— Archaea-CandidatusKorarchaeota-NA-NA-NA-Candidatus_Korarchaeum_cryptofilum_WP_125742960.1 Archaea-NA-NA-NA-NA-archaeon_AArcSI_WP_119818676.1 — Archaea-NA-NA-NA-NA-anaerobic_archaeon_MKD1_WP_147664005.1 — Bacteria-Firmicutes-Bacilli-Bacillales-Staphylococcaceae-Abyssicoccus_albus_WP_123808047.1 Bacteria-NA-NA-NA-NA WP 012655930.1 —— Bacteria-Tenericutes-Mollicutes-Entomoplasmatales-Entomoplasmataceae-Entomoplasma_somnilux_WP_024863860.1 Bacteria-Tenericutes-Mollicutes-Entomoplasmatales-Spiroplasmataceae-NA_WP_070406424.1 Paulinella Bacteria-Tenericutes-Mollicutes-Entomoplasmatales-Spiroplasmataceae-Spiroplasma_kunkelii_WP_053390461.1 Archaea Bacteria-Firmicutes-Clostridia-Clostridiales-Syntrophomonadaceae-Thermohydrogenium_kirishiense_WP_132775629.1 Bacteria-Firmicutes-Clostridia-Thermoanaerobacterales-ThermoanaerobacteralesFamilyIII.IncertaeSedis-Thermoanaerobacterium_thermosaccharolyticum_WP_013299112.1 Bacteria Bacteria-Spirochaetes-Spirochaetia-Brachyspirales-Brachyspiraceae-Brachyspira_aalborgi_WP_147527433.1 Eukaryota —— Bacteria-Spirochaetes-Spirochaetia-Brachyspirales-Brachyspiraceae-Brachyspira_pilosicoli_WP_147731050.1 Viruses — Bacteria-Firmicutes-Clostridia-Clostridiales-Hungateiclostridiaceae-Ruminiclostridium_sufflavum_WP_110462893.1 Bacteria-Fusobacteria-Fusobacteriia-Fusobacteriales-Fusobacteriaceae-Fusobacterium necrogenes WP 115270765.1 —— Bacteria-Fusobacteria-Fusobacteriia-Fusobacteriales-Fusobacteriaceae-NA_WP_070577629.1 — Bacteria-Fusobacteria-Fusobacteriia-Fusobacteriales-Fusobacteriaceae-Fusobacterium_russii_WP_022818811.1 ————— Bacteria-Fusobacteria-Fusobacteriia-Fusobacteriales-Leptotrichiaceae-Leptotrichia_wadei_WP_018499121.1 Bacteria-Nitrospirae-Nitrospira-Nitrospirales-Nitrospiraceae-Thermodesulfovibrio_thiophilus_WP_028845063.1 — Archaea-Euryarchaeota-Archaeoglobi-Archaeoglobales-Archaeoglobaceae-Archaeoglobus_sulfaticallidus_WP_015590543.1 - Archaea-Euryarchaeota-Thermoplasmata-Methanomassiliicoccales-Methanomassiliicoccaceae-Candidatus_Methanomassiliicoccus_intestinalis_WP_020449084.1 BS: ultrafast bootstrap support — Bacteria-CandidatusMelainabacteria-NA-NA-NA-Candidatus_Melainabacteria_bacterium_WP_144105344.1 ——— Bacteria-Actinobacteria-Actinobacteria-Actinomycetales-Actinomycetaceae-Actinomyces_radicidentis_WP_067941718.1 —— Bacteria-Actinobacteria-Actinobacteria-Micrococcales-Rarobacteraceae-Rarobacter_incanus_WP_142112390.1 Bacteria-Actinobacteria-Actinobacteria-Bifidobacteriales-Bifidobacteriaceae-Bifidobacterium_breve_WP_016462059.1 Bacteria-NA-NA-NA-NA WP 004110044.1 — Bacteria-Actinobacteria-Coriobacteriia-Coriobacteriales-Atopobiaceae-Atopobium_vaginae_WP_006302238.1 Bacteria-Planctomycetes-NA-NA-NA-Planctomycetes_bacterium_Pan265_WP_145445290.1 