

Genome-based Taxonomic Classification of the Phylum *Actinobacteria*

Supplementary File S2

List of Figures

1	Phylogenomic GBDP tree without collapsed branches	11
2	Backbone-constrained 16S rRNA gene ML and MP tree	35
3	Unconstrained 16S rRNA gene ML and MP tree	61
4	23S rRNA gene ML and MP tree	70
5	16S rRNA gene ML and MP tree given GBDP tree sampling	79
6	Comparison of branch support	79
7	<i>Atopobium</i> ML tree	80
8	<i>Atopobium</i> MP tree	81
9	<i>Intrasporangium</i> ML tree	82
10	<i>Intrasporangium</i> MP tree	83
11	<i>Sanguibacter</i> ML tree	84
12	<i>Sanguibacter</i> MP tree	85
13	<i>Solirubrobacter</i> ML tree	86
14	<i>Solirubrobacter</i> MP tree	86
15	<i>Gordonia</i> ML tree	87
16	<i>Gordonia</i> MP tree	88
17	<i>Rhodococcus</i> ML tree	89
18	<i>Rhodococcus</i> MP tree	90
19	<i>Corynebacterium</i> ML tree	91
20	<i>Corynebacterium</i> MP tree	92

Tree scale: 0.1

① Type species

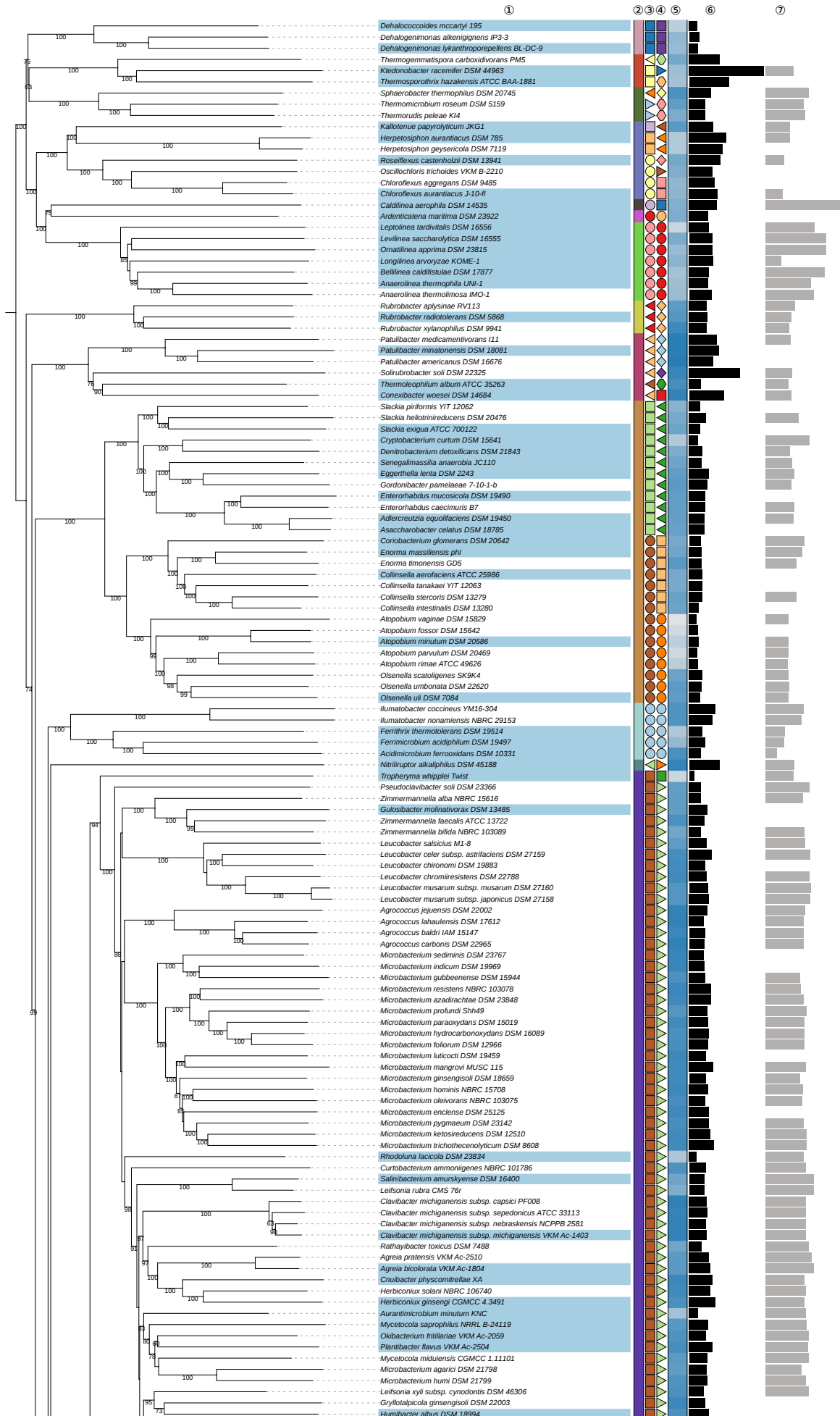
- yes
- no

② Class

- Acidimicrobiia
- Actinobacteria
- Anaerolineae
- Ardenticatenia
- Bacilli
- Caldilineae
- Chloroflexia
- Coriobacteriia
- Dehalococcoidia
- Ktedonobacteria
- Nitriliruptoria
- Rubrobacteria
- Thermoleophilia
- Thermomicrobia

③ Order

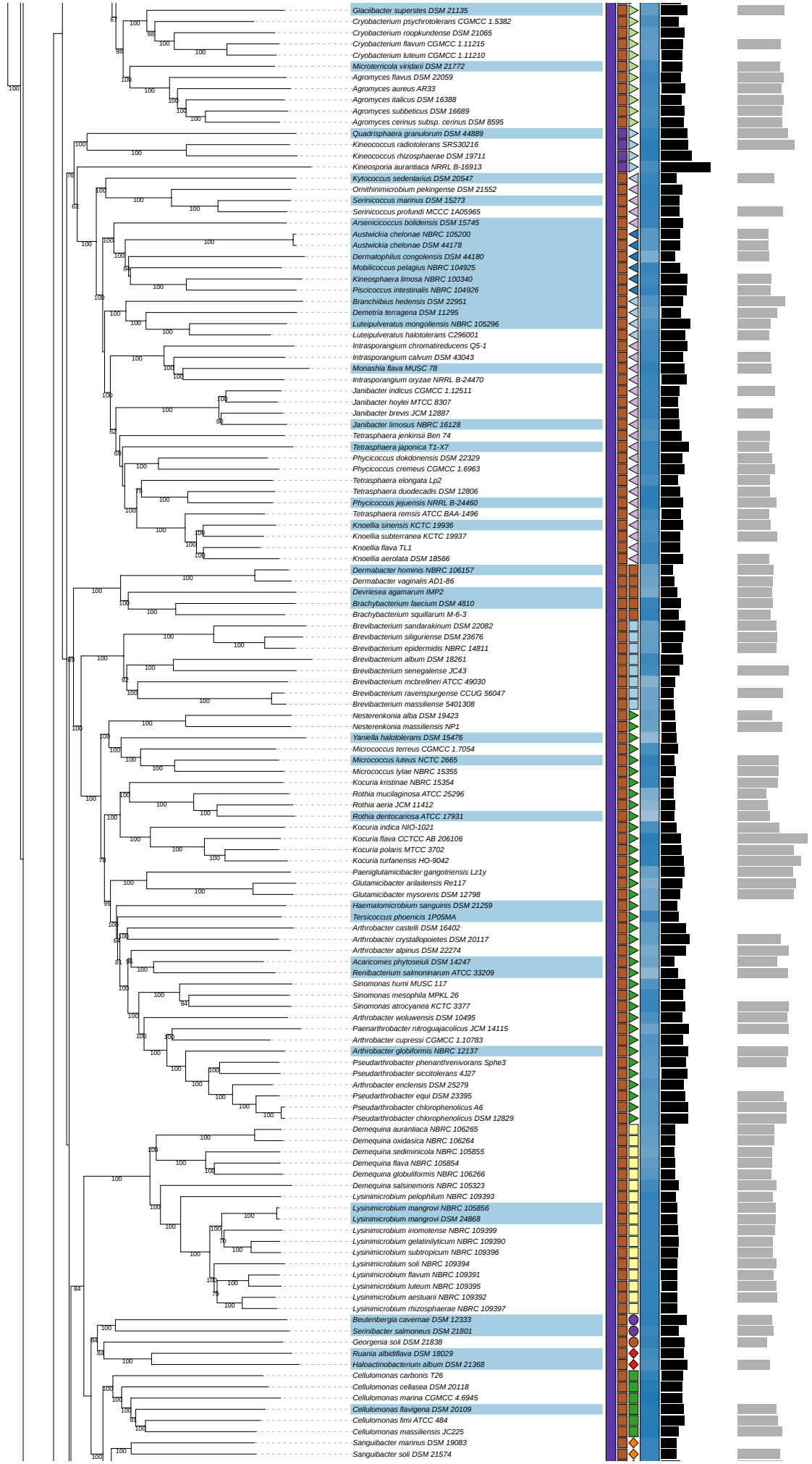
- Acidimicrobiales
- Acidothermales
- Actinomycetales
- Actinopolysporales
- Anaerolineales
- Ardenticatenales
- Bacillales
- Bifidobacteriales
- Caldilineales
- Catenulesporales
- Chloroflexales
- Coriobacteriales
- Corynebacteriales
- Dehalococcoidales
- Eggerthellales
- Frankiales
- Geodermatophilales
- Glycomycetales
- Herpetosiphonales
- Jiangellales
- Kallotenuales
- Kineosporiales
- Ktedonobacteriales
- Micrococcales
- Micromonosporales
- Nakamurellales
- Nitriliruptorales



- Propionibacteriales
- Pseudonocardiales
- Rubrobacteriales
- Solirubrobacteriales
- Sphaerobacteriales
- Streptomycetales
- Streptosporangiales
- Thermogemmatisporales
- Thermoleophilales
- Thermomicrobiales
- NA

④ Family

- Acidimicrobiaceae
- Acidothermaceae
- Actinomycetaceae
- Actinopolysporaceae
- Actinospicaceae
- Anaerolineaceae
- Ardenticatenaceae
- Atopobiaceae
- Bacillaceae
- Beutenbergiaceae
- Bifidobacteriaceae
- Bogoriellaceae
- Brevibacteriaceae
- Caldilineaceae
- Catenulisporaceae
- Cellulomonadaceae
- Chloroflexaceae
- Conexibacteraceae
- Coriobacteriaceae
- Corynebacteriaceae
- Cryptosporangiaceae
- Dehalococcoidaceae
- Demequinaceae
- Dermabacteraceae
- Dermacoccaceae
- Dermatophilaceae
- Dietziaceae
- Eggerthellaceae
- Frankiaceae
- Geodermatophilaceae
- Glycomycetaceae
- Herpetosiphonaceae
- Intrasporangiaceae
- Jannellaceae



- Streptomyces*
- Jonesiaceae*
- Kallotenuaceae*
- Kineosporiaceae*
- Ktedonobacteraceae*
- Microbacteriaceae*
- Micrococcaceae*
- Micromonosporaceae*
- Mycobacteriaceae*
- Nakamurellaceae*
- Nitriliruptoraceae*
- Nocardiaceae*
- Nocardioidaceae*
- Nocardiopsaceae*
- Oscillochloridaceae*
- Patulibacteraceae*
- Promicromonosporaceae*
- Propionibacteriaceae*
- Pseudonocardiaceae*
- Roseiflexaceae*
- Ruaniaceae*
- Rubrobacteraceae*
- Sanguibacteraceae*
- Segniliparaceae*
- Solirubrobacteraceae*
- Sphaerobacteraceae*
- Sporichthyaceae*
- Streptomycetaceae*
- Streptosporangiaceae*
- Thermogemmatisporaceae*
- Thermoleophilaceae*
- Thermomicrobiaceae*
- Thermomonosporaceae*
- Thermosporotrichaceae*
- Tsakumurellaceae*
- NA

⑤ G+C content (in %)

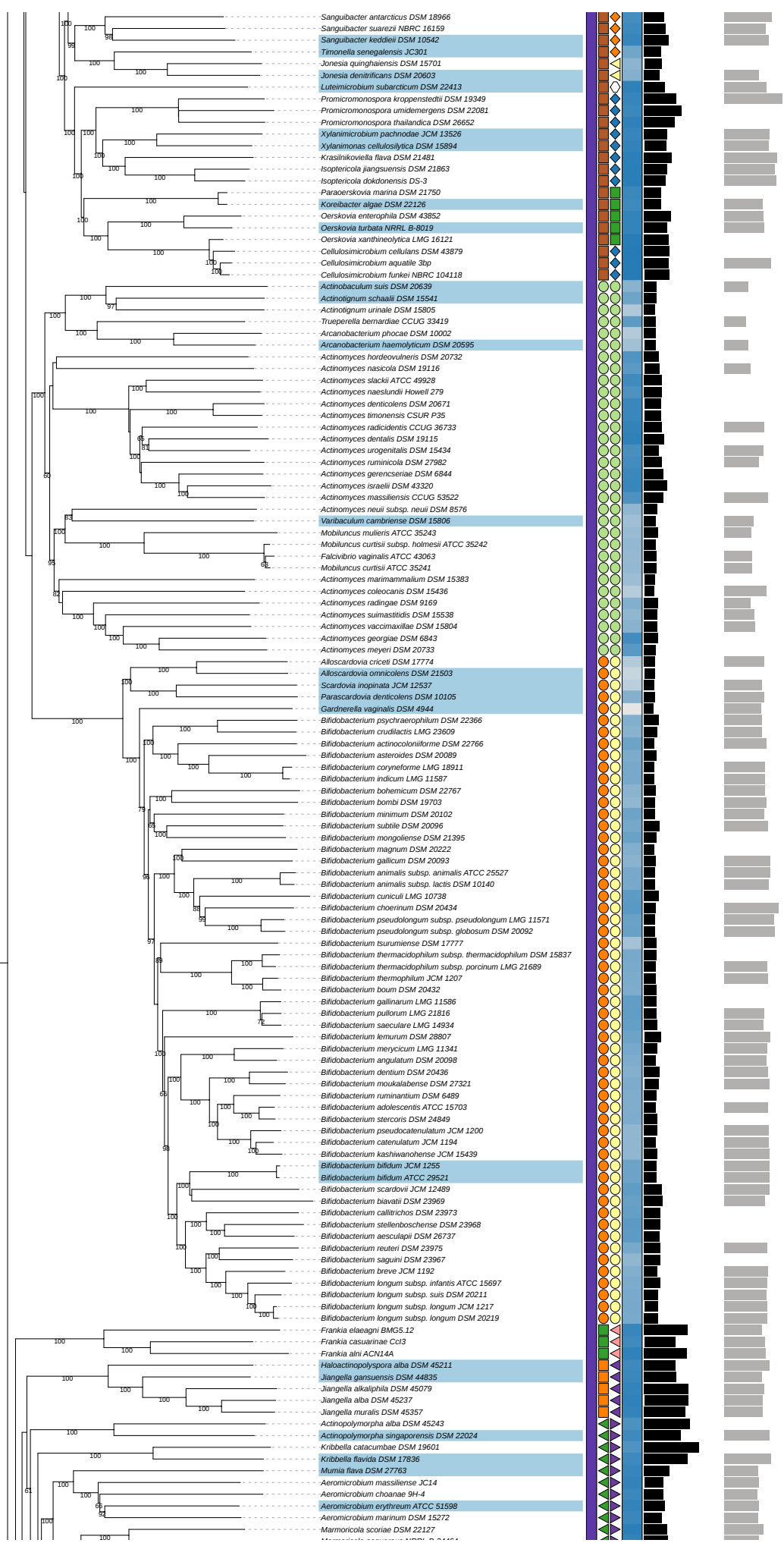
- Min. (41.3)
- Max. (75.9)

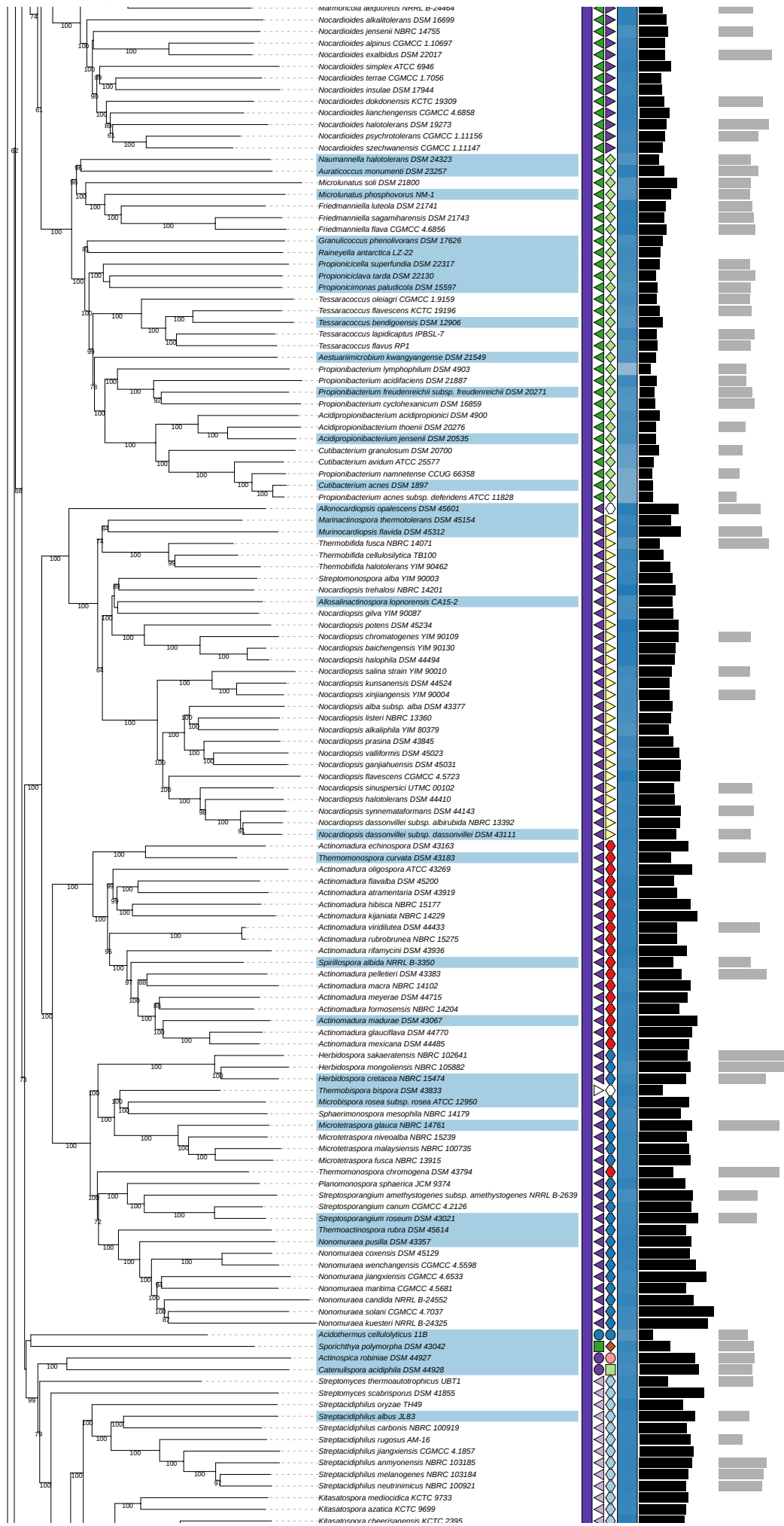
⑥ Sequence length (in bp)

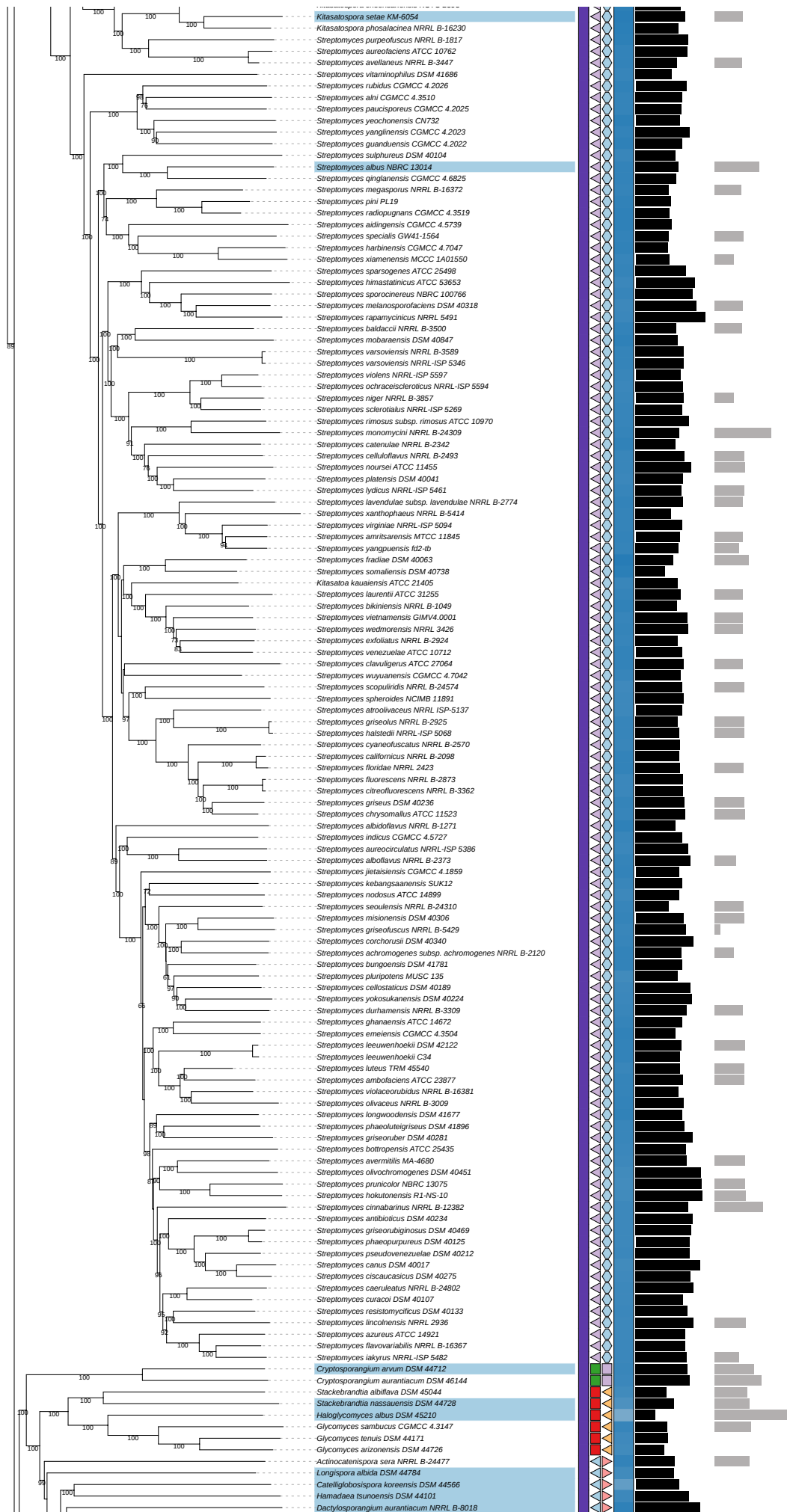
- Min. (927,303), Max. (13,661,541)

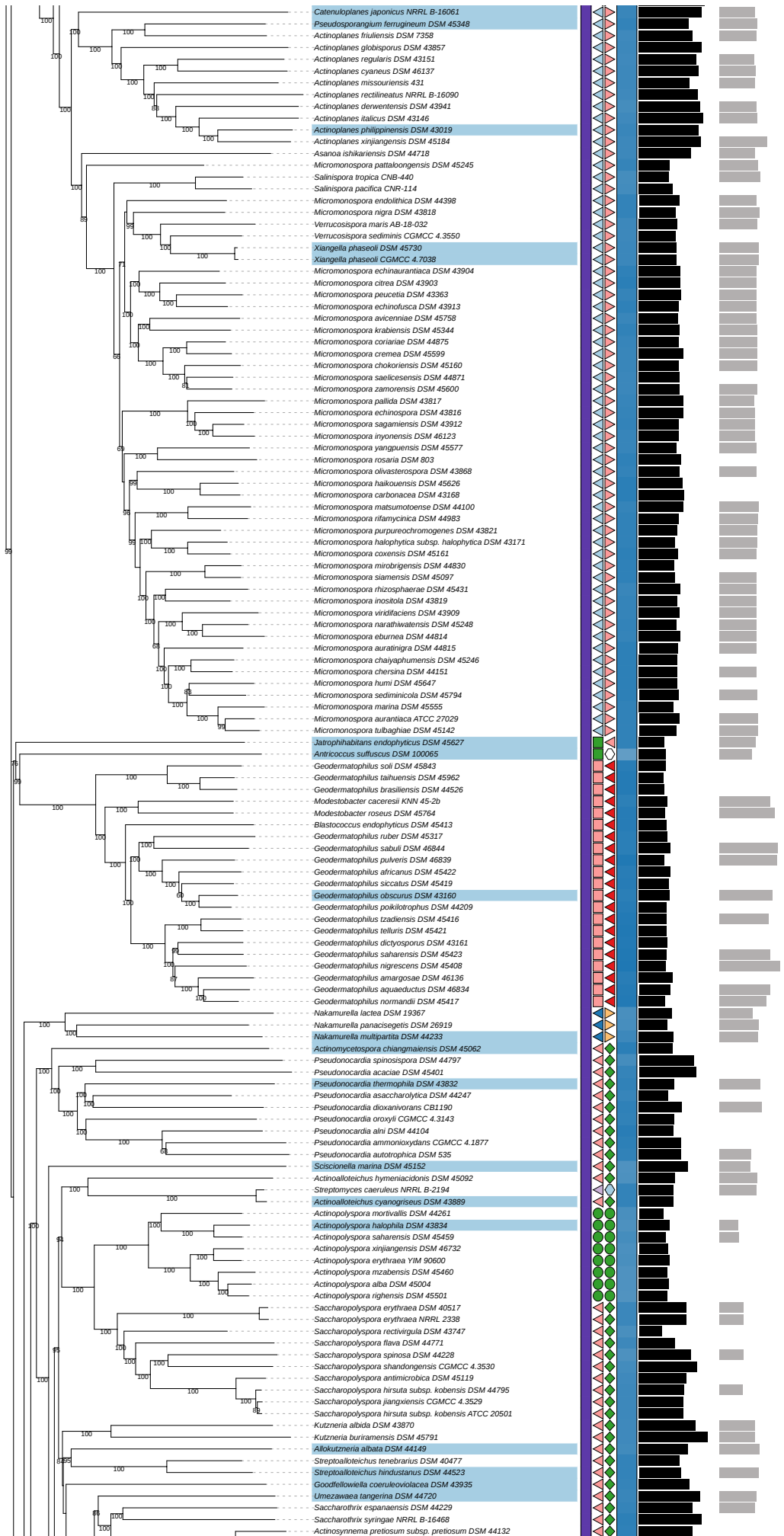
⑦ ITS Length

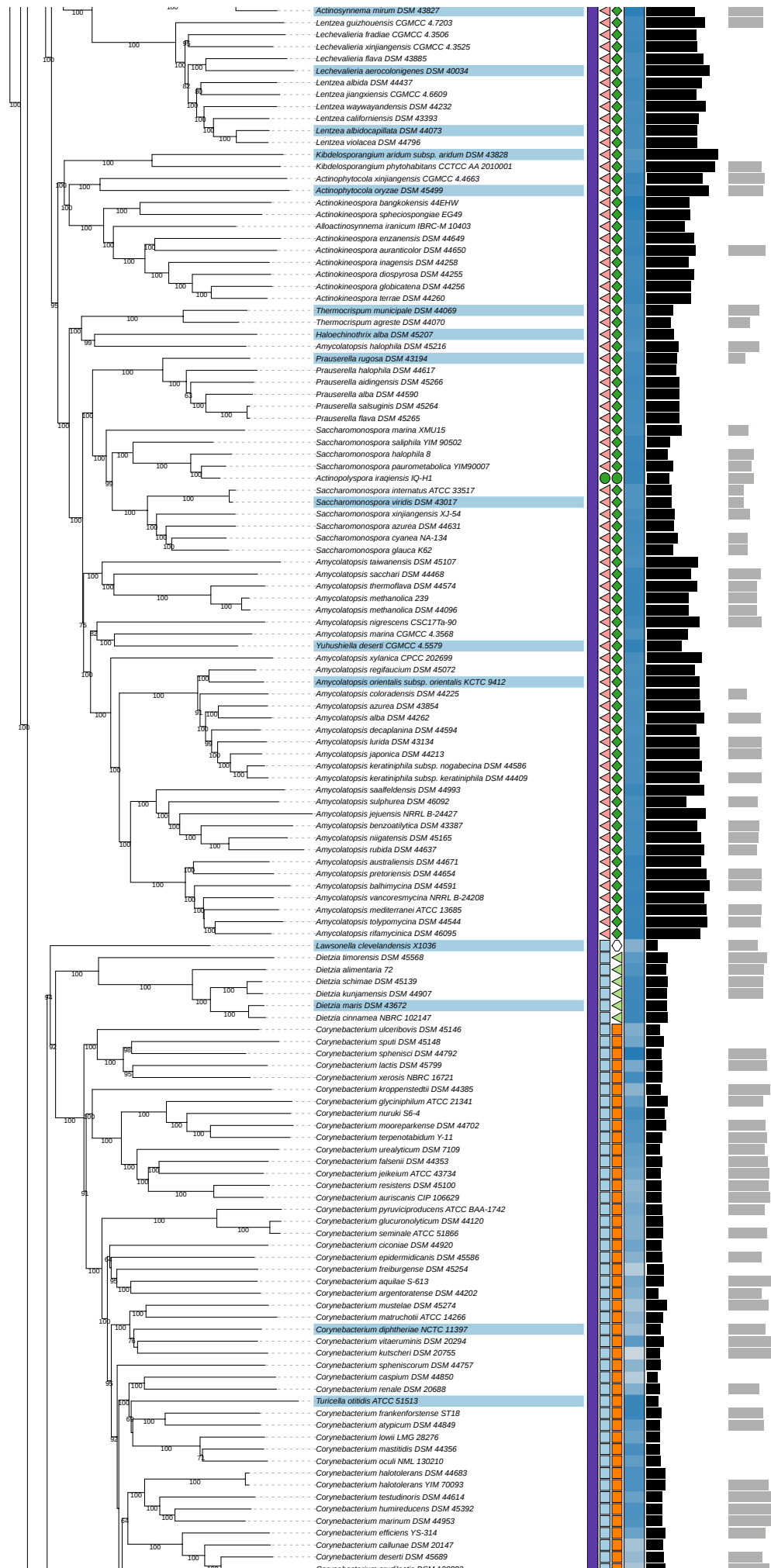
- Min. (59), Max. (804)

