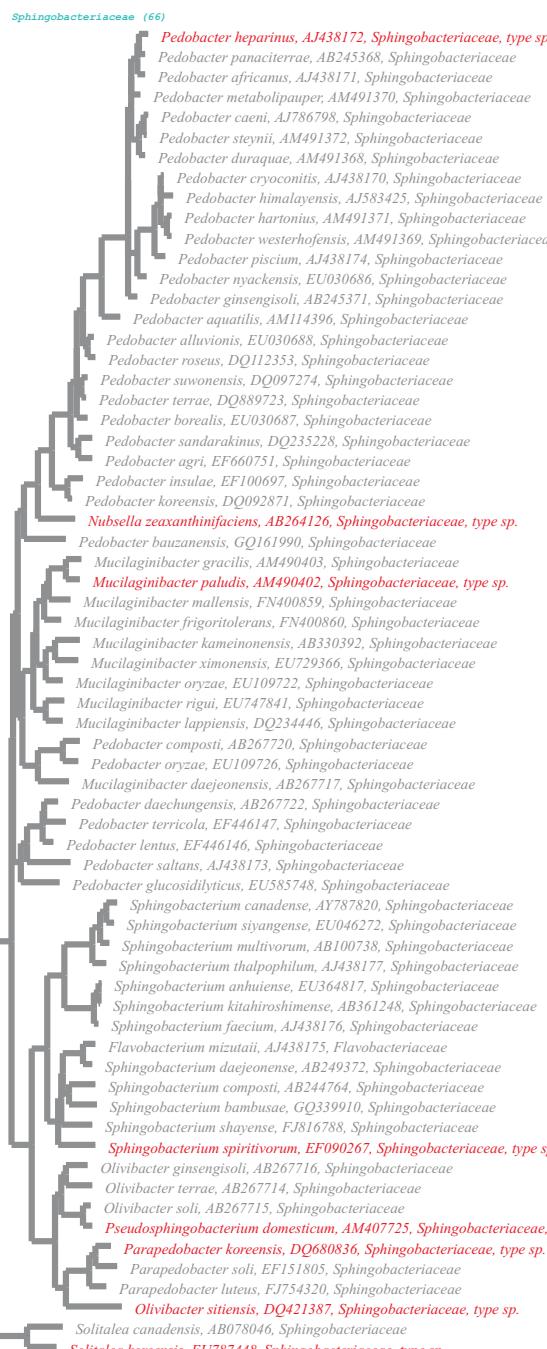




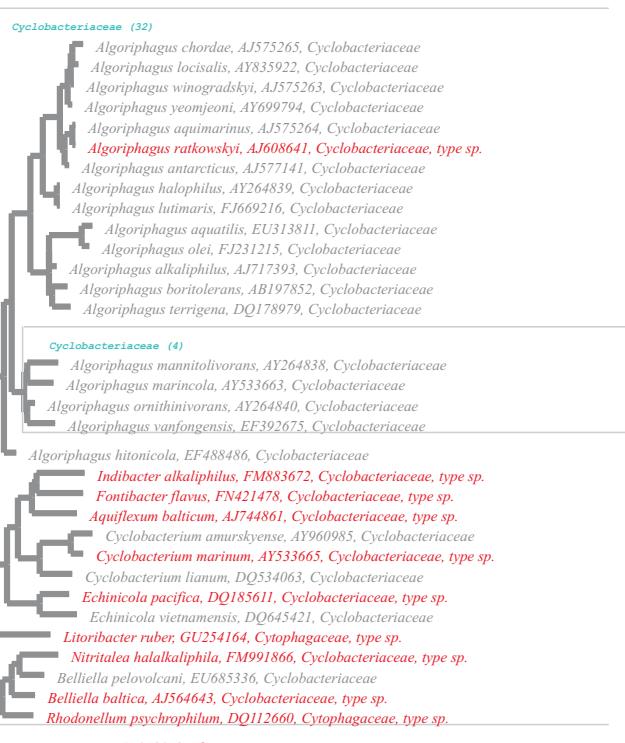
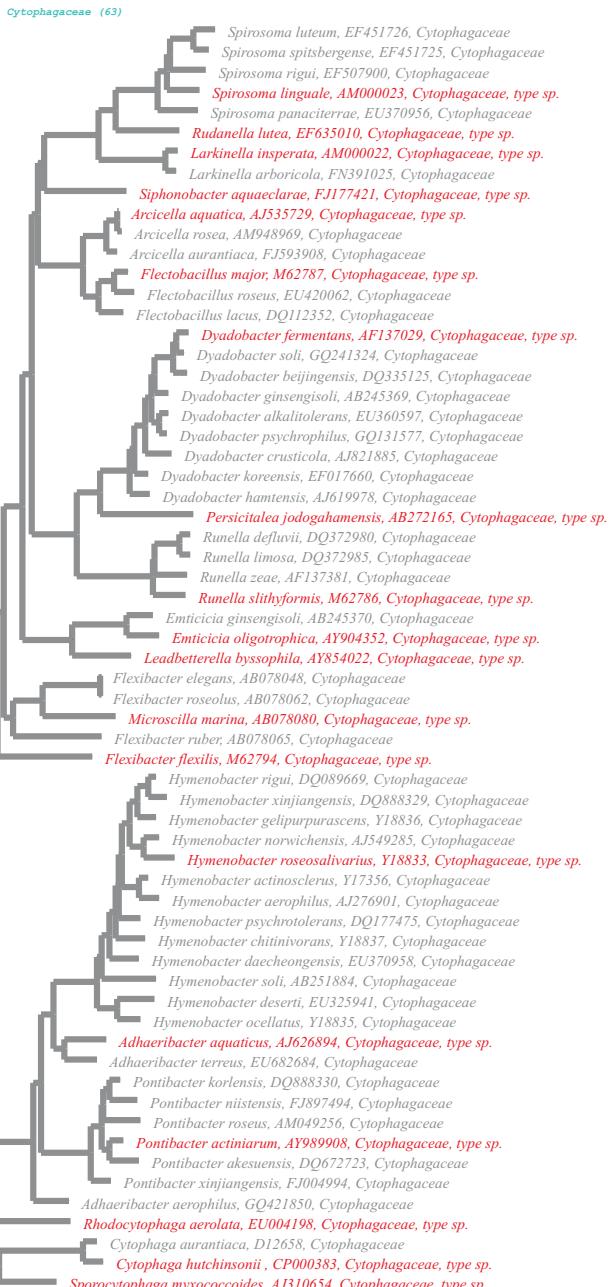




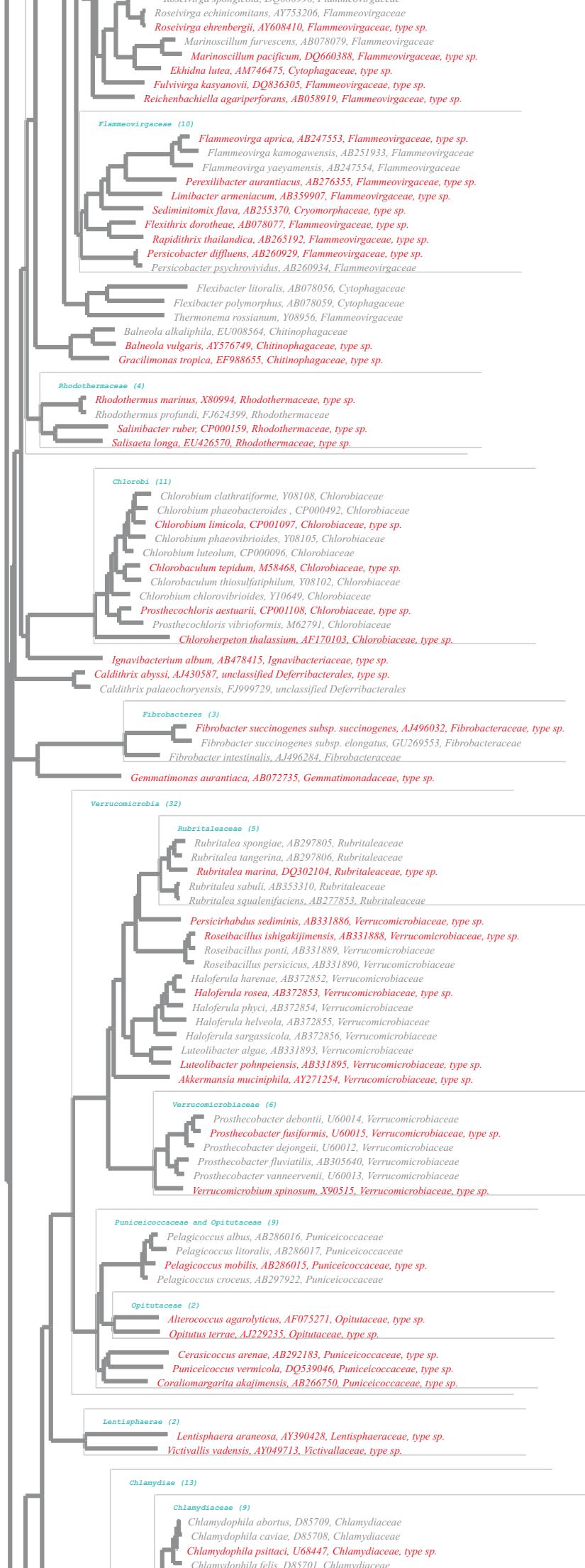




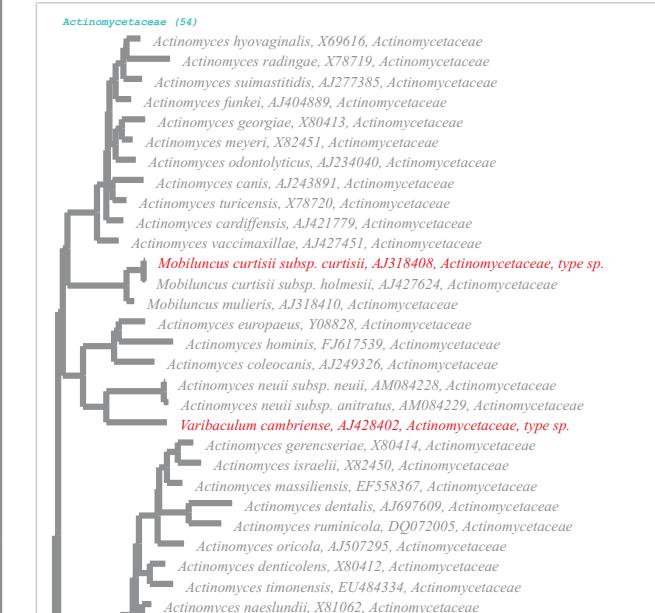
*Lewinella pescia*, AF052293, *Sapspiraceae*  
*Lewinella nigricans*, AF039294, *Sapspiraceae*  
*Haliscomenobacter hydrossis*, AJ784892, *Sapspiraceae*, type sp.  
*Aureispira marina*, AB245933, *Sapspiraceae*, type sp.  
*Aureispira maritima*, AB278130, *Sapspiraceae*



*Marivirga tractuosa*, AB078072, *Flammeovirgaceae*, type sp.  
*Marivirga sericea*, AB078081, *Flammeovirgaceae*  
*Fabibacter halotolerans*, DQ080995, *Flammeovirgaceae*, type sp.  
*Roseivirga spongicola*, DQ080996, *Flammeovirgaceae*









**Microbacteriaceae (185)**

*Microbacterium hatanonis*, AB274908, *Microbacteriaceae*

- Microbacterium invictum*, AM949677, Microbacteriaceae  
*Microbacterium aurum*, Y17229, Microbacteriaceae  
*Microbacterium lacus*, AB286030, Microbacteriaceae  
*Microbacterium terregens*, AB004721, Microbacteriaceae  
*Microbacterium terricola*, AB234025, Microbacteriaceae  
*Microbacterium pygmaeum*, AB248875, Microbacteriaceae  
***Microbacterium lacticum*, X77441, Microbacteriaceae, type sp.**  
*Microbacterium schleiferi*, Y17237, Microbacteriaceae  
*Microbacterium flavum*, AB286029, Microbacteriaceae  
*Microbacterium koreense*, AY962574, Microbacteriaceae  
*Microbacterium aoyamense*, AB234028, Microbacteriaceae  
*Microbacterium deminutum*, AB234026, Microbacteriaceae  
*Microbacterium pumilum*, AB234027, Microbacteriaceae  
*Microbacterium fluvii*, AB286028, Microbacteriaceae  
*Microbacterium avajiense*, AB286027, Microbacteriaceae  
*Microbacterium laevaniformans*, Y17234, Microbacteriaceae  
*Microbacterium aurantiacum*, AB004726, Microbacteriaceae  
*Microbacterium kitamiense*, AB013907, Microbacteriaceae  
*Microbacterium chocolatum*, AB004725, Microbacteriaceae  
*Microbacterium dextranolyticum*, Y17230, Microbacteriaceae  
*Microbacterium soli*, EF593038, Microbacteriaceae  
*Microbacterium xylinolyticum*, AJ853908, Microbacteriaceae  
*Microbacterium hominis*, AM181504, Microbacteriaceae  
*Microbacterium halophilum*, AB004714, Microbacteriaceae  
*Microbacterium insulae*, EU239498, Microbacteriaceae  
*Microbacterium trichothecenolyticum*, Y17240, Microbacteriaceae  
*Microbacterium flavescentis*, Y17232, Microbacteriaceae  
*Microbacterium ketosireducens*, AB004724, Microbacteriaceae  
*Microbacterium terrae*, AB004720, Microbacteriaceae  
*Microbacterium thalassium*, AM181507, Microbacteriaceae  
*Microbacterium oleivorans*, AJ698725, Microbacteriaceae  
*Microbacterium testaceum*, X77445, Microbacteriaceae  
*Microbacterium arborescens*, X77443, Microbacteriaceae  
*Microbacterium imperiale*, X77442, Microbacteriaceae  
*Microbacterium ginsengisoli*, AB271048, Microbacteriaceae  
*Microbacterium radiodurans*, GG329713, Microbacteriaceae  
*Microbacterium marinilacus*, AB286020, Microbacteriaceae  
*Microbacterium paludicola*, AJ853909, Microbacteriaceae  
*Microbacterium sedimentincola*, AB286021, Microbacteriaceae  
*Microbacterium kribbensense*, EF466125, Microbacteriaceae  
*Microbacterium ulmi*, AY062021, Microbacteriaceae  
*Microbacterium gubbeense*, AF263563, Microbacteriaceae  
*Microbacterium indicum*, AM158907, Microbacteriaceae  
*Microbacterium barkeri*, X77446, Microbacteriaceae  
*Microbacterium luticocci*, AM747814, Microbacteriaceae  
*Microbacterium aquimaris*, AM778449, Microbacteriaceae  
*Microbacterium pseudoresistens*, FJ865214, Microbacteriaceae  
*Microbacterium aerolatum*, AJ309929, Microbacteriaceae  
*Microbacterium paraoxydans*, AJ491806, Microbacteriaceae  
*Microbacterium ginsengiterrae*, EU873314, Microbacteriaceae  
*Microbacterium maritipicum*, AJ853910, Microbacteriaceae  
*Microbacterium oxydans*, Y17227, Microbacteriaceae  
*Microbacterium liquefaciens*, X77444, Microbacteriaceae  
*Microbacterium litoeolum*, AB004718, Microbacteriaceae  
*Microbacterium saperdae*, AB004719, Microbacteriaceae  
*Microbacterium foliorum*, AJ249780, Microbacteriaceae  
*Microbacterium hydrocarbonoxydans*, AJ698726, Microbacteriaceae  
*Microbacterium phyllosphearae*, AJ277840, Microbacteriaceae  
*Microbacterium binotii*, EF567306, Microbacteriaceae  
*Microbacterium halotolerans*, AT376165, Microbacteriaceae  
*Microbacterium profundi*, EF623999, Microbacteriaceae  
*Microbacterium keratanolyticum*, AB004717, Microbacteriaceae  
*Microbacterium natoriense*, AY566291, Microbacteriaceae  
*Microbacterium resistens*, Y14699, Microbacteriaceae  
*Microbacterium arabinogalactanolyticum*, Y17228, Microbacteriaceae  
*Microbacterium esteraromaticum*, Y17231, Microbacteriaceae  
*Microbacterium agarici*, FJ807673, Microbacteriaceae  
*Microbacterium lindanitolerans*, EU873539, Microbacteriaceae  
*Microbacterium humi*, FJ865215, Microbacteriaceae  
*Mycetocola lacteus*, AB012648, Microbacteriaceae  
***Mycetocola saprophilus*, AB012647, Microbacteriaceae, type sp.**  
*Mycetocola tolaasinivorans*, AB012646, Microbacteriaceae  
*Mycetocola reblochoni*, DQ062097, Microbacteriaceae  
*Plantibacter auratus*, AB177868, Microbacteriaceae  
*Plantibacter flavus*, AJ310417, Microbacteriaceae, type sp.  
***Okibacterium fritillariae*, AB042094, Microbacteriaceae, type sp.**  
*Cryobacterium roopkundense*, EF467640, Microbacteriaceae  
***Cryobacterium psychrophilum*, AJ544063, Microbacteriaceae, type sp.**  
*Cryobacterium psychrotolerans*, DQ515963, Microbacteriaceae  
***Labedella gwakjiensis*, DQ533552, Microbacteriaceae, type sp.**  
*Cryobacterium mesophilum*, EF466127, Microbacteriaceae  
***Klugiella xanthotipulae*, AY372075, Microbacteriaceae, type sp.**  
*Frigoribacterium mesophilum*, EF466126, Microbacteriaceae  
*Rathayibacter iranicus*, AM410684, Microbacteriaceae  
*Rathayibacter toxicus*, D84127, Microbacteriaceae  
*Rathayibacter caricis*, AF159364, Microbacteriaceae  
***Rathayibacter rathayi*, X77439, Microbacteriaceae, type sp.**  
*Rathayibacter festucae*, AM410683, Microbacteriaceae  
*Rathayibacter tritici*, X77438, Microbacteriaceae  
*Clavibacter michiganensis* subsp. *insidiosus*, U09761, Microbacteriaceae  
*Clavibacter michiganensis* subsp. *tessellaris*, U30254, Microbacteriaceae  
***Clavibacter michiganensis* subsp. *michiganensis*, X77435, Microbacteriaceae, type sp.**  
*Clavibacter michiganensis* subsp. *sepedonicus*, AM849034, Microbacteriaceae  
*Clavibacter michiganensis* subsp. *nebraskensis*, X77434, Microbacteriaceae  
*Microcella alkaliphila*, AJ717385, Microbacteriaceae  
*Microcella putealis*, AJ717388, Microbacteriaceae, type sp.  
*Yonghaparkia alkaliphila*, DQ256087, Microbacteriaceae, type sp.  
***Frondithabitus australicus*, DQ525859, Microbacteriaceae, type sp.**  
*Frondithabitus peucedani*, FM998017, Microbacteriaceae  
***Frigoribacter faeni*, Y18807, Microbacteriaceae, type sp.**  
***Marisediminicola antarctica*, GQ496083, Microbacteriaceae, type sp.**  
*Leucobacter alluvii*, AM072820, Microbacteriaceae  
*Leucobacter chironomi*, EU346911, Microbacteriaceae  
*Leucobacter iarius*, AM040493, Microbacteriaceae  
*Leucobacter chromiireducens* subsp. *chromiireducens*, AJ781046, Microbacteriaceae  
*Leucobacter chromiireducens* subsp. *solfipictus*, DQ845457, Microbacteriaceae  
*Leucobacter luti*, AM072819, Microbacteriaceae  
*Leucobacter albus*, AB012594, Microbacteriaceae  
*Leucobacter aridicollis*, AJ781047, Microbacteriaceae  
***Leucobacter komagatae*, D45063, Microbacteriaceae, type sp.**  
*Leucobacter aerolatus*, FN597581, Microbacteriaceae  
*Leucobacter advena*, AM1919158, Microbacteriaceae