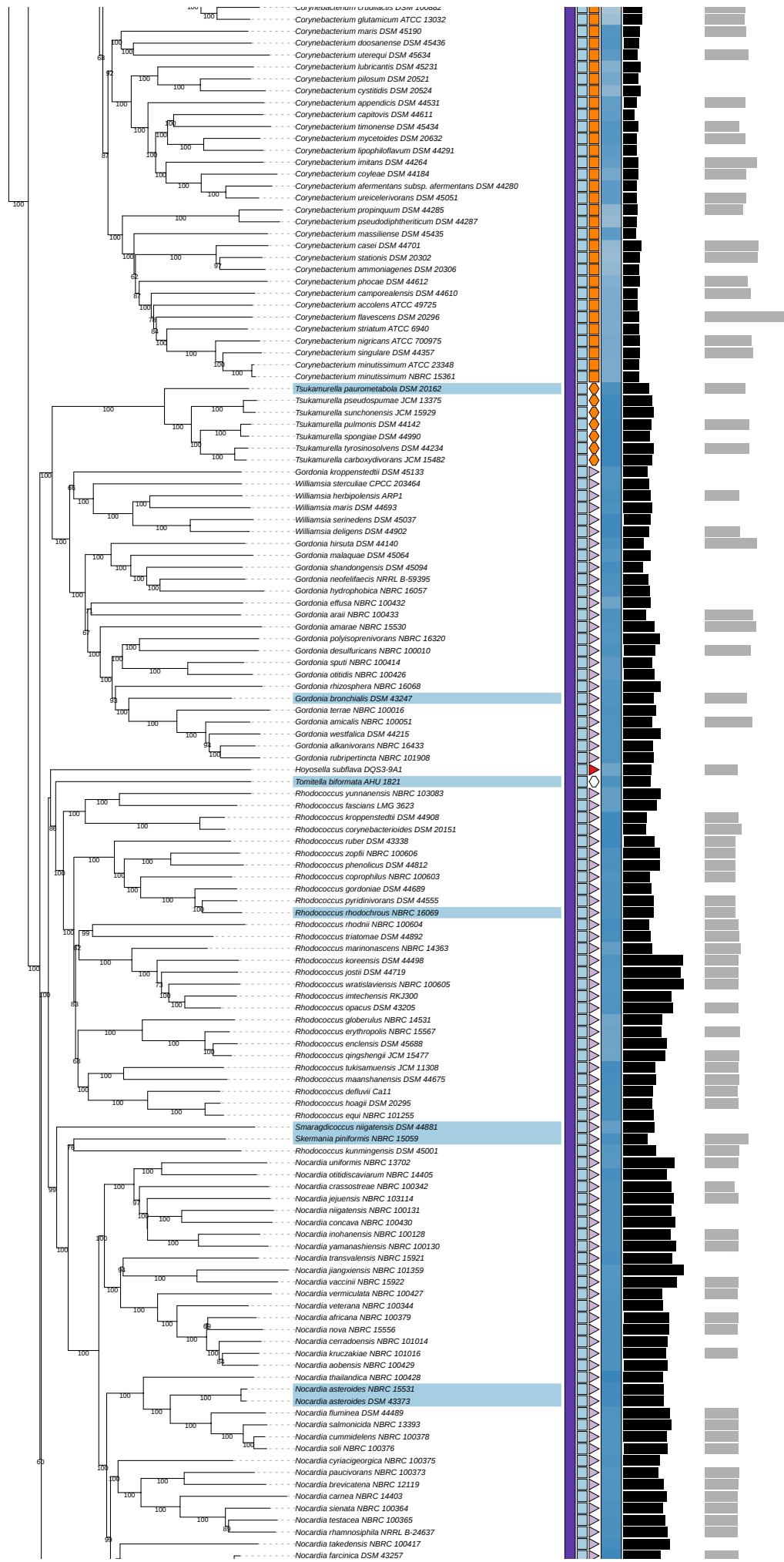












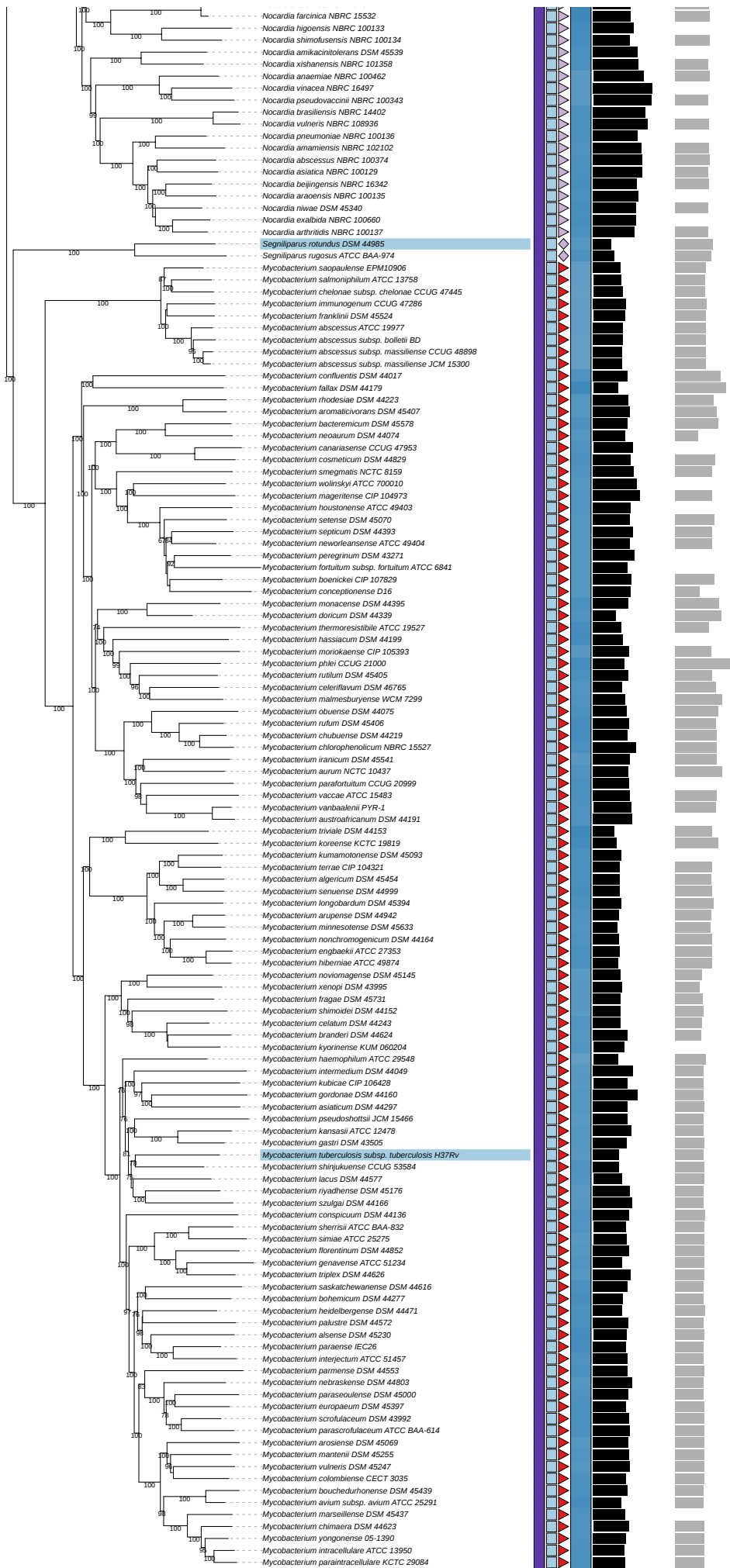
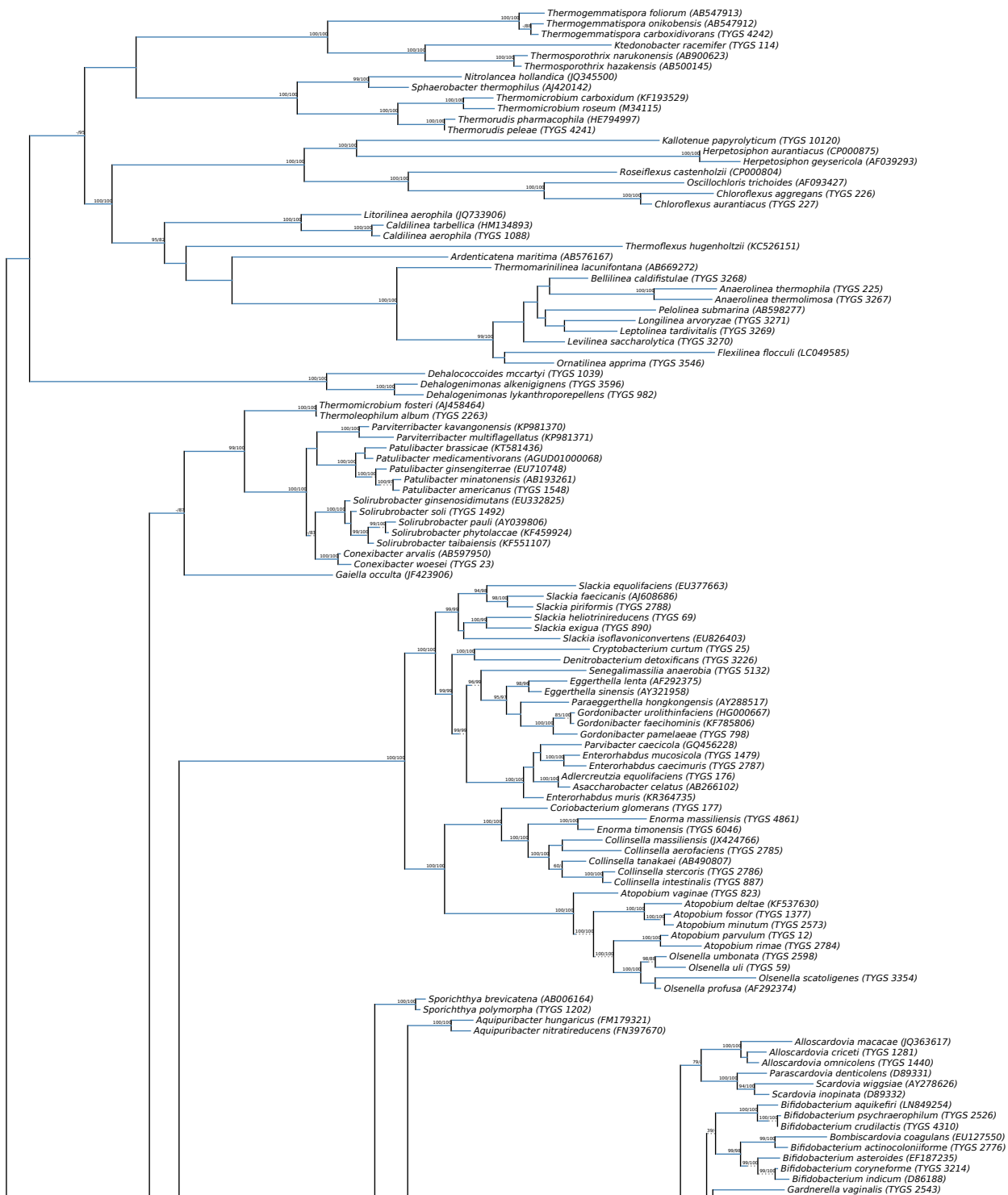
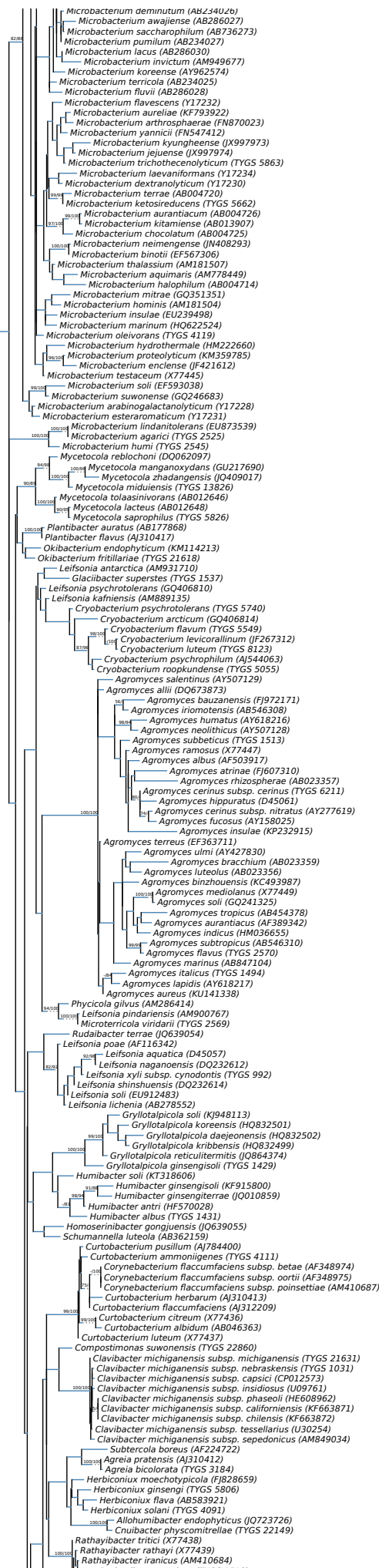
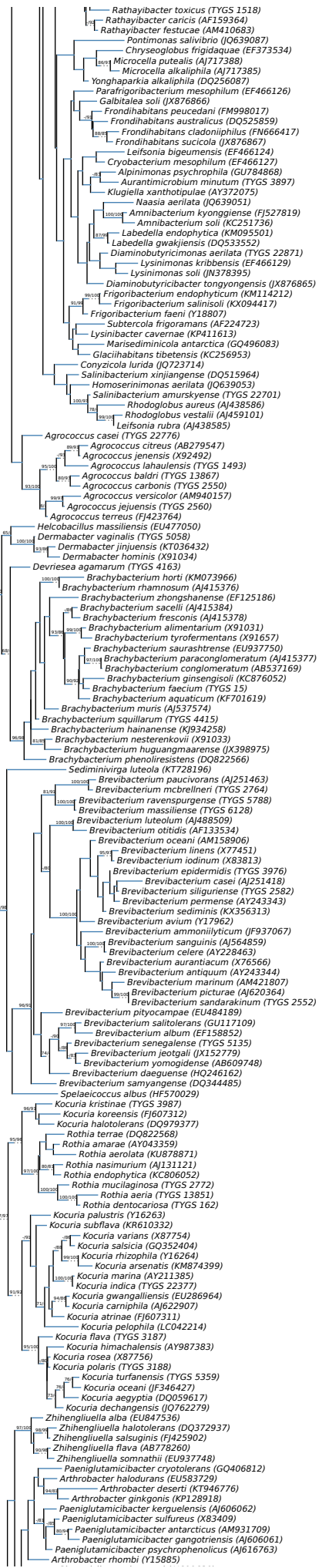


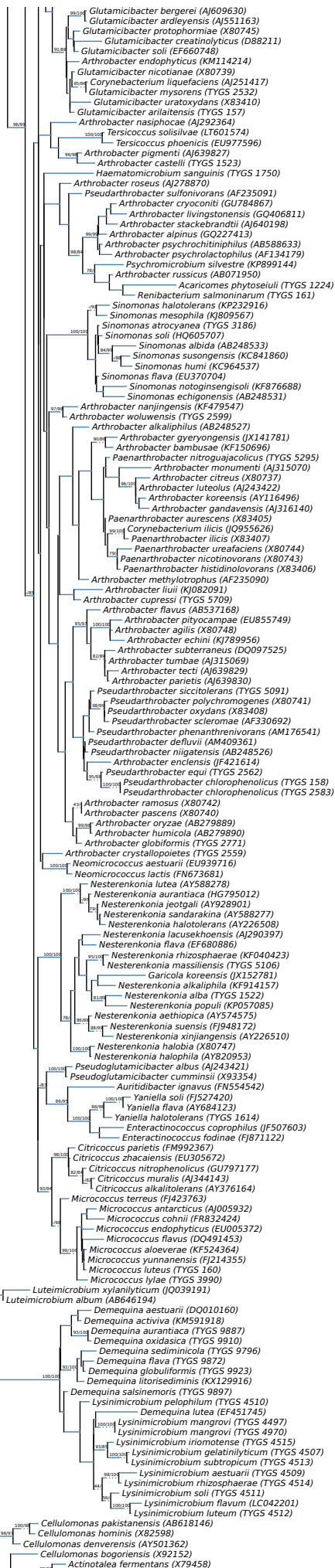
Figure 1: Tree inferred with FastME from GBDP distances calculated from whole proteomes. The branches are scaled in terms of log-transformed intergenomic distances (GBDP formula d_5). The numbers above branches are GBDP pseudo-bootstrap support values from 100 replications. Tip colors indicate type species, colors to the right of the tips indicate, from left to right, class (2), order (3) and family (4; see the embedded legend for details). The blue gradient scale (5) indicates the exact G+C content as calculated from the genome sequences. Genome size (6) and ITS length (7) are display at the right-hand side.

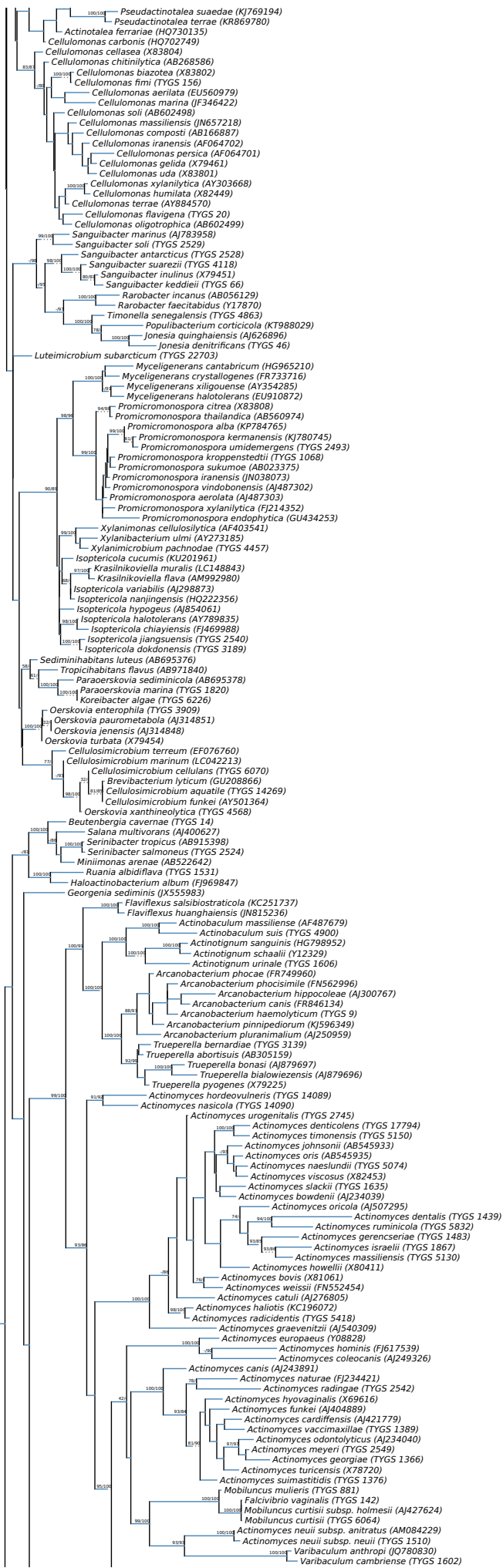


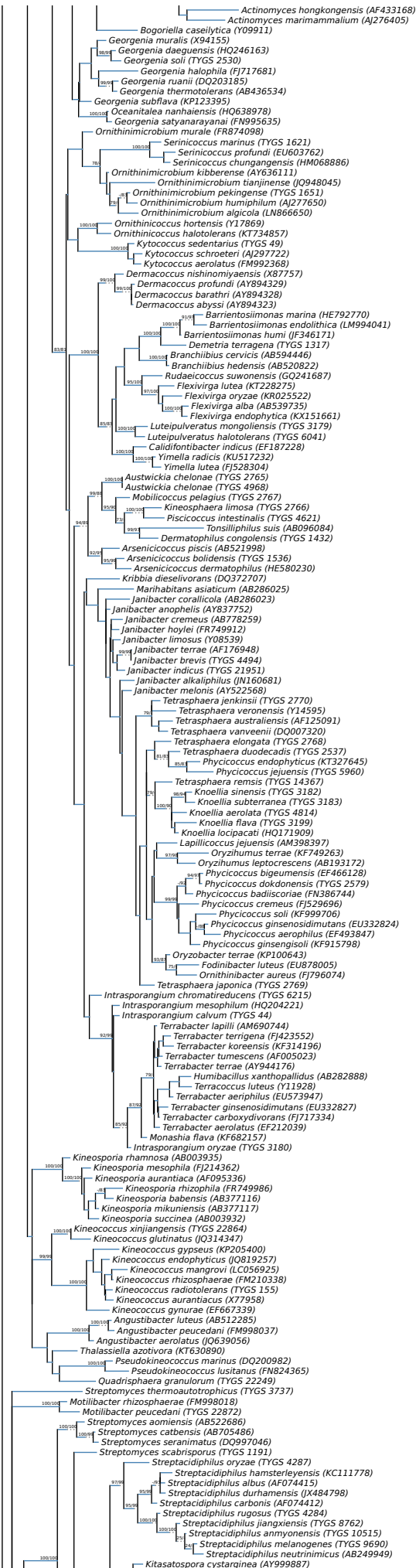


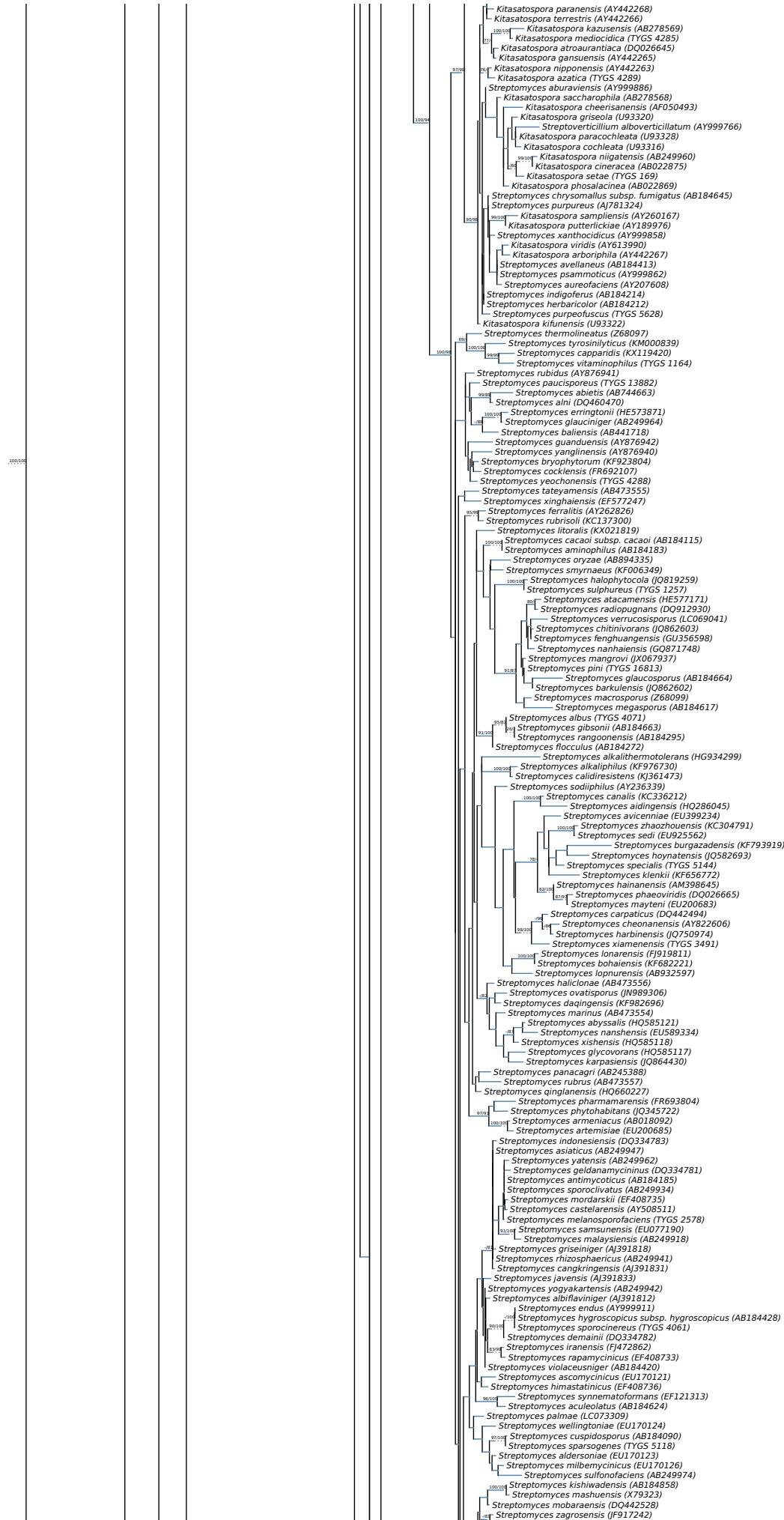








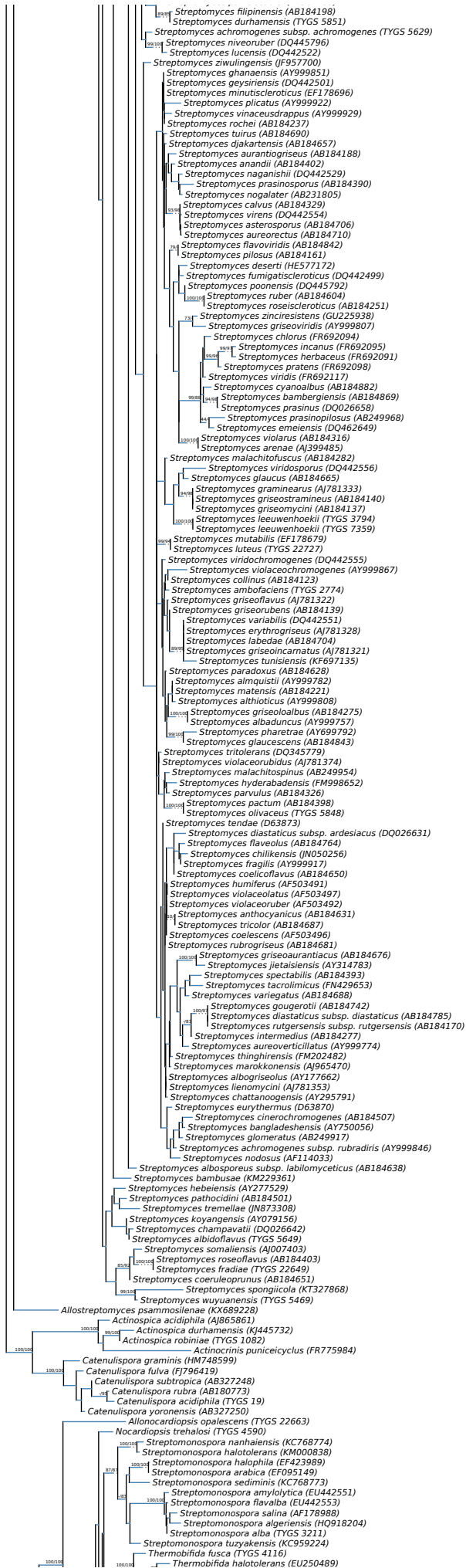


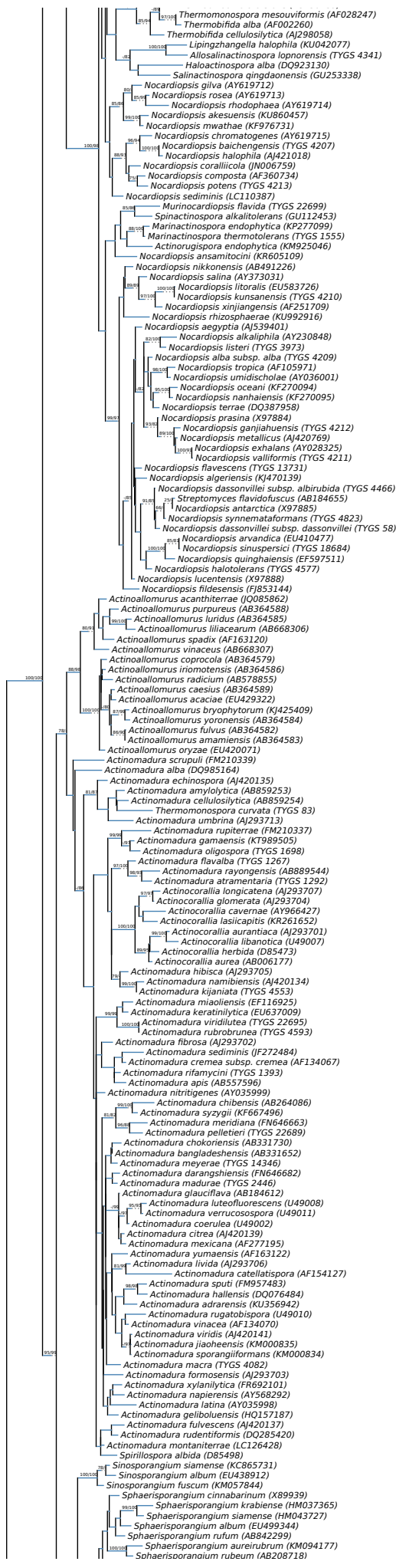


Streptomyces youssoufiensis (FN421338)
Streptomyces lutetireticuli (AB249969)
Streptomyces fervens subsp. melissporus (AB184715)
Streptomyces abikoensis (JN566041)
Streptomyces luteoverticillatus (AB184803)
Streptomyces ehimensis (AY999834)
Streptomyces angustimyceticus (DQ442509)
Streptomyces lilacinus (AB184413)
Streptomyces kashmirensis (AB184546)
Streptomyces septatus (AY999925)
Streptomyces salmonis (AB184705)
Streptomyces hachioensis (EF178694)
Streptomyces netropsis (AB184732)
Streptomyces flavoperegrinus (AB249911)
Streptovorticillium syringium (AJ781375)
Streptomyces distallicus (EF178671)
Streptomyces kentuckensis (DQ442512)
Streptomyces stramineus (AB184720)
Streptomyces eurocidicus (AY999790)
Streptomyces albireticuli (AY999748)
Streptomyces biverticillatus (AB249922)
Streptomyces werraensis (DQ442558)
Streptomyces globisporus subsp. caucasicus (EF178676)
Streptomyces olivoreticuli (AY999857)
Streptovorticillium olivoreticuli subsp. cellulophilum (AB184719)
Streptomyces fervens (AB184871)
Streptomyces spitsbergensis (AB184700)
Streptomyces baldaccii (TYGS 10933)
Streptomyces zhihengii (KU936048)
Streptovorticillium viridoflavum (AY999847)
Streptomyces olivoverticillatus (AB184636)
Streptomyces thioluteus (AB184753)
Streptomyces lacticiproducens (GQ184344)
Streptomyces lavenduligriseus (DQ442515)
Streptovorticillium reticulum subsp. protomycicum (AB184551)
Streptomyces morokoensis (AB184878)
Streptomyces roseoverticillatus (AB184169)
Streptomyces cinnamoneus (AB184850)
Streptomyces pseudoehinosporus (AB184100)
Streptomyces aureoverisilis (AY999849)
Streptomyces rectiverticillatus (DQ026657)
Streptomyces hiroshimensis (AB184144)
Streptomyces cinnamoneus subsp. albosporus (EF654100)
Streptomyces blastomyceticus (AY999802)
Streptomyces ardens (AB184864)
Streptomyces parvisporigenes (AY999865)
Streptomyces luteosporus (DQ442525)
Streptovorticillium cinnamoneum subsp. lanosum (AY999747)
Streptovorticillium cinnamoneum subsp. sparsum (AB184716)
Streptomyces griseoverticillatus (AB184862)
Streptomyces sapporonensis (AB184508)
Streptomyces varsoviensis (TYGS 5920)
Streptomyces varsoviensis (TYGS 5927)
Streptomyces griseocarneus (X99943)
Streptomyces orinoci (AB184866)
Streptomyces ladakanum (AB184430)
Streptomyces albospinus (AY999753)
Streptovorticillium verticillium subsp. quintum (AB184822)
Streptomyces kasugaensis (AB024441)
Streptomyces celluloflavus (TYGS 6012)
Streptomyces misakiensis (AB217605)
Streptomyces catenulae (TYGS 6003)
Streptomyces libani subsp. libani (AB184414)
Streptomyces ruanii (DQ042530)
Streptomyces tubercidicus (AJ621612)
Streptomyces albofaciens (AB045880)
Streptomyces chrestomyceticus (AJ621609)
Streptomyces rimosus subsp. paromomycinus (AJ621610)
Streptomyces kronopolis (K050495)
Streptomyces lycidus (Y15507)
Streptomyces staurosporinus (FR692111)
Streptomyces lunalinharesii (DQ094838)
Streptomyces yunnanensis (AF346818)
Streptomyces albulus (AB024440)
Streptomyces noursei (TYGS 3940)
Streptomyces platensis (AB045882)
Streptomyces caniferus (AB184640)
Streptomyces libani subsp. rufus (AJ781351)
Streptomyces hygroscopicus subsp. glebosus (AB184479)
Streptomyces siyagensis (DQ026654)
Streptomyces auratus (AJ391816)
Streptomyces purpurogeniscleroticus (AJ621604)
Streptomyces violens (TYGS 5647)
Streptomyces ochraceiscleroticus (TYGS 5855)
Streptomyces sclerotialis (TYGS 5998)
Streptomyces albixialis (AY999901)
Streptomyces chumphonensis (AB738400)
Streptomyces sparsus (AJ849545)
Streptomyces daliensis (AY785161)
Streptomyces iconiensis (KC959223)
Streptomyces avinelliae (EU683612)
Streptomyces ramulus (DQ026662)
Streptomyces olivaceiscleroticus (AJ621606)
Streptomyces niger (AJ621607)
Streptomyces monomycini (DQ445790)
Streptomyces rimosus subsp. rimosus (TYGS 4573)
Streptomyces goshikiensis (EF178693)
Streptomyces sporoverrucosus (DQ442544)
Streptomyces colombiensis (DQ026646)
Streptomyces lavendulae subsp. grasserius (AY999841)
Streptomyces nojiriensis (AJ781355)
Streptomyces sporovaeus (AJ781370)
Streptomyces xanthophaeus (TYGS 5972)
Streptomyces vinaceus (AB184394)
Streptomyces cirratus (AY999794)
Streptomyces yangpuensis (TYGS 4854)
Streptomyces racemochromogenes (DQ026656)
Streptomyces polychromogenes (AB184292)
Streptomyces katrae (AB184409)
Streptomyces flavotricini (AY999915)
Streptomyces amritsarensis (TYGS 15778)
Streptomyces toxytricini (DQ442548)
Streptomyces globosus (AJ781330)
Streptomyces cinnamomensis (AB184707)
Streptomyces virginiae (TYGS 5739)
Streptomyces avidinii (AB184395)
Streptomyces subrutilus (X80825)
Streptomyces lavendulae subsp. lavendulae (D85116)
Kitasatoa kauaiensis (TYGS 5145)
Streptomyces lateritus (AJ781326)
Streptomyces venezuelae (TYGS 728)
Streptomyces litmocidini (AB184149)
Streptomyces yerevanensis (EF178684)
Streptomyces harboensis (DQ445794)
Streptomyces zaomyceticus (EF178685)
Streptomyces exfoliatus (TYGS 5964)
Streptomyces omiyaensis (EF178697)
Streptomyces wedmorensis (TYGS 5843)
Streptomyces melanogenes (AB184222)
Streptomyces noborioensis (AB184287)
Streptomyces crystallinus (AB184652)
Streptomyces sanyensis (FJ261968)
Streptomyces polygonati (KP208836)
Streptomyces nashvillensis (AB184286)
Streptomyces gulbargensis (DQ317411)
Streptomyces filamentosus (AB184130)
Streptomyces roseosporus (AB184238)
Streptomyces laurentii (TYGS 3713)
Streptomyces termitum (AB184302)
Streptomyces roseofulvus (AB184327)
Streptomyces roseolus (AB184168)
Streptomyces roseoviridis (AB184239)
Streptomyces showdoensis (AB184389)
Streptomyces viridobrunneus (AJ781372)
Streptomyces cinereoruber subsp. cinereoruber (AY999771)
Streptomyces violaceoerectus (AB184314)
Streptomyces hirsutus (DQ442506)
Streptomyces bikiniensis (X79851)
Streptomyces vietnamensis (TYGS 3677)
Streptomyces fukangensis (KF040416)
Streptomyces graminofaciens (AB184416)
Streptomyces kurssanovii (AB184325)
Streptomyces xantholicus (AB184349)
Streptomyces peucetius (AB045887)

Streptomyces cremeus (AY999744)
Streptomyces spiroverticillatus (AB249921)
Streptomyces filiosensis (DQ0408297)
Streptomyces beijiangensis (AF385681)
Piliella columellifera subsp. pallida (GU269552)
Streptomyces candidus (DQ026663)
Streptomyces aureus (AY094368)
Streptomyces durmitorensis (DQ067287)
Streptomyces rectivulvaceus (DQ026660)
Streptomyces rosealbus (AY223232)
Streptomyces kanamyceticus (DQ442511)
Streptomyces arcticus (KR013752)
Streptomyces pulveraceus (AB184806)
Streptomyces sanglieri (AB249945)
Streptomyces yanii (AB006159)
Streptomyces atratus (DQ026638)
Streptomyces gelaticus (DQ026636)
Streptomyces laculatispora (FR692106)
Streptomyces brevispora (FR692104)
Streptomyces drozdowiczii (AB249957)
Streptomyces camponotocapitis (KP784807)
Streptomyces laceyi (AB249944)
Streptomyces niveus (DQ442532)
Streptomyces spheroides (DQ445788)
Streptomyces polyantibioticus (DQ014528)
Streptomyces formicae (KP784804)
Streptomyces lusherensis (KF938656)
Streptomyces scopuliridis (TYGS 5375)
Streptomyces mauvecolor (AB184532)
Streptomyces xanthochromogenes (DQ442559)
Streptomyces michiganensis (AB184153)
Streptomyces hungungensis (JN560157)
Streptomyces albidochromogenes (AB249953)
Streptomyces helveticus (AB184367)
Streptomyces chryseus (AY999787)
Streptomyces enissocaeensis (AB249930)
Streptomyces hypolithicus (EU196762)
Streptomyces sannanensis (AB184579)
Streptomyces flavogriseus (AJ494864)
Streptomyces nigrificans (DQ442531)
Streptomyces nitrosporeus (EF178680)
Streptomyces flavovirens (DQ026635)
Streptomyces griseolus (TYGS 5632)
Streptomyces halstedii (TYGS 5856)
Streptomyces atroolivaceus (TYGS 5636)
Streptomyces olivoviridis (AB184227)
Streptomyces clavifer (DQ026670)
Streptomyces mutomycini (AB249951)
Streptomyces finlayi (AY999788)
Streptomyces anulatus (DQ026637)
Streptomyces roseodiastaticus (AB184683)
Streptomyces pratensis (JQ806215)
Streptomyces cyanofofascatus (TYGS 6020)
Streptomyces setonii (AB184300)
Streptomyces acrimycini (AY999889)
Streptomyces badius (AY999783)
Streptomyces parvus (DQ442537)
Streptomyces sundarbanensis (AY550275)
Streptomyces laclianis (AB184439)
Streptomyces griseobrunneus (AB249912)
Streptomyces albolongus (AB184425)
Streptomyces cavourensis subsp. cavourensis (DQ445791)
Streptomyces araujoniae (EU792889)
Streptomyces sindensis (AB184759)
Streptomyces baarnensis (AB184615)
Streptomyces fimicarius (AY999784)
Streptomyces flavofuscus (AB249935)
Streptomyces caviscabies (AF112160)
Streptomyces argenteolus (AB184187)
Streptomyces cinereolus (AB184646)
Streptomyces luridiscabies (AF361784)
Streptomyces fulvissimus (CP005080)
Streptomyces californicus (TYGS 5376)
Streptomyces floridae (TYGS 5645)
Streptomyces lipmanii (DQ442519)
Streptomyces griseus subsp. alpha (AY999869)
Streptomyces griseus subsp. cretosus (AY999897)
Streptomyces fulvorangeus (AB184711)
Streptomyces microflavus (DQ445795)
Streptomyces alloviridis (AB184256)
Streptomyces willmorei (EF178673)
Streptomyces fluorescens (TYGS 10931)
Streptomyces citreofluorescens (TYGS 10934)
Streptomyces erumpens (AY999825)
Streptomyces griseus (TYGS 2588)
Streptomyces chrysomallus (TYGS 3201)
Streptomyces cavourensis subsp. washingtonensis (DQ026671)
Streptomyces praecox (AB184293)
Streptomyces griseoplanus (AY999894)
Streptomyces pluricoloriensis (DQ442540)
Streptomyces tanashiensis (AY999856)
Streptomyces globosporus (EF178686)
Streptomyces albolineatus (AB249958)
Streptomyces rubiginosohelvolus (AB184240)
Streptomyces griseinus (AB184205)
Streptomyces mediolani (AB184674)
Streptomyces lunaeactis (KM20217)
Streptomyces clavuligerus (TYGS 5129)
Streptomyces amakusaensis (AY999781)
Streptomyces inusitatus (AB184445)
Streptomyces tsukubensis (AB217600)
Streptomyces indicus (EF178633)
Streptomyces vastus (DQ442552)
Streptomyces flavus (DQ026643)
Streptomyces cinereus (AB184072)
Streptomyces novaeaeae (AB184357)
Streptomyces aureocirculatus (TYGS 5596)
Streptomyces scopiformis (AF184081)
Streptomyces silaceus (EU812170)
Streptomyces flavofungini (AB184359)
Streptomyces alboflavus (TYGS 5638)
Streptomyces alfalfae (KR080524)
Streptomyces kebangsaanensis (HM449824)
Streptomyces galius (X79852)
Streptomyces longwoodensis (AB184580)
Streptomyces coacervatus (AB500703)
Streptomyces flavidovirens (AB184270)
Streptomyces longisporus (AJ399475)
Streptomyces phyllanthi (LC125632)
Streptomyces cinnabarinus (TYGS 14181)
Streptomyces antibioticus (AY999776)
Streptomyces griseorubiginosus (AJ781339)
Streptomyces phaeoauripureus (DQ026666)
Streptomyces seymeniensis (KC560729)
Streptomyces phaeochromogenes (AB184738)
Streptomyces umbrinus (AB184305)
Streptomyces ederenis (AY999824)
Streptomyces tauricus (AB045879)
Streptomyces aurantiacus (AJ781383)
Streptomyces glomeraurantiacus (AB249983)
Streptomyces plumbresistens (EU526954)
Streptomyces pseudovenezuelae (AB184233)
Streptomyces canus (AY999775)
Streptomyces ciscaucasicus (AB184208)
Streptomyces hellomycini (AB184712)
Streptomyces atroviens (DQ026672)
Streptomyces viridodiastaticus (AY999852)
Streptomyces coeruleorubidus (AY999719)
Streptomyces coeruleus (AY999720)
Streptomyces bellus (AB184849)
Streptomyces lomondensis (AB184673)
Streptomyces lusitanus (AB184424)
Streptomyces thermocarboxydus (U94490)
Streptomyces lavendulocoloc (DQ442516)
Streptomyces pseudogriseolus (DQ442541)
Streptomyces ganadicus (AB184660)
Streptomyces rubiginosus (AY999810)
Streptomyces capillispiralis (AB184577)
Streptomyces cellulosa (DQ442495)
Streptomyces fimbriatus (AY999844)
Streptomyces bluenis (AB184421)
Streptomyces thermocarboxydovorus (U94489)
Streptomyces thermospinosporus (AF33113)
Streptomyces thermodiastaticus (AB018095)

Streptomyces brasiliensis (AB249981)
Streptomyces spiralis (EF178683)
Streptomyces africanus (AY208912)
Streptomyces afghaniensis (AB184847)
Streptomyces viridivulvaceus (AY999854)
Streptomyces andamanensis (LC008305)
Streptomyces fumanus (AB184273)
Streptomyces levis (AB184670)
Streptomyces carpinensis (AB184574)
Streptomyces caelestis (X80824)
Streptomyces azureus (TYGS 9843)
Streptomyces iakyrus (TYGS 5637)
Streptomyces longispororuber (AB184440)
Streptomyces speilbonae (AF452714)
Streptomyces cyaneus (AF346475)
Streptomyces flavovariabilis (TYGS 5626)
Streptomyces curacoi (AB184841)
Streptomyces rameus (AB184798)
Streptomyces regensis (DQ026649)
Streptomyces niveiscabiei (AF361786)
Streptomyces spinoverrucosus (AB184578)
Streptomyces fabae (KM229360)
Streptomyces griseosporus (AB184419)
Streptomyces muensis (N560155)
Streptomyces purpurascens (AB045888)
Streptomyces massaporeus (AB184152)
Streptomyces indiaensis (AB184553)
Streptomyces hawaiiensis (AB184143)
Streptomyces luteogriseus (AB184379)
Streptomyces janthinus (AB184851)
Streptomyces violaceus (AB184315)
Streptomyces roseoviolaceus (AJ399484)
Streptomyces albosporus (AJ781327)
Streptomyces sampsonii (D63871)
Streptomyces odorifer (Z76682)
Streptomyces violascens (AJ999737)
Streptomyces griseochromogenes (AJ399491)
Streptomyces resistomyficus (AJ399472)
Streptomyces felleus (AB184129)
Streptomyces coelicolor (AB184196)
Streptomyces griseus subsp. solivaciens (AB249915)
Streptomyces hydrogenans (AB184868)
Streptomyces limosus (AB184147)
Streptomyces canescens (AB184117)
Streptomyces daghestanicus (DQ442497)
Streptomyces rhizophilus (HQ267989)
Streptomyces gramineus (HM745988)
Streptomyces fuscichromogenes (KC771428)
Streptomyces olivicoloratus (KM229359)
Streptomyces panaciradicis (KF971876)
Streptomyces sasae (HQ267987)
Streptomyces hyaluronumycinii (AB840588)
Streptomyces shehnenensis (HQ660226)
Streptomyces jujiangensis (KF938657)
Streptomyces graminisoli (HQ267975)
Streptomyces actinomycinicus (LC069046)
Streptomyces gilvifuscus (KM229362)
Streptomyces lanatus (AB184845)
Streptomyces lincolniensis (TYGS 3900)
Streptomyces shaanxiensis (FJ465151)
Streptomyces osmaniensis (FJ613126)
Streptomyces caeruleatus (GQ329712)
Streptomyces graminifolii (HQ267984)
Streptomyces prunicolor (TYGS 3949)
Streptomyces hokutenensis (TYGS 3950)
Streptomyces adustus (LC026279)
Streptomyces alboniger (AY845349)
Streptomyces mirabilis (AB184412)
Streptomyces kaempferi (HE591382)
Streptomyces olivochromogenes (AY094370)
Streptomyces rhizosphaerihabitus (HQ267983)
Streptomyces albiflavescens (KC771426)
Streptomyces krungkingensis (LC008304)
Streptomyces siamensis (AB773848)
Streptomyces spongiae (AB498741)
Streptomyces kunmingensis (DQ442513)
Streptomyces endophyticus (GU367154)
Streptomyces fractus (FJ857947)
Streptomyces atriruber (EU181219)
Streptomyces avermiltis (BA000030)
Streptomyces bobili (AB184328)
Streptomyces galilaeus (AB045878)
Streptomyces phaeoluteigriseus (TYGS 21770)
Streptomyces acidiscabies (D63865)
Streptomyces alanosinus (AB184442)
Streptomyces griseoruber (AB184209)
Streptomyces phaeofaciens (AB184360)
Streptomyces puniceus (DQ442542)
Streptomyces roseoilacinus (AB184167)
Streptomyces indoligenes (KU195301)
Streptomyces gobitricini (AB184666)
Streptomyces lavendofoliae (AJ781336)
Streptomyces luridus (DQ442523)
Streptomyces diastatochromogenes (D63867)
Streptomyces deccanensis (EF219459)
Streptomyces europaeiscabiei (AJ007423)
Streptomyces scabiei (D63862)
Streptomyces stelliscabiei (AJ007429)
Streptomyces bottropensis (TYGS 3203)
Streptomyces hygroscopicus subsp. ossamyceticus (AB184560)
Streptomyces decoyicus (EU170127)
Streptomyces tonulus (AJ781367)
Streptomyces ipomoeae (AB184857)
Streptomyces neyagawaensis (D63869)
Streptomyces heilongjiangensis (JF431459)
Streptomyces cinereoruber subsp. fructofermentans (AY999758)
Streptomyces polymachus (KM229363)
Streptomyces lacrimiflumis (KB29342)
Streptomyces turgidiscabies (AB026221)
Streptomyces reticuliscabiei (AJ007428)
Streptomyces graminilatus (HQ268006)
Streptomyces rishiriensis (EF178682)
Streptomyces humilus (DQ442508)
Streptomyces cacai subsp. asoseus (DQ026644)
Streptomyces chartreusii (AB184839)
Streptomyces similanensis (AB773850)
Streptomyces seoulensis (TYGS 5595)
Streptomyces recifensis (AB184165)
Streptomyces griseoluteus (AY999751)
Streptomyces cyslabdanicus (AB915216)
Streptomyces canarius (AB184396)
Streptomyces olivaceoviridis (AB184288)
Streptomyces capoanus (AB045877)
Streptomyces bungensis (AB184696)
Streptomyces corchorusii (AB184267)
Streptomyces chibaensis (AY999798)
Streptomyces phaeogriseichromatogenes (AJ391813)
Streptomyces griseofuscus (TYGS 5635)
Streptomyces murinus (AB184155)
Streptomyces costaricanus (AB249939)
Streptomyces phaeoluteichromatogenes (AJ391814)
Streptomyces misionensis (TYGS 2580)
Streptomyces cellostaticus (AY999742)
Streptomyces lannensis (AB562508)
Streptomyces changmaiensis (AB562507)
Streptomyces echinoruber (KC139252)
Streptomyces bullii (HE591384)
Streptomyces chromofuscus (AB184194)
Streptomyces pluripotens (KF195922)
Streptomyces thermocoprophilus (AJ007402)
Streptomyces thermoviolaceus subsp. apingensis (Z68095)
Streptomyces thermoviolaceus subsp. thermoviolaceus (Z68096)
Streptomyces thermoalcalitolerans (AB249909)
Streptomyces thermogriseus (AB249980)
Streptomyces thermotrichans (DQ442547)
Streptomyces thermovulgaris (Z68094)
Streptomyces mexicanus (AB249966)
Streptomyces canchipurensis (N560154)
Streptomyces coeruleofuscus (DQ026668)
Streptomyces cinereospinus (AB184648)
Streptomyces yokosukanensis (DQ026652)
Streptomyces echinatus (AJ399465)
Streptomyces yaanensis (JQ307192)
Streptomyces puniscabiei (AF361785)





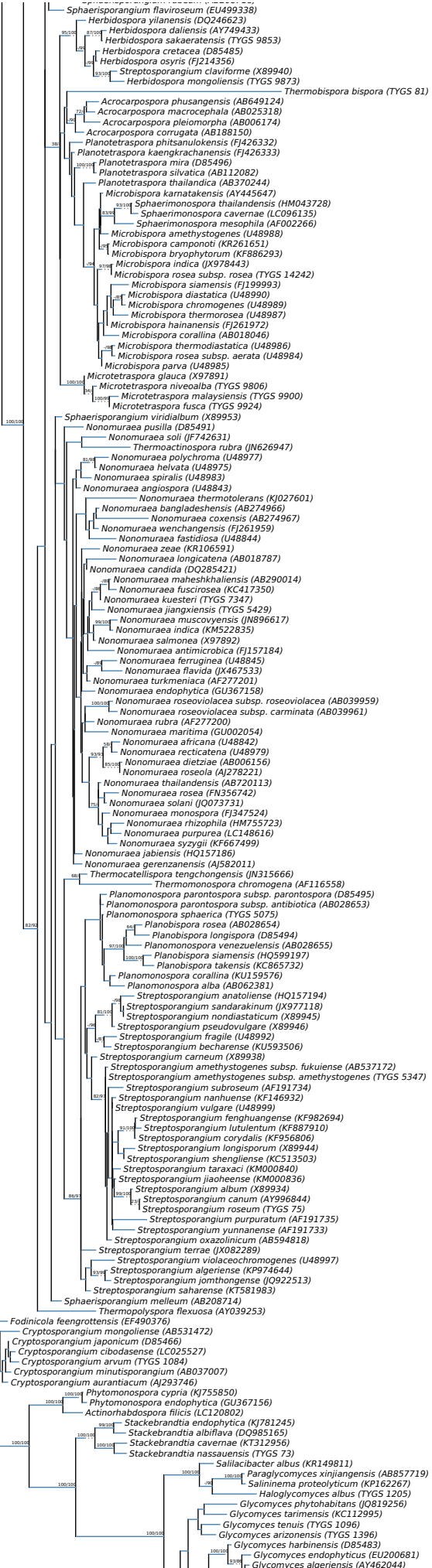
Thermomonospora mesouviformis (AF028247)
Thermobifida alba (AF002260)
Thermobifida cellulolytica (AJ298058)
Lipingshangella halophila (KU042077)
Allosalinactinospora lopnrensis (TYGS 4341)
Haloactinospora alba (DQ923130)
Salinactinospora qingdaonensis (GU253338)
Nocardiosis gilva (AY619712)
Nocardiosis rosea (AY619713)
Nocardiosis rhodophaea (AY619714)
Nocardiosis akesuensis (KU860457)
Nocardiosis mwathae (KF976731)
Nocardiosis chromatogenes (AY619715)
Nocardiosis baichengensis (TYGS 4207)
Nocardiosis halophila (AJ421018)
Nocardiosis corallicola (JN006759)
Nocardiosis composta (AF360734)
Nocardiosis potens (TYGS 4213)
Nocardiosis sediminis (LC110387)

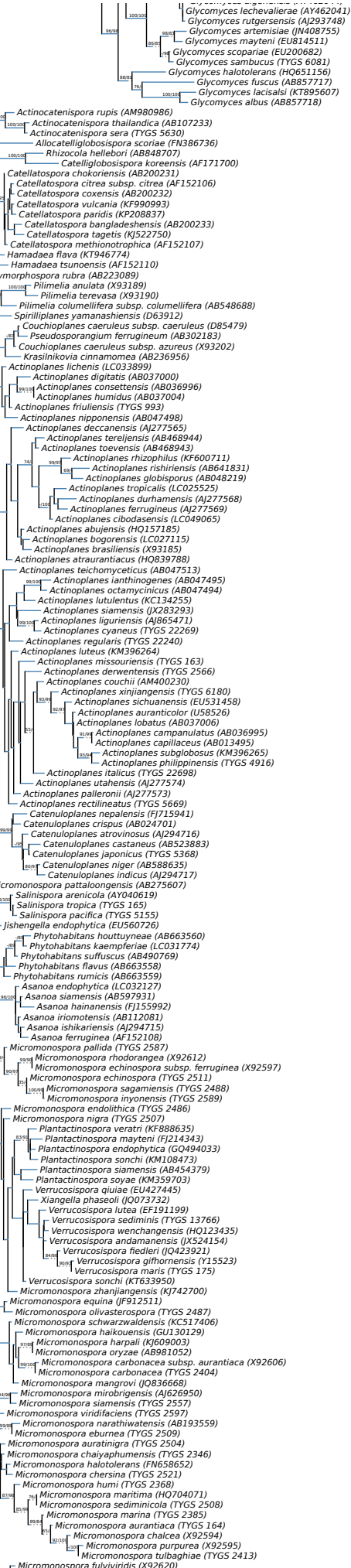
Murinocardiosis flavida (TYGS 22699)
Spinactinospora alkaltolerans (GU112453)
Marinactinospora endophytica (KP277099)
Marinactinospora thermotolerans (TYGS 1555)
Actinorugispora endophytica (KM925046)
Nocardiosis ansamitocini (KR605109)
Nocardiosis nikonensis (AB491226)
Nocardiosis salina (AY373031)
Nocardiosis litoralis (EU583726)
Nocardiosis kunsanensis (TYGS 4210)
Nocardiosis xinjiangensis (AF251709)
Nocardiosis rhizosphaerae (KJ929216)
Nocardiosis aegyptia (AJ539401)
Nocardiosis alkaliphila (AY230848)
Nocardiosis listeri (TYGS 3973)
Nocardiosis alba subsp. alba (TYGS 4209)
Nocardiosis tropica (AF105971)
Nocardiosis umidischolae (AY036001)
Nocardiosis oceani (KF270094)
Nocardiosis nanhaiensis (KF270095)
Nocardiosis terrae (DQ387958)
Nocardiosis prasina (X97884)
Nocardiosis ganjaluensis (TYGS 4212)
Nocardiosis metallicus (AJ420769)
Nocardiosis exhalans (AY028325)
Nocardiosis valliformis (TYGS 4211)
Nocardiosis flavescens (TYGS 13731)
Nocardiosis algeriensis (KJ470139)
Nocardiosis dassonvillei subsp. albirubida (TYGS 4466)
Streptomyces flavidofuscus (AB184655)
Nocardiosis antarctica (X97885)
Nocardiosis synnemataformans (TYGS 4823)
Nocardiosis dassonvillei subsp. dassonvillei (TYGS 58)
Nocardiosis arvandica (EU410477)
Nocardiosis sinuspersici (TYGS 18684)
Nocardiosis quinghaiensis (EF597511)
Nocardiosis halotolerans (TYGS 4577)
Nocardiosis lucentensis (X97888)
Nocardiosis fildesensis (FJ853144)

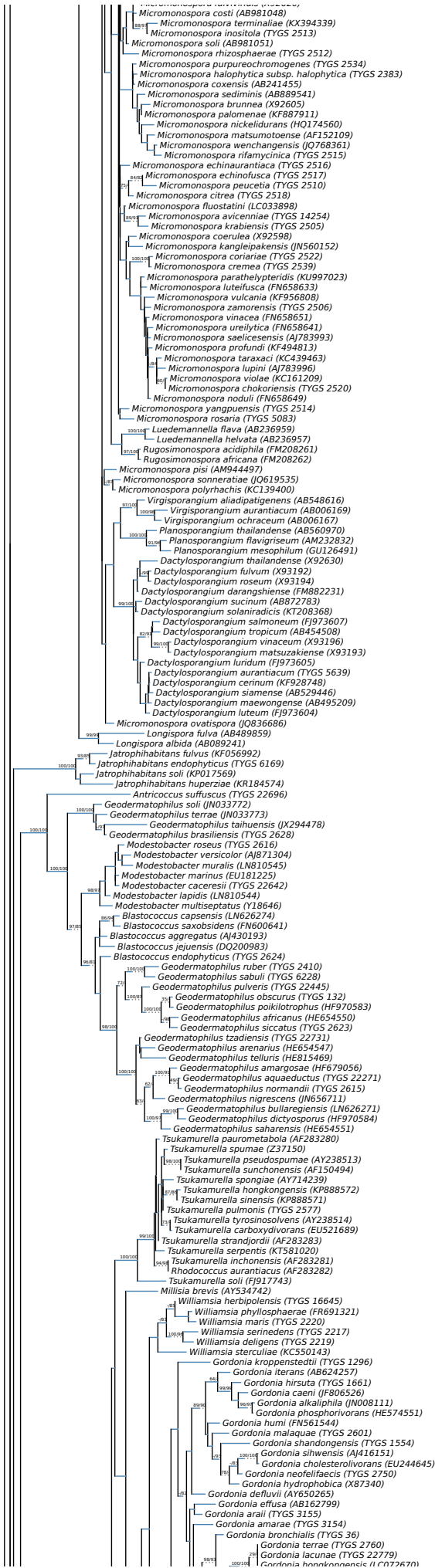
Actinoallomurus acanthiterae (Q085862)
Actinoallomurus purpureus (AB364588)
Actinoallomurus luridus (AB364585)
Actinoallomurus liliacearum (AB668306)
Actinoallomurus spadix (AF163120)
Actinoallomurus vinaceus (AB668307)
Actinoallomurus coprocola (AB364579)
Actinoallomurus innotensis (AB364586)
Actinoallomurus radicum (AB578855)
Actinoallomurus caesius (AB364589)
Actinoallomurus acaciae (EU429322)
Actinoallomurus bryophytorum (KJ25409)
Actinoallomurus yoronensis (AB364584)
Actinoallomurus fulvus (AB364582)
Actinoallomurus amamiensis (AB364583)
Actinoallomurus oryzae (EU420071)
Actinomadura scrupuli (FM210339)
Actinomadura alba (DQ985164)
Actinomadura echinospira (AJ420135)
Actinomadura amyolytica (AB859253)
Actinomadura cellulolytica (AB859254)
Thermomonospora curvata (TYGS 83)
Actinomadura umbrina (AJ293713)
Actinomadura rupiterrae (FM210337)
Actinomadura gamaensis (KT989505)
Actinomadura oligospira (TYGS 1698)
Actinomadura flavalba (TYGS 1267)
Actinomadura rayongensis (AB889544)
Actinomadura stramentaria (TYGS 1292)
Actinocoralia longicatena (AJ293707)
Actinocoralia glomerata (AJ293704)
Actinocoralia cavernae (AY966427)
Actinocoralia lasiocapitis (KR261652)
Actinocoralia aurantiaca (AJ293701)
Actinocoralia libanotica (U49007)
Actinocoralia herbida (D85473)
Actinocoralia aurea (AB006177)
Actinomadura hibisca (AJ293705)
Actinomadura namibiensis (AJ420134)
Actinomadura kijaniata (TYGS 4553)

Actinomadura miaoliensis (EF116925)
Actinomadura keratinilytica (EU637009)
Actinomadura viridilutea (TYGS 22695)
Actinomadura rubrorubra (TYGS 4593)
Actinomadura fibrosa (AJ293702)
Actinomadura sediminis (FJ272484)
Actinomadura cremea subsp. cremea (AF134067)
Actinomadura rifamycini (TYGS 1393)
Actinomadura apis (AB557596)
Actinomadura nirtigines (AJ035999)
Actinomadura chibensis (AB264086)
Actinomadura syzygii (KF667496)
Actinomadura meridiana (FN646663)
Actinomadura pelletieri (TYGS 22689)
Actinomadura chokoriensis (AB331730)
Actinomadura bangladeshensis (AB331652)
Actinomadura meyeriae (TYGS 14346)
Actinomadura darangshiensis (FN646682)
Actinomadura madurae (TYGS 2446)
Actinomadura glauciflava (AB184612)
Actinomadura luteofluorescens (U49008)
Actinomadura verrucosospira (U49011)
Actinomadura coerulea (U49002)
Actinomadura citrea (AJ420139)
Actinomadura mexicana (AF277195)
Actinomadura yumaensis (AF163122)
Actinomadura livida (AJ293706)
Actinomadura catellatispora (AF154127)

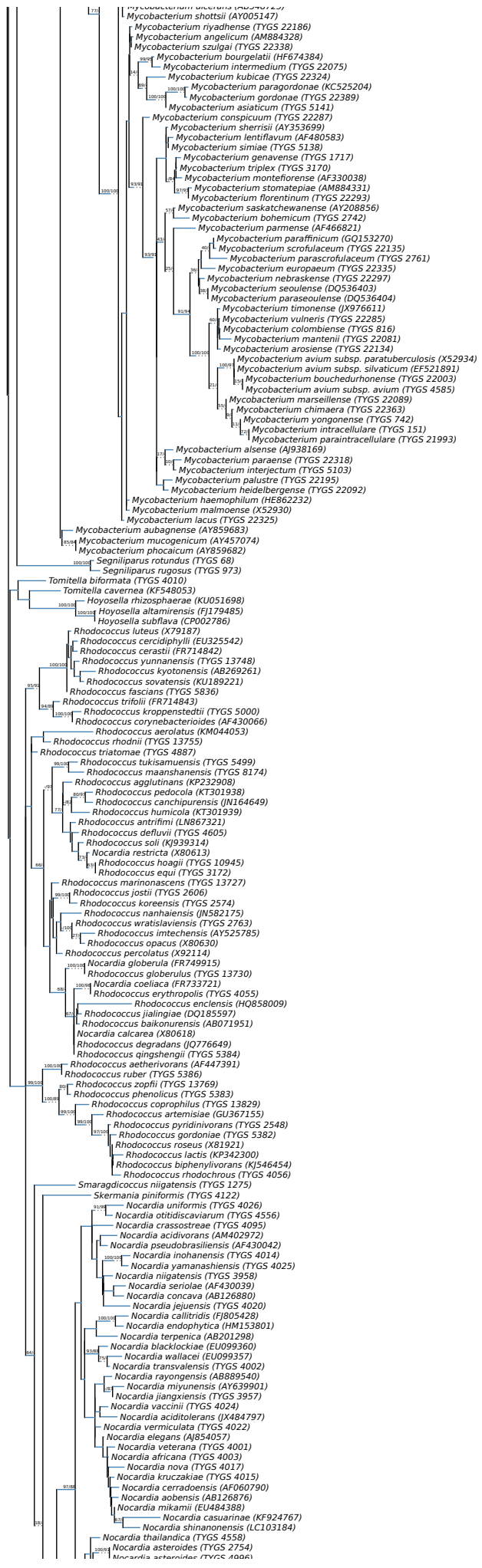
Actinomadura sputi (FM957483)
Actinomadura hallensis (DQ076484)
Actinomadura adranensis (KU356942)
Actinomadura rugatobispura (U49010)
Actinomadura vinacea (AF134070)
Actinomadura viridis (AJ420141)
Actinomadura jiaoheensis (KM000835)
Actinomadura sporangiiformans (KM000834)
Actinomadura macra (TYGS 4082)
Actinomadura formosensis (AJ293703)
Actinomadura xylanilytica (FR692101)
Actinomadura napierensis (AY568292)
Actinomadura latina (AY035998)
Actinomadura geliboluensis (HQ157187)
Actinomadura fulvoscens (AJ420137)
Actinomadura rudentiformis (DQ285420)
Actinomadura montaniterrae (LC126428)
Spirillospora albida (D85498)
Sinosporangium siamense (KC865731)
Sinosporangium album (EU438912)
Sinosporangium fuscum (KM057844)
Sphaerisporangium cinnabarinum (X89939)
Sphaerisporangium krabiense (HM037365)
Sphaerisporangium siamense (HM043727)
Sphaerisporangium album (EU499344)
Sphaerisporangium rutum (AB842299)
Sphaerisporangium aureiburum (KM094177)
Sphaerisporangium rubeum (AB208718)