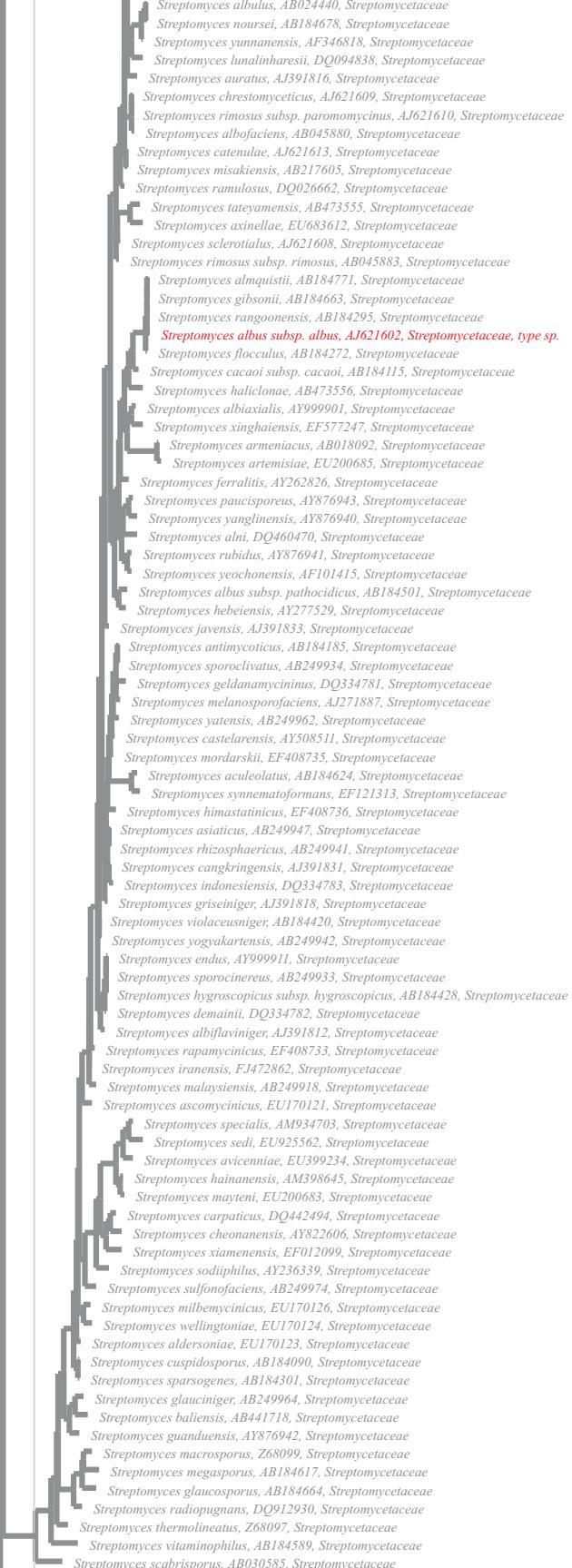


*Streptomyces pseudotrichia*, DQ442541, Streptomycetaceae  
*Streptomyces rubiginosus*, AY999810, Streptomycetaceae  
*Streptomyces anandii*, AB184402, Streptomycetaceae  
*Streptomyces viridiviolaceus*, AY999854, Streptomycetaceae  
*Streptomyces fumanus*, AB184273, Streptomycetaceae  
*Streptomyces lavendulicolor*, DQ442516, Streptomycetaceae  
*Streptomyces azureus*, EF178674, Streptomycetaceae  
*Streptomyces djakartensis*, AB184657, Streptomycetaceae  
*Streptomyces caelstis*, X80824, Streptomycetaceae  
*Streptomyces levii*, AB184670, Streptomycetaceae  
*Streptomyces afghanensis*, AB184847, Streptomycetaceae  
*Streptomyces geysiriensis*, DQ442501, Streptomycetaceae  
*Streptomyces minutiscleroticus*, EF178696, Streptomycetaceae  
*Streptomyces ghanensis*, AY999851, Streptomycetaceae  
*Streptomyces rochei*, AB184237, Streptomycetaceae  
*Streptomyces vinaceusdrappii*, AY999929, Streptomycetaceae  
*Streptomyces plicatus*, AY999922, Streptomycetaceae  
*Streptomyces mutabilis*, EF178679, Streptomycetaceae  
*Streptomyces africanus*, AY208912, Streptomycetaceae  
*Streptomyces tauricus*, AB184690, Streptomycetaceae  
*Streptomyces carpiniensis*, AB184574, Streptomycetaceae  
*Streptomyces fimbriatus*, AY999844, Streptomycetaceae  
*Streptomyces atrovirens*, DQ026672, Streptomycetaceae  
*Streptomyces griseomycini*, AB184137, Streptomycetaceae  
*Streptomyces griseostramineus*, AB184140, Streptomycetaceae  
*Streptomyces graminearum*, AJ781333, Streptomycetaceae  
*Streptomyces thermospinosisporis*, AF333113, Streptomycetaceae  
*Streptomyces viridosporus*, DQ442556, Streptomycetaceae  
*Streptomyces aurantiogriseus*, AB184188, Streptomycetaceae  
*Streptomyces thermodiastaticus*, AB018095, Streptomycetaceae  
*Streptomyces brasiliensis*, AB249981, Streptomycetaceae  
*Streptomyces glaucus*, AB184665, Streptomycetaceae  
*Streptomyces asterosporus*, AB184706, Streptomycetaceae  
*Streptomyces aureorectus*, AB184710, Streptomycetaceae  
*Streptomyces virens*, DQ442554, Streptomycetaceae  
*Streptomyces calvus*, AB184329, Streptomycetaceae  
*Streptomyces janthinus*, AB184851, Streptomycetaceae  
*Streptomyces violaceus*, AB184315, Streptomycetaceae  
*Streptomyces roseoviolaceus*, AJ399484, Streptomycetaceae  
*Streptomyces albosporus* subsp. *albosporus*, AJ781327, Streptomycetaceae  
*Streptomyces hawaiiensis*, AB184143, Streptomycetaceae  
*Streptomyces massasporeus*, AB184152, Streptomycetaceae  
*Streptomyces luteogriseus*, AB184379, Streptomycetaceae  
*Streptomyces cinerochromogenes*, AB184507, Streptomycetaceae  
*Streptomyces niveiscaebiae*, AF361786, Streptomycetaceae  
*Streptomyces flavoviridis*, AB184842, Streptomycetaceae  
*Streptomyces pilosus*, AB184161, Streptomycetaceae  
*Streptomyces lomondensis*, AB184673, Streptomycetaceae  
*Streptomyces indiaensis*, AB184553, Streptomycetaceae  
*Streptomyces purpurascens*, AJ399486, Streptomycetaceae  
*Streptomyces iakyrus*, AB184877, Streptomycetaceae  
*Streptomyces bellus*, AB184849, Streptomycetaceae  
*Streptomyces coeruleescens*, AY999720, Streptomycetaceae  
*Streptomyces lusitanus*, AB184424, Streptomycetaceae  
*Streptomyces thermocarboxydus*, U94490, Streptomycetaceae  
*Streptomyces speibonae*, AF452714, Streptomycetaceae  
*Streptomyces longispororuber*, AB184440, Streptomycetaceae  
*Streptomyces viridodistaticus*, AY999852, Streptomycetaceae  
*Streptomyces coeruleorubidus*, AY999719, Streptomycetaceae  
*Streptomyces parvulus*, AB184326, Streptomycetaceae  
*Streptomyces malachitospinus*, AB249954, Streptomycetaceae  
*Streptomyces spinoverrucosus*, AB184578, Streptomycetaceae  
*Streptomyces olivaceus*, AB184743, Streptomycetaceae  
*Streptomyces pactum*, AB184398, Streptomycetaceae  
*Streptomyces chattanoogensis*, AY295791, Streptomycetaceae  
*Streptomyces lienomycini*, AJ781353, Streptomycetaceae  
*Streptomyces albogriseolus*, AY177662, Streptomycetaceae  
*Streptomyces marokkonensis*, AJ965470, Streptomycetaceae  
*Streptomyces thinghirensis*, FM202482, Streptomycetaceae  
*Streptomyces althioticus*, AY999808, Streptomycetaceae  
*Streptomyces matensis*, AB184221, Streptomycetaceae  
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*Streptomyces labedae*, AB184704, Streptomycetaceae  
*Streptomyces griseoincarnatus*, AJ781321, Streptomycetaceae  
*Streptomyces variabilis*, DQ442551, Streptomycetaceae  
*Streptomyces erythrogriseus*, AJ781328, Streptomycetaceae  
*Streptomyces albaduncus*, AY999757, Streptomycetaceae  
*Streptomyces griseolalbus*, AB184275, Streptomycetaceae  
*Streptomyces malachitofuscus*, AB184282, Streptomycetaceae  
*Streptomyces griseoflavus*, AJ781322, Streptomycetaceae  
*Streptomyces collinus*, AB184123, Streptomycetaceae  
*Streptomyces paradoxus*, AB184628, Streptomycetaceae  
*Streptomyces violaceochromogenes*, AY999867, Streptomycetaceae  
*Streptomyces ambafaciens*, AB184182, Streptomycetaceae  
*Streptomyces viridochromogenes*, DQ442555, Streptomycetaceae  
*Streptomyces glaucescens*, AB184843, Streptomycetaceae  
*Streptomyces pharetrae*, AY699792, Streptomycetaceae  
*Streptomyces flaveolus*, AB184764, Streptomycetaceae  
*Streptomyces misionensis*, EF178678, Streptomycetaceae  
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*Streptomyces achromogenes* subsp. *rubradiris*, AY999846, Streptomycetaceae  
*Streptomyces nodosus*, AF114033, Streptomycetaceae  
*Streptomyces eurythermus*, D63870, Streptomycetaceae  
*Streptomyces tritoleras*, DQ345779, Streptomycetaceae  
*Streptomyces coelescens*, AF503496, Streptomycetaceae  
*Streptomyces violaceorubidus*, AJ781374, Streptomycetaceae  
*Streptomyces tendae*, D63873, Streptomycetaceae  
*Streptomyces humiferus*, AF503491, Streptomycetaceae  
*Streptomyces violaceoruber*, AF503492, Streptomycetaceae  
*Streptomyces violaceolatius*, AF503497, Streptomycetaceae  
*Streptomyces rubrogriseus*, AB184681, Streptomycetaceae  
*Streptomyces tricolor*, AB184687, Streptomycetaceae  
*Streptomyces anthocyanicus*, AB184631, Streptomycetaceae  
*Streptomyces coelioflavus*, AB184650, Streptomycetaceae  
*Streptomyces diastaticus* subsp. *ardesiacus*, DQ026631, Streptomycetaceae  
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*Streptomyces fradiae*, DQ026630, Streptomycetaceae  
*Streptomyces somaliensis*, AJ007403, Streptomycetaceae  
*Streptomyces glomeratus*, AB249917, Streptomycetaceae  
*Streptomyces bluensis*, AB184421, Streptomycetaceae  
*Streptomyces thermocarboxyvorans*, U94489, Streptomycetaceae  
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*Streptomyces mexicanus*, AB249966, Streptomycetaceae  
*Streptomyces cinereospinus*, AB184648, Streptomycetaceae  
*Streptomyces coeruleofuscus*, DQ026668, Streptomycetaceae  
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*Streptomyces fumigatiscleroticus*, DQ442499, Streptomycetaceae  
*Streptomyces bambusicola*, AB184869, Streptomycetaceae  
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*Streptomyces cyanoalbus*, AB184882, Streptomycetaceae  
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*Streptomyces ruber*, AB184604, Streptomycetaceae  
*Streptomyces poenensis*, DQ445792, Streptomycetaceae  
*Streptomyces albidoflavus*, AB184255, Streptomycetaceae  
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*Streptomyces scopiformis*, AF184081, Streptomycetaceae  
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*Streptomyces jetaisensis*, AY314783, Streptomycetaceae  
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*Streptomyces intermedius*, AB184277, Streptomycetaceae  
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*Streptomyces gulbargensis*, DQ317411, Streptomycetaceae  
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*Streptomyces roseofulvus*, AB184327, Streptomycetaceae  
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*Streptomyces viridobrunneus*, AJ781372, Streptomycetaceae  
*Streptomyces roseoviridis*, AB184239, Streptomycetaceae  
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*Streptomyces hirsutus*, DQ442506, Streptomycetaceae  
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*Streptomyces griseorubiginosus*, AJ781339, Streptomycetaceae  
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*Streptomyces achromogenes* subsp. *achromogenes*, AB184109, Streptomycetaceae  
*Streptomyces griseofuscus*, AB184206, Streptomycetaceae  
*Streptomyces murinus*, AB184155, Streptomycetaceae  
*Streptomyces costaricanus*, AB249939, Streptomycetaceae  
  *Streptomyces phaeogriseochromatogenes*, AJ391813, Streptomycetaceae  
*Streptomyces lanatus*, AB184845, Streptomycetaceae  
*Streptomyces durhamensis*, AY999785, Streptomycetaceae  
*Streptomyces filipinensis*, AB184198, Streptomycetaceae  
*Streptomyces puniciscabiei*, AF361785, Streptomycetaceae  
*Streptomyces echinatus*, AJ399465, Streptomycetaceae  
*Streptomyces yokosukanensis*, DQ026652, Streptomycetaceae  
*Streptomyces cellostaticus*, AT999742, Streptomycetaceae  
*Streptomyces avermitilis*, BA000030, Streptomycetaceae  
*Streptomyces atriruber*, EU812169, Streptomycetaceae  
*Streptomyces cinnabarinus*, AB184266, Streptomycetaceae  
*Streptomyces kunningensis*, DQ442513, Streptomycetaceae  
*Streptomyces mirabilis*, AB184412, Streptomycetaceae  
*Streptomyces olivochromogenes*, AY094370, Streptomycetaceae  
*Streptomyces prunicolor*, DQ026659, Streptomycetaceae  
*Streptomyces griseoluteus*, AY999751, Streptomycetaceae  
*Streptomyces recens*, AB184165, Streptomycetaceae  
*Streptomyces seoulensis*, AB249970, Streptomycetaceae  
*Streptomyces cyaneus*, AF346475, Streptomycetaceae  
*Streptomyces pseudovenezuelae*, AB184233, Streptomycetaceae  
*Streptomyces chartreusis*, AB184839, Streptomycetaceae  
  *Streptomyces osmaniensis*, FJ613126, Streptomycetaceae  
*Streptomyces plumbiresistens*, EU526954, Streptomycetaceae  
*Streptomyces albioniger*, AT845349, Streptomycetaceae  
*Streptomyces phaeoluteigriseus*, AJ391815, Streptomycetaceae  
*Streptomyces bobili*, AB184328, Streptomycetaceae  
*Streptomyces galilaeus*, AB045878, Streptomycetaceae  
  *Streptomyces cinereus*, AB184072, Streptomycetaceae  
  *Streptomyces flaveus*, DQ026643, Streptomycetaceae  
  *Streptomyces vastus*, DQ442552, Streptomycetaceae  
*Streptomyces aureocirculatus*, AY999861, Streptomycetaceae  
*Streptomyces novaecaesareae*, AB184357, Streptomycetaceae  
  *Streptomyces aurantiacus*, AJ781383, Streptomycetaceae  
  *Streptomyces glomeraurantiacus*, AB249983, Streptomycetaceae  
  *Streptomyces tauricus*, AB045879, Streptomycetaceae  
  *Streptomyces ederensis*, AY999824, Streptomycetaceae  
  *Streptomyces umbrinus*, AB184305, Streptomycetaceae  
  *Streptomyces phaeochromogenes*, AB184738, Streptomycetaceae  
  *Streptomyces stelliscabiei*, AJ007429, Streptomycetaceae  
  *Streptomyces bottropensis*, AB184262, Streptomycetaceae  
  *Streptomyces deccanensis*, EF219459, Streptomycetaceae  
  *Streptomyces europeaisabiei*, AT207598, Streptomycetaceae  
  *Streptomyces scabiei*, D63862, Streptomycetaceae  
  *Streptomyces hygroscopicus* subsp. *ossamyceticus*, AB184560, Streptomycetaceae  
  *Streptomyces torulosus*, AJ781367, Streptomycetaceae  
  *Streptomyces ipomoeae*, AB184857, Streptomycetaceae  
  *Streptomyces decoicus*, EU170127, Streptomycetaceae  
  *Streptomyces neyagaawensis*, D63869, Streptomycetaceae  
  *Streptomyces diastatochromogenes*, D63867, Streptomycetaceae  
  *Streptomyces cinereoruber* subsp. *fructofermentans*, AY999758, Streptomycetaceae  
  *Streptomyces reticuliscabiei*, AJ007428, Streptomycetaceae  
  *Streptomyces turgidiscabiei*, AB026221, Streptomycetaceae  
  *Streptomyces phaeofaciens*, AB184360, Streptomycetaceae  
  *Streptomyces puniceus*, DQ442542, Streptomycetaceae  
  *Streptomyces rishiriensis*, EF178682, Streptomycetaceae  
  *Streptomyces cacaoi* subsp. *asensis*, DQ026644, Streptomycetaceae  
  *Streptomyces humidus*, DQ442508, Streptomycetaceae  
  *Streptomyces flavovariabilis*, EF178691, Streptomycetaceae  
  *Streptomyces durmitoris*, DQ067287, Streptomycetaceae  
  *Streptomyces rectviolaceus*, DQ026660, Streptomycetaceae  
  *Streptomyces aureus*, AY094368, Streptomycetaceae  
  *Streptomyces kanamycticus*, DQ442511, Streptomycetaceae  
  *Streptomyces beijingensis*, AF385681, Streptomycetaceae  
  *Streptomyces drozdzowiczii*, AB249957, Streptomycetaceae  
  *Streptomyces atratus*, DQ026638, Streptomycetaceae  
  *Streptomyces yanii*, AB006159, Streptomycetaceae  
  *Streptomyces sangliert*, AB249945, Streptomycetaceae  
  *Streptomyces gelatinicus*, DQ026636, Streptomycetaceae  
  *Streptomyces pulveraceus*, AB184806, Streptomycetaceae  
  *Streptomyces flavovirens*, DQ026635, Streptomycetaceae  
  *Streptomyces flavogriseus*, AJ494864, Streptomycetaceae  
  *Streptomyces nitrosoporeus*, EF178680, Streptomycetaceae  
  *Streptomyces griseolus*, AB184768, Streptomycetaceae  
  *Streptomyces halstedii*, EF178695, Streptomycetaceae  
  *Streptomyces cincereorectus*, AB184646, Streptomycetaceae  
  *Streptomyces fulvorubeus*, AB184711, Streptomycetaceae  
  *Streptomyces microflavus*, DQ445795, Streptomycetaceae  
  *Streptomyces griseus*, AY207604, Streptomycetaceae  
  *Streptomyces cyanoeofuscatus*, AB184860, Streptomycetaceae  
  *Streptomyces clavifer*, DQ026670, Streptomycetaceae  
  *Streptomyces mutomycini*, AB249951, Streptomycetaceae  
  *Streptomyces finlayi*, AY999788, Streptomycetaceae  
  *Streptomyces atroolivaceus*, AJ781320, Streptomycetaceae  
  *Streptomyces analatus*, DQ026637, Streptomycetaceae  
  *Streptomyces chrysomallus* subsp. *chrysomallus*, AB184120, Streptomycetaceae  
  *Streptomyces finnicarius*, AY999784, Streptomycetaceae  
  *Streptomyces griseoplanus*, AY999894, Streptomycetaceae  
  *Streptomyces rubiginosohelvolus*, AB184240, Streptomycetaceae  
  *Streptomyces tanashiensis*, AY999856, Streptomycetaceae  
  *Streptomyces albovinaceus*, AB249958, Streptomycetaceae  
  *Streptomyces pluricolorescens*, DQ442540, Streptomycetaceae  
  *Streptomyces globosporus*, EF178686, Streptomycetaceae  
  *Streptomyces sindenensis*, AB184759, Streptomycetaceae  
  *Streptomyces badius*, AY999783, Streptomycetaceae

*Streptomyces parvus*, DQ442537, Streptomycetaceae  
*Streptomyces albolongus*, AB184425, Streptomycetaceae  
*Streptomyces caouensis*, DQ445791, Streptomycetaceae  
*Streptomyces celluloflavus*, AB184476, Streptomycetaceae  
*Streptomyces candidus*, DQ026663, Streptomycetaceae  
*Streptomyces bacillaris*, AB184439, Streptomycetaceae  
*Streptomyces turidus*, DQ442523, Streptomycetaceae  
*Streptomyces roseolilacinus*, AB184167, Streptomycetaceae  
*Streptomyces gobitricini*, AB184666, Streptomycetaceae  
*Streptomyces lavendofoliae*, AJ781336, Streptomycetaceae  
*Streptomyces amakusaensis*, AY999781, Streptomycetaceae  
*Streptomyces inustatus*, AB184445, Streptomycetaceae  
*Streptomyces michiganensis*, AB184153, Streptomycetaceae  
*Streptomyces xanthochromogenes*, DQ442559, Streptomycetaceae  
*Streptomyces mauveicolor*, AB184532, Streptomycetaceae  
*Streptomyces melanogenes*, AB184222, Streptomycetaceae  
*Streptomyces noborioensis*, AB184287, Streptomycetaceae  
*Streptomyces crystallinus*, AB184652, Streptomycetaceae  
*Streptomyces spiroverticillatus*, AB184814, Streptomycetaceae  
*Streptomyces kurssanovii*, AB184325, Streptomycetaceae  
*Streptomyces xantholithicus*, AB184349, Streptomycetaceae  
*Streptomyces peucetius*, AB045887, Streptomycetaceae  
*Streptomyces crenneus*, AY999744, Streptomycetaceae  
*Kitasatospora kazuensis*, AB278569, Streptomycetaceae  
*Kitasatospora mediocidica*, U93324, Streptomycetaceae  
*Kitasatospora gansuensis*, AY442265, Streptomycetaceae  
*Kitasatospora atroaurantiaca*, DQ026645, Streptomycetaceae  
*Streptomyces purpofuscus*, AJ781364, Streptomycetaceae  
*Kitasatospora azatica*, U93312, Streptomycetaceae  
*Kitasatospora nippomensis*, AY442263, Streptomycetaceae  
*Kitasatospora kifunensis*, U93322, Streptomycetaceae  
*Streptomyces herbaricolar*, AB184801, Streptomycetaceae  
*Streptomyces indigoferus*, AB184214, Streptomycetaceae  
*Streptomyces aureofaciens*, AY207608, Streptomycetaceae  
*Streptomyces xanthocidicus*, AY999858, Streptomycetaceae  
*Streptomyces avellaneus*, AB184413, Streptomycetaceae  
*Streptomyces psammoticus*, AY999862, Streptomycetaceae  
*Kitasatospora putterlickiae*, AY189976, Streptomycetaceae  
*Kitasatospora samplensis*, AY260167, Streptomycetaceae  
*Streptomyces chrysomallus* subsp. *fumigatus*, AB184645, Streptomycetaceae  
*Streptomyces purpureus*, AJ781324, Streptomycetaceae  
*Streptomyces aburaviensis*, AY999886, Streptomycetaceae  
*Kitasatospora terrestris*, AY442266, Streptomycetaceae  
*Kitasatospora parbensis*, AY442268, Streptomycetaceae  
*Kitasatospora cineracea*, AB022875, Streptomycetaceae  
*Kitasatospora nitagatensis*, AB249960, Streptomycetaceae  
*Kitasatospora setae*, U93332, Streptomycetaceae, type sp.  
*Kitasatospora cocheleata*, U93316, Streptomycetaceae  
*Kitasatospora paracochleata*, U93328, Streptomycetaceae  
*Kitasatospora cystarginea*, AY999887, Streptomycetaceae  
*Kitasatospora griseola*, U93320, Streptomycetaceae  
*Kitasatospora phosalacinea*, AB022869, Streptomycetaceae  
*Kitasatospora saccharophila*, AB278568, Streptomycetaceae  
*Kitasatospora cheerisanensis*, AF050493, Streptomycetaceae  
*Kitasatospora arboriphila*, AY442267, Streptomycetaceae  
*Kitasatospora viridis*, AY613990, Streptomycetaceae  
*Streptacidipilus oryzae*, DQ208700, Streptomycetaceae  
*Streptacidipilus ammonensis*, DQ904546, Streptomycetaceae  
*Streptacidipilus jiangxiensis*, AB249948, Streptomycetaceae  
*Streptacidipilus melanogenes*, DQ994689, Streptomycetaceae  
*Streptacidipilus rugosus*, DQ904547, Streptomycetaceae  
*Streptacidipilus albus*, AF074415, Streptomycetaceae, type sp.  
*Streptacidipilus carbonis*, AF074412, Streptomycetaceae  
*Streptomyces sannanensis*, AB184579, Streptomycetaceae  
*Streptomyces polyantibioticus*, DQ141528, Streptomycetaceae  
*Actinomadura glaucaflava*, AB184612, Thermomonosporaceae  
*Streptomyces netropsis*, EF178671, Streptomycetaceae  
*Streptomyces eurocidicus*, AY999790, Streptomycetaceae  
*Streptomyces werraensis*, DQ442558, Streptomycetaceae  
*Streptomyces stramineus*, AB184720, Streptomycetaceae  
*Streptomyces olivoverticillatus*, AB184636, Streptomycetaceae  
*Streptomyces varsoviensis*, DQ026653, Streptomycetaceae  
*Streptomyces blastmyceticus*, AY999802, Streptomycetaceae  
*Streptomyces orinoci*, AB184866, Streptomycetaceae  
*Streptomyces arduis*, AB184864, Streptomycetaceae  
*Streptomyces cinnamoneus*, AB184850, Streptomycetaceae  
*Streptomyces pseudoechinosporous*, AB184100, Streptomycetaceae  
*Streptomyces lilacinus*, AB184819, Streptomycetaceae  
*Streptomyces luteosporous*, DQ442525, Streptomycetaceae  
*Streptomyces hiroshimensis*, AB184789, Streptomycetaceae  
*Streptomyces caeruleus*, EF178675, Streptomycetaceae  
*Streptomyces abikoensis*, AY999834, Streptomycetaceae  
*Streptomyces angustumyceticus*, DQ442509, Streptomycetaceae  
*Streptomyces griseoearneus*, X99943, Streptomycetaceae  
*Streptomyces morookaense*, AJ781349, Streptomycetaceae  
*Streptomyces thioluteus*, AB184753, Streptomycetaceae  
*Streptomyces lavenduligriseus*, DQ442515, Streptomycetaceae  
*Streptomyces nanshenensis*, EU589334, Streptomycetaceae  
*Streptomyces sulphureus*, DQ442546, Streptomycetaceae  
*Streptomyces luteireticuli*, AB249969, Streptomycetaceae  
*Streptomyces kasugaiensis*, AB024441, Streptomycetaceae  
*Streptomyces mashuensis*, X79323, Streptomycetaceae  
*Streptomyces moharaensis*, DQ442528, Streptomycetaceae  
*Streptomyces ochraceiscleroticus*, AB184094, Streptomycetaceae  
*Streptomyces violens*, AJ621605, Streptomycetaceae  
*Streptomyces purpurogenescleroticus*, AJ621604, Streptomycetaceae  
*Streptomyces niger*, AJ621607, Streptomycetaceae  
*Streptomyces olivaceiscleroticus*, AJ621606, Streptomycetaceae  
*Streptomyces monomycinii*, DQ445790, Streptomycetaceae  
*Streptomyces caniferus*, AB184640, Streptomycetaceae  
*Streptomyces libani* subsp. *rufus*, AJ781351, Streptomycetaceae  
*Streptomyces hygroscopicus* subsp. *decoyicus*, AY999883, Streptomycetaceae  
*Streptomyces hygroscopicus* subsp. *glebosus*, AB184479, Streptomycetaceae  
*Streptomyces platensis*, AB045882, Streptomycetaceae  
*Streptomyces albispinus*, AY999753, Streptomycetaceae  
*Streptomyces stoyaeensis*, DQ026654, Streptomycetaceae  
*Streptomyces libani* subsp. *libani*, AB184414, Streptomycetaceae  
*Streptomyces tubercidicus*, AJ621612, Streptomycetaceae  
*Streptomyces nigrescens*, DQ442530, Streptomycetaceae  
*Streptomyces lydicus*, Y15507, Streptomycetaceae



**Catenulisporeae (4)**  
*Catenulispora subtropica*, AB327248, Catenulisporeaceae  
*Catenulispora yoronensis*, AB327250, Catenulisporeaceae  
*Catenulispora rubra*, AB180773, Catenulisporeaceae  
*Catenulispora acidiphila*, AJ865857, Catenulisporeaceae, type sp.

**Actinospicaceae (2)**  
*Actinospica acidiphila*, AJ865861, Actinospicaceae  
*Actinospica robiniae*, AJ865863, Actinospicaceae, type sp.

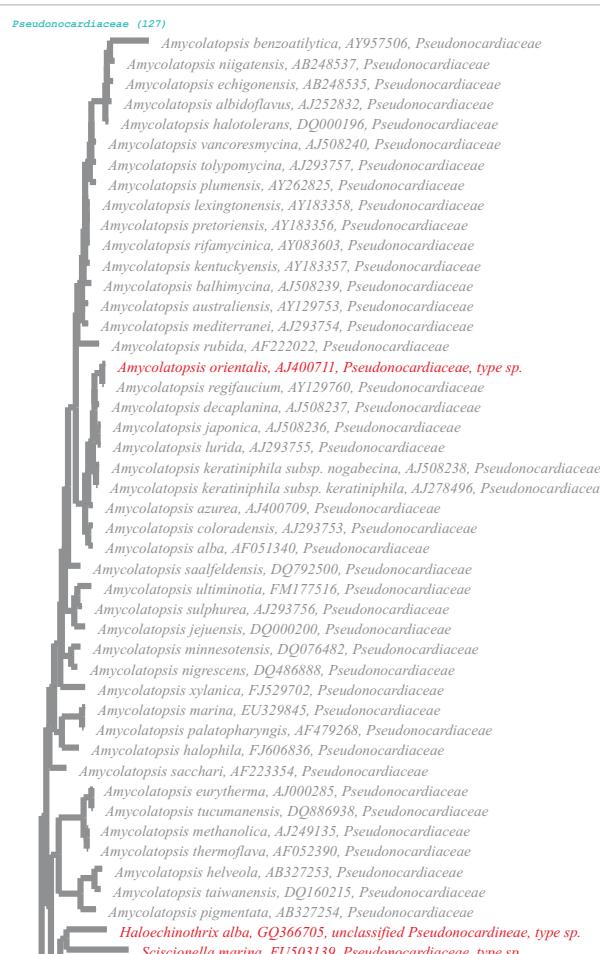
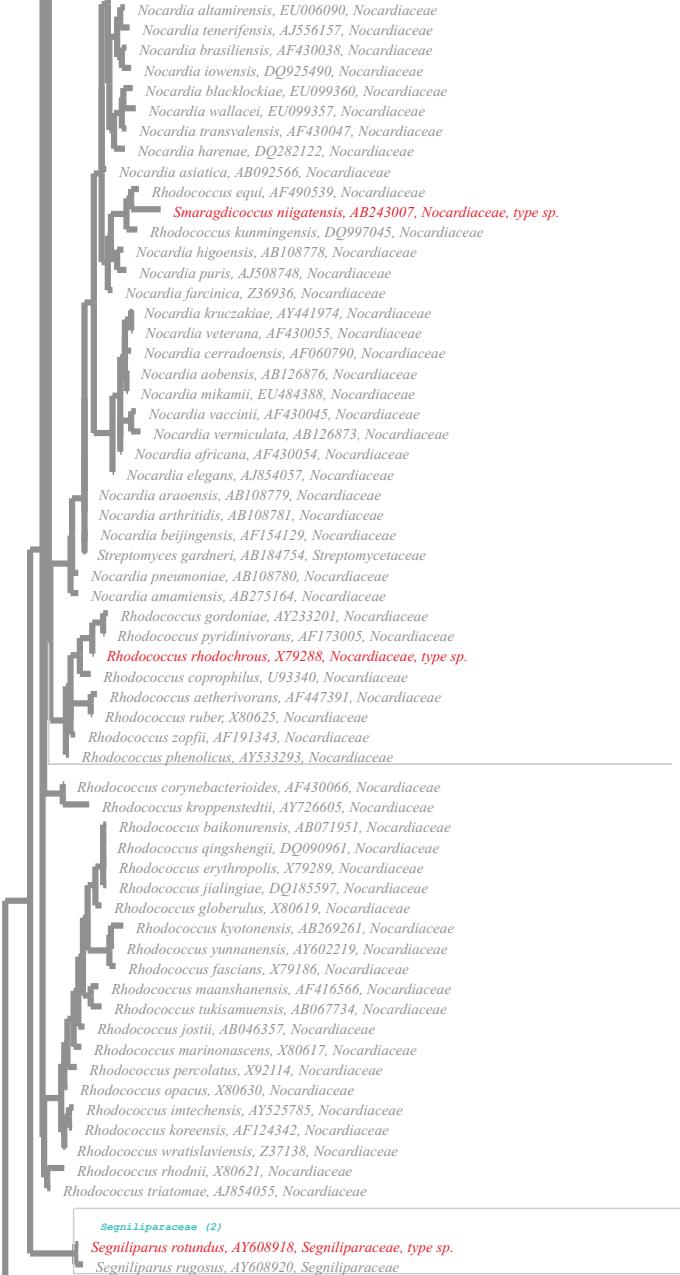
**Mycobacteriaceae (143)**