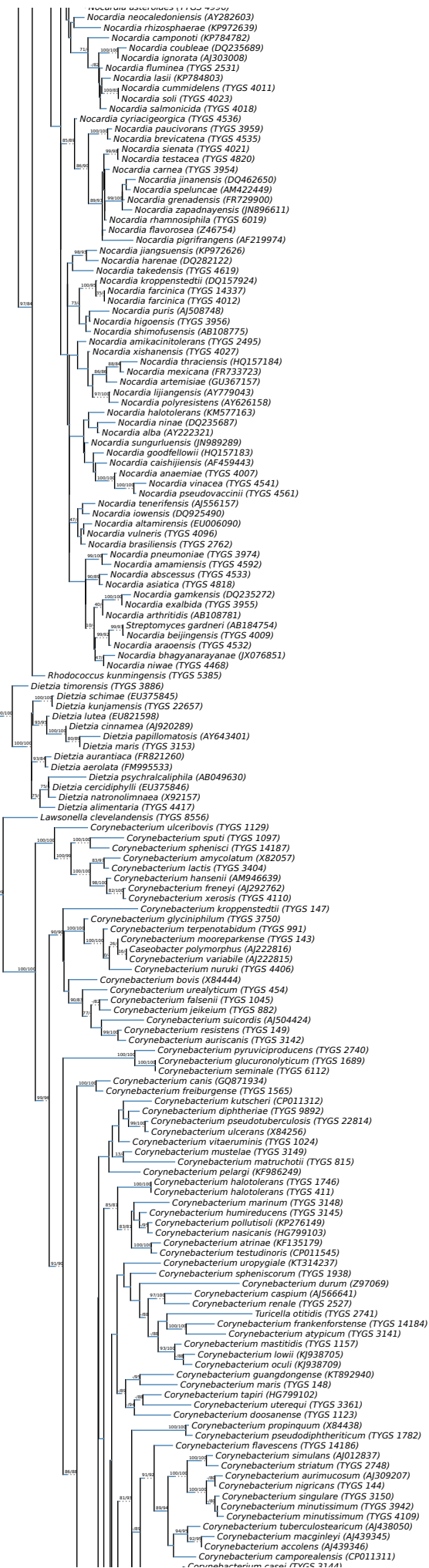


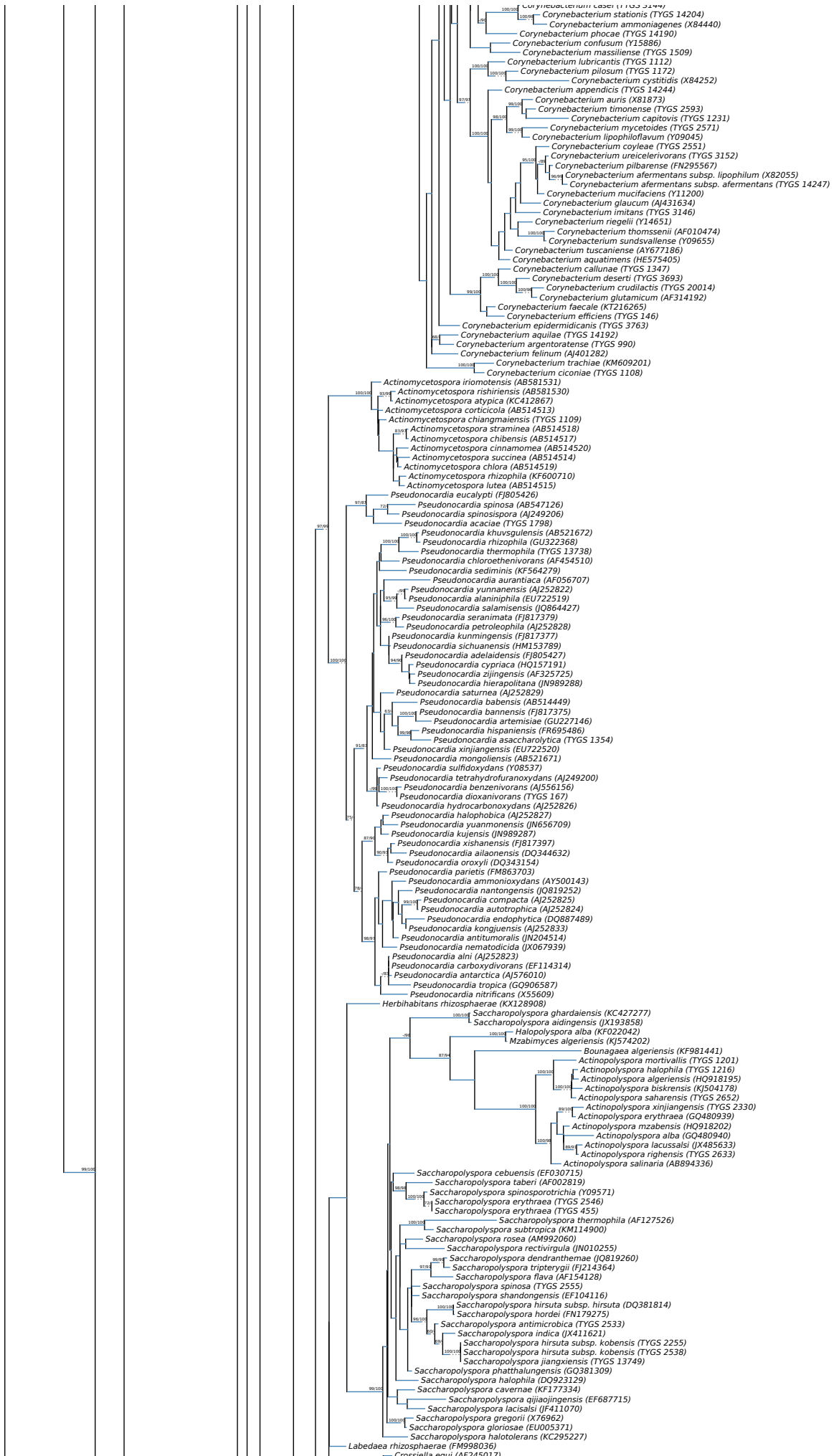


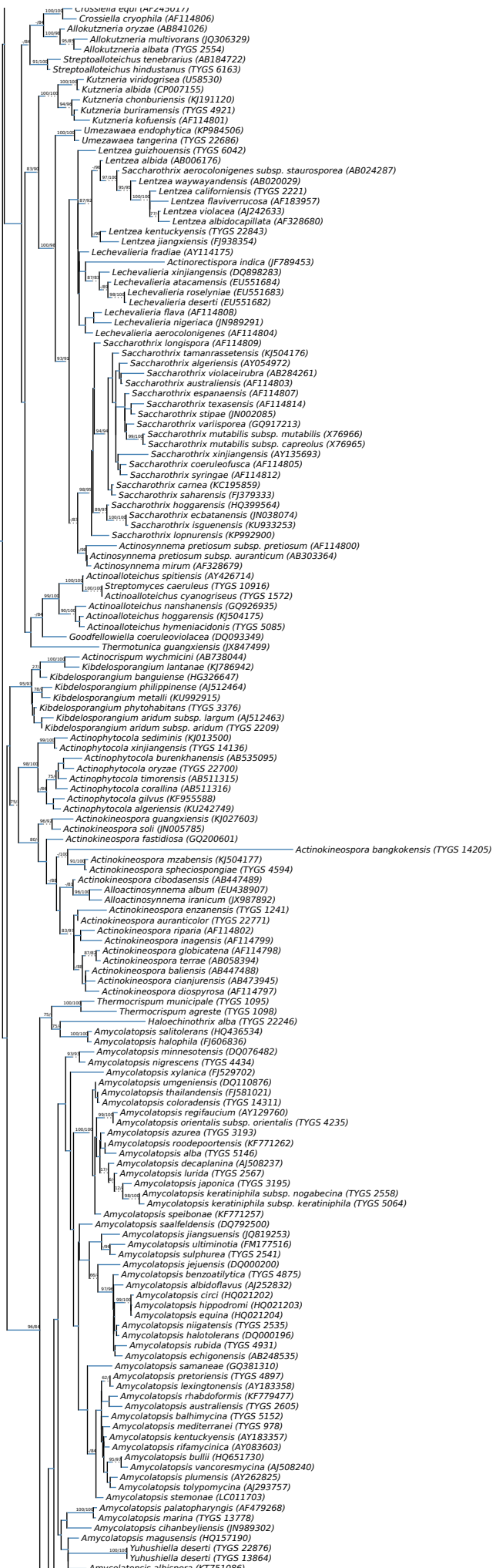


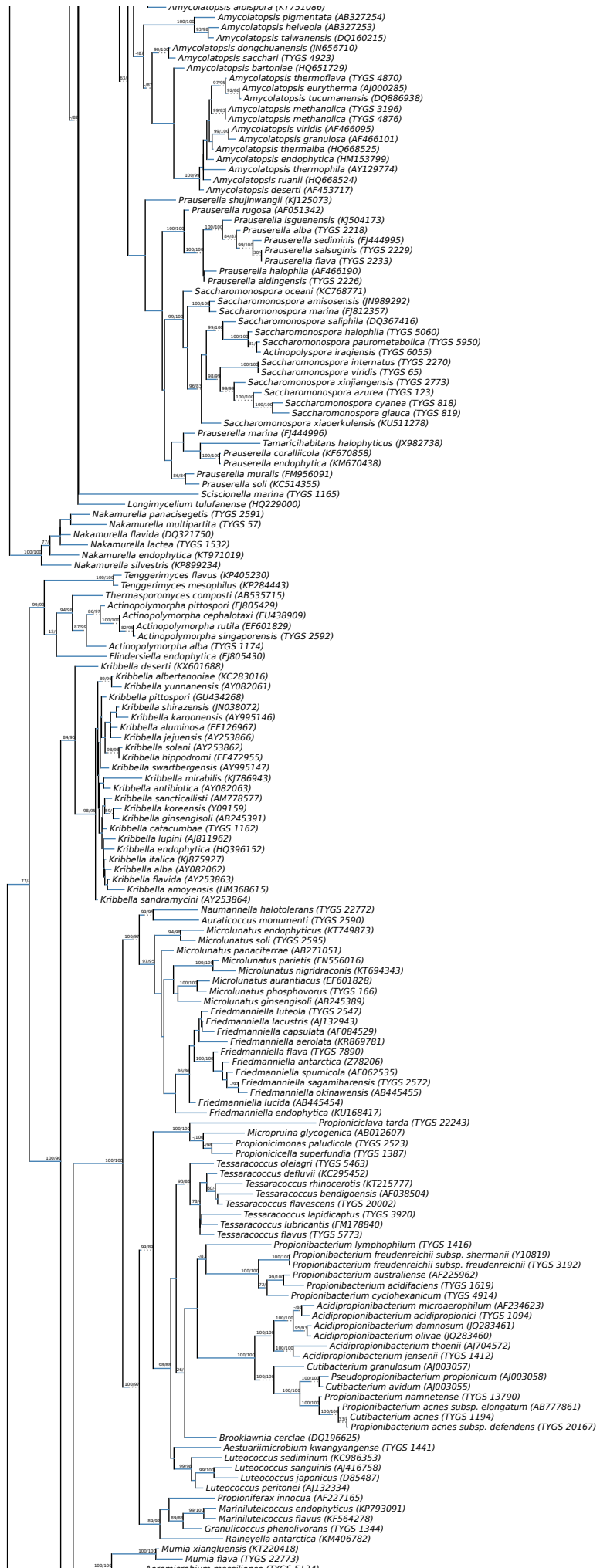












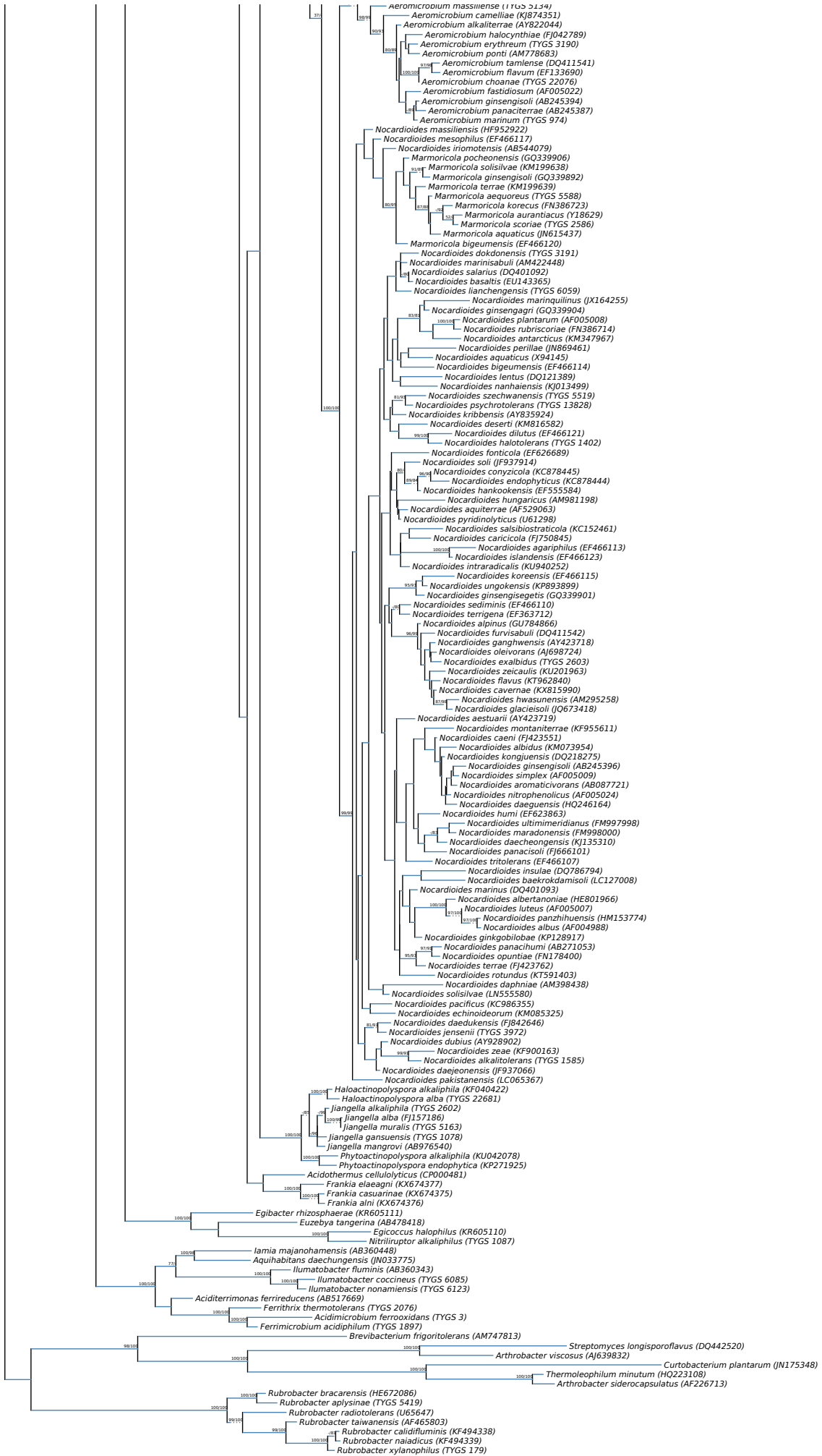
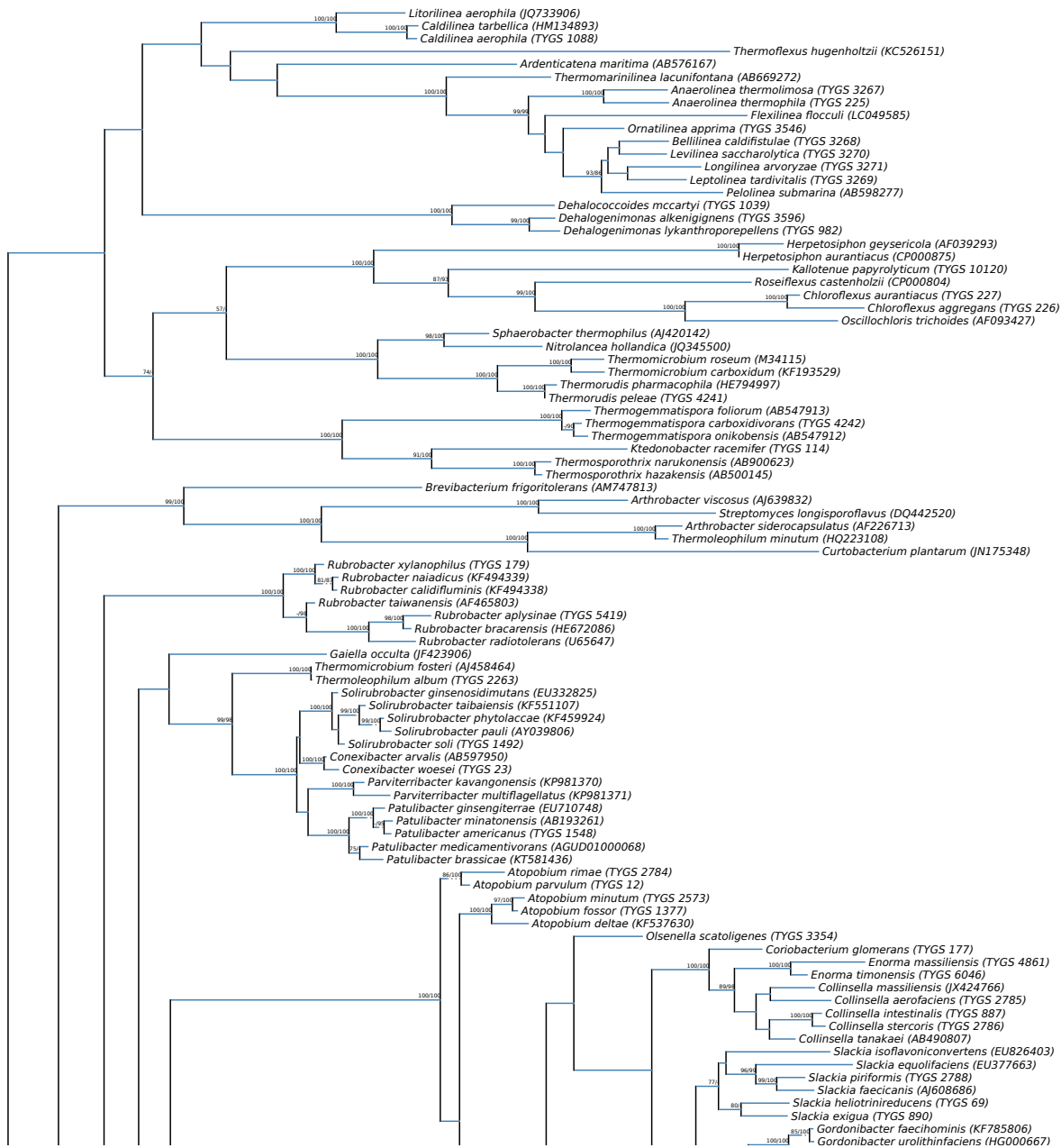
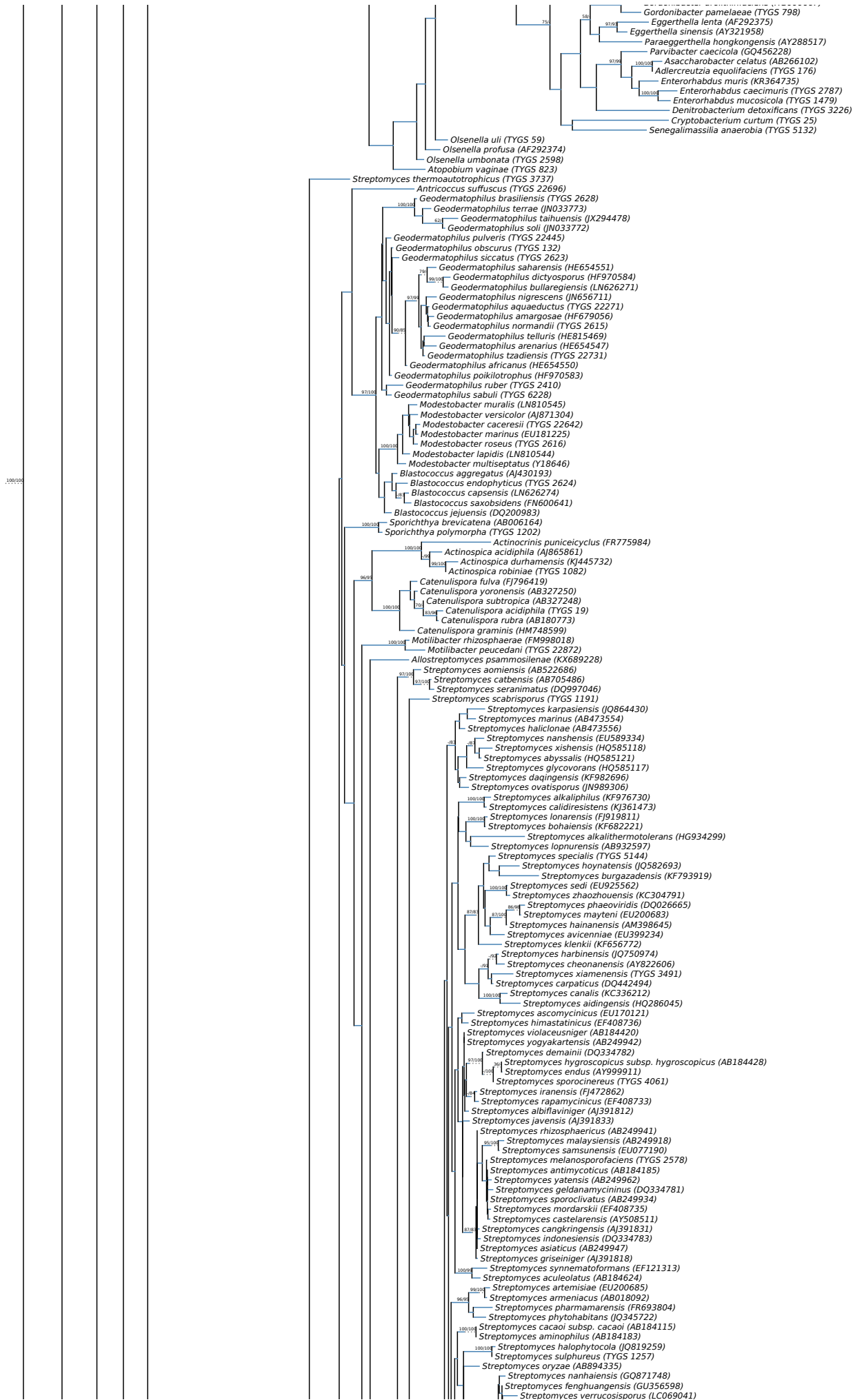


Figure 2: Backbone-constrained comprehensive 16S rRNA gene ML and MP tree (CCT).
Dotted parts of branches are filled in to allow proper placement of bootstrap values and are not part of the actual branch length.





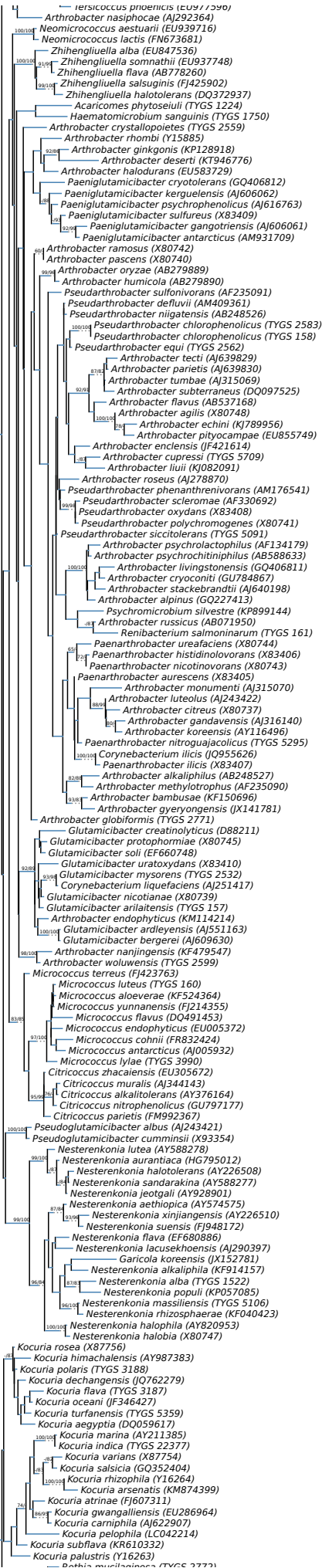
Streptomyces chitinivorans (JQ862603)
Streptomyces atacamensis (HE571711)
Streptomyces radiopugnans (DQ912930)
Streptomyces pini (TYGS 14613)
Streptomyces barkuensis (JQ862602)
Streptomyces mangrovi (JX067937)
Streptomyces glaucosporus (AB184664)
Streptomyces megasporus (AB184617)
Streptomyces macrosporus (Z68099)
Streptomyces smyrnaeus (KF006349)
Streptomyces litoralis (KX021819)
Streptomyces albus (TYGS 4071)
Streptomyces gibsonii (AB184663)
Streptomyces rangoonensis (AB184295)
Streptomyces flocculus (AB184272)
Streptomyces sodiophilus (AY236339)
Streptomyces rubrus (AB473557)
Streptomyces panacagri (AB245388)
Streptomyces qinglanensis (HQ660227)
Streptomyces pathocidini (AB184501)
Streptomyces tremellae (JN873308)
Streptomyces rubidus (AY876941)
Streptomyces yeechongensis (TYGS 4288)
Streptomyces paucisporus (TYGS 13882)
Streptomyces polygonati (KP208836)
Streptomyces yanglinensis (AY876940)
Streptomyces cocklensis (FR692107)
Streptomyces bryophytorum (KF923804)
Streptomyces guanduensis (AY876942)
Streptomyces baliensis (AB441718)
Streptomyces erringtonii (HE573871)
Streptomyces glauciniger (AB249964)
Streptomyces tateyamensis (AB473555)
Streptomyces rimosus subsp. *rimosus* (TYGS 4573)
Streptomyces albofaciens (AB045880)
Streptomyces auratus (AJ391816)
Streptomyces purpurogeniscleroticus (AJ621604)
Streptomyces ochraceiscleroticus (TYGS 5855)
Streptomyces violens (TYGS 5647)
Streptomyces olivaceiscleroticus (AJ621606)
Streptomyces niger (AJ621607)
Streptomyces monomycini (DQ445790)
Streptomyces siaoyensis (DQ026654)
Streptoverticillium verticillium subsp. *quintum* (AB184822)
Streptomyces kasugaensis (AB024441)
Streptomyces celluloflavus (TYGS 6012)
Streptomyces albospinus (AY999753)
Streptomyces misakiensis (AB217605)
Streptomyces catenulae (TYGS 6003)
Streptomyces ruanii (DQ442530)
Streptomyces tubercidicus (AJ621612)
Streptomyces libani subsp. *libani* (AB184414)
Streptomyces luteosporus (DQ442525)
Streptomyces xinghaiensis (EF577247)
Streptomyces palmae (LC073309)
Streptomyces spongicola (KT327868)
Streptomyces wuyuanensis (TYGS 5469)
Streptomyces orinoci (AB184866)
Streptomyces lilacinus (AB184819)
Streptomyces kashmirensis (AB184546)
Streptomyces morookaense (AB184878)
Streptomyces lacticiproducens (GQ184344)
Streptoverticillium reticulum subsp. *protomyticum* (AB184551)
Streptomyces lavenduligriseus (DQ442515)
Streptomyces thioluteus (AB184753)
Streptomyces olivovericillatus (AB184636)
Streptoverticillium viridiflavum (AY999847)
Streptomyces septatus (AY999825)
Streptomyces salmonis (AB184705)
Streptoverticillium cinnamoneum subsp. *lanosum* (AY999747)
Streptoverticillium cinnamoneum subsp. *sparsum* (AB184716)
Streptomyces hiroshimensis (AB184144)
Streptomyces aureoverisilis (AY999849)
Streptomyces rectiverticillatus (DQ026657)
Streptomyces pseudoechinosporus (AB184100)
Streptomyces cinnamoneus (AB184950)
Streptomyces parvisporogenes (AY999865)
Streptomyces albireticuli (AY999748)
Streptomyces zhihengii (KU936048)
Streptomyces hachioensis (EF178694)
Streptomyces polyantibioticus (DQ141528)
Streptomyces formicae (KP784804)
Streptomyces scopuliridis (TYGS 5375)
Streptomyces lushanensis (KF938656)
Streptomyces hypolithicus (EU196762)
Streptomyces chryseus (AY999787)
Streptomyces helveticus (AB184367)
Streptomyces enissocaealis (AB249930)
Streptomyces albidochromogenes (AB249953)
Streptomyces xanthochromogenes (DQ442559)
Streptomyces michiganensis (AB184153)
Streptomyces hungungensis (JN560157)
Streptomyces mauvecolor (AB184532)
Streptomyces lunaealis (KM207217)
Streptomyces pratensis (JQ806215)
Streptomyces griseoplanus (AY999894)
Streptomyces cyaneofuscatus (TYGS 6020)
Streptomyces erumpens (AY999825)
Streptomyces griseus (TYGS 2568)
Streptomyces flavogriseus (AJ494864)
Streptomyces flavovirens (DQ026635)
Streptomyces nigrfaciens (DQ442531)
Streptomyces nitrosporus (EF178680)
Streptomyces griseolus (TYGS 5632)
Streptomyces halstedii (TYGS 5856)
Streptomyces argenteolus (AB184187)
Streptomyces cinereorectus (AB184646)
Streptomyces fluorescens (TYGS 10931)
Streptomyces citreofluorescens (TYGS 10934)
Streptomyces fimicarius (AY999784)
Streptomyces flavofuscus (AB249935)
Streptomyces baarnensis (AB184615)
Streptomyces badius (AY999783)
Streptomyces sundarbansensis (AY550275)
Streptomyces parvus (DQ442537)
Streptomyces bacillaris (AB184439)
Streptomyces araujoniae (EU792889)
Streptomyces cavourensis subsp. *cavourensis* (DQ445791)
Streptomyces griseobrunneus (AB249912)
Streptomyces albobrunnus (AB184425)
Streptomyces sindenensis (AB184759)
Streptomyces setonii (AB184300)
Streptomyces acrimycini (AY999889)
Streptomyces caviscabies (AF112160)
Streptomyces alboviridis (AB184256)
Streptomyces griseus subsp. *cretosus* (AY999897)
Streptomyces griseus subsp. *alpha* (AY999869)
Streptomyces microflavus (DQ445795)
Streptomyces fulvobovus (AB184711)
Streptomyces willmorei (EF178673)
Streptomyces lipmanii (DQ442519)
Streptomyces fulvissimus (CP005080)
Streptomyces luridiscabiei (AF361784)
Streptomyces californicus (TYGS 5376)
Streptomyces floridae (TYGS 5645)
Streptomyces finlayi (AY999788)
Streptomyces clavifer (DQ026670)
Streptomyces mutomycini (AB249951)
Streptomyces atroolivaceus (TYGS 5636)
Streptomyces olivoviridis (AB184227)
Streptomyces cavourensis subsp. *washingtonensis* (DQ026671)
Streptomyces chrysomallus (TYGS 3201)