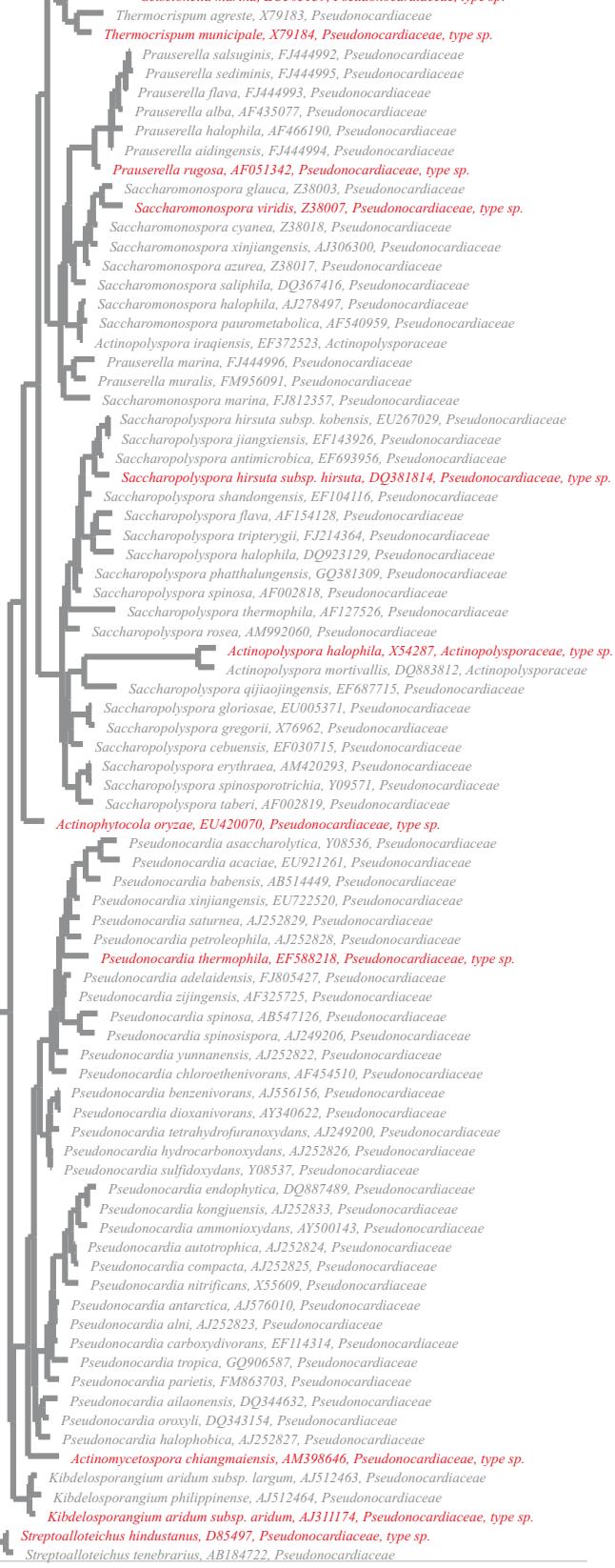
*Mycobacterium florentinum*, AJ616230, Mycobacteriaceae  
*Mycobacterium stomatepiae*, AM884331, Mycobacteriaceae  
*Mycobacterium montefiorensense*, AF330038, Mycobacteriaceae  
*Mycobacterium genavense*, X60070, Mycobacteriaceae  
*Mycobacterium parvense*, AF466821, Mycobacteriaceae  
*Mycobacterium triplex*, U57632, Mycobacteriaceae  
*Mycobacterium lentiflavum*, AF480583, Mycobacteriaceae  
*Mycobacterium simiae*, X52931, Mycobacteriaceae  
*Mycobacterium kubiae*, AF133902, Mycobacteriaceae  
*Mycobacterium palustre*, AJ308603, Mycobacteriaceae  
*Mycobacterium parascrofidaceum*, AJ337273, Mycobacteriaceae  
*Mycobacterium heidelbergense*, AJ000684, Mycobacteriaceae  
*Mycobacterium interjectum*, HM037998, Mycobacteriaceae





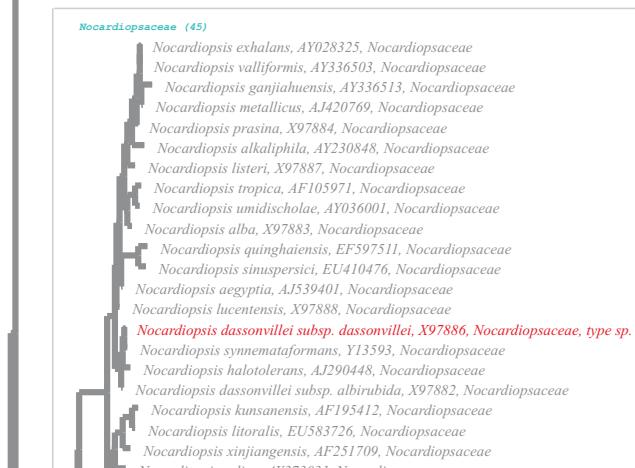
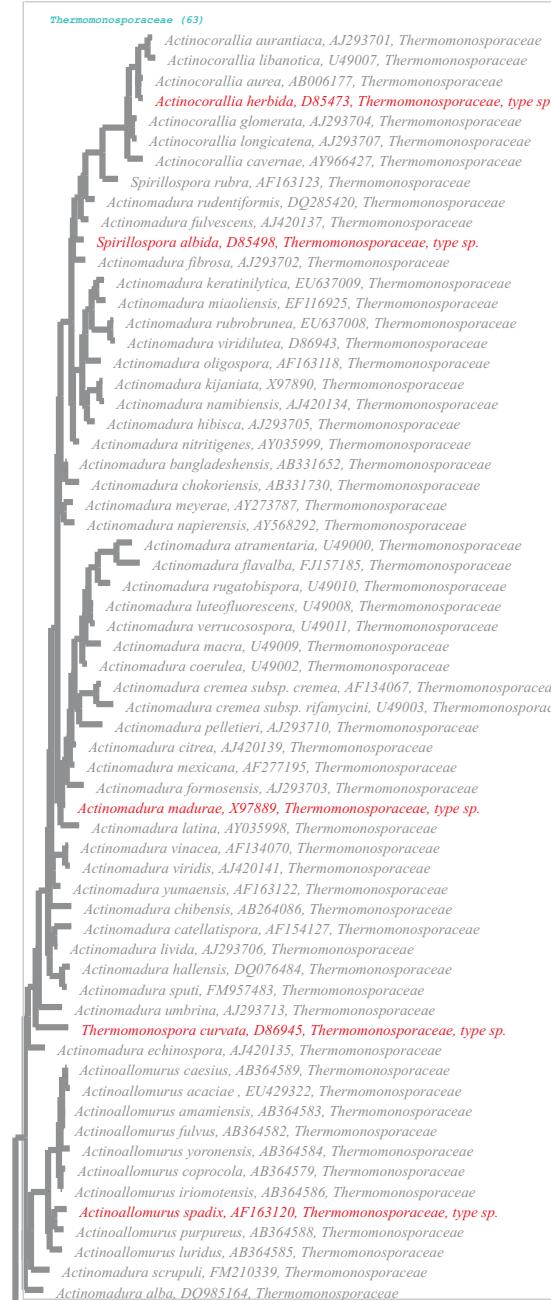








*Crossiella cryophila*, AF114806, Pseudonocardiaceae, type sp.  
*Crossiella equi*, AF245017, Pseudonocardiaceae  
*Kutzneria albida*, EF543522, Pseudonocardiaceae  
*Kutzneria kofuensis*, AF114801, Pseudonocardiaceae  
<sup>\*</sup>*Actinoalloteichus cyanogriseus*, AB006178, Pseudonocardiaceae, type sp.  
<sup>\*</sup>*Actinoalloteichus spitiensis*, AY426714, Pseudonocardiaceae  
*Actinoalloteichus hymeniacidonis*, DQ144222, Pseudonocardiaceae  
*Goofellowiella coeruleoviolacea*, DQ093349, Pseudonocardiaceae, type sp.  
*Umezawaea tangerina*, AB020031, Actinosynnemataceae, type sp.



*Nocardiopsis salina*, AY37031, *Nocardiopsaceae*  
*Nocardiopsis nikkonensis*, AB491226, *Nocardiopsaceae*  
*Nocardiopsis composta*, AF360734, *Nocardiopsaceae*  
*Nocardiopsis potens*, FM253114, *Nocardiopsaceae*  
*Nocardiopsis baichengensis*, AY619716, *Nocardiopsaceae*  
*Nocardiopsis halophila*, AJ421018, *Nocardiopsaceae*  
*Nocardiopsis chromatogenes*, AY619715, *Nocardiopsaceae*  
*Nocardiopsis rhodophaea*, AY619714, *Nocardiopsaceae*  
*Nocardiopsis rosea*, AY619713, *Nocardiopsaceae*  
*Nocardiopsis gilva*, AY619712, *Nocardiopsaceae*  
*Nocardiopsis trehalosi*, AF105972, *Nocardiopsaceae*  
*Streptomonospora flavalba*, EU442553, *Nocardiopsaceae*  
*Streptomonospora alba*, AF462347, *Nocardiopsaceae*  
***Streptomonospora salina*, AF178988, *Nocardiopsaceae*, type sp.**  
*Streptomonospora amyloyticus*, EU442551, *Nocardiopsaceae*  
*Nocardiopsis arabica*, EF095149, *Nocardiopsaceae*  
*Streptomonospora halophila*, EF423989, *Nocardiopsaceae*  
*Haloactinospira alba*, DQ923130, *Nocardiopsaceae*, type sp.  
*Murinocardiopsis flava*, FN393755, *Nocardiopsaceae*, type sp.  
*Marinactinospira thermotolerans*, EU698029, *Nocardiopsaceae*, type sp.  
*Thermobifida cellulosilytica*, AJ298058, *Nocardiopsaceae*  
*Thermobifida fusca*, AF028245, *Nocardiopsaceae*  
***Thermobifida alba*, AF002260, *Nocardiopsaceae*, type sp.**  
*Thermobifida halotolerans*, EU250489, *Nocardiopsaceae*

**Streptosporangiaceae (73)**

*Nonomuraea angiospora*, U48843, *Streptosporangiaceae*  
*Nonomuraea spiralis*, U48983, *Streptosporangiaceae*  
*Nonomuraea helvata*, U48975, *Streptosporangiaceae*  
*Nonomuraea polychroma*, U48977, *Streptosporangiaceae*  
*Nonomuraea rubra*, AF277200, *Streptosporangiaceae*  
*Nonomuraea antimicrobica*, FJ157184, *Streptosporangiaceae*  
*Nonomuraea roseoviolacea* subsp. *roseoviolacea*, AB039959, *Streptosporangiaceae*  
*Nonomuraea roseoviolacea* subsp. *carminata*, AB039961, *Streptosporangiaceae*  
*Nonomuraea ferruginea*, U48845, *Streptosporangiaceae*  
*Nonomuraea coxensis*, AB274967, *Streptosporangiaceae*  
*Nonomuraea fastidiosa*, U48844, *Streptosporangiaceae*  
*Nonomuraea bangladeshensis*, AB274966, *Streptosporangiaceae*  
*Nonomuraea kuesteri*, AJ746362, *Streptosporangiaceae*  
*Nonomuraea maheshkhalensis*, AB290014, *Streptosporangiaceae*  
*Nonomuraea longicatena*, AB018787, *Streptosporangiaceae*  
*Nonomuraea salmonea*, X97892, *Streptosporangiaceae*  
*Nonomuraea candida*, DQ285421, *Streptosporangiaceae*  
*Nonomuraea turkmenica*, AF277201, *Streptosporangiaceae*  
*Nonomuraea africana*, U48842, *Streptosporangiaceae*  
*Nonomuraea recticatena*, U48979, *Streptosporangiaceae*  
*Nonomuraea roseola*, AJ278221, *Streptosporangiaceae*  
*Nonomuraea dietiae*, AB006156, *Streptosporangiaceae*  
*Nonomuraea rosea*, FN356742, *Streptosporangiaceae*  
***Streptosporangium purpuratum*, AF191735, *Streptosporangiaceae***  
*Streptosporangium yunnanense*, AF191733, *Streptosporangiaceae*  
*Streptosporangium vulgare*, U48999, *Streptosporangiaceae*  
*Streptosporangium longisporum*, X89944, *Streptosporangiaceae*  
*Streptosporangium amethystogenes* subsp. *amethystogenes*, X89935, *Streptosporangiaceae*  
*Streptosporangium album*, X89934, *Streptosporangiaceae*  
***Streptosporangium roseum*, X9947, *Streptosporangiaceae*, type sp.**  
*Streptosporangium canum*, AY996844, *Streptosporangiaceae*  
*Streptosporangium subroseum*, AF191734, *Streptosporangiaceae*  
*Streptosporangium nondiastaticum*, X89945, *Streptosporangiaceae*  
*Streptosporangium pseudovulgare*, X89946, *Streptosporangiaceae*  
*Streptosporangium fragile*, U48992, *Streptosporangiaceae*  
*Streptosporangium carneum*, X89938, *Streptosporangiaceae*  
*Streptosporangium violaceochromogenes*, U48997, *Streptosporangiaceae*  
*Planomonospora parontospora* subsp. *antibiotica*, AB028653, *Streptosporangiaceae*  
*Planomonospora sphaerica*, AB062382, *Streptosporangiaceae*  
***Planomonospora parontospora* subsp. *parontospora*, D85495, *Streptosporangiaceae*, type sp.**  
*Planomonospora alba*, AB062381, *Streptosporangiaceae*  
***Planobispora longispora*, D85494, *Streptosporangiaceae*, type sp.**  
*Planobispora rosea*, AB028654, *Streptosporangiaceae*  
*Planomonospora venezuelensis*, AB028655, *Streptosporangiaceae*  
***Microbispora rosea* subsp. *rosea*, D86936, *Streptosporangiaceae*, type sp.**  
*Microbispora rosea* subsp. *aerata*, U48984, *Streptosporangiaceae*  
*Microbispora corallina*, AB018046, *Streptosporangiaceae*  
*Microbispora siamensis*, FJ199993, *Streptosporangiaceae*  
*Microbispora mesophila*, AF002266, *Streptosporangiaceae*  
*Microtetraspora fusca*, U48973, *Streptosporangiaceae*  
*Microtetraspora niveoalba*, U48976, *Streptosporangiaceae*  
***Microtetraspora glauca*, X97891, *Streptosporangiaceae*, type sp.**  
*Microtetraspora malaysiensis*, AB062383, *Streptosporangiaceae*  
*Planotetraspora thailandica*, AB370244, *Streptosporangiaceae*  
*Planotetraspora kaengkrachanensis*, FJ426333, *Streptosporangiaceae*  
*Planotetraspora sylvatica*, AB112082, *Streptosporangiaceae*  
***Planotetraspora mira*, D85496, *Streptosporangiaceae*, type sp.**  
*Herbidospora daliensis*, AY749433, *Streptosporangiaceae*  
*Herbidospora yilanensis*, DQ246623, *Streptosporangiaceae*  
*Streptosporangium claviforme*, X89940, *Streptosporangiaceae*  
***Herbidospora cretacea*, D85485, *Streptosporangiaceae*, type sp.**  
*Herbidospora osiris*, FJ214356, *Streptosporangiaceae*  
*Acrocarpospora macrocephala*, AB025318, *Streptosporangiaceae*  
***Acrocarpospora pleiomorpha*, AB006174, *Streptosporangiaceae*, type sp.**  
*Acrocarpospora corrugata*, AB188150, *Streptosporangiaceae*  
***Nonomuraea pusilla*, D85491, *Streptosporangiaceae*, type sp.**  
*Sphaerisporangium viridialbum*, X89953, *Streptosporangiaceae*  
*Sphaerisporangium melleum*, AB208714, *Streptosporangiaceae*  
*Sphaerisporangium cinnabarinum*, X89939, *Streptosporangiaceae*  
*Sphaerisporangium flaviroseum*, EU499348, *Streptosporangiaceae*  
*Sphaerisporangium album*, EU499344, *Streptosporangiaceae*  
*Sphaerisporangium rubrum*, AB208718, *Streptosporangiaceae*  
***Thermopolyspora flexuosa*, AY039233, *Streptosporangiaceae*, type sp.**  
***Thermobispora bispora*, U58523, *Pseudonocardiaceae*, type sp.**  
*Thermomonospora chromogena*, AF116558, *Thermomonoporaceae*

**Glycomycetaceae (13)**

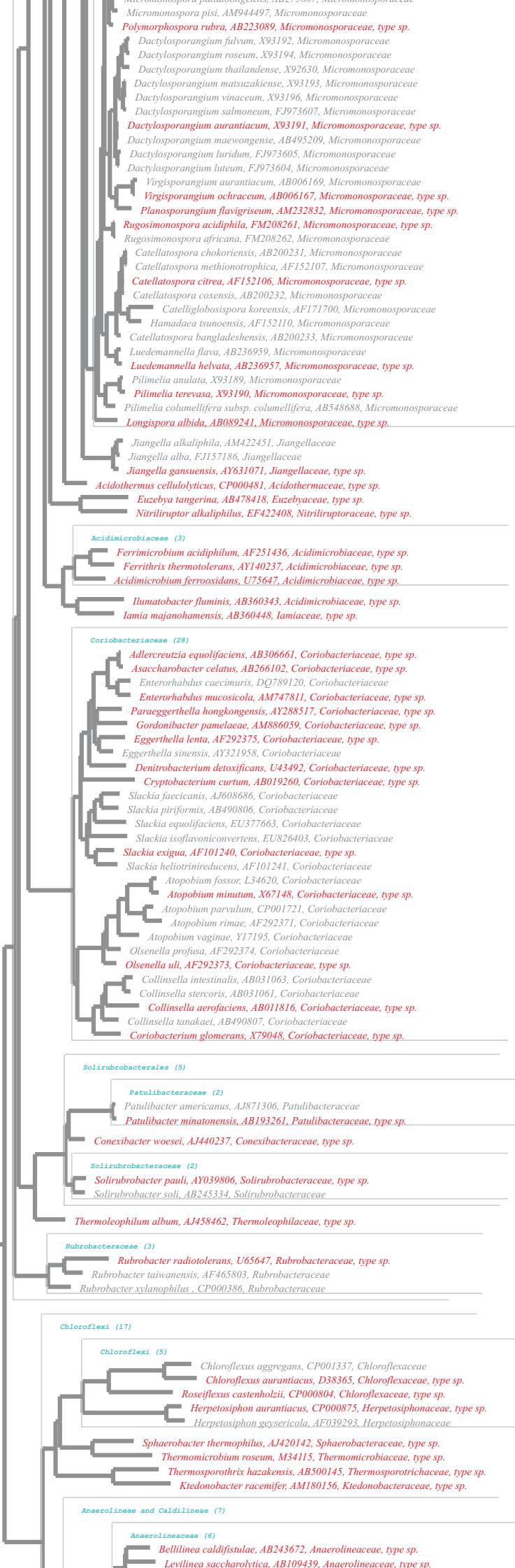
*Glycomyces lechevalierae*, AY462041, *Glycomycetaceae*  
*Glycomyces rutgersensis*, AJ293748, *Glycomycetaceae*  
*Glycomyces algeriensis*, AY462044, *Glycomycetaceae*  
*Glycomyces endophyticus*, EU200681, *Glycomycetaceae*  
***Glycomyces harbinensis*, D85483, *Glycomycetaceae*, type sp.**  
*Glycomyces sambucus*, DQ460469, *Glycomycetaceae*  
*Glycomyces scopariae*, EU200682, *Glycomycetaceae*  
*Glycomyces mayteni*, EU814511, *Glycomycetaceae*

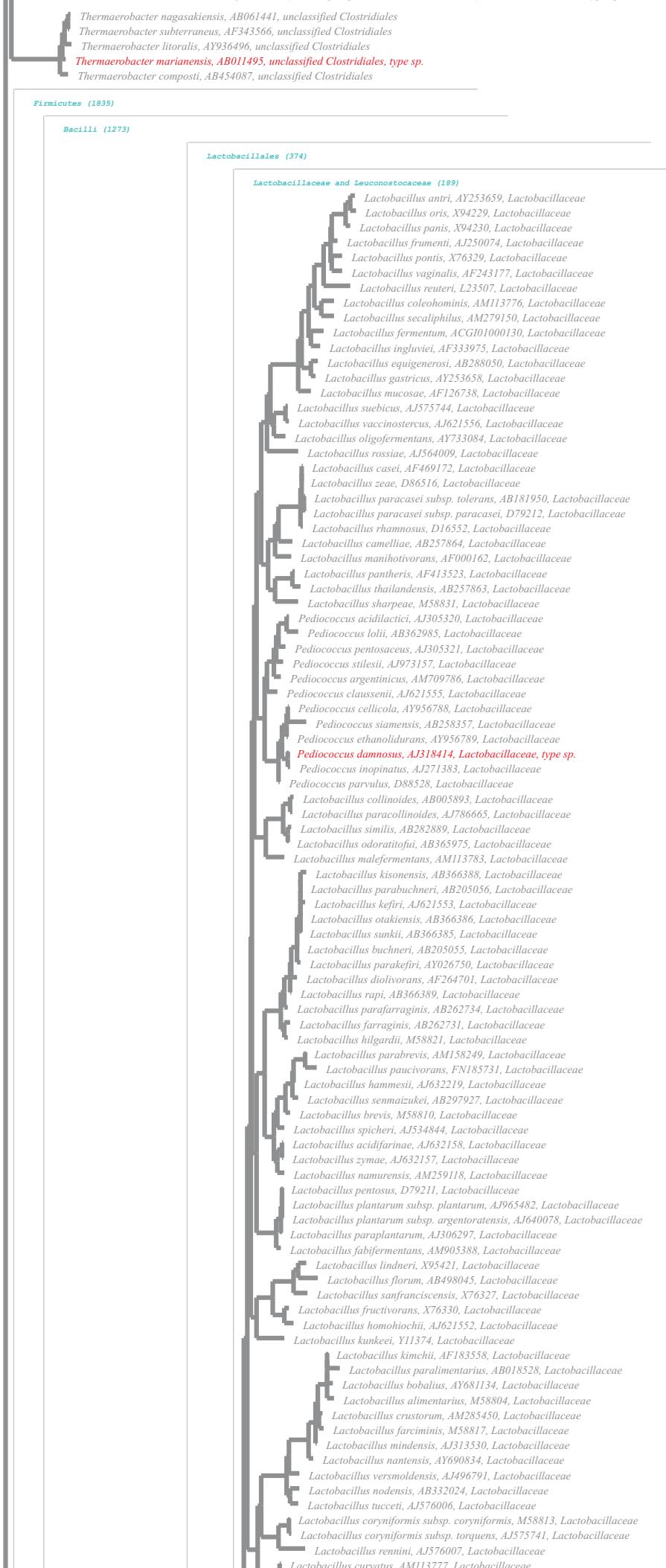


*Kribbella jejuensis*, AY253866, Nocardioidaceae  
*Kribbella swartbergensis*, AY995147, Nocardioidaceae  
*Kribbella aluminosa*, EF126967, Nocardioidaceae  
*Kribbella hippodromi*, EF472955, Nocardioidaceae  
*Kribbella solani*, AY253862, Nocardioidaceae  
Kribbella catacumbae, AM778575, Nocardioidaceae  
*Kribbella karoensis*, AY995146, Nocardioidaceae  
*Kribbella sandramycinii*, AY253864, Nocardioidaceae  
*Kribbella yunnanensis*, AY082061, Nocardioidaceae  
*Kribbella antibiotica*, AY082063, Nocardioidaceae  
*Kribbella ginsengisoli*, AB245391, Nocardioidaceae  
*Kribbella koreensis*, Y09159, Nocardioidaceae  
*Kribbella sancticallisti*, AM778577, Nocardioidaceae  
*Kribbella alba*, AY082062, Nocardioidaceae  
**Kribbella flava**, AY253863, *Nocardioidaceae*, type sp.  
*Kribbella lupini*, AJ811962, Nocardioidaceae  
*Actinopolymorpha rutula*, EF601829, Nocardioidaceae  
*Actinopolymorpha cephalotaxi*, EU438909, Nocardioidaceae  
**Actinopolymorpha singaporense**, AF237815, *Nocardioidaceae*, type sp.  
*Actinopolymorpha alba*, EU706350, Nocardioidaceae

**Micromonosporaceae (118)**

*Actinoplanes cyaneus*, AB036997, Micromonosporaceae  
*Actinoplanes liguriensis*, AJ865471, Micromonosporaceae  
*Actinoplanes italicus*, AB037005, Micromonosporaceae  
*Actinoplanes couchii*, AM400230, Micromonosporaceae  
*Actinoplanes rectilineatus*, AB037010, Micromonosporaceae  
*Actinoplanes sichuanensis*, EU531458, Micromonosporaceae  
*Actinoplanes xinjiangensis*, EU531457, Micromonosporaceae  
*Actinoplanes derwentensis*, AB036999, Micromonosporaceae  
*Actinoplanes missouriensis*, AJ277572, Micromonosporaceae  
*Actinoplanes auranticolor*, U58526, Micromonosporaceae  
*Actinoplanes lobatus*, AB037006, Micromonosporaceae  
*Actinoplanes campanulatus*, AB036995, Micromonosporaceae  
*Actinoplanes capillaceus*, AB013495, Micromonosporaceae  
**Actinoplanes philippensis**, U58525, *Micromonosporaceae*, type sp.  
*Actinoplanes utahensis*, AJ277574, Micromonosporaceae  
*Actinoplanes palleronii*, AJ277573, Micromonosporaceae  
*Actinoplanes regularis*, X93188, Micromonosporaceae  
*Actinoplanes consettensis*, AB036996, Micromonosporaceae  
*Actinoplanes humidus*, AB037004, Micromonosporaceae  
*Actinoplanes digitatis*, AB037000, Micromonosporaceae  
*Actinoplanes durhamensis*, AJ277568, Micromonosporaceae  
*Actinoplanes ferruginea*, AJ277569, Micromonosporaceae  
*Actinoplanes terefensis*, AB468944, Micromonosporaceae  
*Actinoplanes tovenensis*, AB468943, Micromonosporaceae  
*Actinoplanes globisporus*, AB048219, Micromonosporaceae  
*Actinoplanes deccaensis*, AJ277565, Micromonosporaceae  
*Krasilnikovia cinnamomea*, AB236956, Micromonosporaceae  
**Pseudosporangium ferrugineum**, AB302183, *Micromonosporaceae*, type sp.  
**Couchioplanes caeruleus** subsp. *caeruleus*, D85479, *Micromonosporaceae*, type sp.  
*Couchioplanes caeruleus* subsp. *azureus*, X93202, Micromonosporaceae  
*Actinoplanes brasiliensis*, X93185, Micromonosporaceae  
*Actinoplanes teichomyceticus*, AB047513, Micromonosporaceae  
**Spirilliplanes yamanashiensis**, D63912, *Micromonosporaceae*, type sp.  
*Catenuloplanes atrovinosus*, AJ294716, Micromonosporaceae  
**Catenuloplanes japonicus**, X93201, *Micromonosporaceae*, type sp.  
*Catenuloplanes indicus*, AJ294717, Micromonosporaceae  
*Catenuloplanes crispus*, AB024701, Micromonosporaceae  
*Catenuloplanes nepalensis*, FJ715941, Micromonosporaceae  
*Verrucospora lutea*, EF191199, Micromonosporaceae  
*Verrucospora sediminis*, EU870859, Micromonosporaceae  
**Verrucospora giffhornensis**, Y15523, *Micromonosporaceae*, type sp.  
*Asanoa iriomotensis*, AB112081, Micromonosporaceae  
*Asanoa ishikariensis*, AJ294715, Micromonosporaceae  
*Asanoa ferruginea*, AF152108, Micromonosporaceae, type sp.  
*Phytohabitans suffuscus*, AB490769, Micromonosporaceae, type sp.  
*Salinispora arenicola*, AY040619, Micromonosporaceae, type sp.  
*Salinispora tropica*, AY040617, Micromonosporaceae  
*Actinurispora siamensis*, AB454379, Micromonosporaceae, type sp.  
**Plantactinospira mayteni**, FJ214343, *Micromonosporaceae*, type sp.  
*Micromonospora chokriensis*, AB241454, Micromonosporaceae  
*Micromonospora lupini*, AJ783996, Micromonosporaceae  
*Micromonospora mirobrigensis*, AJ626950, Micromonosporaceae  
*Micromonospora siamensis*, AB193565, Micromonosporaceae  
*Micromonospora rifamycinica*, AY561829, Micromonosporaceae  
*Micromonospora matsumotoense*, AF152109, Micromonosporaceae  
*Micromonospora saelicesensis*, AJ783993, Micromonosporaceae  
**Micromonospora chalcea**, X92594, *Micromonosporaceae*, type sp.  
*Micromonospora marina*, AB196712, Micromonosporaceae  
*Micromonospora aurantiaca*, X92604, Micromonosporaceae  
*Micromonospora halophytica*, X92601, Micromonosporaceae  
*Micromonospora purpureochromogenes*, X92611, Micromonosporaceae  
*Micromonospora coxensis*, AB241455, Micromonosporaceae  
*Micromonospora carbonacea*, X92599, Micromonosporaceae  
*Micromonospora kraibensis*, AB196716, Micromonosporaceae  
*Micromonospora inostiola*, X92610, Micromonosporaceae  
*Micromonospora pallida*, X92608, Micromonosporaceae  
*Micromonospora echinaurantiaca*, X92618, Micromonosporaceae  
*Micromonospora olivasterospora*, X92613, Micromonosporaceae  
*Micromonospora viridisfaciens*, X92623, Micromonosporaceae  
*Micromonospora nigra*, X92609, Micromonosporaceae  
*Micromonospora coerulea*, X92598, Micromonosporaceae  
*Micromonospora coriariae*, AJ784008, Micromonosporaceae  
*Micromonospora echinofusca*, X92625, Micromonosporaceae  
*Micromonospora peuetica*, X92603, Micromonosporaceae  
*Micromonospora citrea*, X92617, Micromonosporaceae  
*Micromonospora echinospora*, X92607, Micromonosporaceae  
*Micromonospora fulviviridis*, X92620, Micromonosporaceae  
*Micromonospora inyonensis*, X92629, Micromonosporaceae  
*Micromonospora sagamiensis*, X92624, Micromonosporaceae  
*Micromonospora rosaria*, X92631, Micromonosporaceae  
*Micromonospora chersina*, X92628, Micromonosporaceae  
*Micromonospora endolithica*, AJ560635, Micromonosporaceae  
*Micromonospora auratinigra*, AB159779, Micromonosporaceae  
*Micromonospora chaitaphumensis*, AB196710, Micromonosporaceae  
*Micromonospora tubaghiae*, EU196562, Micromonosporaceae  
*Micromonospora eburnea*, AB107231, Micromonosporaceae  
*Micromonospora narathiwatensis*, AB193559, Micromonosporaceae  
*Micromonospora pattaloongensis*, AB775607, Micromonosporaceae





Lactobacillus curvatus, AM11377, Lactobacillaceae  
Lactobacillus sakei subsp. sakei, AM11378, Lactobacillaceae  
Lactobacillus sakei subsp. carnosus, AY204889, Lactobacillaceae  
Lactobacillus graminis, AM113778, Lactobacillaceae

**Leuconostocaceae (34)**

- Leuconostoc gelidum, AF175402, Leuconostocaceae
- Leuconostoc kimchii, AF173986, Leuconostocaceae
- Leuconostoc iniae, AF439560, Leuconostocaceae
- Leuconostoc gasomitatum, AF231131, Leuconostocaceae
- Leuconostoc carnosum, AB022925, Leuconostocaceae
- Leuconostoc citreum, AF111948, Leuconostocaceae
- Leuconostoc holzapfeli, AM600682, Leuconostocaceae
- Leuconostoc palmar, AM940225, Leuconostocaceae
- Leuconostoc lactic, AB023968, Leuconostocaceae
- Leuconostoc pseudomesenteroides, AB023237, Leuconostocaceae
- Leuconostoc mesenteroides subsp. mesenteroides, CP000414, Leuconostocaceae, type sp.**
- Leuconostoc mesenteroides subsp. dextranicum, AB023244, Leuconostocaceae
- Fructobacillus duronis, AJ780981, Leuconostocaceae
- Fructobacillus fructosus, AF360737, Leuconostocaceae
- Fructobacillus ficulneus, AF360736, Leuconostocaceae
- Fructobacillus pseudoficulneus, AY169967, Leuconostocaceae
- Leuconostoc fallax, AF360738, Leuconostocaceae
- Oenococcus kitaharae, AB221475, Leuconostocaceae
- Oenococcus oeni, AB022924, Leuconostocaceae, type sp.**
- Weissella minor, AB022920, Leuconostocaceae
- Weissella viridescens, AB023236, Leuconostocaceae, type sp.**
- Weissella halotolerans, AB022926, Leuconostocaceae
- Weissella paramesenteroides, AB023238, Leuconostocaceae
- Weissella thailandensis, AB023838, Leuconostocaceae
- Weissella hellenica, S67831, Leuconostocaceae
- Weissella confusa, AB023241, Leuconostocaceae
- Weissella cibaria, AJ295989, Leuconostocaceae
- Weissella kandleri, M23038, Leuconostocaceae
- Weissella koreensis, AY035891, Leuconostocaceae
- Weissella soli, AY028260, Leuconostocaceae
- Weissella ghanensis, AM882997, Leuconostocaceae
- Weissella fabaria, FM179678, Leuconostocaceae
- Weissella beninensis, EU439435, Leuconostocaceae