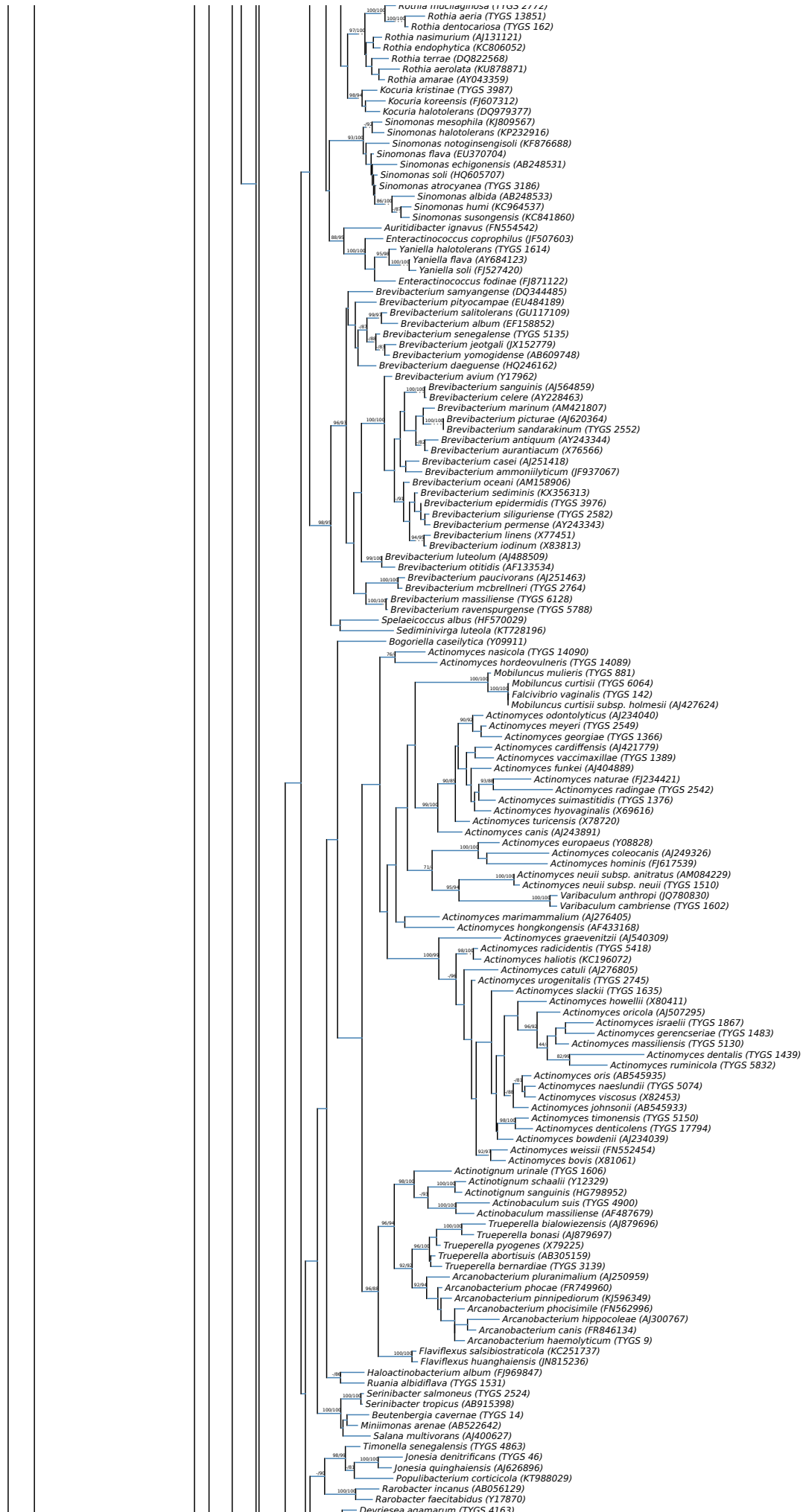
Streptomyces anulatus (DQ026637)
Streptomyces praecox (AB184293)
Streptomyces roseolastaticus (AB184683)
Streptomyces pluricoloratus (DQ442540)
Streptomyces tanashiensis (AY99856)
Streptomyces albolineatus (AB249958)
Streptomyces globisporus (EF178686)
Streptomyces griseinus (AB184205)
Streptomyces rubiginosohelvolus (AB184240)
Streptomyces mediolani (AB184674)
Streptomyces pulveraceus (AB184806)
Streptomyces gelaticus (DQ026636)
Streptomyces sanglieri (AB249945)
Streptomyces atratus (DQ026638)
Streptomyces yanii (AB006159)
Streptomyces atriruber (EU812169)
Streptomyces avermitilis (BA000030)
Streptomyces achromogenes subsp. *achromogenes* (TYGS 5629)
Streptomyces niveoruber (DQ445796)
Streptomyces lucensis (DQ442522)
Streptomyces celostaticus (AY999742)
Streptomyces yokosukanensis (DQ026652)
Streptomyces alboniger (AY845349)
Streptomyces alanosinus (AB184442)
Streptomyces acidiscabies (D63865)
Streptomyces puniceus (DQ442542)
Streptomyces phaeofaciens (AB184360)
Streptomyces graminilatus (HQ268006)
Streptomyces lacrimifluminis (KJ829342)
Streptomyces turgidiscabies (AB026221)
Streptomyces reticuliscabiei (AJ007428)
Streptomyces cinereoruber subsp. *fructofermentans* (AY999758)
Streptomyces diastatochromogenes (D63867)
Streptomyces scabiei (D63862)
Streptomyces europaeiscabiei (AJ007423)
Streptomyces heilongjiangensis (JF431459)
Streptomyces neyagawaensis (D63869)
Streptomyces hygrosopicus subsp. *ossamyceticus* (AB184560)
Streptomyces torulosus (AJ781367)
Streptomyces ipomoeae (AB184857)
Streptomyces decoyicus (EU170127)
Streptomyces deccanensis (EF219459)
Streptomyces stelliscabiei (AJ007429)
Streptomyces bottropensis (TYGS 3203)
Streptomyces polymachus (KM229363)
Streptomyces kunmingensis (DQ442513)
Streptomyces fractus (FJ857947)
Streptomyces endophyticus (GU367154)
Streptomyces pratensis (FR692098)
Streptomyces emeiensis (DQ462649)
Streptomyces prasinopilosus (AB249968)
Streptomyces chlorus (FR692094)
Streptomyces viridis (FR692117)
Streptomyces prasinus (DQ026658)
Streptomyces bambergensis (AB184869)
Streptomyces cyanoalbus (AB184882)
Streptomyces incanus (FR692095)
Streptomyces herbaceus (FR692091)
Streptomyces spongiae (AB498741)
Streptomyces kaempferi (HE591382)
Streptomyces mirabilis (AB184412)
Streptomyces olivochromogenes (AY094370)
Streptomyces aurantiacus (AJ781383)
Streptomyces glomeroaurantiacus (AB249983)
Streptomyces tauricus (AB045879)
Streptomyces ederensis (AY99824)
Streptomyces umbrinus (AB184305)
Streptomyces phaeochromogenes (AB184738)
Streptomyces arcticus (KR013752)
Streptomyces kanamyceticus (DQ442511)
Streptomyces durmitorensis (DQ067287)
Streptomyces rectiviolaceus (DQ026660)
Streptomyces rosealbus (AY223222)
Streptomyces aureus (AY094368)
Streptomyces rhizospherophilus (HQ267983)
Streptomyces albiflavescens (KC771426)
Streptomyces krungchingensis (LC008304)
Streptomyces siamensis (AB773848)
Streptomyces adustus (LC026279)
Streptomyces ciscaucasicus (AB184208)
Streptomyces canus (AY999775)
Streptomyces cyaneus (AF346475)
Streptomyces shaanxiensis (FJ465151)
Streptomyces caeruleus (GQ229712)
Streptomyces lincolnsis (TYGS 3900)
Streptomyces cinnabarinus (TYGS 14181)
Streptomyces griseoruber (AB184209)
Streptomyces antibioticus (AY999776)
Streptomyces coacervatus (AB500703)
Streptomyces flavidovirens (AB184270)
Streptomyces longisporus (AJ399475)
Streptomyces phyllanthi (LC125632)
Streptomyces curaci (AB184841)
Streptomyces chibaensis (AY999798)
Streptomyces carchosus (AB184267)
Streptomyces olivaceoviridis (AB184288)
Streptomyces canarius (AB184396)
Streptomyces cyslabdanicus (AB915216)
Streptomyces capoanus (AB045877)
Streptomyces rameus (AB184798)
Streptomyces regensis (DQ026649)
Streptomyces bungoensis (AB184896)
Streptomyces galbus (X79852)
Streptomyces longwoodensis (AB184580)
Streptomyces panaciradicis (KF971876)
Streptomyces fuscichromogenes (KC771428)
Streptomyces olivicoloratus (KM229359)
Streptomyces jiujiangensis (KF938657)
Streptomyces shenzhenensis (HQ660226)
Streptomyces graminisoli (HQ267975)
Streptomyces hyalurocycini (AB840588)
Streptomyces echinatus (AJ399465)
Streptomyces actinomyceticus (LC069046)
Streptomyces yaanensis (JQ307192)
Streptomyces puniscabiei (AF361785)
Streptomyces durhamensis (TYGS 5851)
Streptomyces filipinensis (AB184198)
Streptomyces niveiscabiei (AF361786)
Streptomyces phaeoigriseochromatogenes (AJ391813)
Streptomyces murinus (AB184155)
Streptomyces costaricanus (AB249939)
Streptomyces griseofuscus (TYGS 5635)
Streptomyces rhizophilus (HQ267989)
Streptomyces gramineus (HM748598)
Streptomyces sasae (HQ267987)
Streptomyces lanatus (AB184845)
Streptomyces gilvifuscus (KM229362)
Streptomyces ziwulingensis (FJ937700)
Streptomyces griseorubiginosus (AJ781339)
Streptomyces phaeopurpureus (DQ026666)
Streptomyces plumbiresistens (EU526954)
Streptomyces vastus (DQ442552)
Streptomyces flaveus (DQ026643)
Streptomyces cinereus (AB184072)
Streptomyces seymeniensis (KC560729)
Streptomyces novaeceesarae (AB184357)
Streptomyces aureocirculatus (TYGS 5596)
Streptomyces pseudovenezuelae (AB184233)
Streptomyces seoulensis (TYGS 5595)
Streptomyces griseoluteus (AY999751)
Streptomyces recifensis (AB184165)
Streptomyces similanensis (AB773850)

Streptomyces flavovariabilis (TYGS 5626)
Streptomyces cacaoi subsp. asoensis (DQ026644)
Streptomyces humidus (DQ442508)
Streptomyces nishiniensis (EF178682)
Streptomyces chartreus (AB184839)
Streptomyces osmaniensis (FJ613126)
Streptomyces graminifolii (HQ267984)
Streptomyces prunicolor (TYGS 3949)
Streptomyces hokutonensis (TYGS 3950)
Streptomyces phaeoluteigriseus (TYGS 21770)
Streptomyces bobilli (AB184328)
Streptomyces galilaeus (AB045878)
Streptomyces subtilis (X80825)
Streptomyces avidinii (AB184395)
Streptomyces yangpuensis (TYGS 4854)
Streptomyces racemochromogenes (DQ026656)
Streptomyces polychromogenes (AB184292)
Streptomyces katrae (AB184409)
Streptomyces flavotricini (AY999915)
Streptomyces toxycricini (DQ442548)
Streptomyces globosus (AJ781330)
Streptomyces amitsarensis (TYGS 15778)
Streptomyces cinnamomensis (AB184707)
Streptomyces virginiae (TYGS 5739)
Streptomyces nojiensis (AJ781355)
Streptomyces vinaceus (AB184394)
Streptomyces cirratus (AY999794)
Streptomyces lavendulae subsp. lavendulae (D85116)
Streptomyces colombiensis (DQ026646)
Streptomyces lavendulae subsp. grasserius (AY999841)
Streptomyces goshikiensis (EF178693)
Streptomyces sporoverrucosus (DQ442544)
Streptomyces spororaveus (AJ781370)
Streptomyces xanthophaeus (TYGS 5972)
Streptomyces cremeus (AY999744)
Streptomyces spiroverticillatus (AB249921)
Streptomyces graminofaciens (AB184416)
Streptomyces xantholithicus (AB184349)
Streptomyces peucetii (AB045887)
Streptomyces kurssanovii (AB184325)
Streptomyces candidus (DQ026663)
Kitasatoa kauaiensis (TYGS 5145)
Streptomyces violaceorectus (AB184314)
Streptomyces hirsutus (DQ442506)
Streptomyces vietnamensis (TYGS 3677)
Streptomyces bikiniensis (X79851)
Streptomyces cinereoruber subsp. cinereoruber (AY999771)
Streptomyces roseoviridis (AB184339)
Streptomyces gulbargensis (DQ317411)
Streptomyces roseosporus (AB184238)
Streptomyces filamentosus (AB184130)
Streptomyces roseolus (AB184168)
Streptomyces roseofulvus (AB184327)
Streptomyces termium (AB184302)
Streptomyces laurentii (TYGS 3713)
Streptomyces nashvillensis (AB184286)
Streptomyces viridobrunneus (AJ781372)
Streptomyces showdoensis (AB184389)
Streptomyces yerevanensis (EF178684)
Streptomyces litmocidini (AB184149)
Streptomyces narbonensis (DQ445794)
Streptomyces wedmorensis (TYGS 5843)
Streptomyces exfoliatus (TYGS 5964)
Streptomyces lateritius (AJ781326)
Streptomyces venezuelae (TYGS 728)
Streptomyces zaomycelicus (EF178685)
Streptomyces omiyaensis (EF178697)
Streptomyces fildesensis (DQ408297)
Streptomyces camponoticapitis (KP784807)
Streptomyces laceyi (AB249944)
Streptomyces spheroides (DQ445788)
Streptomyces niveus (DQ442532)
Streptomyces bambusae (KM229361)
Streptomyces alboporeus subsp. labilomycelicus (AB184638)
Streptomyces laevispora (FR692106)
Streptomyces brevispora (FR692104)
Streptomyces drozdowiczii (AB249957)
Streptomyces fukangensis (KF040416)
Streptomyces beijiangensis (AF385681)
Pilimelia columellifera subsp. pallida (GU269552)
Streptomyces sannanensis (AB184579)
Streptomyces noboritoensis (AB184287)
Streptomyces melanogenes (AB184222)
Streptomyces crystallinus (AB184652)
Streptomyces sanyensis (FJ261968)
Streptomyces clavuligerus (TYGS 5129)
Streptomyces amakusaensis (AY999781)
Streptomyces inusitatus (AB184445)
Streptomyces tsukubensis (AB217600)
Streptomyces indicus (EF157833)
Streptomyces lavendofoliae (AJ781336)
Streptomyces gobitricini (AB184666)
Streptomyces luridus (DQ442523)
Streptomyces indoligenes (K1195301)
Streptomyces roseolilacinus (AB184167)
Streptomyces stramineus (AB184720)
Kitasatospora kifunensis (U93322)
Kitasatospora nipponensis (AY442263)
Kitasatospora azatica (TYGS 4289)
Streptomyces purpeofuscus (TYGS 5628)
Kitasatospora sampliensis (AY260167)
Kitasatospora putterlickiae (AY189976)
Streptomyces chrysomallus subsp. fumigatus (AB184645)
Streptomyces xanthocidicus (AY999858)
Streptomyces purpureus (AJ781324)
Streptacidiphilus albus (AF074415)
Streptacidiphilus hamsterleyensis (KC111778)
Streptacidiphilus durhamensis (JX484798)
Streptacidiphilus carbonis (AF074412)
Streptacidiphilus melanogenes (TYGS 9690)
Streptacidiphilus jiangxiensis (TYGS 8762)
Streptacidiphilus anmyonensis (TYGS 10515)
Streptacidiphilus rugosus (TYGS 4284)
Streptacidiphilus neutrinimicus (AB249949)
Streptacidiphilus oryzae (TYGS 4287)
Kitasatospora arboriphila (AY442267)
Kitasatospora viridis (AY613990)
Streptomyces aureofaciens (A1207608)
Streptomyces psammoticus (AY999862)
Streptomyces avellaneus (AB184413)
Streptomyces aburaviensis (AY999886)
Streptomyces indigoferus (AB184214)
Streptomyces herbaricolor (AB184212)
Kitasatospora griseola (U93320)
Kitasatospora setae (TYGS 169)
Kitasatospora cineracea (AB022875)
Kitasatospora nigatensis (AB249960)
Kitasatospora saccharophila (AB278568)
Kitasatospora phosalacina (AB022869)
Kitasatospora cheerisanensis (AF050493)
Streptovercillium alboverticillatum (AY999766)
Kitasatospora cochleata (U93316)
Kitasatospora paracochleata (U93328)
Kitasatospora cystarginea (AY999887)
Kitasatospora terrestris (AY442266)
Kitasatospora paranensis (A1442268)
Kitasatospora medicidica (TYGS 4285)
Kitasatospora kazusensis (AB278569)
Kitasatospora gansuensis (AY442265)
Kitasatospora atroaurantiaca (DQ026645)
Streptovercillium syringium (AJ781375)
Streptomyces distallicus (EF178671)

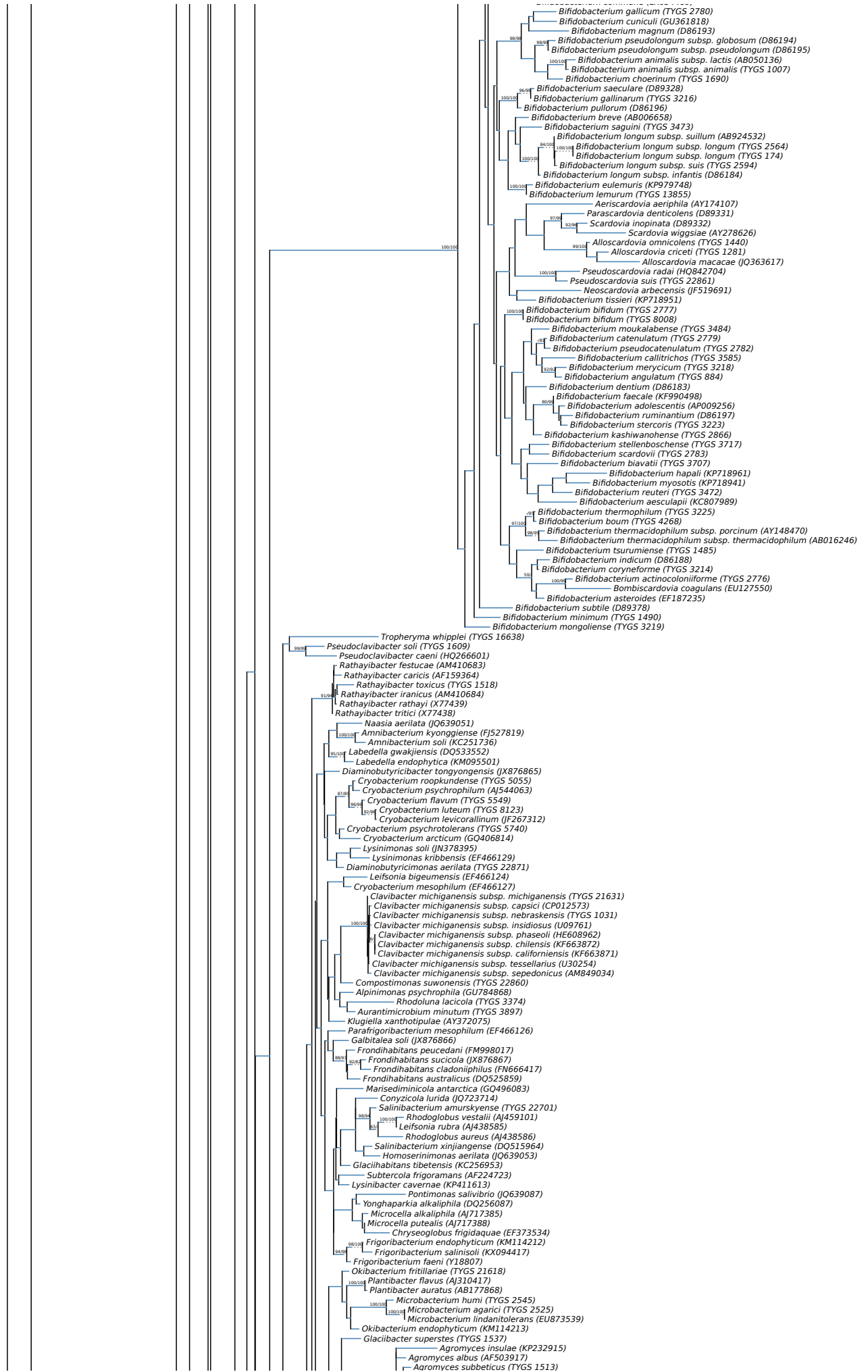
Streptomyces kentuckensis (DQ442512)
Streptomyces flavopercicus (AB249911)
Streptomyces netropsis (AB184792)
Streptomyces baldacii (TYGS 10933)
Streptomyces spitsbergensis (AB184700)
Streptomyces fervens (AB184871)
Streptomyces werraensis (DQ442558)
Streptomyces biverticillatus (AB249922)
Streptomyces olivoreticuli (AY999857)
¹⁰⁰⁰ *Streptoverticillium olivoreticuli* subsp. *cellulophilum* (AB184719)
Streptomyces globisporus subsp. *caucasicus* (EF178676)
Streptomyces eurodicus (AY999790)
Streptomyces ardens (AB184864)
Streptomyces blastmyceticus (AY999802)
Streptomyces cinnamomeus subsp. *albosporus* (EF654100)
Streptomyces roseoverticillatus (AB184169)
Streptomyces luteoverticillatus (AB184803)
Streptomyces ehimensis (AY999834)
Streptomyces angustmyceticus (DQ442509)
Streptomyces youssouffensis (FN421338)
¹⁰⁰ *Streptomyces zagrosensis* (JF917242)
Streptomyces luteireticuli (AB249969)
Streptomyces fervens subsp. *melrosporus* (AB184715)
Streptomyces abikoensis (JN566041)
^{100/100} *Streptomyces varsoviensis* (TYGS 5927)
Streptomyces varsoviensis (TYGS 5920)
^{100/100} *Streptomyces sapporonensis* (AB184508)
Streptomyces griseoverticillatus (AB184862)
Streptomyces griseocarneus (X99943)
Streptomyces ladakanum (AB184430)
Streptomyces mobaraensis (DQ442528)
^{100/100} *Streptomyces mashuensis* (X79323)
^{100/100} *Streptomyces kishiwadensis* (AB184858)
Streptomyces chromofuscus (AB184194)
Streptomyces bullii (HE591384)
Streptomyces cinereospinus (AB184648)
Streptomyces coeruleofuscus (DQ026668)
Streptomyces canchipurensis (JN560154)
Streptomyces anandii (AB184402)
^{100/100} *Streptomyces virens* (DQ442554)
Streptomyces calvus (AB184329)
Streptomyces asterosporus (AB184706)
Streptomyces aureorectus (AB184710)
Streptomyces cinerochromogenes (AB184507)
Streptomyces aurantigriseus (AB184188)
Streptomyces kebangaensis (HM449824)
Streptomyces tuius (AB184690)
Streptomyces fimbriatus (AY999844)
Streptomyces viridosporus (DQ442556)
Streptomyces glaucus (AB184665)
Streptomyces griseostramineus (AB184140)
^{100/100} *Streptomyces griseomicini* (AB184137)
Streptomyces gramineus (AJ781333)
Streptomyces viridiviolaceus (AY999854)
Streptomyces griseoviridis (AY999807)
^{100/100} *Streptomyces abietis* (AB744663)
Streptomyces alni (DQ460470)
Streptomyces hebeiensis (AY277529)
Streptomyces zinciresistens (GU225938)
Streptomyces fumigatiscleroticus (DQ442499)
Streptomyces poonensis (DQ445792)
^{100/100} *Streptomyces ruber* (AB184604)
Streptomyces roseiscleroticus (AB184251)
^{100/100} *Streptomyces jietaisiensis* (AY314783)
Streptomyces griseoaurantiacus (AB184676)
Streptomyces spiralis (EF178683)
Streptomyces brasiliensis (AB249981)
^{100/100} *Streptomyces africanus* (AY208912)
Streptomyces afghaniensis (AB184847)
Streptomyces phaeoluteichromatogenes (AJ391814)
Streptomyces misionensis (TYGS 2580)
Streptomyces carpinensis (AB184574)
Streptomyces levis (AB184670)
Streptomyces matensis (AB184221)
Streptomyces alquistii (AY999782)
Streptomyces althioticus (AY999808)
^{100/100} *Streptomyces albaduncus* (AY999757)
Streptomyces griseoalbus (AB184275)
Streptomyces malachitofuscus (AB184282)
Streptomyces ambofaciens (TYGS 2774)
Streptomyces collinus (AB184123)
Streptomyces violaceochromogenes (AY999867)
Streptomyces atrovirens (DQ026672)
Streptomyces viridodiataticus (AY999852)
Streptomyces griseosporus (AB184419)
Streptomyces lusitanus (AB184424)
Streptomyces thermocarboxydus (U94490)
¹⁰⁰ *Streptomyces coeruleus* (AY999720)
Streptomyces bellus (AB184849)
Streptomyces coeruleorubidus (AY999719)
Streptomyces lomondensis (AB184673)
^{100/100} *Streptomyces flavoviridis* (AB184842)
Streptomyces pilosus (AB184161)
Streptomyces luteogriseus (AB184379)
Streptomyces hawaiiensis (AB184143)
Streptomyces indiaensis (AB184553)
Streptomyces massaporeus (AB184152)
Streptomyces roseoviolaceus (AJ399484)
Streptomyces muensis (JN560155)
Streptomyces spinoverrucosus (AB184578)
Streptomyces purpurascens (AB045888)
Streptomyces violaceus (AB184315)
Streptomyces janthinus (AB184851)
Streptomyces albosporeus (AJ781327)
^{100/100} *Streptomyces violarius* (AB184316)
Streptomyces arenae (AJ399485)
Streptomyces echinoruber (KC139252)
Streptomyces deserti (HE577122)
Streptomyces spectabilis (AB184393)
Streptomyces aureoverticillatus (AY999774)
Streptomyces variegatus (AB184688)
Streptomyces albidoflavus (TYGS 5649)
Streptomyces daghestanicus (DQ442497)
Streptomyces felleus (AB184129)
Streptomyces limosus (AB184147)
Streptomyces hydrogenans (AB184868)
Streptomyces griseus subsp. *solvifaciens* (AB249915)
Streptomyces coelicolor (AB184196)
Streptomyces resistomycificus (AJ399472)
Streptomyces griseochromogenes (AJ399491)
Streptomyces violascens (AY999737)
Streptomyces canescens (AB184117)
¹⁰⁰ *Streptomyces champavatii* (DQ026642)
Streptomyces sampsonii (D63871)
Streptomyces odorifer (Z76862)
Streptomyces koyangensis (AY079156)
Streptomyces tacrolimicus (FN429653)
Streptomyces intermedius (AB184277)
Streptomyces diastaticus subsp. *diastaticus* (AB184785)
^{100/100} *Streptomyces gougerotii* (AB184742)
Streptomyces rutgersensis subsp. *rutgersensis* (AB184170)
Streptomyces alboflavus (TYGS 5638)
Streptomyces flavofungini (AB184359)
Streptomyces scopiformis (AF184081)
Streptomyces alifalae (KR080524)
Streptomyces silaceus (EU812170)
^{100/100} *Streptomyces changmaiensis* (AB562507)
Streptomyces lannensis (AB562508)
^{100/100} *Streptomyces leeuwenhoekii* (TYGS 3794)
Streptomyces leeuwenhoekii (TYGS 7359)
^{100/100} *Streptomyces somaliensis* (AJ007403)
¹⁰⁰ *Streptomyces coeruleoprurus* (AB184651)

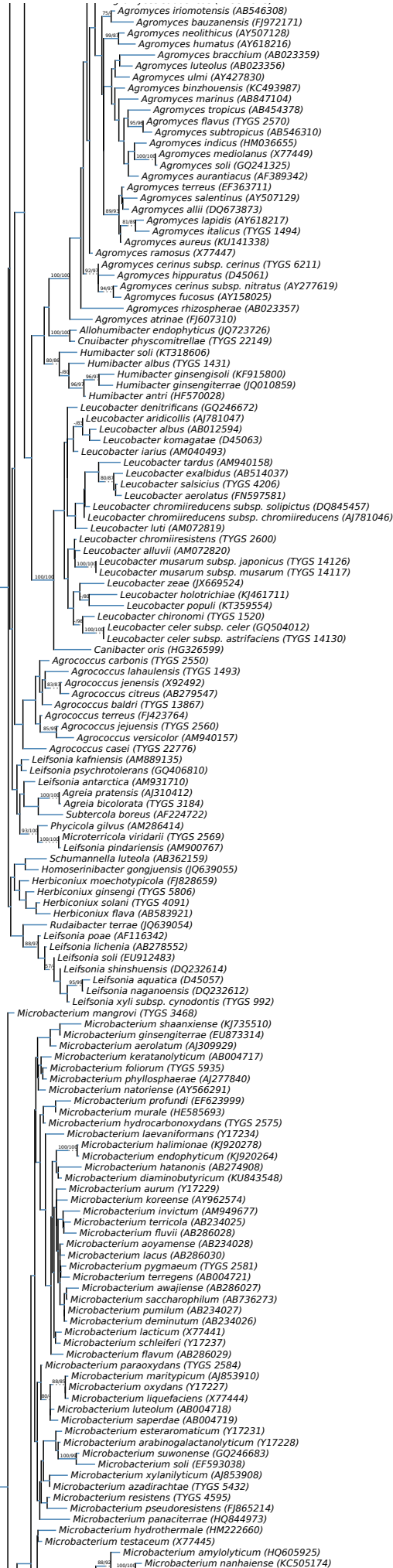


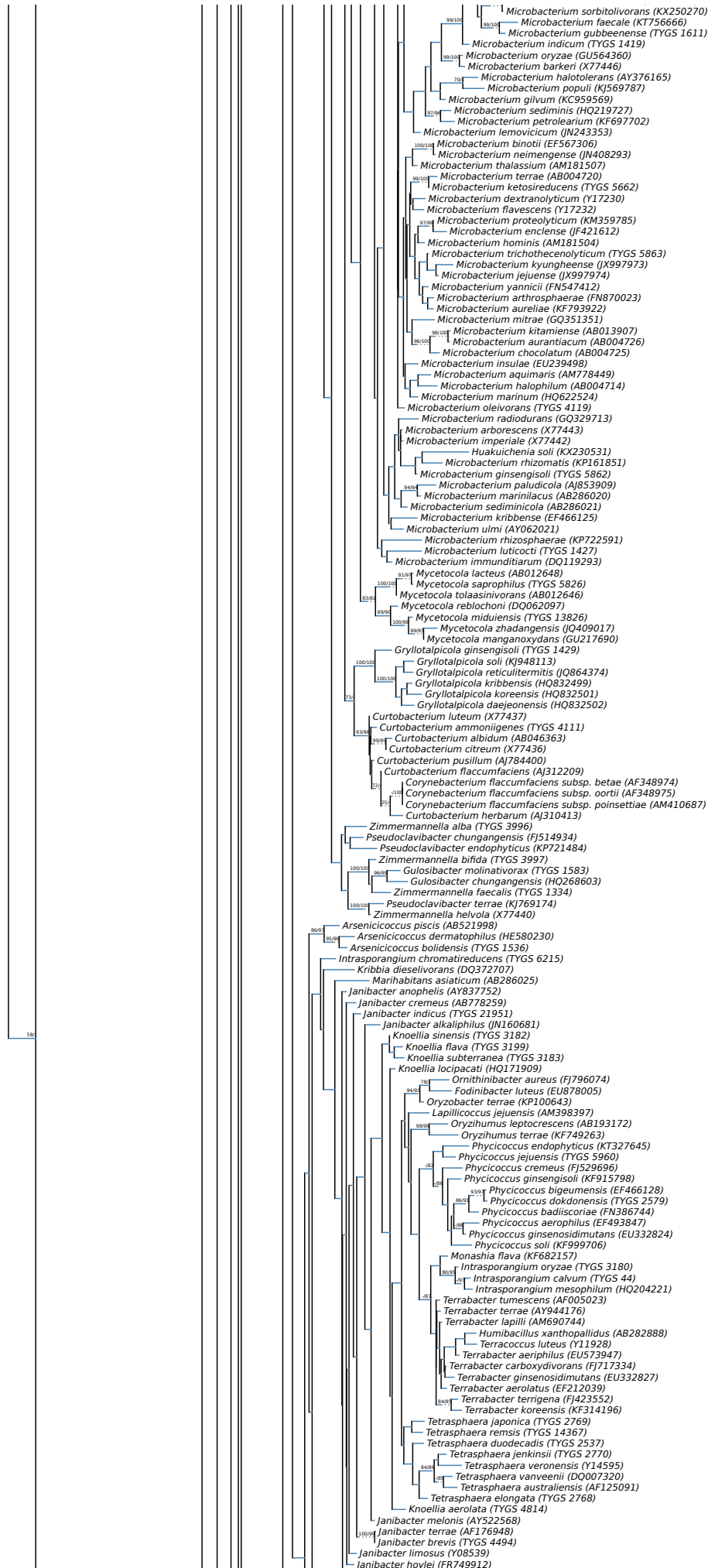


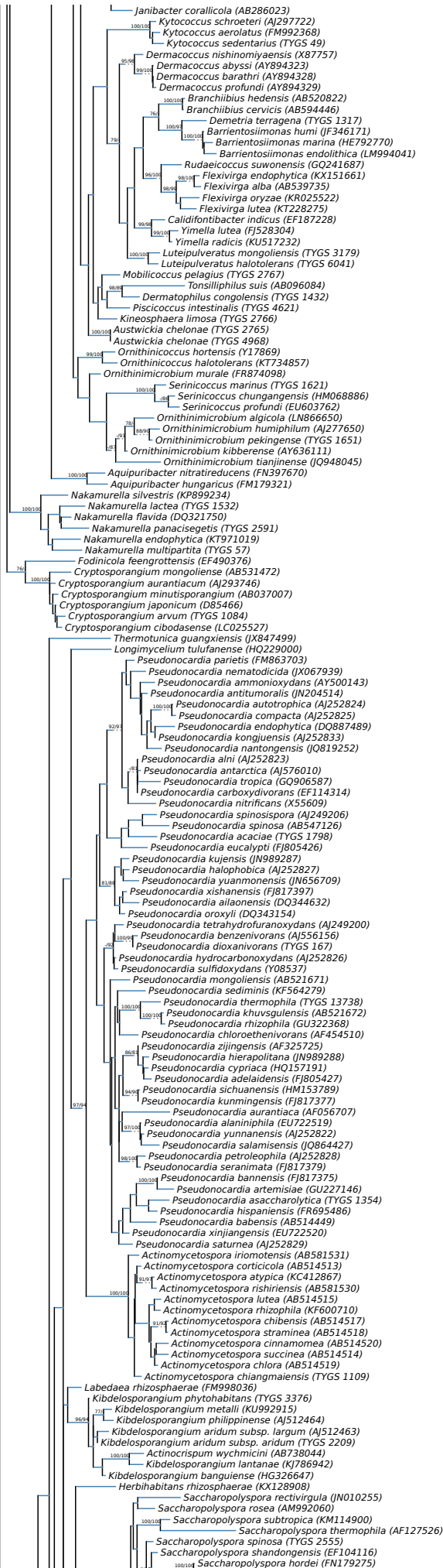




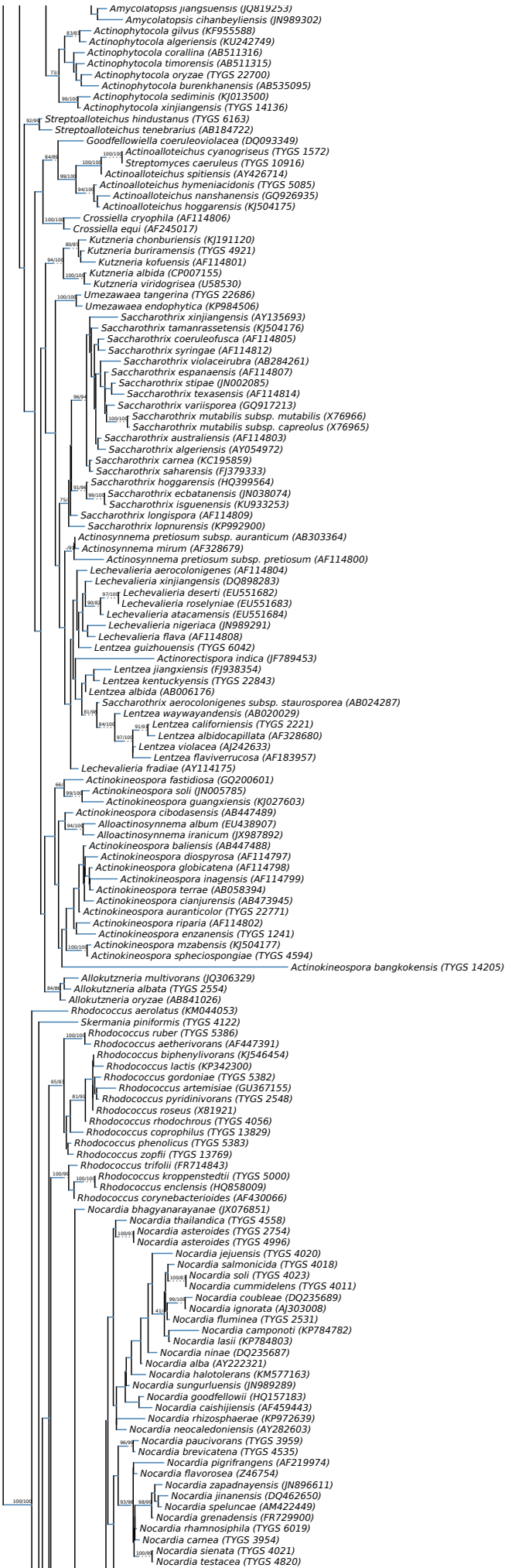


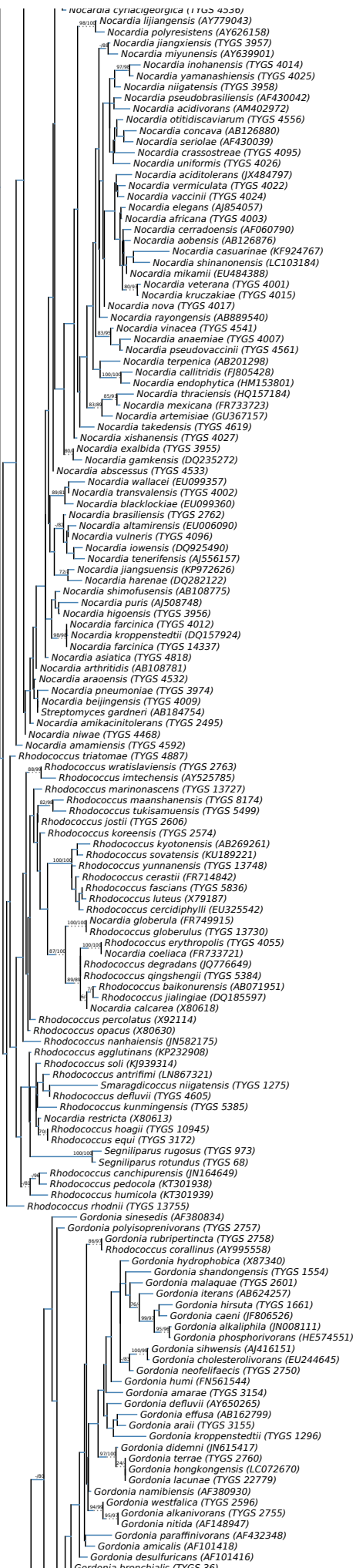


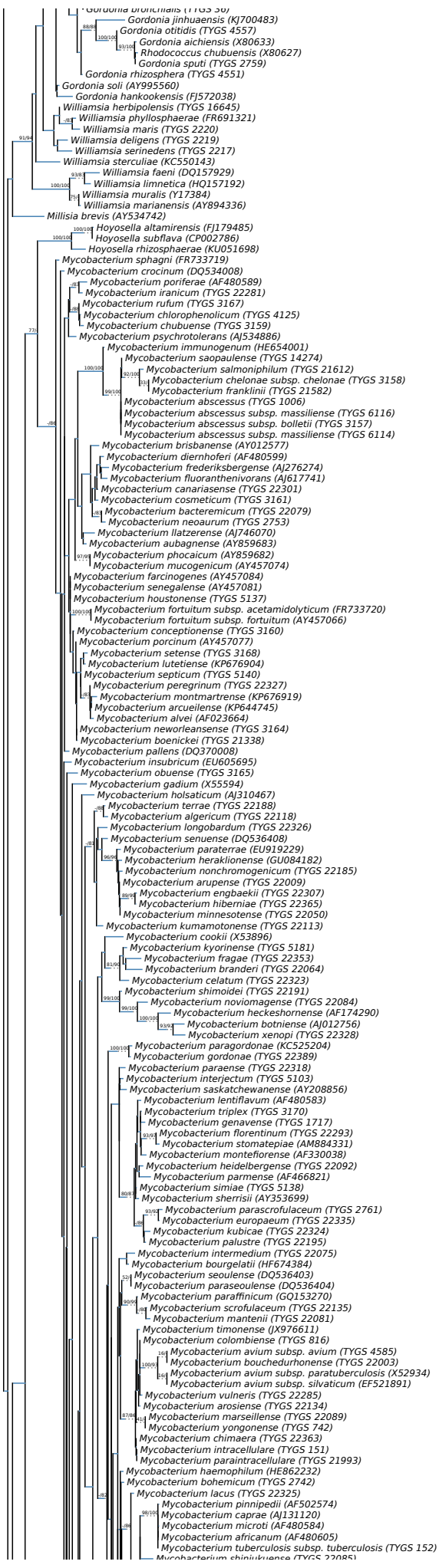


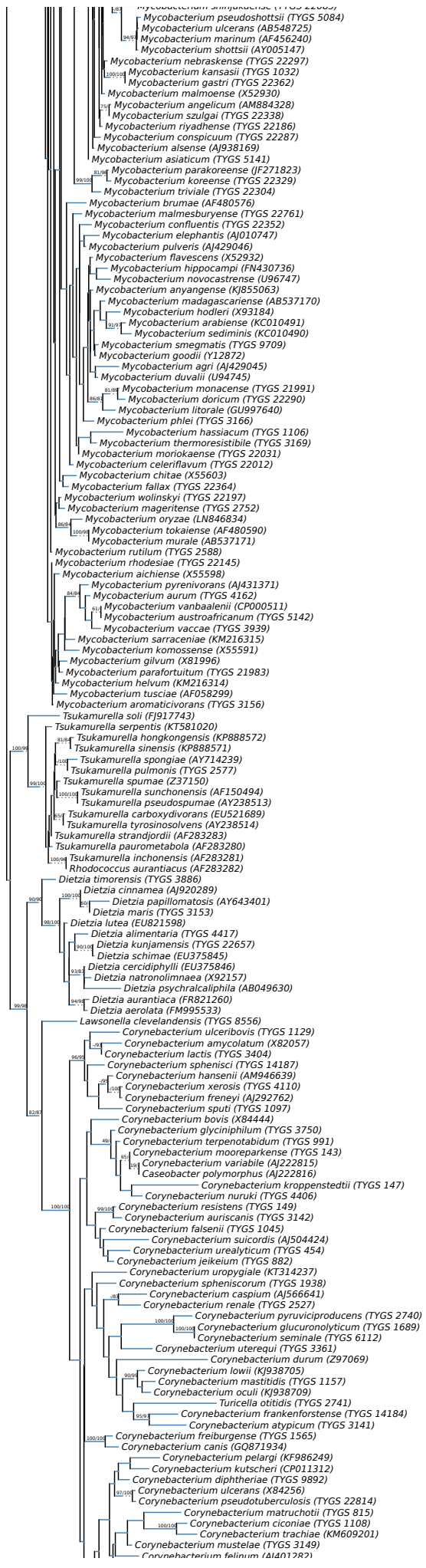


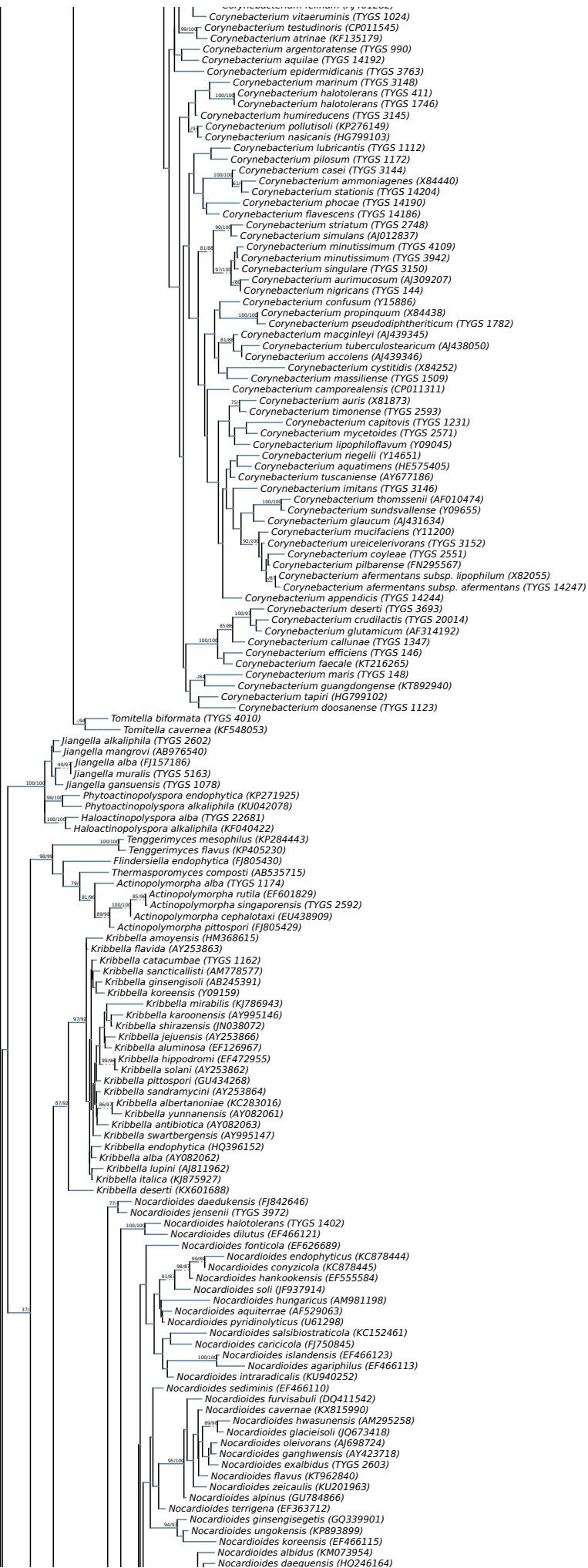




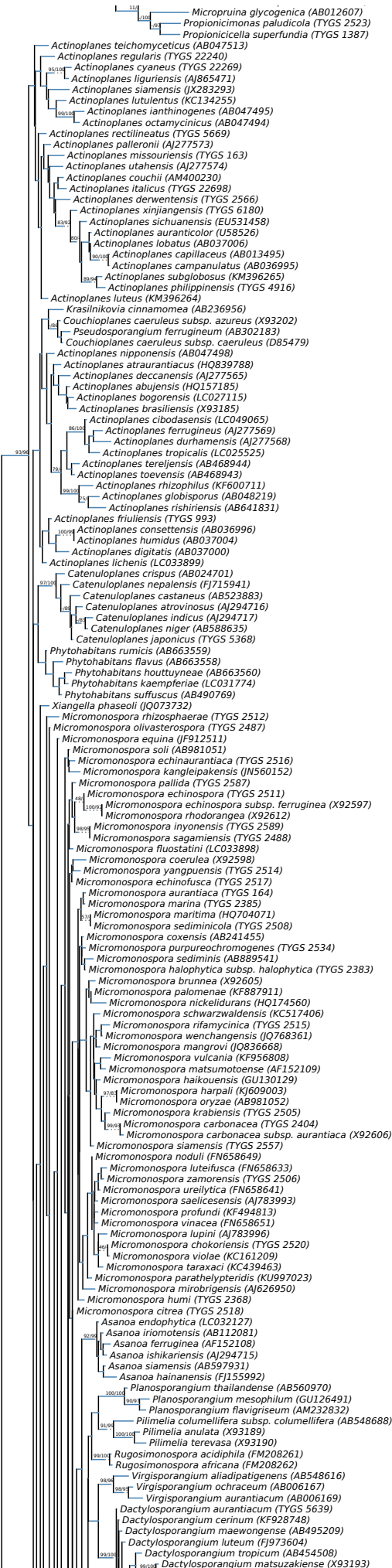


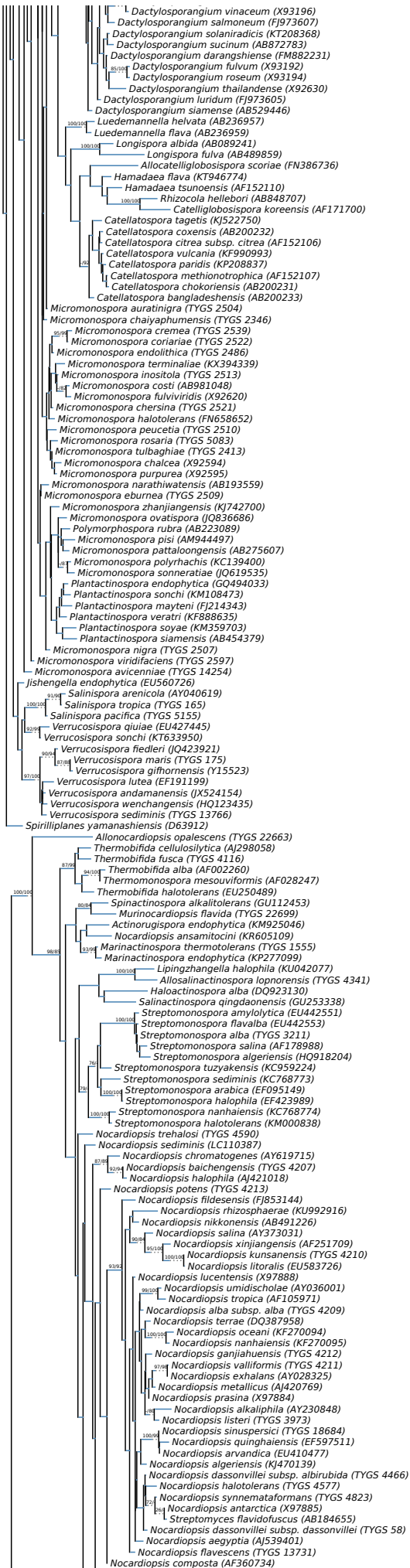


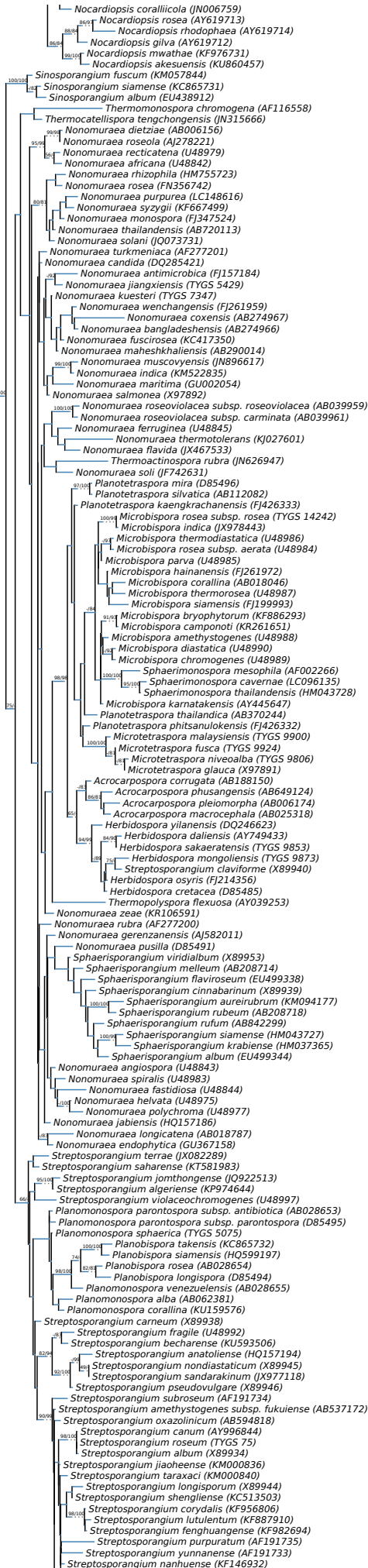












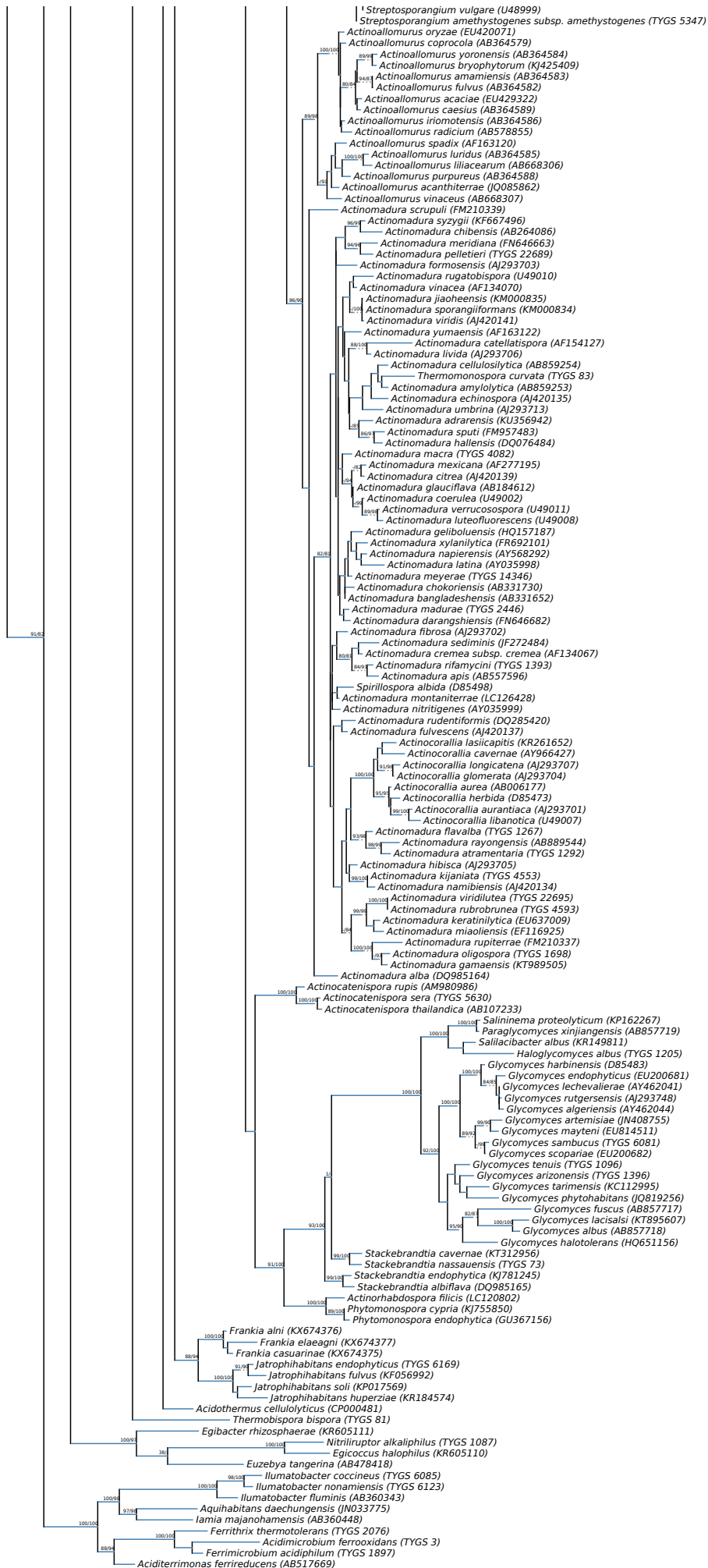
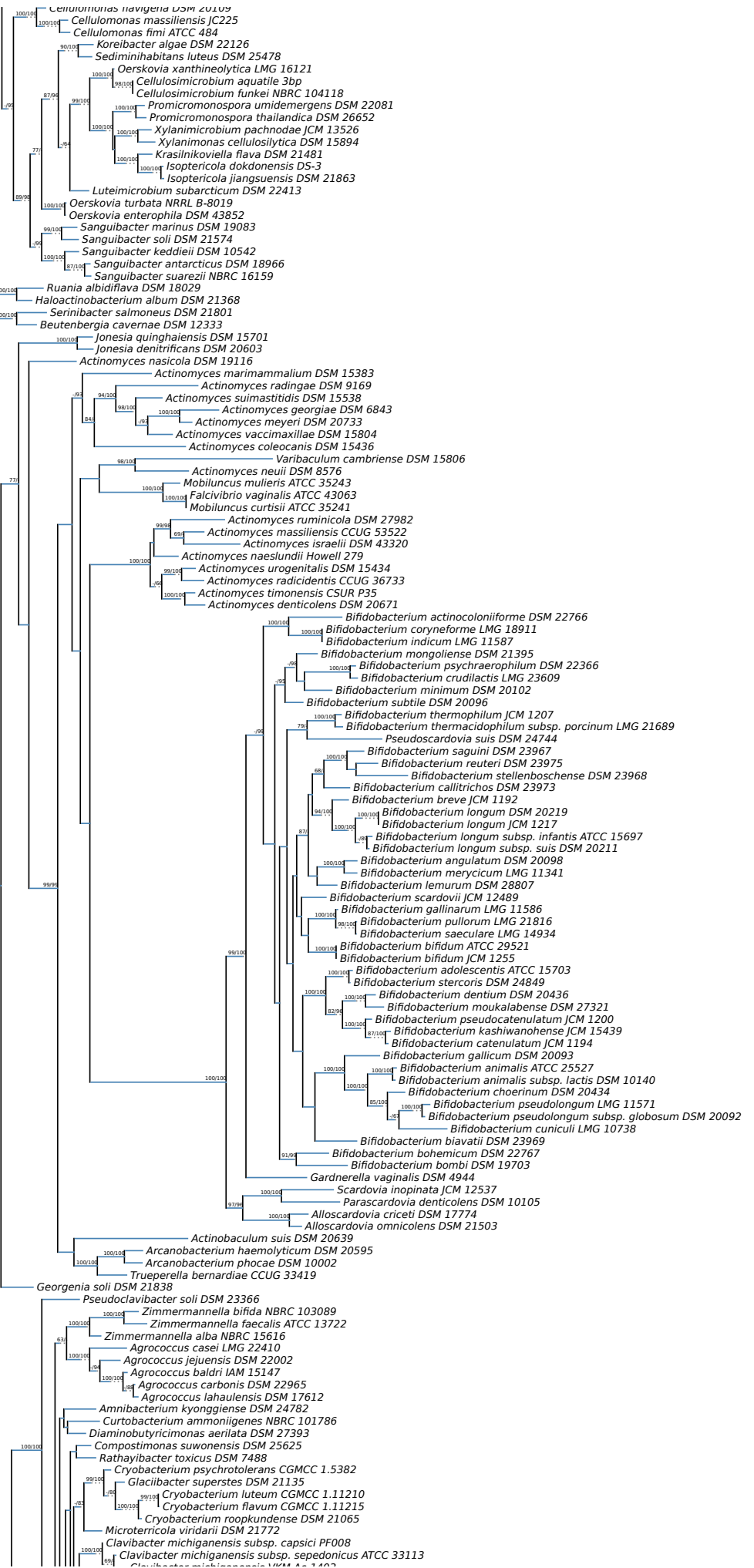
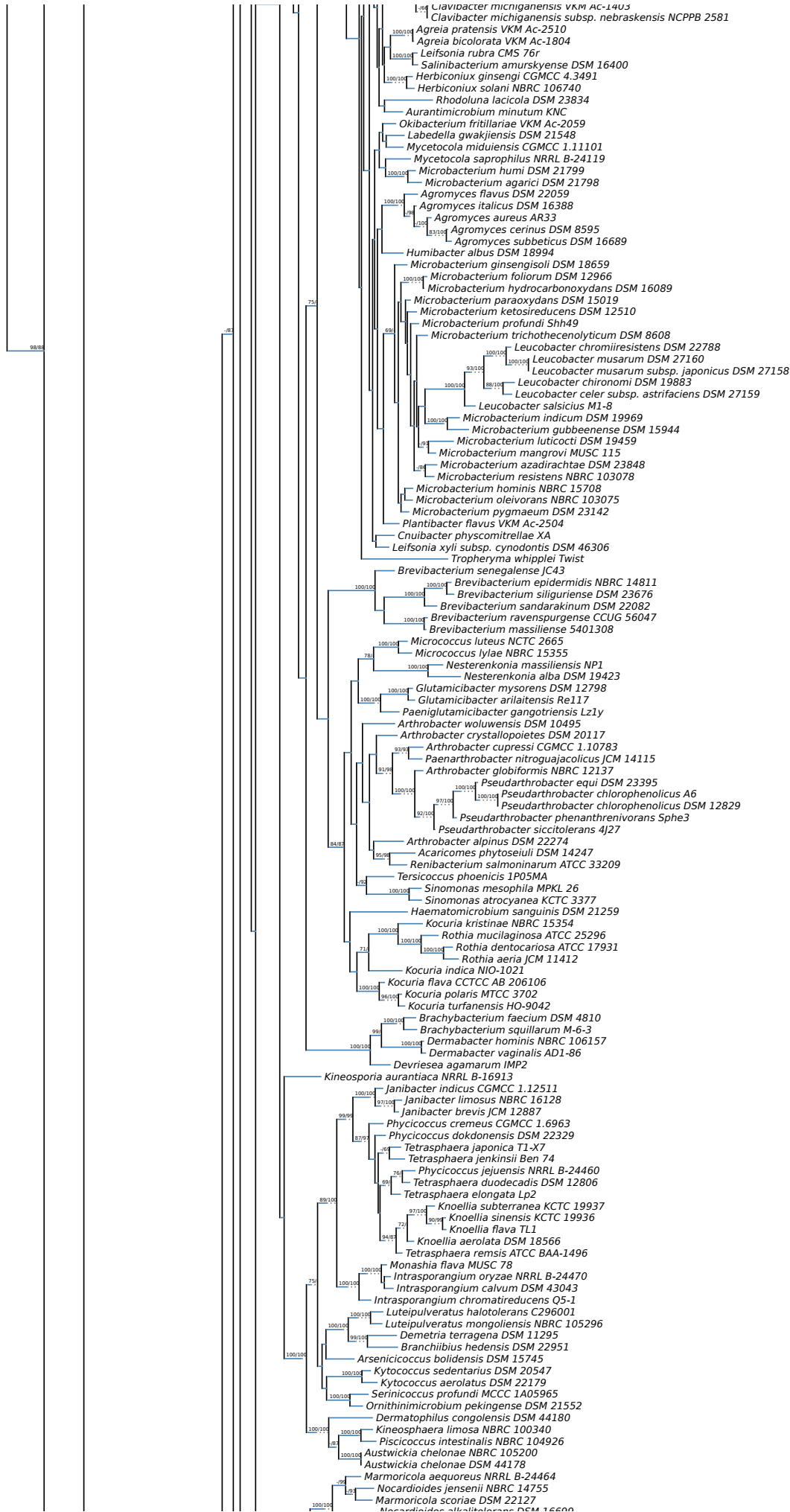


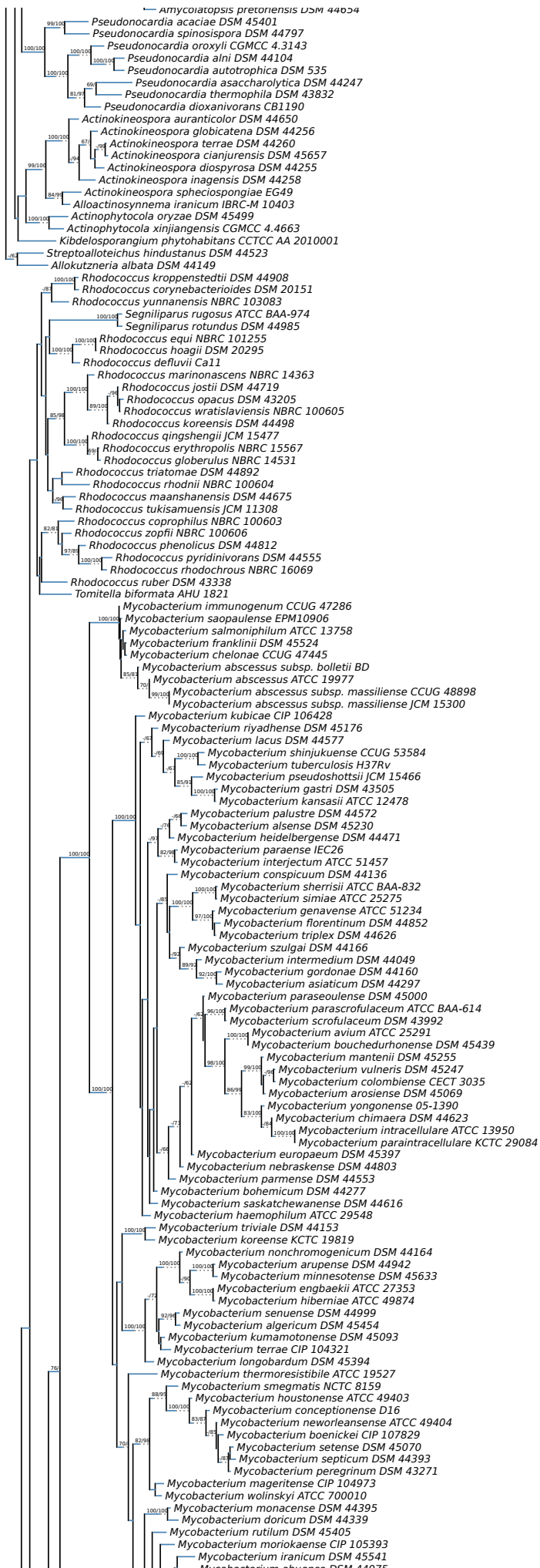
Figure 3: Unconstrained comprehensive 16S rRNA gene ML and MP tree (UCT). Dotted parts of branches are filled in to allow proper placement of bootstrap values and are not part of the actual branch length.