**Lactobacillaceae (113)**

- Lactobacillus amylolyticus, Y17361, Lactobacillaceae
- Lactobacillus hamsteri, AJ306298, Lactobacillaceae
- Lactobacillus acidophilus, AY773947, Lactobacillaceae
- Lactobacillus amylovorus, AY944408, Lactobacillaceae
- Lactobacillus kitasatosi, AB107638, Lactobacillaceae
- Lactobacillus kefirancifaciens subsp. kefirancifaciens, AM113781, Lactobacillaceae**
- Lactobacillus crispatus, AF257097, Lactobacillaceae
- Lactobacillus ultunensis, AY253660, Lactobacillaceae
- Lactobacillus gallinarum, AJ417737, Lactobacillaceae
- Lactobacillus helveticus, AM113779, Lactobacillaceae
- Lactobacillus intestinalis, AJ306299, Lactobacillaceae
- Lactobacillus kalixensis, AY253657, Lactobacillaceae
- Lactobacillus delbrueckii subsp. lactic, AY050173, Lactobacillaceae
- Lactobacillus delbrueckii subsp. delbrueckii, AY773949, Lactobacillaceae, type sp.**
- Lactobacillus delbrueckii subsp. indicus, AY421720, Lactobacillaceae
- Lactobacillus delbrueckii subsp. bulgaricus, CR954253, Lactobacillaceae
- Lactobacillus equicursoris, AB290830, Lactobacillaceae
- Lactobacillus acetotolerans, M58801, Lactobacillaceae
- Lactobacillus fornicalis, Y18654, Lactobacillaceae
- Lactobacillus jensenii, AF243176, Lactobacillaceae
- Lactobacillus pratti, AJ272391, Lactobacillaceae
- Lactobacillus gasseri, AF519171, Lactobacillaceae
- Lactobacillus taiwanensis, EU487512, Lactobacillaceae
- Lactobacillus johnsonii, AJ002515, Lactobacillaceae
- Lactobacillus iners, Y16329, Lactobacillaceae
- Lactobacillus amylophilus, M58806, Lactobacillaceae
- Lactobacillus amylophilicus, AM236149, Lactobacillaceae
- Lactobacillus concavus, AY683322, Lactobacillaceae
- Lactobacillus dextrinicu, D87679, Lactobacillaceae
- Lactobacillus harbinensis, AB196123, Lactobacillaceae**
- Lactobacillus perlons, Y19167, Lactobacillaceae
- Lactobacillus composti, AB268118, Lactobacillaceae
- Paralactobacillus selangorensis, AF049745, Lactobacillaceae, type sp.**
- Lactobacillus hayakitenensis, AB267406, Lactobacillaceae
- Lactobacillus salivarius, AF089108, Lactobacillaceae
- Lactobacillus saerimneri, AT255802, Lactobacillaceae
- Lactobacillus ceti, AM292799, Lactobacillaceae
- Lactobacillus acidipiscis, AB023836, Lactobacillaceae
- Lactobacillus pobuzihii, AB326358, Lactobacillaceae
- Lactobacillus aviaris subsp. aviaris, M58808, Lactobacillaceae
- Lactobacillus agilis, M58803, Lactobacillaceae
- Lactobacillus equi, AB048833, Lactobacillaceae
- Lactobacillus ruminis, AB326354, Lactobacillaceae
- Lactobacillus animalis, AB326350, Lactobacillaceae
- Lactobacillus apodemi, AJ871178, Lactobacillaceae
- Lactobacillus murinus, AJ621554, Lactobacillaceae
- Lactobacillus ghanensis, DQ523489, Lactobacillaceae
- Lactobacillus nagelii, AB162131, Lactobacillaceae
- Lactobacillus vini, AJ576009, Lactobacillaceae
- Lactobacillus aquaticus, DQ664203, Lactobacillaceae
- Lactobacillus varuum, AY681126, Lactobacillaceae
- Lactobacillus succinola, AB433982, Lactobacillaceae
- Lactobacillus capillatus, AB365976, Lactobacillaceae
- Lactobacillus satsumensis, AB154519, Lactobacillaceae
- Lactobacillus oeni, AY681127, Lactobacillaceae
- Lactobacillus hordei, EU074850, Lactobacillaceae
- Lactobacillus mali, M58824, Lactobacillaceae
- Lactobacillus cacaonum, AM905389, Lactobacillaceae
- Lactobacillus algidus, AB033209, Lactobacillaceae

**Enterococcaceae and Streptococcaceae (131)**

**Streptococcaceae (82)**

- Streptococcus pneumoniae, AF003930, Streptococcaceae
- Streptococcus pseudopneumoniae, AY612844, Streptococcaceae
- Streptococcus mitis, AF003929, Streptococcaceae
- Streptococcus oralis, AY485602, Streptococcaceae
- Streptococcus infantis, AY485603, Streptococcaceae
- Streptococcus australis, AY485604, Streptococcaceae
- Streptococcus parasanguinis, AF003933, Streptococcaceae
- Streptococcus agalactiae, AF104678, Streptococcaceae



**Pilibacter termitis, AY533171, Enterococcaceae, type sp.**

*Enterococcus hermanniensis*, AY396047, Enterococcaceae

*Enterococcus pallens*, DQ411812, Enterococcaceae

*Enterococcus avium*, AF133535, Enterococcaceae

*Enterococcus raffinosus*, Y18296, Enterococcaceae

*Enterococcus devriesei*, AJ891167, Enterococcaceae

*Enterococcus pseudoavium*, AF061002, Enterococcaceae

*Enterococcus gilvus*, DQ411810, Enterococcaceae

*Enterococcus malodoratus*, AJ301835, Enterococcaceae

*Enterococcus faecium*, AJ301830, Enterococcaceae

*Enterococcus ratti*, AF539705, Enterococcaceae

*Enterococcus hirae*, Y17302, Enterococcaceae

*Enterococcus mundtii*, AF061013, Enterococcaceae

*Enterococcus villorum*, AJ271329, Enterococcaceae

*Enterococcus durans*, AJ276354, Enterococcaceae

*Enterococcus thailandicus*, EF197994, Enterococcaceae

***Tetragenococcus halophilus*, D88668, Enterococcaceae, type sp.**

*Tetragenococcus solitarius*, AJ301840, Enterococcaceae

*Tetragenococcus koreensis*, AY690334, Enterococcaceae

*Tetragenococcus muriticus*, D88824, Enterococcaceae

*Enterococcus aquimarinus*, AJ877015, Enterococcaceae

*Enterococcus camilliae*, EF154454, Enterococcaceae

*Enterococcus italicus*, AJ582753, Enterococcaceae

*Enterococcus sulfureus*, AF061001, Enterococcaceae

*Enterococcus saccharolyticus*, AF061004, Enterococcaceae

*Enterococcus cecorum*, AF061009, Enterococcaceae

*Enterococcus columbae*, AF061006, Enterococcaceae

*Enterococcus asini*, Y11621, Enterococcaceae

*Enterococcus canintestini*, AJ888906, Enterococcaceae

*Enterococcus dispar*, AF061007, Enterococcaceae

*Enterococcus casseliiflavus*, AF039903, Enterococcaceae

***Melissococcus plutonius*, AY862507, Enterococcaceae, type sp.**

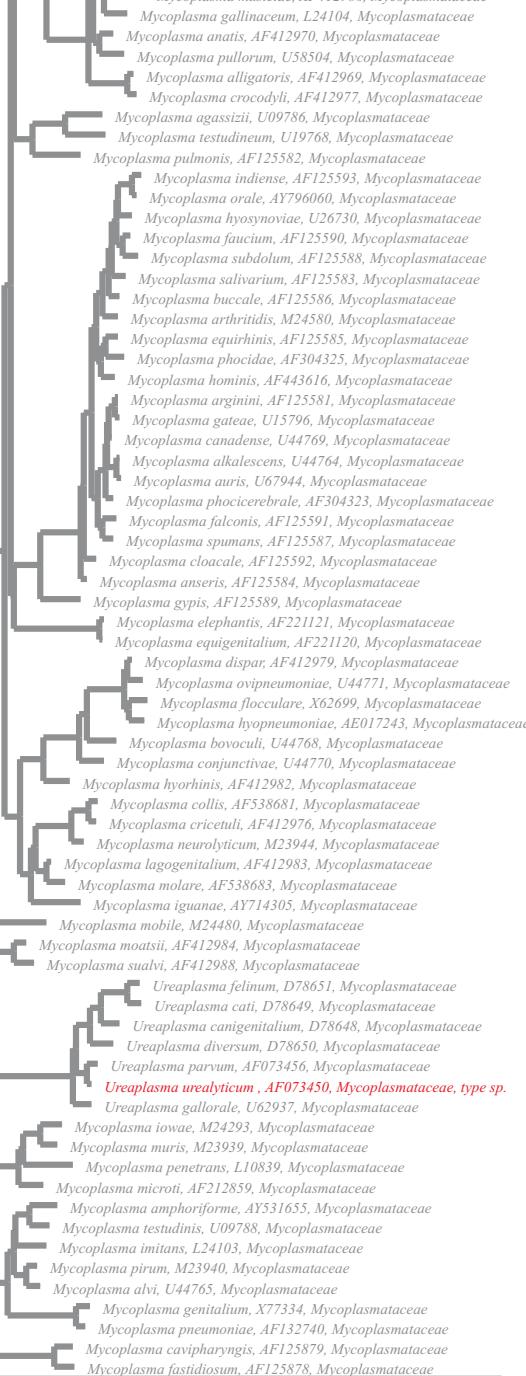
*Enterococcus gallinarum*, AF039900, Enterococcaceae

*Enterococcus canis*, X76177, Enterococcaceae

*Enterococcus phoeniculicola*, AY028437, Enterococcaceae

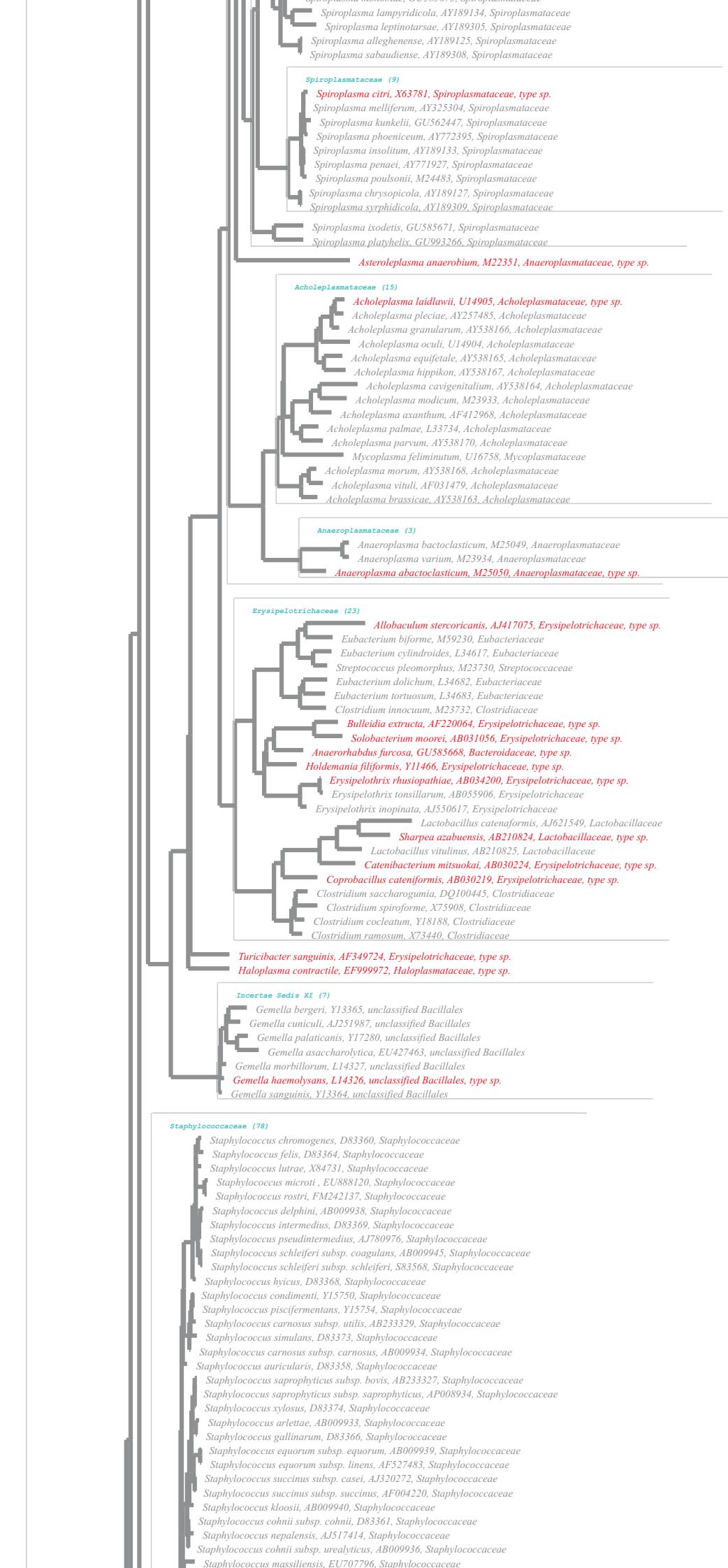
*Enterococcus cacciae*, AY943820, Enterococcaceae





#### Entomoplasmatales (56)







Bacillus coahuilensis, EF014452, Bacillaceae



Listeriaceae (11)

- Listeria ivanovii* subsp. *londoniensis*, X98529, Listeriaceae  
*Listeria ivanovii* subsp. *ivanovii*, X98528, Listeriaceae  
*Listeria seeligeri*, DQ065845, Listeriaceae  
*Listeria innocua*, X98527, Listeriaceae  
***Listeria monocytogenes*, X56153, Listeriaceae, type sp.**  
*Listeria marnitris*, EU545982, Listeriaceae  
*Listeria welshimeri*, DQ065846, Listeriaceae  
*Brochothrix campestris*, X56156, Listeriaceae  
***Brochothrix thermosphacta*, AY543023, Listeriaceae, type sp.**  
*Listeria rocourtiae*, FJ557241, Listeriaceae  
*Listeria grayi*, X98526, Listeriaceae

*Jeotgalibacillus alimentarius*, AF281158, Planococcaceae, type sp.

- Jeotgalibacillus salarius*, EU874389, Planococcaceae  
*Jeotgalibacillus campisalis*, AT190535, Planococcaceae  
*Jeotgalibacillus martinis*, AJ237708, Planococcaceae  
*Bacillus aquimaris*, AF483625, Bacillaceae  
*Bacillus vietnamensis*, AB099708, Bacillaceae  
*Bacillus marißflavi*, AF483624, Bacillaceae  
*Bacillus seohaeanensis*, AT667495, Bacillaceae  
*Bacillus mycoides*, AB021192, Bacillaceae  
*Bacillus weihenstephanensis*, AB021199, Bacillaceae  
*Bacillus thuringiensis*, D16281, Bacillaceae  
*Bacillus cereus*, AE016877, Bacillaceae  
*Bacillus anthracis*, AB190217, Bacillaceae  
*Bacillus pseudomycoides*, AF013121, Bacillaceae  
*Bacillus fusiculus*, AB049195, Bacillaceae  
*Bacillus panaciterrae*, AB245380, Bacillaceae  
*Bacillus flexus*, AB021185, Bacillaceae  
*Bacillus megaterium*, D16273, Bacillaceae  
*Bacillus koreensis*, AT667496, Bacillaceae

Bacillaceae 1 (17)

- Bacillus aerius*, AJ831843, Bacillaceae  
*Bacillus aerophilus*, AJ831844, Bacillaceae  
*Bacillus stratosphericus*, AJ831841, Bacillaceae  
*Bacillus licheniformis*, CP000002, Bacillaceae  
*Bacillus sonorensis*, AF302118, Bacillaceae  
*Bacillus amyloliquefaciens*, AB255669, Bacillaceae  
*Bacillus siamensis*, GQ281299, Bacillaceae  
*Bacillus methylotrophicus*, EU194897, Bacillaceae  
***Bacillus subtilis* subsp. *subtilis*, AJ276351, Bacillaceae, type sp.**  
*Bacillus subtilis* subsp. *spizizenii*, AF074970, Bacillaceae  
*Bacillus vallismortis*, AB021198, Bacillaceae  
*Bacillus mojavensis*, AB021191, Bacillaceae  
*Brevibacterium halotolerans*, AM747812, Brevibacteriaceae  
*Bacillus atrophaeus*, AB021181, Bacillaceae  
*Bacillus pumilus*, AY876289, Bacillaceae  
*Bacillus safensis*, AF234854, Bacillaceae  
*Bacillus altitudinis*, AJ831842, Bacillaceae

*Bacillus ginsengihumi*, AB245378, Bacillaceae

- Bacillus acidiproducens*, EF379274, Bacillaceae  
*Bacillus acidicola*, AF547209, Bacillaceae  
*Bacillus oleronius*, AT988598, Bacillaceae  
*Bacillus sporothermodurans*, U49078, Bacillaceae  
*Bacillus carboniphilus*, AB021182, Bacillaceae  
*Bacillus chungangensis*, FJ514932, Bacillaceae  
*Bacillus endophyticus*, AF295302, Bacillaceae  
*Bacillus isabeliae*, AM503357, Bacillaceae  
*Bacillus shackletonii*, AJ250318, Bacillaceae  
*Bacillus circulans*, AY043084, Bacillaceae  
*Bacillus nealsonii*, EU656111, Bacillaceae  
*Bacillus korlensis*, EU603320, Bacillaceae  
*Bacillus siralis*, AF071856, Bacillaceae  
*Bacillus benzoevorans*, X60611, Bacillaceae  
*Bacillus firmus*, D16268, Bacillaceae  
*Bacillus infantis*, AT904032, Bacillaceae  
*Bacillus oceanisediminis*, GQ292772, Bacillaceae  
*Bacillus kribbensis*, DQ280367, Bacillaceae  
***Falsibacillus pallidus*, EU364818, Bacillaceae, type sp.**  
*Bacillus horneckiae*, EU861362, Bacillaceae