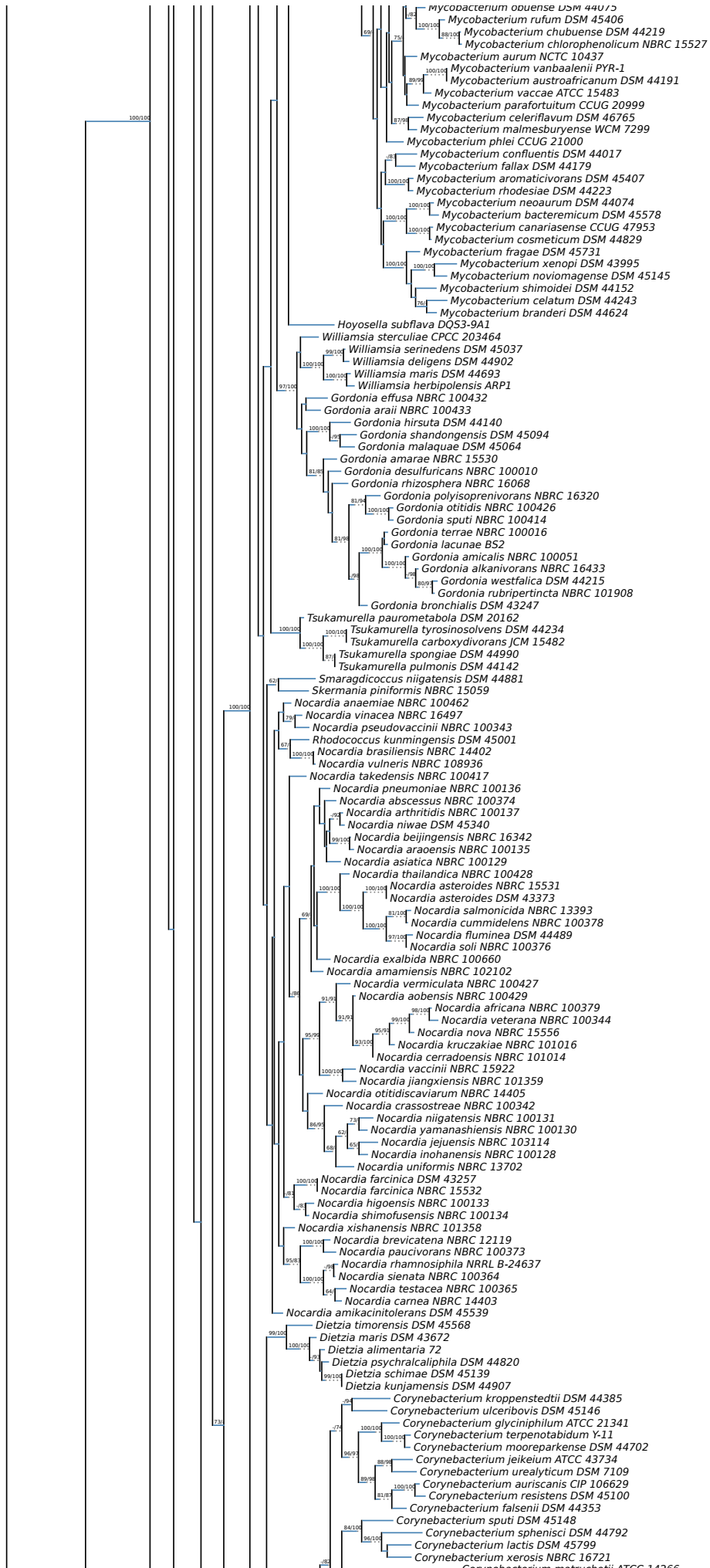


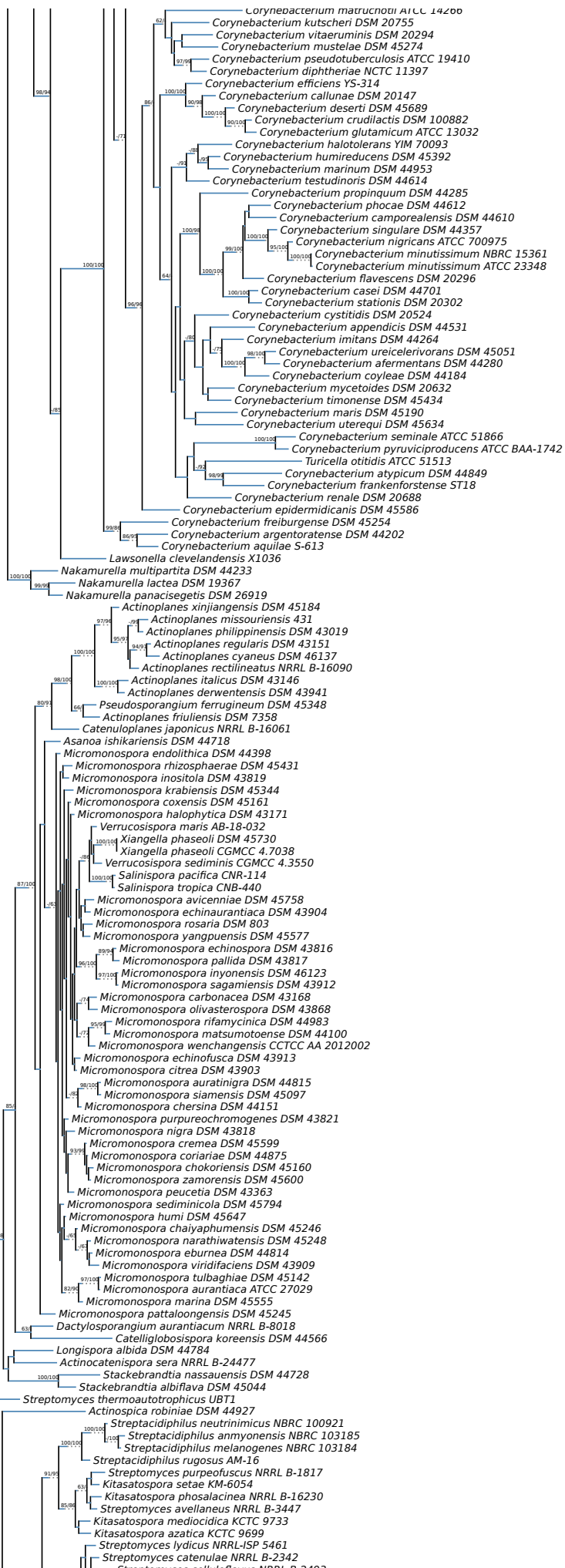












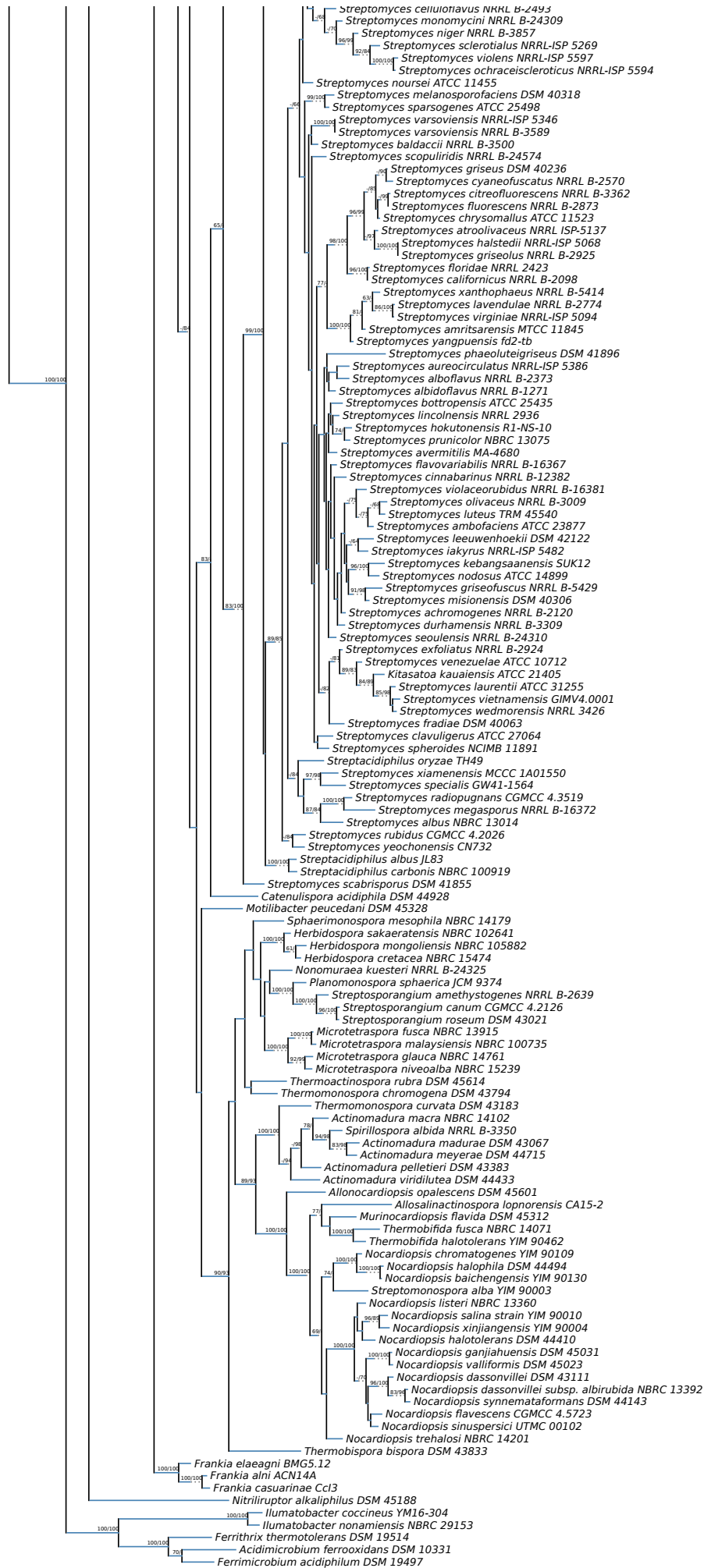
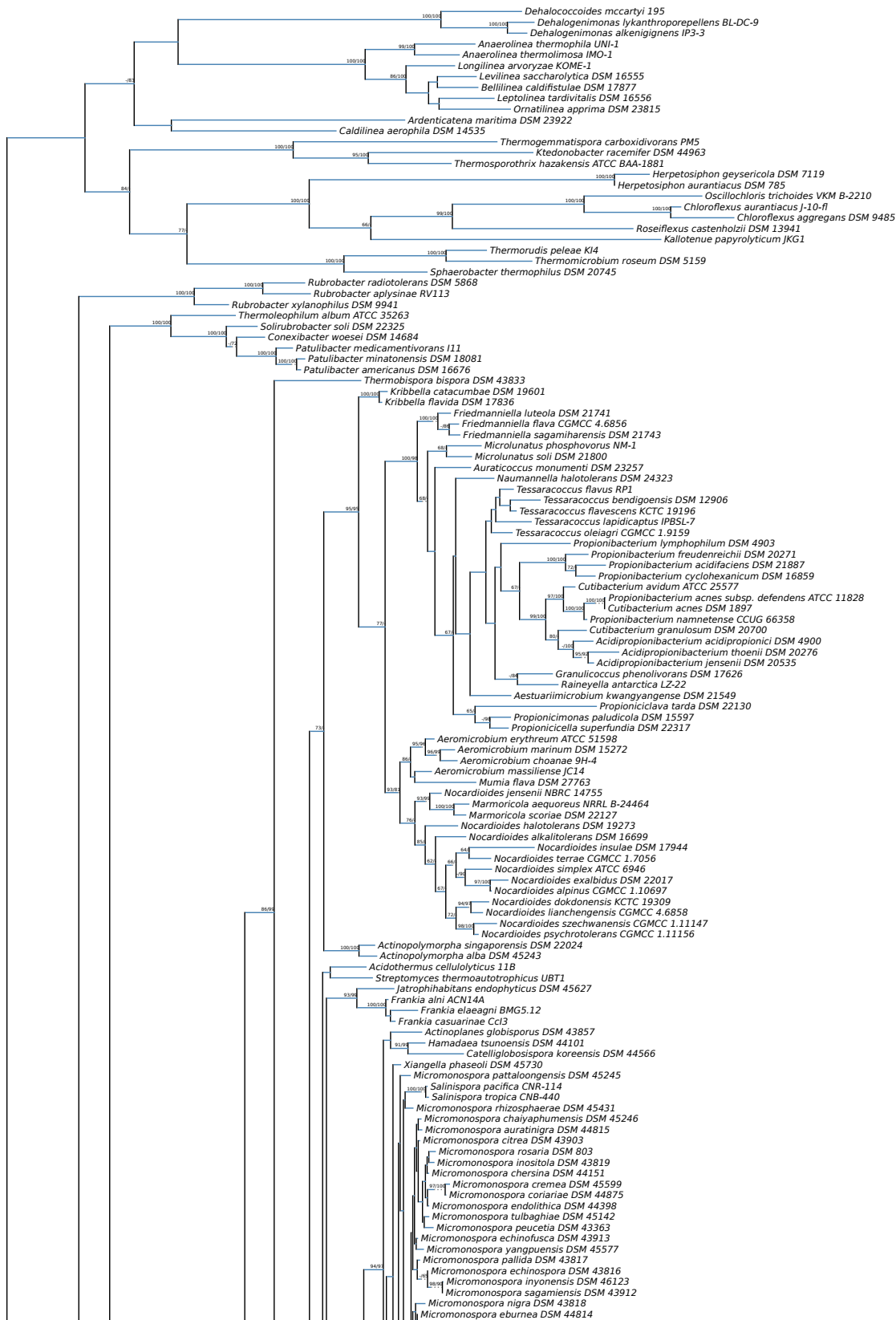
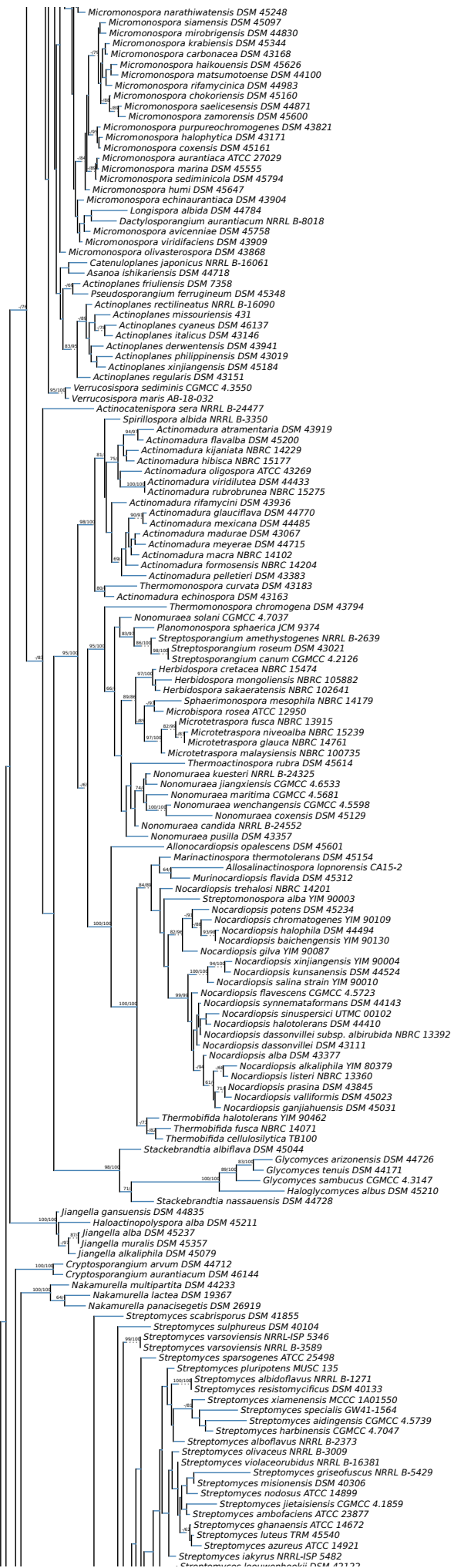
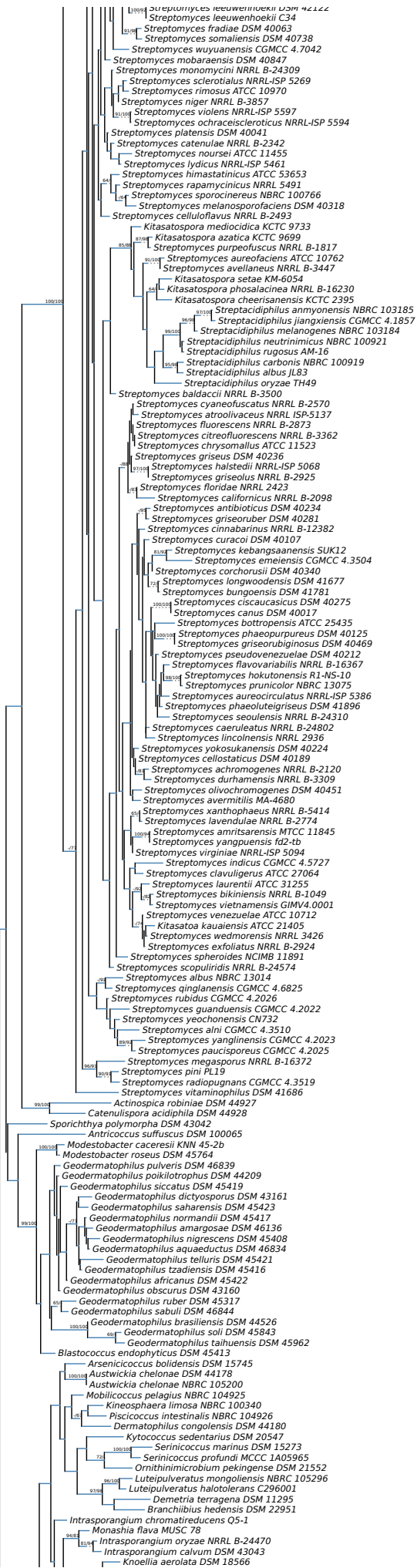


Figure 4: 23S rRNA gene ML and MP tree. Dotted parts of branches are filled in to allow proper placement of bootstrap values and are not part of the actual branch length.

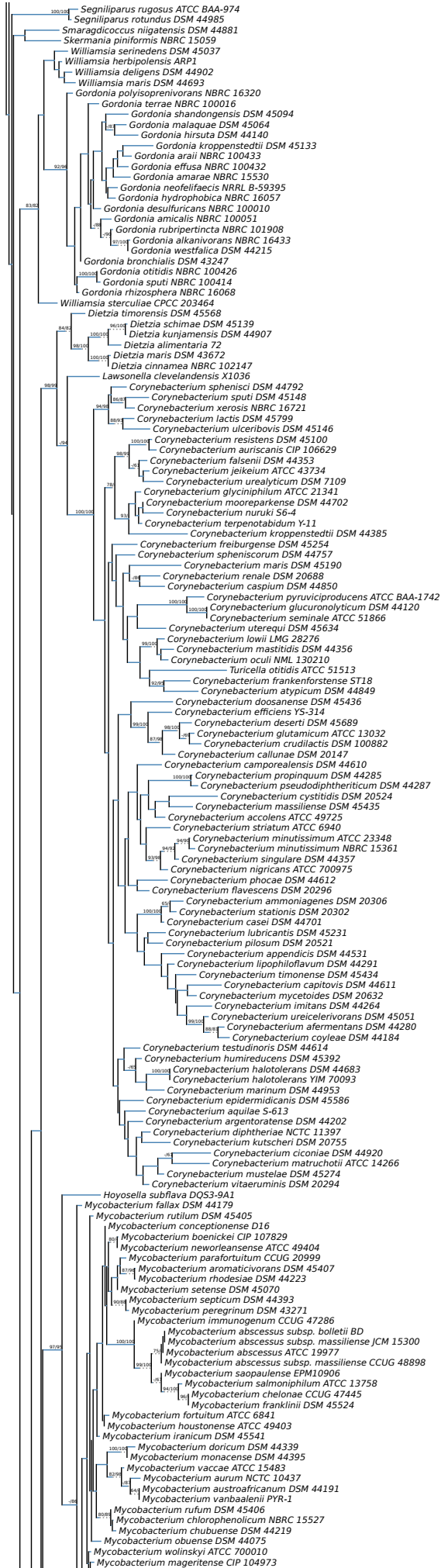














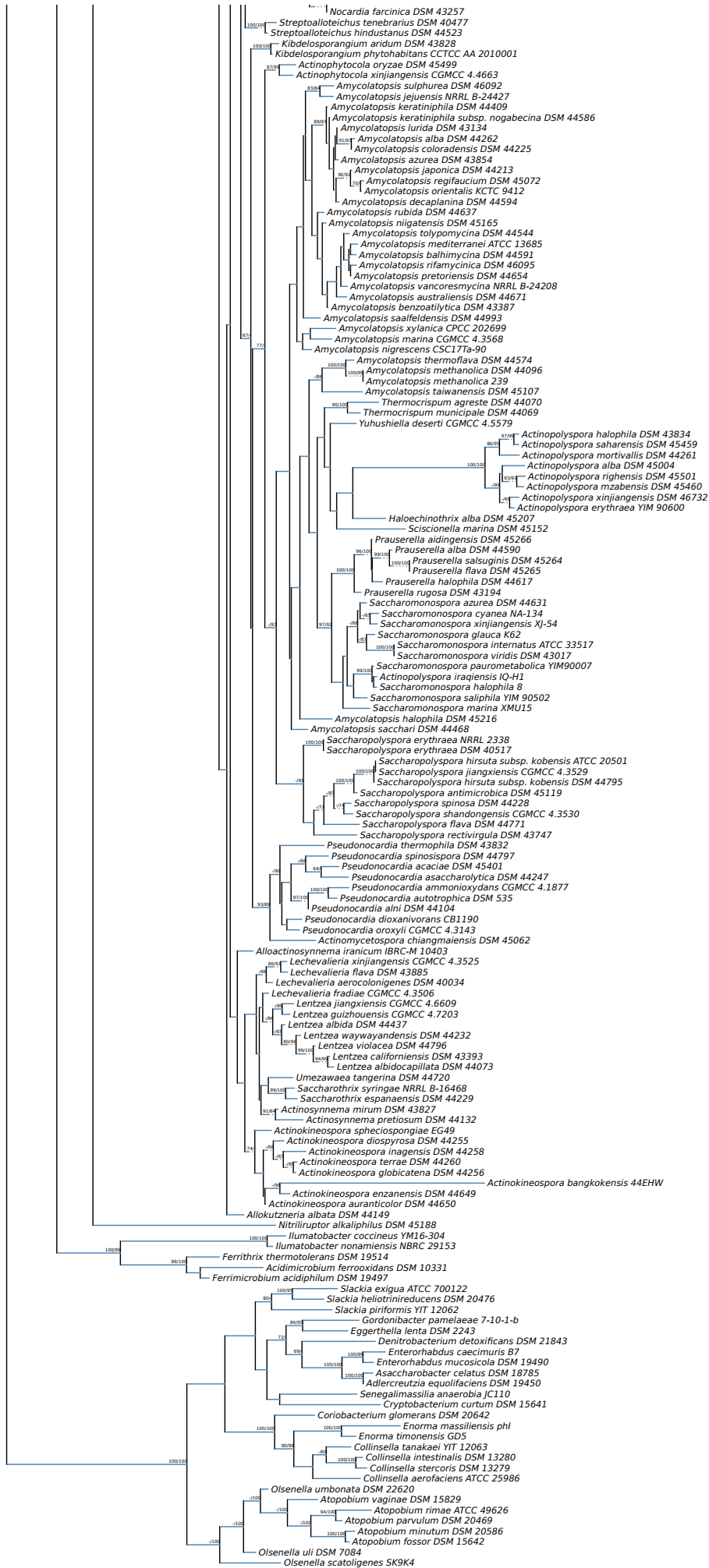


Figure 5: 16S rRNA gene ML and MP tree using the sampling from the GBDP tree. Dotted parts of branches are filled in to allow proper placement of bootstrap values and are not part of the actual branch length.

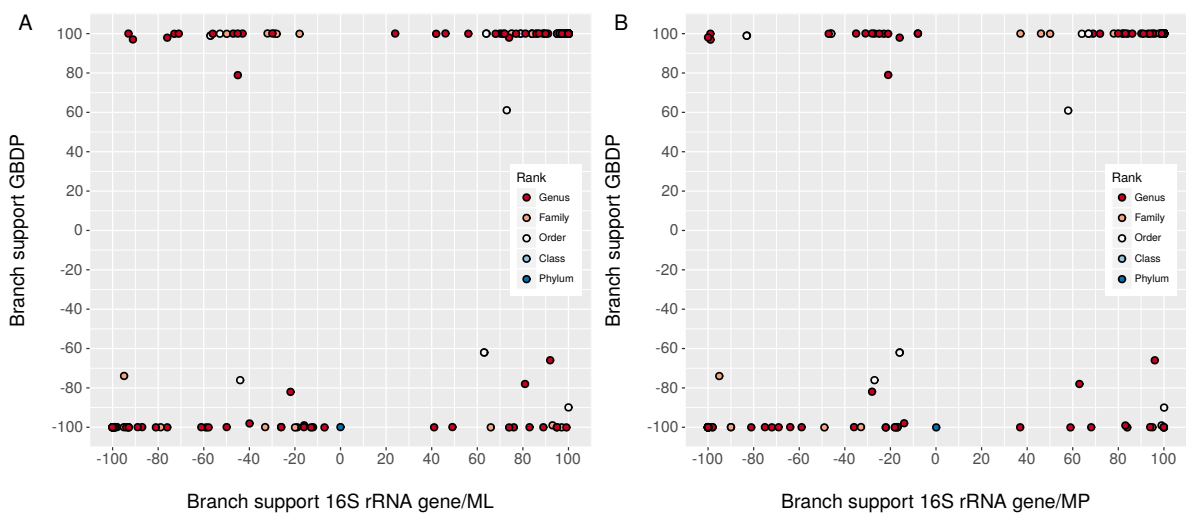


Figure 6: Comparison of branch support. Shown are the negative or positive branch support values for each taxon inferred from whole genomes with GBDP in comparison to those inferred from 16S rRNA gene sequences with ML (A) and MP (B). The colors indicate the taxonomic rank. The upper right corner contains the taxa significantly supported by all methods, the lower left corner those significantly opposed by all methods. The other two corners, which would indicate a significant conflict between the methods, are empty. Jitter was used to avoid overplotting.

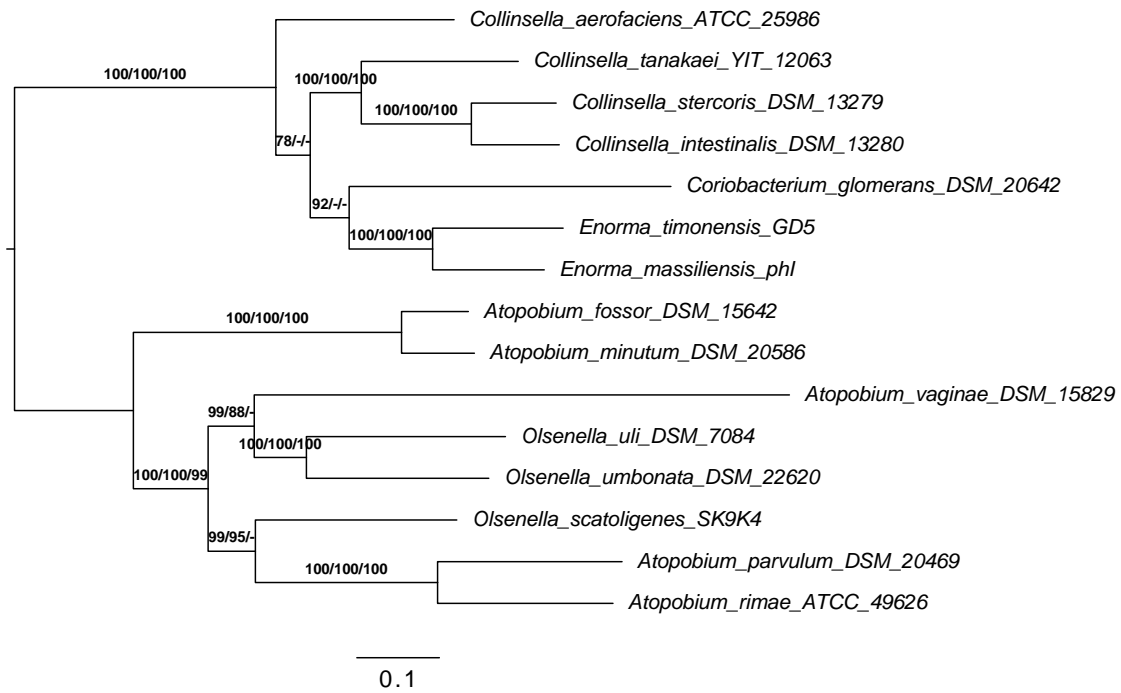


Figure 7: Phylogenetic tree inferred with RAxML from the *Atopobium* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

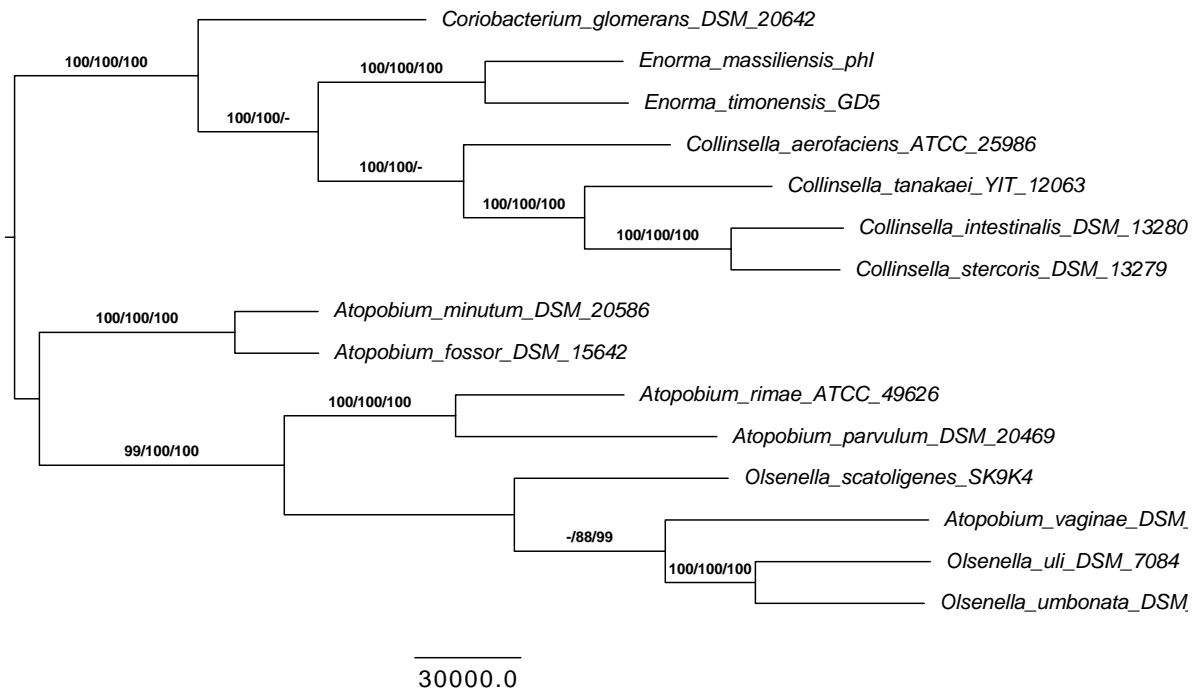


Figure 8: Phylogenetic tree inferred with TNT from the *Atopobium* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAXML analysis of the single-copy core genes.

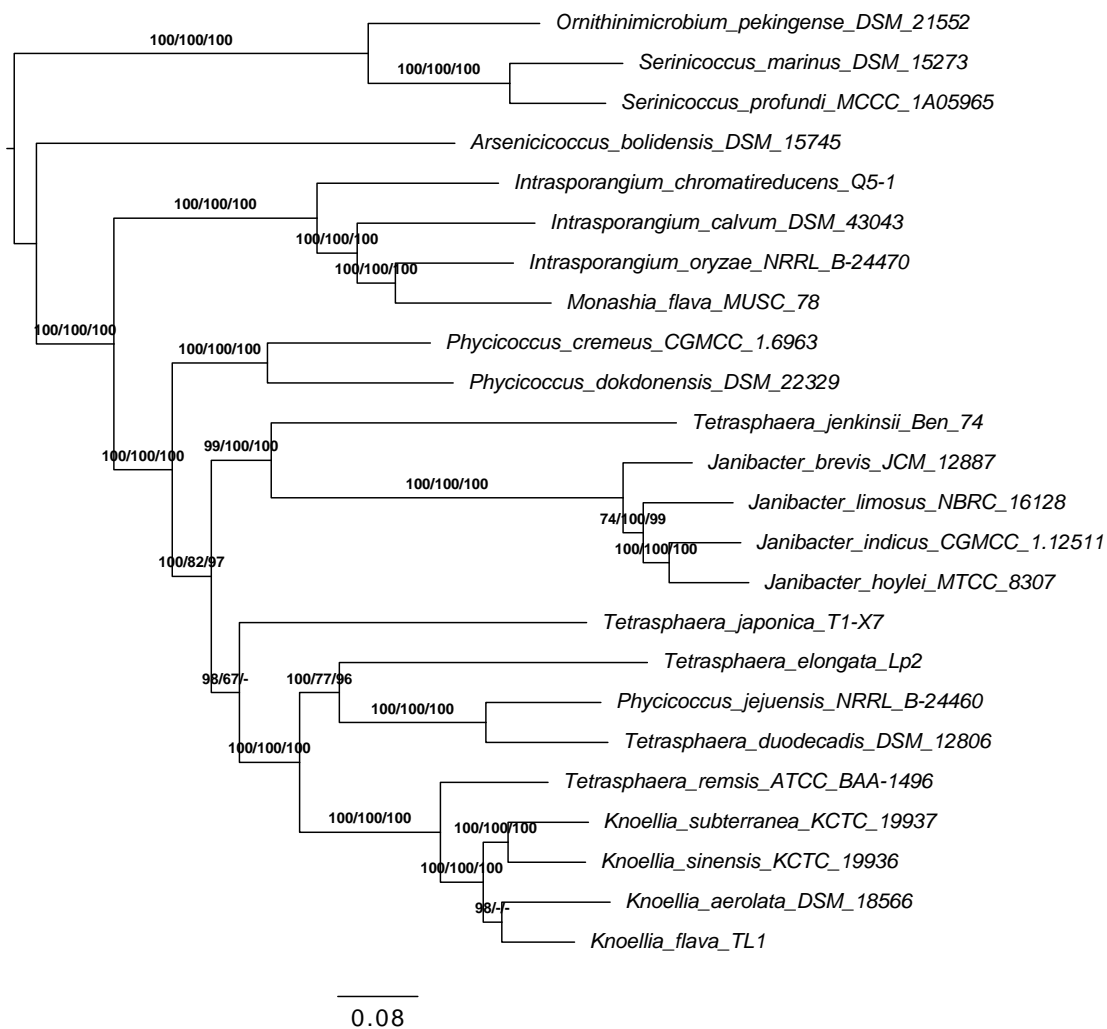


Figure 9: Phylogenetic tree inferred with RAxML from the *Intrasporangium* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

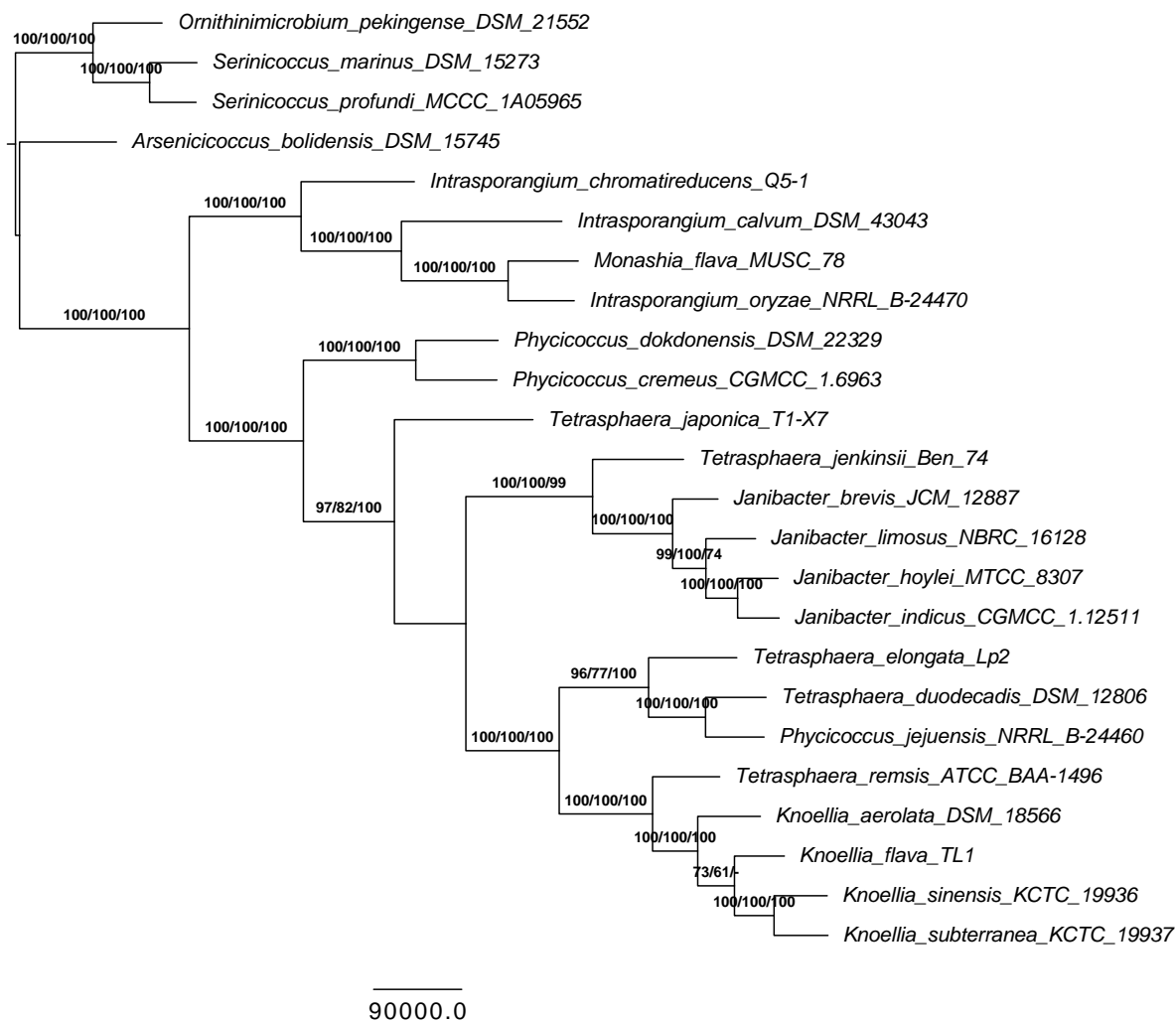


Figure 10: Phylogenetic tree inferred with TNT from the *Intrasporangium* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.

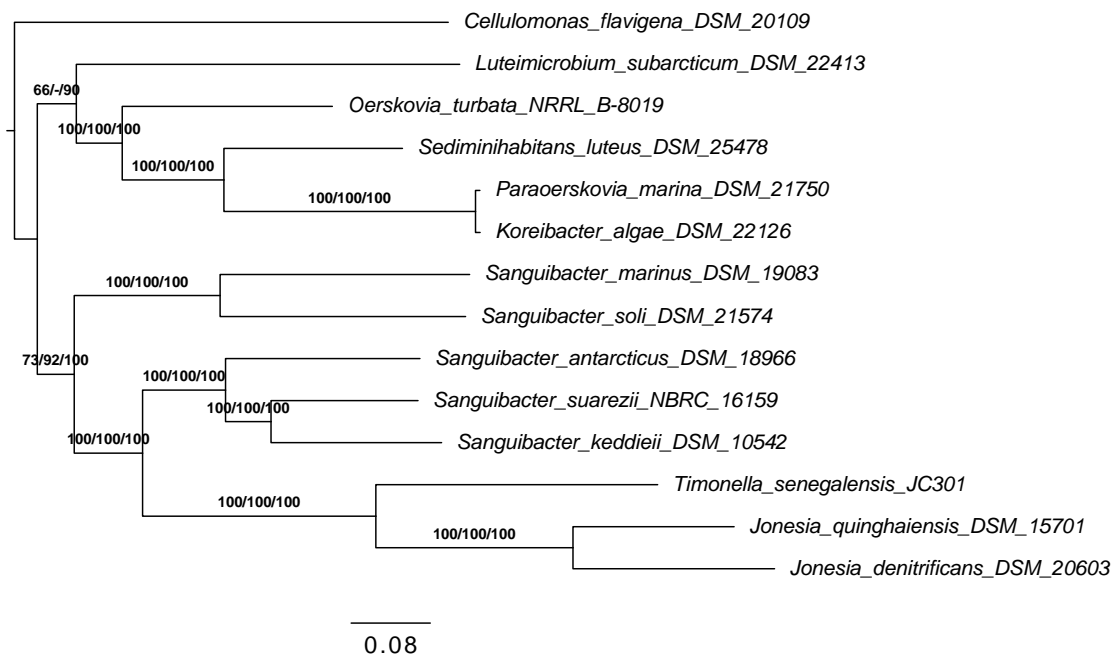


Figure 11: Phylogenetic tree inferred with RAxML from the *Sanguibacter* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

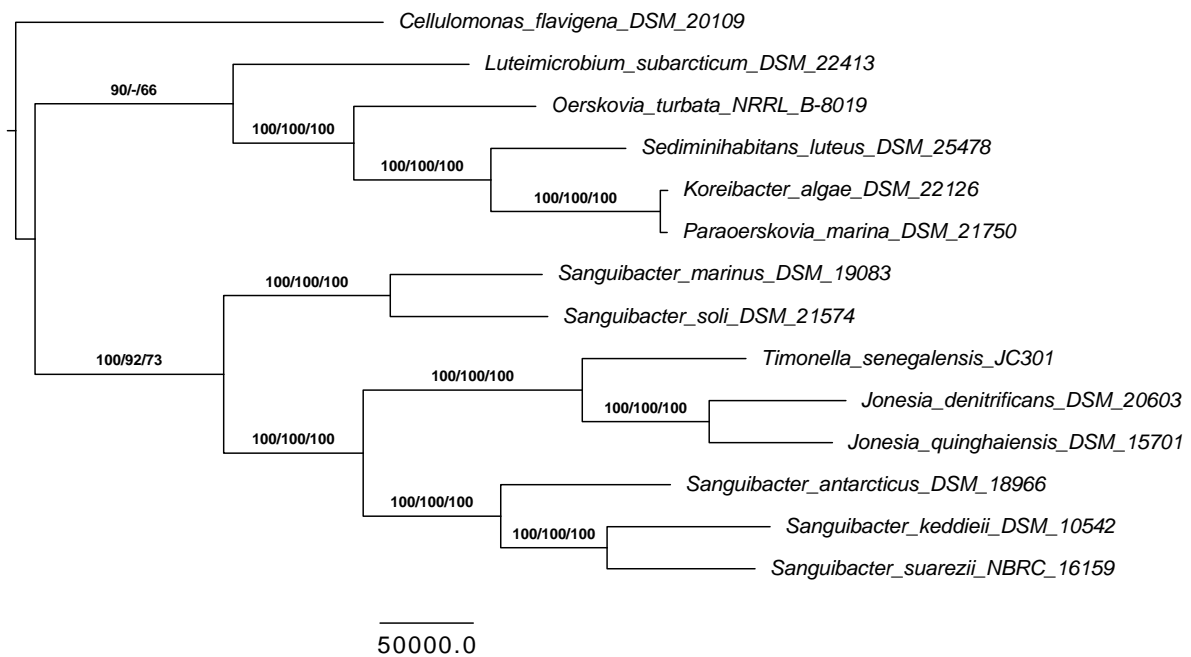


Figure 12: Phylogenetic tree inferred with TNT from the *Sanguibacter* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.

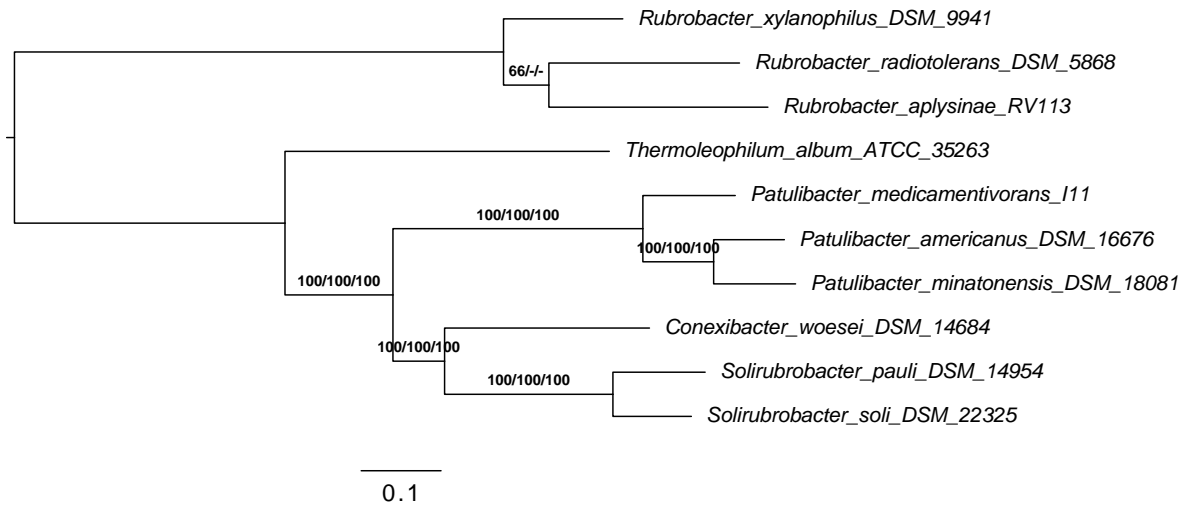


Figure 13: Phylogenetic tree inferred with RAxML from the *Solirubrobacter* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

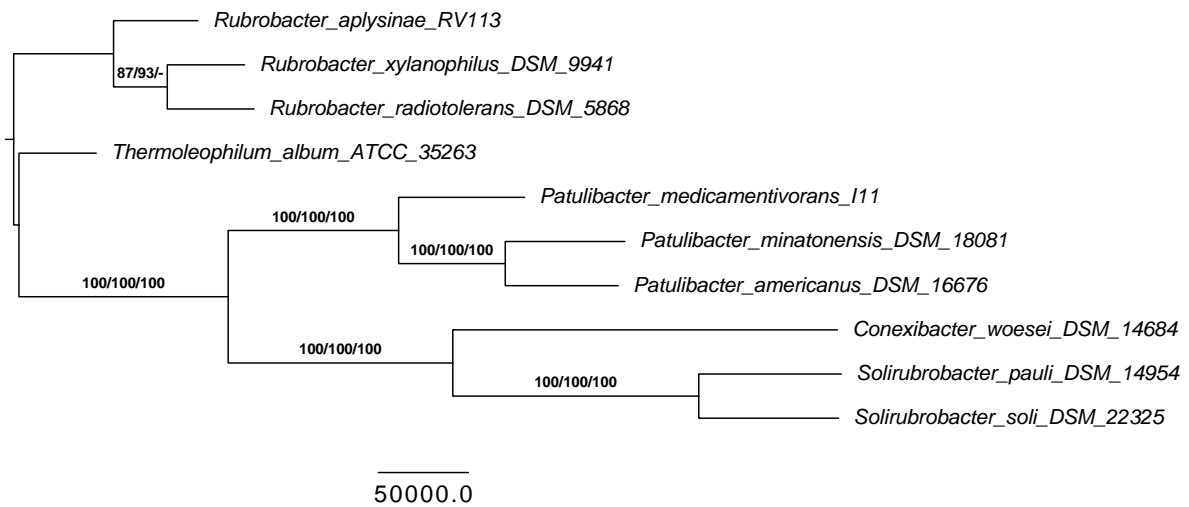


Figure 14: Phylogenetic tree inferred with TNT from the *Solirubrobacter* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.

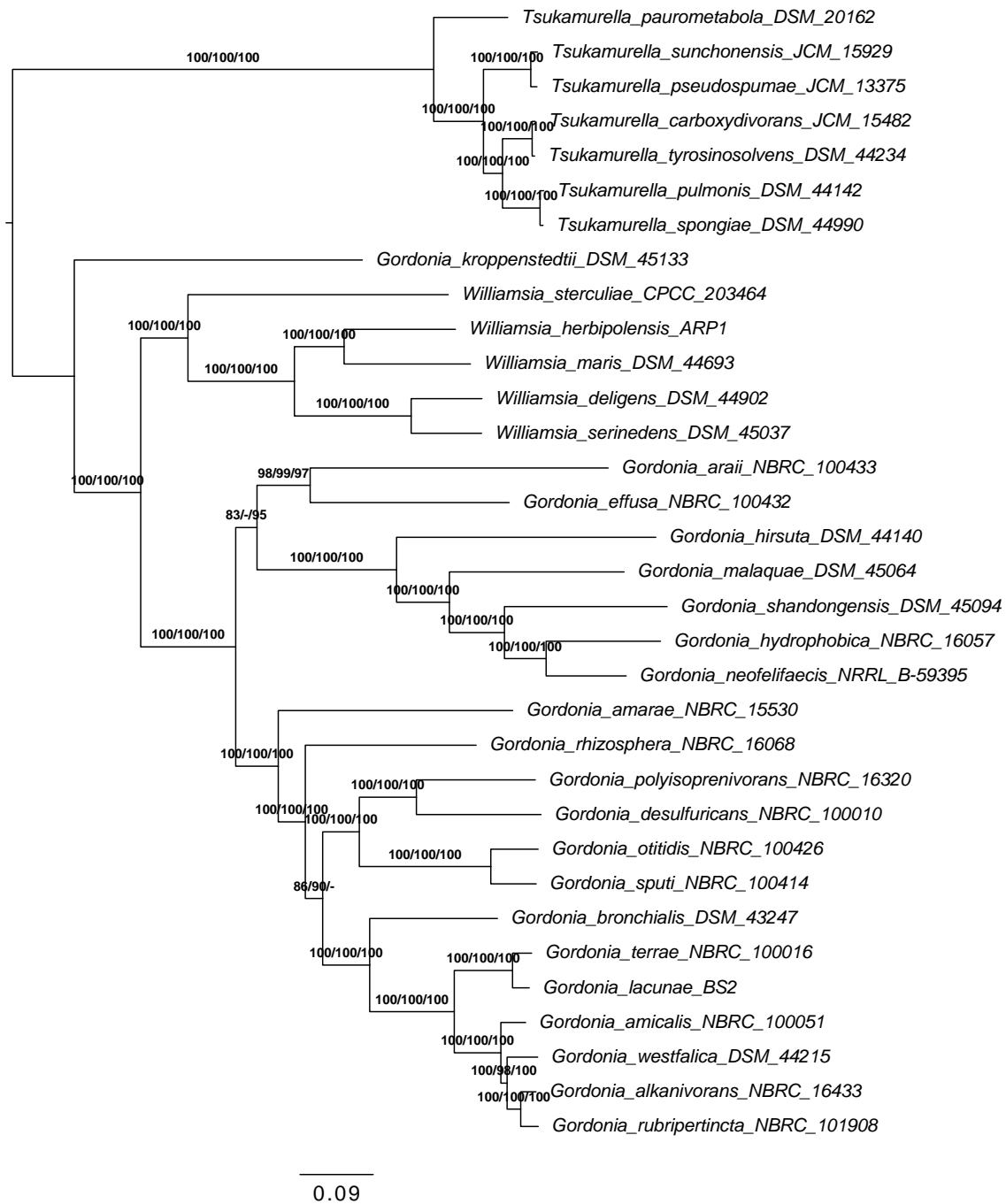


Figure 15: Phylogenetic tree inferred with RAxML from the *Gordonia* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

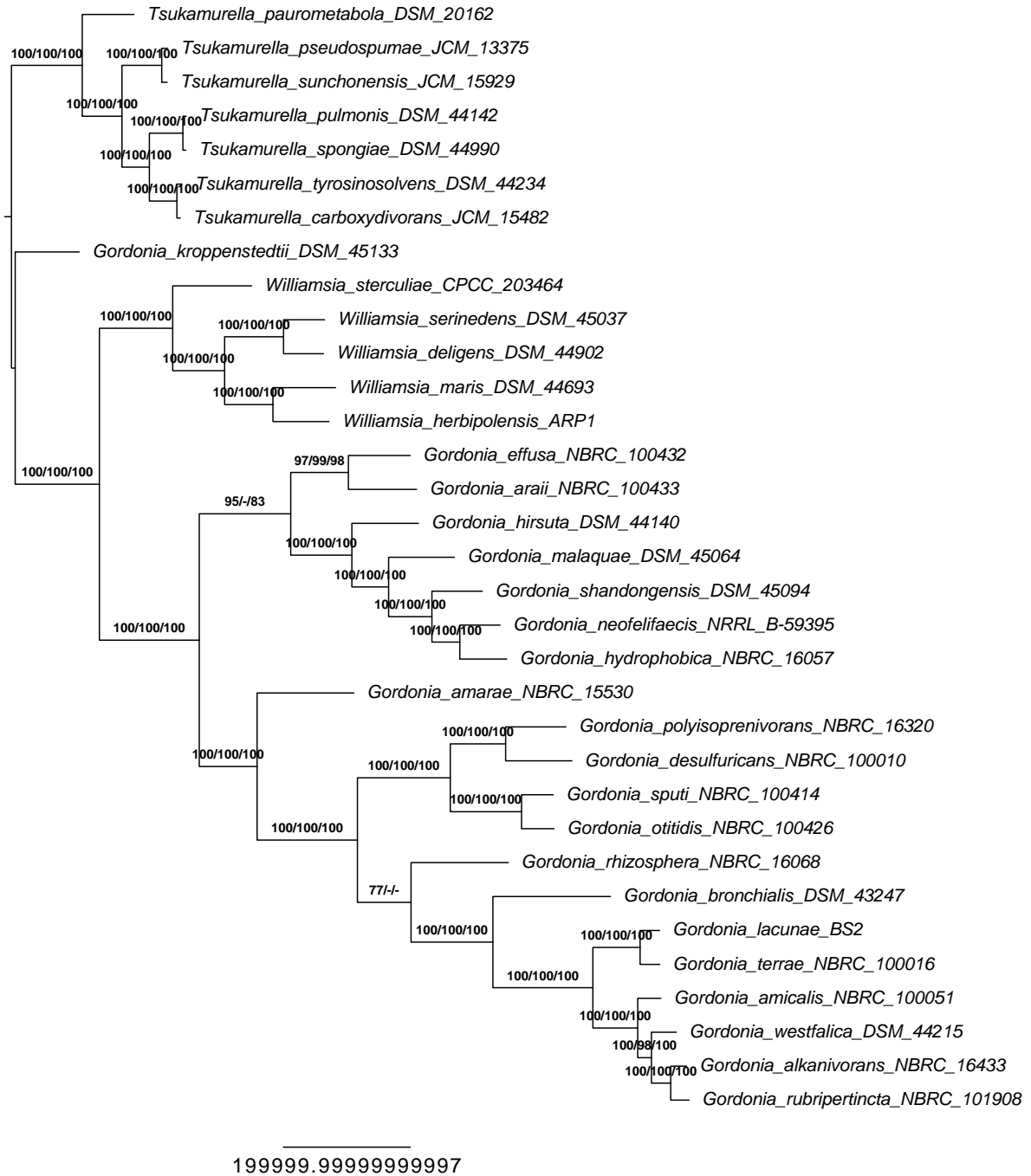


Figure 16: Phylogenetic tree inferred with TNT from the *Gordonia* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.

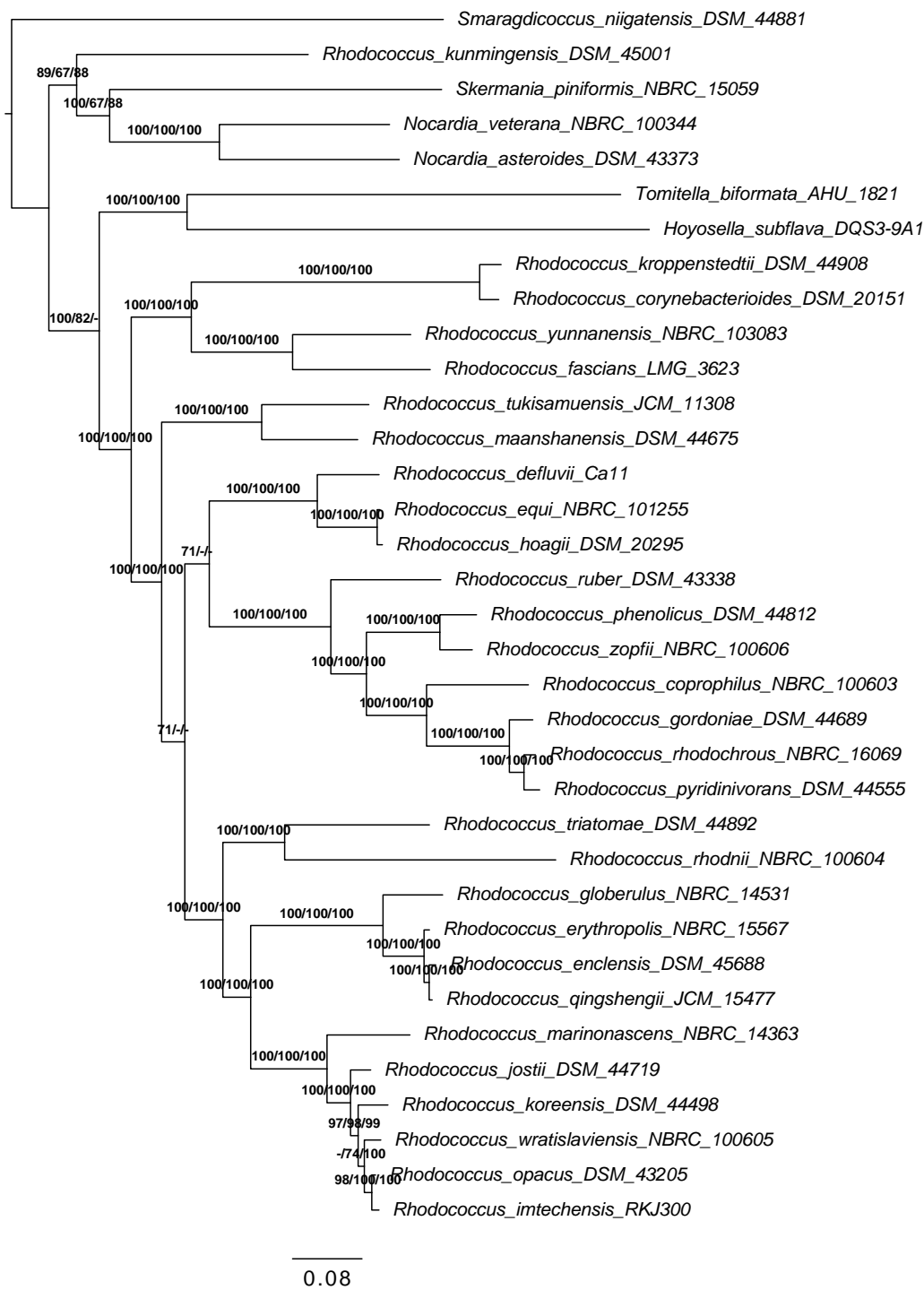


Figure 17: Phylogenetic tree inferred with RAxML from the *Rhodococcus* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

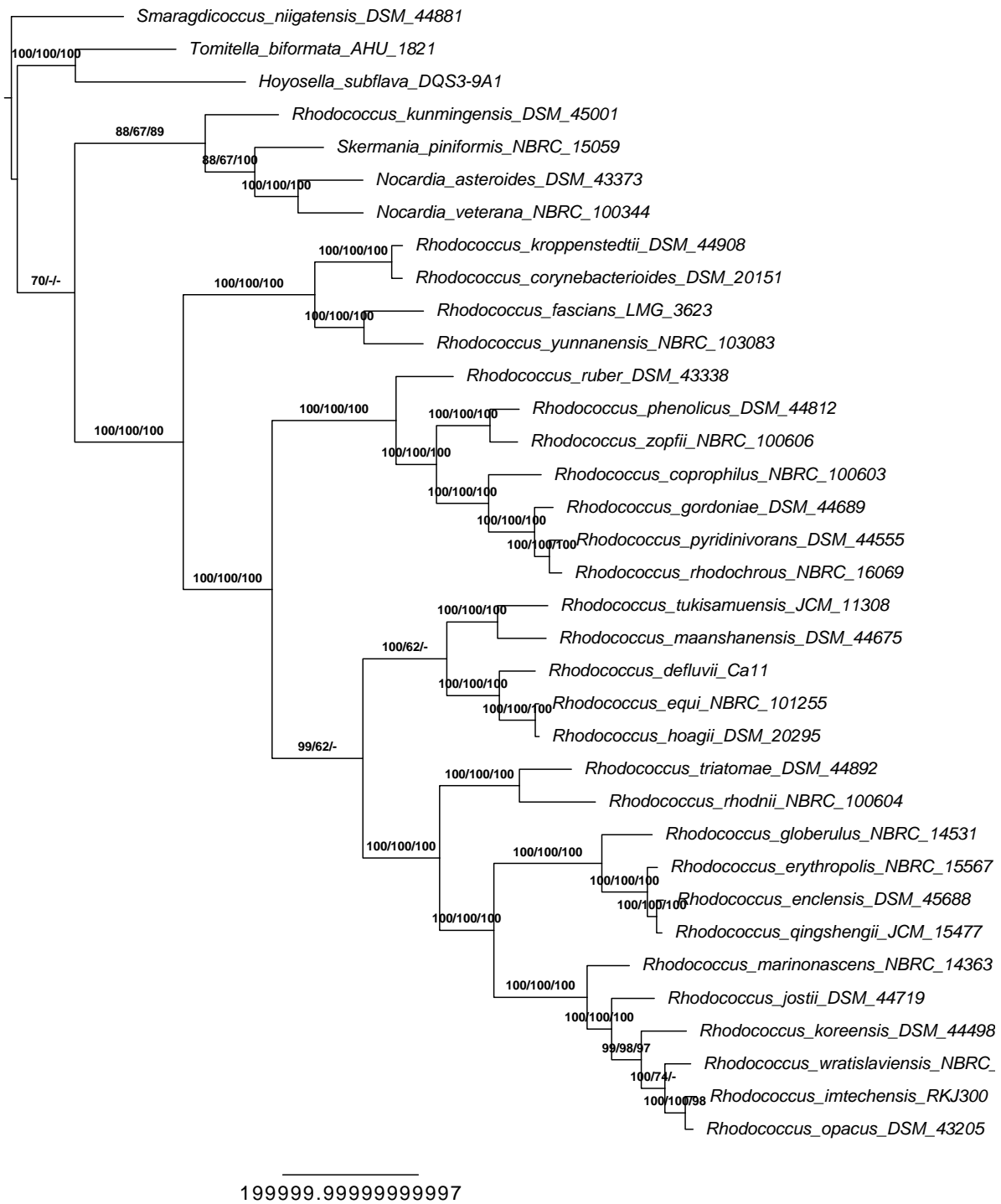


Figure 18: Phylogenetic tree inferred with TNT from the *Rhodococcus* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.

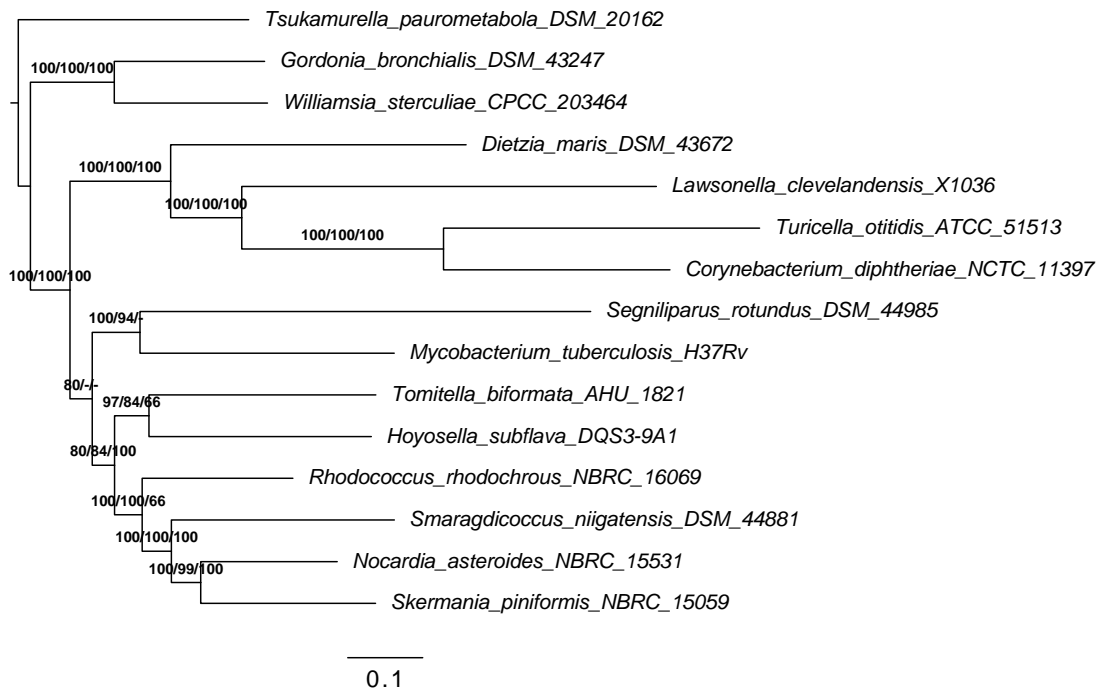


Figure 19: Phylogenetic tree inferred with RAxML from the *Corynebacterium* supermatrix including single-copy core genes. Branches are scaled in terms of expected number of changes per site. Numbers above branches are partition bootstrap support values from (i) RAxML analysis of the single-copy core genes; (ii) TNT analysis of the single-copy core genes; (iii) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes.

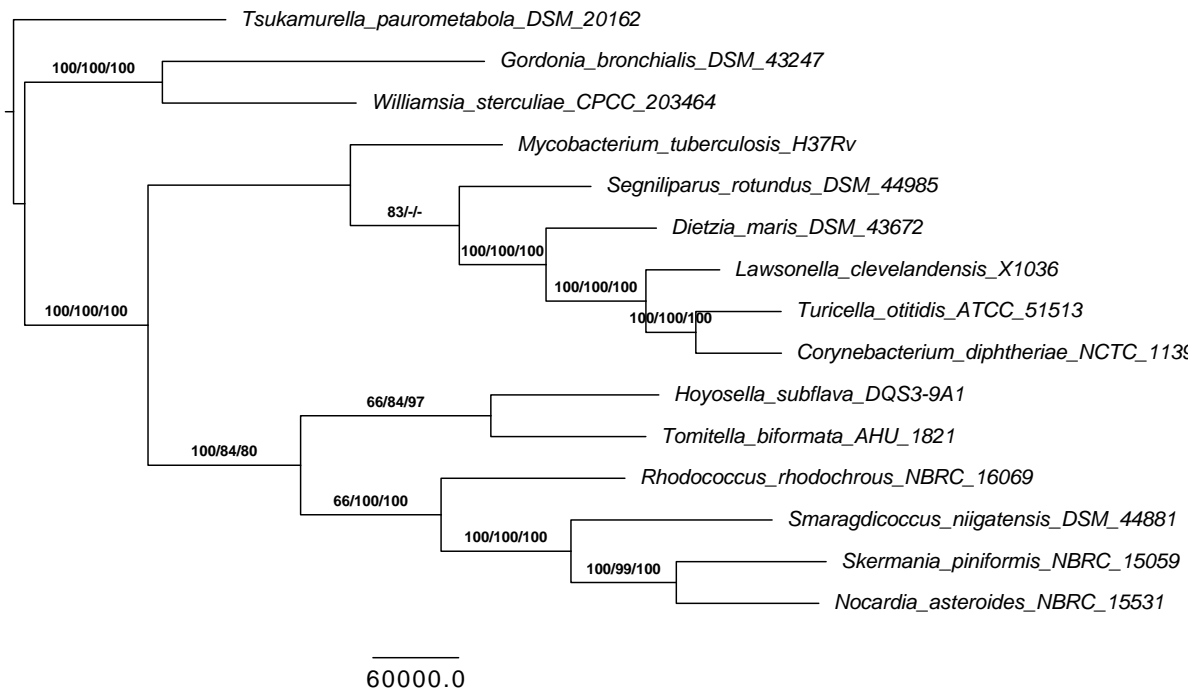


Figure 20: Phylogenetic tree inferred with TNT from the *Corynebacterium* supermatrix including single-copy genes that occurred in at least four of the genomes. Branches are scaled in terms of the minimum number of changes (ACCTRAN optimization). Numbers above branches are partition bootstrap support values from (i) TNT analysis of the supermatrix that included single-copy genes that occurred in at least four of the genomes; (ii) TNT analysis of the single-copy core genes; (iii) RAxML analysis of the single-copy core genes.