Paenibacillaceae 2 (24)

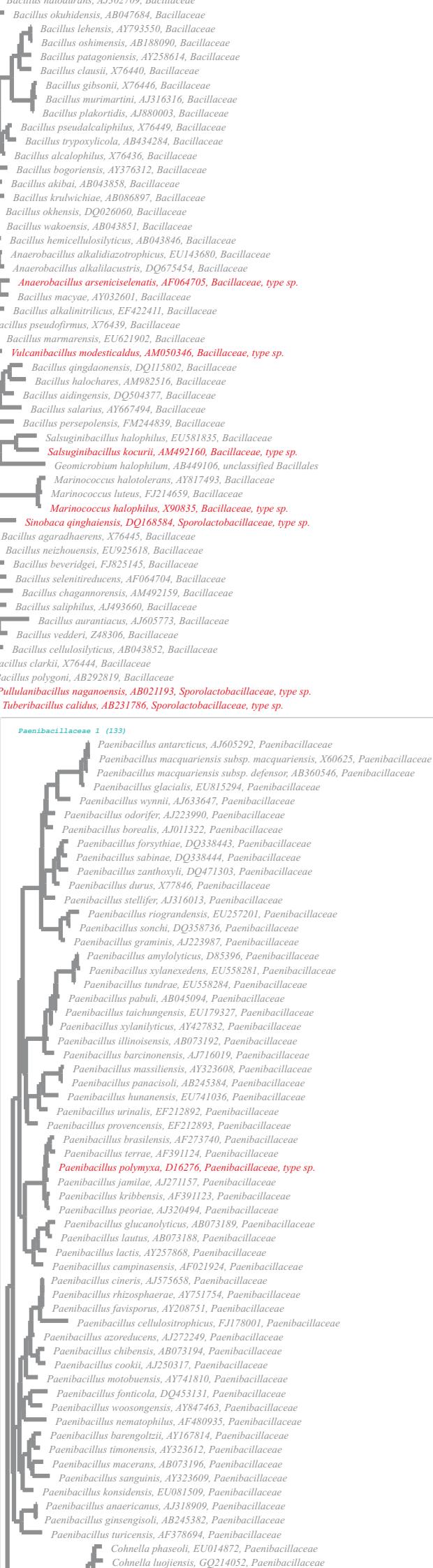
- Brevibacillus centrosporus*, D78458, Paenibacillaceae  
*Brevibacillus choshinensis*, AB112713, Paenibacillaceae  
*Brevibacillus reuszeri*, AB112715, Paenibacillaceae  
*Brevibacillus parabrevis*, AB112714, Paenibacillaceae  
***Brevibacillus brevis*, AB271756, Paenibacillaceae, type sp.**  
*Brevibacillus formosus*, AB112712, Paenibacillaceae  
*Brevibacillus agri*, AB112716, Paenibacillaceae  
*Brevibacillus limnophilus*, AB112717, Paenibacillaceae  
*Brevibacillus invocatus*, AF378232, Paenibacillaceae  
*Brevibacillus panacium*, EU383033, Paenibacillaceae  
*Brevibacillus borstelensis*, AB112721, Paenibacillaceae  
*Brevibacillus ginsengisoli*, AB245376, Paenibacillaceae  
*Brevibacillus laterosporus*, D16271, Paenibacillaceae  
*Brevibacillus levickii*, AJ715378, Paenibacillaceae  
*Brevibacillus thermoruber*, Z26921, Paenibacillaceae  
***Aneurinibacillus aneurinilyticus*, X94194, Paenibacillaceae, type sp.**  
*Aneurinibacillus migulanus*, X94195, Paenibacillaceae  
*Aneurinibacillus danicus*, AB112725, Paenibacillaceae  
*Aneurinibacillus thermoaeophilus*, X94196, Paenibacillaceae  
*Aneurinibacillus terranovensis*, AJ715385, Paenibacillaceae  
***Ammoniphilus oxalicus*, Y14578, Paenibacillaceae, type sp.**  
*Ammoniphilus oxalivorus*, Y14580, Paenibacillaceae  
***Oxalophagus oxalicus*, Y14581, Paenibacillaceae, type sp.**

Incertae Sedis XII (13)

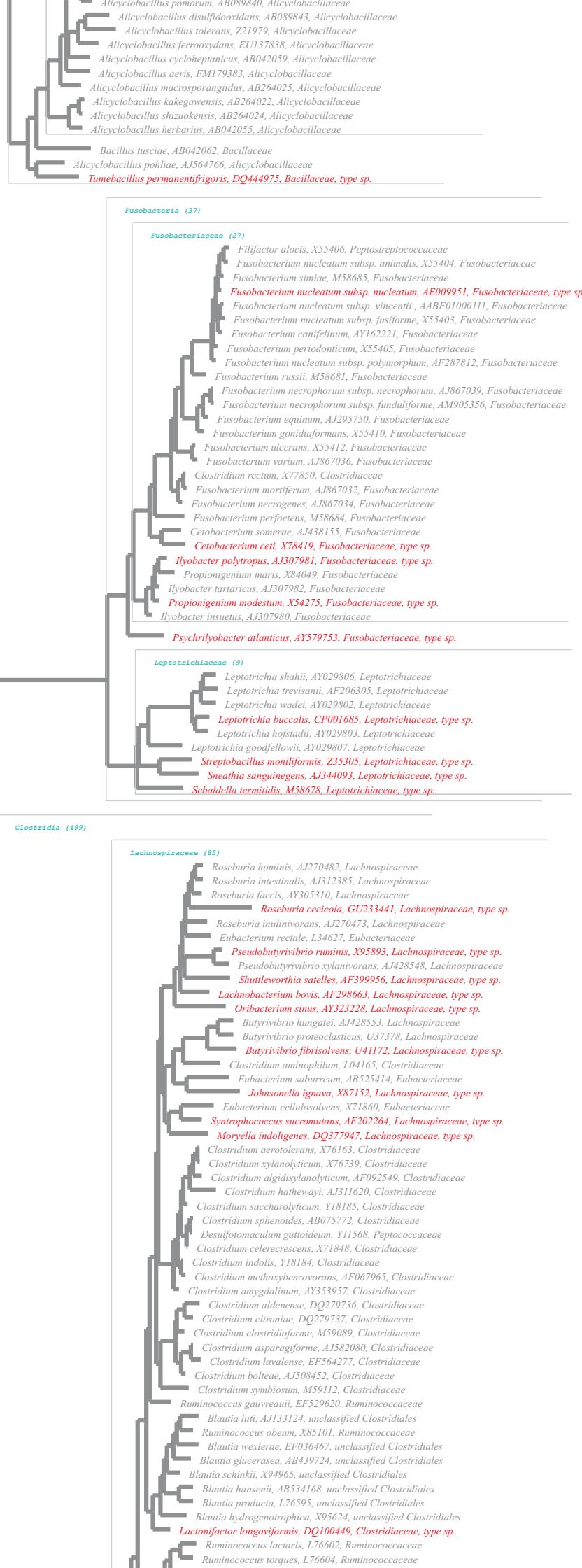
- Exiguobacterium antarcticum*, DQ019164, unclassified Bacillales  
*Exiguobacterium soli*, AY864633, unclassified Bacillales  
*Exiguobacterium oxidotolerans*, AB105164, unclassified Bacillales  
*Exiguobacterium artemiae*, AM072763, unclassified Bacillales  
*Exiguobacterium undae*, DQ019165, unclassified Bacillales  
*Exiguobacterium sibiricum*, CP001022, unclassified Bacillales  
*Exiguobacterium acetylicum*, DQ019167, unclassified Bacillales  
*Exiguobacterium indicum*, AJ846291, unclassified Bacillales

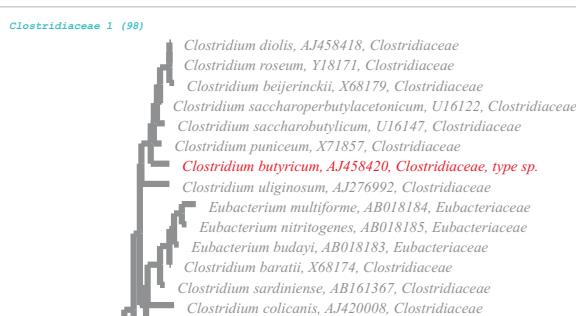
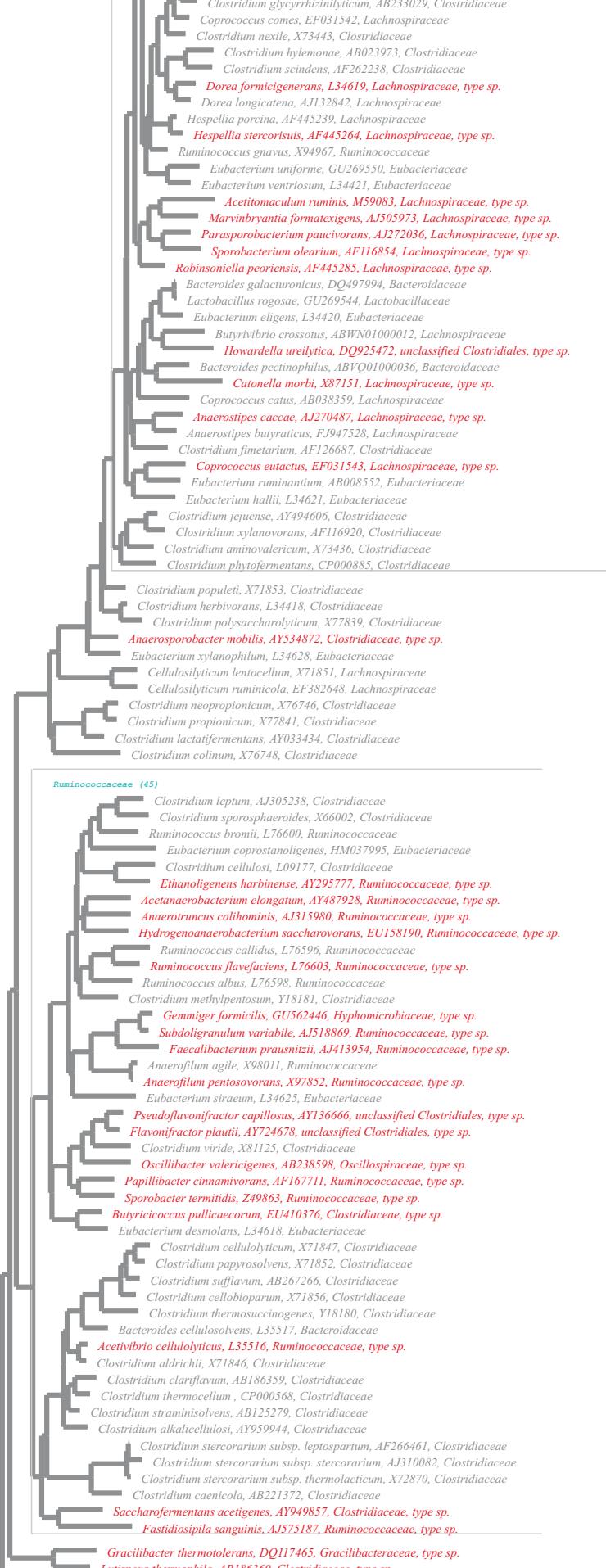


*Halobacillus profundi*, AB189298, Bacillaceae  
*Halobacillus karajensis*, AJ486874, Bacillaceae  
*Halobacillus dabanensis*, AY351395, Bacillaceae  
*Halobacillus mangrovi*, DQ888316, Bacillaceae  
*Thalassobacillus devorans*, AJ717299, *Bacillaceae*, type sp.  
*Thalassobacillus cyri*, FM864226, Bacillaceae  
*Thalassobacillus hwangdonensis*, EU817571, Bacillaceae  
*Sediminibacillus halophilus*, AM905297, *Bacillaceae*, type sp.  
*Sediminibacillus albus*, DQ989634, Bacillaceae  
*Virgibacillus koreensis*, AY616012, Bacillaceae  
*Amphibacillus sediminis*, AB243866, Bacillaceae  
*Amphibacillus jilinensis*, FJ169626, Bacillaceae  
*Natronobacillus azotifigens*, EU143681, *Bacillaceae*, type sp.  
*Halolactibacillus halophilus*, AB196783, *Bacillaceae*, type sp.  
*Halolactibacillus miurensis*, AB196784, Bacillaceae  
*Halolactibacillus alkaliphilus*, EF554593, Bacillaceae  
*Amphibacillus tropicus*, AF418602, Bacillaceae  
*Amphibacillus fermentum*, AF418603, Bacillaceae  
*Paraliobacillus quinghaiensis*, EU135728, Bacillaceae  
*Amphibacillus xylamus*, D82065, *Bacillaceae*, type sp.  
*Paraliobacillus ryukyuensis*, AB087828, *Bacillaceae*, type sp.  
*Gracilibacillus lacisalsi*, DQ664540, Bacillaceae  
*Gracilibacillus thailandensis*, FJ182214, Bacillaceae  
*Gracilibacillus satiphilus*, EU784646, Bacillaceae  
*Gracilibacillus orientalis*, AM040716, Bacillaceae  
*Gracilibacillus dipsosauri*, AB101591, Bacillaceae  
*Gracilibacillus ureilyticus*, EU709020, Bacillaceae  
*Gracilibacillus boracitolerans*, AB197126, Bacillaceae  
*Gracilibacillus halotolerans*, AF036922, *Bacillaceae*, type sp.  
*Gracilibacillus halophilus*, EU135704, Bacillaceae  
*Terribacillus goricensis*, DQ519571, *Bacillaceae*, type sp.  
*Terribacillus saccharophilus*, AB243845, *Bacillaceae*, type sp.  
*Terribacillus halophilus*, AB243849, Bacillaceae  
*Terribacillus ailingensis*, FJ386524, Bacillaceae  
*Oceanobacillus oncorhynchi* subsp. *oncorhynchi*, AB188089, Bacillaceae  
*Oceanobacillus locisalsi*, EU817570, Bacillaceae  
*Oceanobacillus oncorhynchi* subsp. *incaldanensis*, AJ640134, Bacillaceae  
*Oceanobacillus neutriphilus*, EU709018, Bacillaceae  
*Oceanobacillus sojae*, AB473561, Bacillaceae  
*Oceanobacillus iheyensis*, AB010863, *Bacillaceae*, type sp.  
*Oceanobacillus chironomi*, DQ298074, Bacillaceae  
*Oceanobacillus kapialis*, AB366005, Bacillaceae  
*Oceanobacillus picturiae*, AJ315060, Bacillaceae  
*Oceanobacillus caeni*, AB275883, Bacillaceae  
*Oceanobacillus profundus*, DQ386635, Bacillaceae  
*Bacillus thermocloacae*, Z26939, Bacillaceae  
*Virgibacillus halophilus*, AB243851, Bacillaceae  
*Ornithinibacillus bavaricensis*, Y13066, *Bacillaceae*, type sp.  
*Ornithinibacillus californiensis*, AF326365, Bacillaceae  
*Ornithinibacillus contaminans*, FN597064, Bacillaceae  
*Virgibacillus sediminis*, AY121430, Bacillaceae  
*Virgibacillus xinjiangensis*, DQ664543, Bacillaceae  
*Virgibacillus salexigens*, Y11603, Bacillaceae  
*Virgibacillus marismortui*, AJ009793, Bacillaceae  
*Virgibacillus salarius*, AB197851, Bacillaceae  
*Virgibacillus olivae*, DQ139839, Bacillaceae  
*Virgibacillus halodenitrificans*, AY543169, Bacillaceae  
*Virgibacillus chiguensis*, EF101168, Bacillaceae  
*Virgibacillus dokdonensis*, AY822043, Bacillaceae  
*Virgibacillus pantothenticus*, D16275, *Bacillaceae*, type sp.  
*Virgibacillus promii*, AJ012667, Bacillaceae  
*Lentibacillus halodurans*, AY321433, Bacillaceae  
*Lentibacillus salarius*, AY667493, Bacillaceae  
*Lentibacillus salinarum*, EF601571, Bacillaceae  
*Lentibacillus salicampi*, AY057394, *Bacillaceae*, type sp.  
*Lentibacillus persicus*, FN376846, Bacillaceae  
*Lentibacillus kapialis*, AB231905, Bacillaceae  
*Lentibacillus jeotgali*, FJ182050, Bacillaceae  
*Lentibacillus halophilus*, AB191345, Bacillaceae  
*Lentibacillus juripiscarius*, AB127980, Bacillaceae  
*Lentibacillus salis*, AY762976, Bacillaceae  
*Lentibacillus lacisalsi*, AY667497, Bacillaceae  
*Virgibacillus carmonensis*, AJ316302, Bacillaceae  
*Virgibacillus necropolis*, AJ315056, Bacillaceae  
*Virgibacillus arcticus*, EF675742, Bacillaceae  
*Virgibacillus byungsanensis*, FJ357159, Bacillaceae  
*Virgibacillus salinus*, FM205010, Bacillaceae  
*Virgibacillus subterraneus*, FJ746573, Bacillaceae  
*Virgibacillus kekensis*, AY121439, Bacillaceae  
*Cerasibacillus quisquilarum*, AB107894, *Bacillaceae*, type sp.  
*Alkalibacillus filiformis*, AJ493661, Bacillaceae  
*Alkalibacillus haloalkaliphilus*, AJ238041, *Bacillaceae*, type sp.  
*Alkalibacillus silvisoli*, AB264528, Bacillaceae  
*Alkalibacillus halophilus*, DQ359731, Bacillaceae  
*Alkalibacillus salilacus*, AY671976, Bacillaceae  
*Alkalibacillus flavidus*, EU874387, Bacillaceae  
*Halalkalibacillus halophilus*, AB264529, *Bacillaceae*, type sp.  
*Piscibacillus saltipiscarius*, AB194046, *Bacillaceae*, type sp.  
*Aquisalibacillus elongatus*, AM911047, Bacillaceae, type sp.  
*Tenuibacillus multivorans*, AY319933, Bacillaceae, type sp.  
*Filobacillus miloensis*, AJ238042, Bacillaceae, type sp.  
*Salirhabdus euzebyi*, AM292417, Bacillaceae, type sp.  
*Pontibacillus chungwhensis*, AY553296, Bacillaceae, type sp.  
*Pontibacillus marinus*, AY603977, Bacillaceae  
*Pontibacillus litoralis*, EU583724, Bacillaceae  
*Pontibacillus halophilus*, EU583728, Bacillaceae  
*Salinibacillus ailingensis*, AY321436, *Bacillaceae*, type sp.  
*Salinibacillus kushneri*, AY321434, Bacillaceae  
*Paucisalibacillus globulus*, AM114102, *Bacillaceae*, type sp.  
*Bacillus taeanensis*, AY603978, Bacillaceae  
*Bacillus macauensis*, AY373018, Bacillaceae  
*Bacillus rigui*, EU939689, Bacillaceae  
*Bacillus solisalsi*, EU046268, Bacillaceae  
*Bacillus gelatinii*, AJ551329, Bacillaceae  
*Bacillus arsenicus*, AJ606700, Bacillaceae  
*Bacillus barbaricus*, AJ422145, Bacillaceae  
*Bacillus algicola*, AY228462, Bacillaceae  
*Bacillus hwajinpoensis*, AF541966, Bacillaceae  
*Bacillus decolorationis*, AJ315075, Bacillaceae  
*Bacillus kaledewara*, AJ202700, Bacillaceae

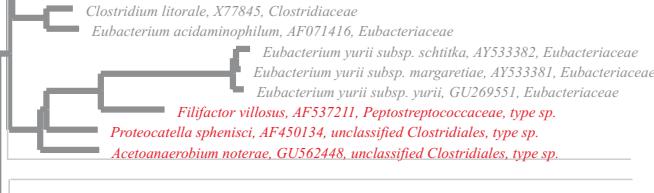












**Clostridiaceae 2 (15)**

- Clostridium aceticum*, Y18183, Clostridiaceae
- Clostridium formicaceticum*, X77836, Clostridiaceae
- Anaeovirgula multivorans*, AB201750, unclassified Clostridiales, type sp.
- Natronincola ferruleducens*, EU878275, Clostridiaceae
- Natronincola peptidivorans*, EF382661, Clostridiaceae
- Natronincola histidinovorans*, Y16716, Clostridiaceae, type sp.
- Tindallia californiensis*, AF373919, Clostridiaceae
- Tindallia magadensis*, Y15626, Clostridiaceae, type sp.
- Tindallia texocoensis*, DQ234901, Clostridiaceae
- Anoxynatronum sibiricum*, AF522323, Clostridiaceae, type sp.
- Alkaliphilus crotonatoxidans*, AF467248, Clostridiaceae
- Alkaliphilus peptidifermenans*, EF382660, Clostridiaceae
- Alkaliphilus transvaalensis*, AB037677, Clostridiaceae, type sp.
- Alkaliphilus oremlandii*, DQ250645, Clostridiaceae
- Alkaliphilus halophilus*, EU627628, Clostridiaceae

**Incertae Sedis XIII (13)**

- Eubacterium minutum*, U13037, Eubacteriaceae
- Eubacterium nodatum*, Z36274, Eubacteriaceae
- Eubacterium pyruvativorans*, AJ310135, Eubacteriaceae
- Eubacterium infirmum*, U13039, Eubacteriaceae
- Eubacterium sulci*, AJ006963, Eubacteriaceae
- Mogibacterium neglectum*, AB037875, unclassified Clostridiales
- Mogibacterium vescum*, AB021702, unclassified Clostridiales
- Mogibacterium diversum*, AB037874, unclassified Clostridiales
- Mogibacterium pumilum*, AB021701, unclassified Clostridiales, type sp.
- Mogibacterium timidum*, Z36296, unclassified Clostridiales
- Eubacterium brachy*, Z36272, Eubacteriaceae
- Anaevorax odorimutans*, AJ251215, unclassified Clostridiales, type sp.
- Eubacterium saphenum*, U65987, Eubacteriaceae

**Incertae Sedis XII (3)**

- Fusibacter paucivorans*, AF050099, unclassified Clostridiales, type sp.
- Guggenheimella bovis*, AY272039, unclassified Clostridiales, type sp.
- Acidaminobacter hydrogenoformans*, AF016691, unclassified Clostridiales, type sp.

**Clostridiaceae 4 (5)**

- Thermotalea metallivorans*, EU443727, Clostridiaceae, type sp.
- Geosporobacter subterraneus*, DQ643978, Clostridiaceae, type sp.
- Caminiella sporogenes*, AJ320233, Clostridiaceae, type sp.
- Clostridium caminithermalis*, AF458779, Clostridiaceae
- Clostridium halophilum*, X77837, Clostridiaceae

**Eubacterium angustum**, L34612, Eubacteriaceae

**Proteiniborus ethanoligenes**, EF116488, unclassified Clostridiales, type sp.

**Incertae Sedis XI (32)**

- Anaerococcus prevotii*, AF542232, unclassified Clostridiales, type sp.
- Anaerococcus tetradus*, AF542234, unclassified Clostridiales
- Anaerococcus octavius*, Y07841, unclassified Clostridiales
- Anaerococcus lactolyticus*, AF542233, unclassified Clostridiales
- Anaerococcus murdochii*, DQ911243, unclassified Clostridiales
- Anaerococcus hydrogenalis*, ABXA01000039, unclassified Clostridiales
- Anaerococcus vaginalis*, AF542229, unclassified Clostridiales
- Murdochia asaccharolytica*, EU483153, unclassified Clostridiales, type sp.
- Helcoccocus kunzii*, X69837, unclassified Clostridiales, type sp.
- Helcoccocus ovis*, Y16279, unclassified Clostridiales
- Helcoccocus suecensis*, AJ579914, unclassified Clostridiales
- Finegoldia magna*, AF542227, unclassified Clostridiales, type sp.
- Gallicola barnesiae*, AB038361, unclassified Clostridiales, type sp.
- Parvimonas micra*, AY323523, unclassified Clostridiales, type sp.
- Peptoniphilus gorbachii*, DQ911241, unclassified Clostridiales
- Peptoniphilus harei*, Y07839, unclassified Clostridiales
- Peptoniphilus Olsenii*, DQ911242, unclassified Clostridiales
- Peptoniphilus lacrimalis*, AF542230, unclassified Clostridiales
- Anaerosphaera aminiphila*, AB298735, Peptostreptococcaceae, type sp.
- Peptoniphilus asaccharolyticus*, AF542228, unclassified Clostridiales, type sp.
- Peptoniphilus indolicus*, AY153431, unclassified Clostridiales
- Peptoniphilus ivorii*, Y07840, unclassified Clostridiales
- Tissierella creatiniphila*, X80227, unclassified Clostridiales
- Tissierella praecauta*, X80832, unclassified Clostridiales, type sp.
- Soehngenia saccharolytica*, AY353956, unclassified Clostridiales, type sp.
- Tepidimicrobium xylanilyticum*, EF522948, Clostridiaceae
- Tepidimicrobium ferriphilum*, AY656718, Clostridiaceae, type sp.
- Clostridium ultunense*, Z69293, Clostridiaceae
- Sporanaerobacter acetigenes*, AF358114, unclassified Clostridiales, type sp.
- Sedimentibacter hydroxybenzoicus*, L11305, unclassified Clostridiales, type sp.
- Sedimentibacter saudenensis*, AJ404680, unclassified Clostridiales
- Dethiosulfatibacter aminovorans*, AB218661, unclassified Clostridiales, type sp.

**Clostridiaceae 3 (3)**

- Clostridialibacter paucivorans*, EF026082, Clostridiaceae, type sp.
- Thermohalobacter berrensis*, AF113543, Clostridiaceae, type sp.
- Caloranaerobacter azorensis*, AJ272422, Clostridiaceae, type sp.

**Garcilla nitratireducens**, AY176772, Eubacteriaceae, type sp.

**Eubacteriaceae (16)**

- Acetobacterium paludosum*, X96958, Eubacteriaceae
- Acetobacterium tundrae*, AJ297449, Eubacteriaceae
- Acetobacterium bakii*, X96960, Eubacteriaceae
- Acetobacterium filamentosum*, X96959, Eubacteriaceae
- Acetobacterium carbinolicum*, X96956, Eubacteriaceae
- Acetobacterium malicum*, X96957, Eubacteriaceae
- Acetobacterium woodii*, X96954, Eubacteriaceae, type sp.
- Acetobacterium wieringae*, X96955, Eubacteriaceae
- Eubacterium aggregans*, AF073898, Eubacteriaceae
- Eubacterium barkeri*, M23927, Eubacteriaceae
- Pseudoramibacter lactolyticus*, AB036759, Eubacteriaceae, type sp.
- Eubacterium callanderi*, X96961, Eubacteriaceae
- Eubacterium limosum*, M59120, Eubacteriaceae, type sp.
- Okubibacter acetoformans*, AY212403, Eubacteriaceae, type sp.

*Incertae Sedis XIV (3)*

- Anaerobranca californiensis*, AY064217, unclassified Clostridiales  
*Anaerobranca zavarzini*, EF190921, unclassified Clostridiales  
*Anaerobranca gottschalkii*, AF203703, unclassified Clostridiales

*Natranaeroobiaceae (2)*

- Natronovirga wadinatrunensis*, EU338489, Natranaeroobiaceae, type sp.  
*Natranaerooba thermophilus*, DQ417202, Natranaeroobiaceae, type sp.

- Dethiobacter alkaliphilus*, EF422412, Syntrophomonadaceae, type sp.  
*Desulfitibacter alkalitolerans*, AY538171, Peptococcaceae, type sp.  
*Desulfitospira alkaliphila*, FJ788525, Peptococcaceae, type sp.

*Veillonellaceae (69)*

- Mitsuokella jalaludinii*, AF479674, Veillonellaceae  
*Mitsuokella multaciida*, X81878, Veillonellaceae, type sp.  
Selenomonas lipolytica, AF001901, Veillonellaceae  
Selenomonas bovis, EF139191, Veillonellaceae  
Selenomonas ruminantium subsp. *lactilytica*, AB003379, Veillonellaceae  
Selenomonas ruminantium subsp. *ruminantium*, M62702, Veillonellaceae  
*Anaerovibrio lipolyticus*, AB034191, Veillonellaceae, type sp.  
Selenomonas artemidis, GQ422716, Veillonellaceae  
Selenomonas noxia, AF287799, Veillonellaceae  
Selenomonas flueggei, AF287803, Veillonellaceae  
Selenomonas infelix, AF287802, Veillonellaceae  
Selenomonas dianae, AF287801, Veillonellaceae  
*Centipeda periodontii*, AJ010963, Veillonellaceae, type sp.  
*Schwartzia succinivorens*, Y09434, Veillonellaceae, type sp.  
*Selenomonas sputigena*, AF287793, Veillonellaceae, type sp.  
Megamonas funiformis, AB300988, Veillonellaceae  
Megamonas rupellensis, EU346729, Veillonellaceae  
*Megamonas hypermegale*, AJ420107, Veillonellaceae, type sp.  
Pectinatus haikarae, DQ223731, Veillonellaceae  
Pectinatus portalensis, AY428574, Veillonellaceae  
*Propionispira arboris*, Y18190, Veillonellaceae, type sp.  
*Zymophilus raffinosivorans*, DQ217599, Veillonellaceae, type sp.  
Sporomusa acidovorans, AJ279798, Veillonellaceae  
*Sporomusa sphaerooides*, AJ279801, Veillonellaceae, type sp.  
Sporomusa malonica, AJ279799, Veillonellaceae  
Sporomusa ovata, AJ279800, Veillonellaceae  
Sporomusa silvacetica, Y09976, Veillonellaceae  
Sporomusa aerivorans, AJ506191, Veillonellaceae  
Sporomusa rhizae, AM158322, Veillonellaceae  
*Pelosinus fermentans*, DQ145536, Veillonellaceae, type sp.  
*Sporotalea propionica*, AM258975, Veillonellaceae, type sp.  
*Acetoneuma longum*, AJ010964, Veillonellaceae, type sp.  
*Thermosinus carboxydivors*, AAWL01000022, Veillonellaceae, type sp.  
*Sporolitus thermophilus*, FJ169187, Veillonellaceae, type sp.  
*Propionispora hippei*, AJ508927, Veillonellaceae  
*Propionispora vibrioides*, AJ279802, Veillonellaceae, type sp.  
*Anaerobius glycerini*, AJ010960, Veillonellaceae, type sp.  
*Dendrosporobacter quercurios*, AJ010962, Veillonellaceae, type sp.  
*Anaerobicus burkinensis*, AJ010961, Veillonellaceae, type sp.  
*Anaeromusa acidaminophila*, AF071415, Veillonellaceae, type sp.  
*Allisonella histaminiformans*, AF548373, Veillonellaceae, type sp.  
*Dialister pneumosintes*, X82500, Veillonellaceae, type sp.  
Dialister invisus, AY162469, Veillonellaceae  
Dialister succinatiphilus, AB370249, Veillonellaceae  
Dialister propionicifaciens, AT850119, Veillonellaceae  
Dialister micaerophilus, AF473837, Veillonellaceae  
*Negativicoccus succinicitvorans*, FJ715930, Veillonellaceae, type sp.  
Megaspheara paucivorans, DQ223730, Veillonellaceae  
Megaspheara suecensis, DQ223729, Veillonellaceae  
Megaspheara cerevisiae, L37040, Veillonellaceae  
*Anaeroglobus geminatus*, AF338413, Veillonellaceae, type sp.  
Megaspheara elsdenii, U95027, Veillonellaceae, type sp.  
Megaspheara micronuciformis, AF473834, Veillonellaceae  
Veillonella denticarii, EF185167, Veillonellaceae  
Veillonella rodentium, AY514996, Veillonellaceae  
Veillonella atypica, AF439641, Veillonellaceae  
*Veillonella parvula*, AY995767, Veillonellaceae, type sp.  
Veillonella rogosae, EF108443, Veillonellaceae  
Veillonella dispar, AF439639, Veillonellaceae  
Veillonella caviae, AY355140, Veillonellaceae  
Veillonella montpellierensis, AF473836, Veillonellaceae  
Veillonella criceti, AF186072, Veillonellaceae  
Veillonella ratti, AY355138, Veillonellaceae  
Veillonella magna, EU096495, Veillonellaceae  
*Acidaminococcus fermentans*, X78017, Acidaminococcaceae, type sp.  
Acidaminococcus intestini, AF473835, Acidaminococcaceae  
*Phascolarctobacterium faecium*, X72865, Acidaminococcaceae, type sp.  
*Succinilasticum ruminis*, X81137, Acidaminococcaceae, type sp.  
*Succinimyces mobilis*, AJ006980, Acidaminococcaceae, type sp.

*Thermincola carboxydiphila*, AY603000, Peptococcaceae, type sp.

- Thermincola ferriacetica*, AY631277, Peptococcaceae  
*Desulfitobacterium chlororespiciens*, U68528, Peptococcaceae  
*Desulfitobacterium hafniense*, CP001336, Peptococcaceae  
*Desulfitobacterium hafniense*, CP001334, Peptococcaceae  
*Desulfitobacterium hafniense*, CP001336, Peptococcaceae  
*Desulfitobacterium dehalogenans*, L28946, Peptococcaceae, type sp.  
Desulfitobacterium metallireducens, AF297871, Peptococcaceae  
Desulfitobacterium aromaticivorans, EU711071, Peptococcaceae  
Desulfosporosinus hippesi, Y11571, Peptococcaceae  
Desulfosporosinus meridiei, AF076527, Peptococcaceae  
Desulfosporosinus auripigmenti, AJ493051, Peptococcaceae  
Desulfosporosinus youngiae, DQ117470, Peptococcaceae  
Desulfosporosinus lacus, AJ582757, Peptococcaceae  
Desulfosporosinus orientis, Y11570, Peptococcaceae, type sp.  
*Dehalobacter restrictus*, U84497, Peptococcaceae, type sp.

*Helio bacteriaceae (8)*

- Helio bacterium gestii*, AB100837, Helio bacteriaceae  
*Helio bacterium modestalidum*, AB100836, Helio bacteriaceae  
*Helio bacterium sulfidophilum*, AF249678, Helio bacteriaceae  
*Helio bacterium undosum*, AF249679, Helio bacteriaceae  
*Helio bacterium mobilis*, AB100835, Helio bacteriaceae, type sp.  
*Helio bacterium chlorum*, M11212, Helio bacteriaceae, type sp.  
*Helio testis baculata*, AF249680, Helio bacteriaceae