Bacteria-Planctomycetes-Planctomycetia-Planctomycetales-Planctomycetaceae-Blastopirellula_marina_WP_105334502.1 Bacteria-Planctomycetes-Planctomycetia-Planctomycetales-Planctomycetaceae-NA_WP_105333044.1 — Bacteria-Fibrobacteres-Chitinivibrionia-Chitinivibrionales-Chitinivibrionaceae-Chitinivibrio_alkaliphilus_WP_022637445.1 Bacteria-Fibrobacteres-Fibrobacteria-Fibrobacterales-Fibrobacteraceae-Fibrobacter sp. UWP2 WP 073188081.1 Bacteria-Fibrobacteres-Fibrobacteria-Fibrobacterales-Fibrobacteraceae-Fibrobacter_sp._UWT1_WP_101480194.1
Bacteria-Fibrobacteres-Fibrobacteria-Fibrobacterales-Fibrobacteraceae-NA_WP_109734751.1 — Bacteria-Spirochaetes-Spirochaetia-Leptospirales-Leptospiraceae-Leptonema_illini_WP_002771011.1 Bacteria-Spirochaetes-Spirochaetia-Leptospirales-Leptospiraceae-Leptospira_perolatii_WP_100714406.1 — Bacteria-Proteobacteria-Deltaproteobacteria-Desulfobacterales-Desulfobulbaceae-Desulfobulbus_mediterraneus_WP_028583273.1 —— Bacteria-Proteobacteria-Deltaproteobacteria-Desulfobacterales-Desulfobulbaceae-Desulfocapsa_sulfexigens_WP_015404537.1 — Bacteria-Thermodesulfobacteria-Thermodesulfobacteria-Thermodesulfobacteriales-Thermodesulfobacteriaceae-Thermodesulfatator_autotrophicus_WP_068543924.1 — Bacteria-Thermodesulfobacteria-Thermodesulfobacteria-Thermodesulfobacteriales-Thermodesulfobacteriaceae-Thermosulfurimonas_dismutans_WP_068669213.1 Distribution of Cr — Bacteria-Proteobacteria-Deltaproteobacteria-Desulfuromonadales-Desulfuromonadaceae-Pelobacter_propionicus_WP_011734463.1 — Bacteria-Proteobacteria-Deltaproteobacteria-Desulfuromonadales-Geobacteraceae-Geobacter_daltonii_WP_012645937.1 Bacteria-Acidobacteria-Acidobacteriia-Acidobacteriales-Acidobacteriaceae-Acidobacteria_bacterium_KBS_146_WP_026388385.1 — Bacteria-Acidobacteria-Acidobacteriia-Acidobacteriales-Acidobacteriaceae-NA_WP_047490417.1 — Bacteria-Acidobacteria-Acidobacteriia-Acidobacteriales-Acidobacteriaceae-Candidatus_Koribacter_versatilis_WP_011524667.1 Bacteria-Acidobacteria-Acidobacteriia-Bryobacterales-Solibacteraceae-Candidatus_Solibacter_usitatus_WP_011683785.1 Bacteria-Bacteroidetes-Cytophagia-Cytophagales-Hymenobacteraceae-Hymenobacter_perfusus_WP_125434506.1

Bacteria-Bacteroidetes-Cytophagia-Cytophagales-Hymenobacteraceae-NA_WP_045689958.1 —— Bacteria-Aquificae-Aquificae-Aquificales-Hydrogenothermaceae-Persephonella_hydrogeniphila_WP_097001157.1 — Bacteria-Aquificae-Aquificae-Aquificales-Hydrogenothermaceae-Sulfurihydrogenibium_subterraneum_WP_028950248.1 —— Bacteria-Aquificae-Aquificae-Desulfurobacteriales-Desulfurobacteriaceae-Balnearium_lithotrophicum_WP_142935746.1 ——— Bacteria-Aquificae-Aquificae-Desulfurobacteriales-Desulfurobacteriaceae-Desulfurobacterium_indicum_WP_076713080.1 Bacteria-Bacteroidetes-NA-BacteroidetesOrderII.Incertaesedis-Rhodothermaceae-Longibacter_salinarum_WP_098075086.1 — Bacteria-Bacteroidetes-NA-BacteroidetesOrderII.Incertaesedis-Rhodothermaceae-Rhodothermaceae_bacterium_RA_WP_068125026.1 — Bacteria-Rhodothermaeota-Rhodothermia-Rhodothermales-Rubricoccaceae-Rubricoccus_marinus_WP_094547328.1 ——— Bacteria-Rhodothermaeota-Rhodothermia-Rhodothermales-Rubricoccaceae-Rubrivirga_sp._SAORIC476_WP_095513086.1 ——— Bacteria-Ignavibacteriae-Ignavibacteria-Ignavibacteriales-Ignavibacteriaceae-Ignavibacterium_album_WP_014559691.1 ——— Bacteria-Ignavibacteriae-Ignavibacteria-Ignavibacteriales-Melioribacteraceae-Melioribacter_roseus_WP_014856518.1 — Bacteria-CandidatusKryptonia-NA-NA-NA-Candidatus_Kryptobacter_tengchongensis_WP_072151010.1 Bacteria-Synergistetes-Synergistia-Synergistales-Synergistaceae-Cloacibacillus_sp._An23_WP_087366900.1 Bacteria-Synergistetes-Synergistia-Synergistales-Synergistaceae-NA_WP_008709106.1 Bacteria-Synergistetes-Synergistia-Synergistales-Synergistaceae-Synergistes_jonesii_WP_037977458.1 Bacteria-Synergistetes-Synergistia-Synergistales-Synergistaceae-Dethiosulfovibrio_salsuginis_WP_085544937.1 — Bacteria-Deferribacteres-Deferribacteres-Deferribacterales-Deferribacteraceae-Flexistipes_sinusarabici_WP_013885805.1 — Bacteria-Deferribacteres-Deferribacteres-Deferribacterales-Deferribacteraceae-Seleniivibrio_woodruffii_WP_132871951.1 ——— Bacteria-candidatedivisionNC10-NA-NA-NA-Candidatus_Methylomirabilis_limnetica_WP_107561898.1 — Bacteria-Verrucomicrobia-NA-NA-NA-Verrucomicrobia_bacterium_S94_WP_130594215.1 —— Bacteria-NA-NA-NA-NA-Vampirococcus_sp._LiM_WP_128699061.1 —— Bacteria-Planctomycetes-CandidatusBrocadiae-CandidatusBrocadiales-CandidatusBrocadiaceae-Candiadtus_Scalindua_japonica_WP_096892728.1 — Bacteria-Lentisphaerae-Lentisphaeria-Lentisphaerales-Lentisphaeraceae-Lentisphaera_araneosa_WP_007278570.1 ———— Bacteria-Lentisphaerae-Lentisphaeria-Victivallales-NA-Victivallales_bacterium_CCUG_44730_WP_106054715.1 — Bacteria-Lentisphaerae-Lentisphaeria-Victivallales-Victivallaceae-Victivallis_vadensis_WP_116884937.1 — Eukaryota-Alveolata-Dinophyceae-NA-Unranked-Alexandrium_tamarense_MMETSP0384_c52_g2_i1.p2 —— Eukaryota-Apusomonadidae-NA-NA-NA-Thecamonas trahens XP 013759631.1 ukaryota-Apicomplexa-NA-Unranked-NA-Alveolata_sp_MMETSP0288_c13398_g1_i1.p1 -Chromeraceae-NA-NA-NA-Vitrella_brassicaformis_MMETSP1451_c15814_g1_i1.p1 0.0 0.2 0.4 0.6 0.8 1.0 Eukaryota-Chromeraceae-NA-NA-NA-Chromera_velia_MMETSP0290_c20684_g1_i1.p1 – Eukaryota-Apicomplexa-Conoidasida-Eucoccidiorida-Sarcocystidae-Neospora_caninum_XP_003880791.1 Lukaryota-Perkinsozoa-NA-Perkinsida-Perkinsidae-Perkinsus_marinus_XP_002773725.1 Eukaryota-Perkinsozoa-NA-Perkinsida-Perkinsidae-Perkinsus_marinus_XP_002780224.1 Eukaryota-Alveolata-Dinophyceae-NA-Unranked-Azadinium_spinosum_MMETSP1036_c49542_g1_i1.p1 - Eukaryota-Haptophyta-NA-Prymnesiales-NA-Chrysoculter_rhomboideus_MMETSP1335_c9829_g1_i1.p1 ______ Eukaryota-Ciliophora-NA-Unranked-NA-Fabrea_salina_MMETSP1345_c13108_g1_i1.p1 Eukaryota-Retaria-NA-NA-NA-Ammonia_sp_MMETSP1384_c17149_g1_i1.p1 Eukaryota-Retaria-NA-NA-NA-Rosalina_sp_MMETSP0190_c15036_g1_i1.p1 Eukaryota-Retaria-NA-NA-NA-Sorites_sp_MMETSP0191_c23573_g1_i1.p1 ukaryota-Cercozoa-Chlorarachniophyceae-NA-NA-Lotharella_globosa_MMETSP0041_c7885_g1_i1.p1 ukaryota-Cercozoa-Chlorarachniophyceae-NA-NA-Chlorarachnion reptans MMETSP0109 c13471 g1 i1.p1 Eukaryota-Cercozoa-NA-Euglyphida-Paulinellidae-Paulinella_chromatophora_scaffold6502-size1657_m.54505 Eukaryota-Amoebozoa-NA-NA-Paramoebidae-Filamoeba_nolandi_MMETSP0413_c7830_g1_i1.p1 - Eukaryota-Brachiopoda-Lingulata-Lingulida-Lingulidae-Lingula_anatina_XP_013406660.1 anoflagellata-Choanoflagellata-Salpingoecidae-Monosiga_brevicollis_XP_001743948.1 Eukaryota-Choanoflagellata-Choanoflagellata-Choanoflagellata-Salpingoecidae-Salpingoeca_rosetta_XP_004997362.1 Eukaryota-Cnidaria-Anthozoa-Scleractinia-Merulinidae-Orbicella_faveolata_XP_020605924.1 Eukaryota-Placozoa-NA-NA-Trichoplacidae-Trichoplax_adhaerens_XP_002113886.1 Eukaryota-Chordata-Mammalia-Cetacea-Monodontidae-Delphinapterus_leucas_XP_022431648.1 -Echinodermata-Asteroidea-Valvatida-Acanthasteridae-Acanthaster_planci_XP_022099408.1 - Eukaryota-Choanoflagellata-Choanoflagellata-Choanoflagellata-NA-Acanthoeca_sp_MMETSP0105_c530_g1_i1.p1 Eukaryota-Platyhelminthes-Trematoda-Opisthorchiida-Opisthorchiidae-Opisthorchis_viverrini_XP 009167059.1 Eukaryota-Platyhelminthes-Trematoda-Strigeidida-Schistosomatidae-Schistosoma mansoni XP 018649478.1 Eukaryota-Nematoda-Chromadorea-Rhabditida-Onchocercidae-Brugia_malayi_XP_001901607.1 ___ Eukaryota-Nematoda-Chromadorea-Rhabditida-Rhabditidae-Caenorhabditis_elegans_NP_741529.1 ⁻ Eukaryota-Nematoda-Chromadorea-Rhabditida-Rhabditidae-Caenorhabditis_remanei_XP_003115521.1 Eukaryota-Nematoda-Chromadorea-Rhabditida-Strongyloididae-Strongyloides_ratti_XP_024501649.1 — Eukaryota-Cryptophyta-NA-Pyrenomonadales-Chroomonadaceae-Chroomonas_mesostigmaticacf_MMETSP0047_c57163_g1_i1.p1 Eukaryota-Cryptophyta-NA-Pyrenomonadales-NA-Geminigera_sp_MMETSP1102_c6045_g1_i1.p1 Eukaryota-Microsporidia-NA-NA-NA-Mitosporidium daphniae XP 013238603.1 Eukaryota-Rhodophyta-Bangiophyceae-Bangiales-Bangiaceae-Porphyra_umbilicalis_Poumb0014s0120.1 Eukaryota-Rhodophyta-Bangiophyceae-NA-NA-Rhodella_maculata_MMETSP0167_c21849_g1_i1.p1 aryota-Glaucophyta-Glaucophyta-Gloeochaetales-Gloeochaetaceae-Gloeochaete_witrockiana_MMETSP0308_c24374_g1_i1.p1 Eukaryota-Longamoebia-Longamoebia-Longamoebia-Acanthamoebidae-Acanthamoeba_castellanii_XP_004356763.1 Eukaryota-Palpitomonas-NA-NA-NA-Palpitomonas_bilix_MMETSP0780_c14110_g1_i2.p1 Eukaryota-Palpitomonas-NA-NA-NA-Palpitomonas_bilix_MMETSP0780_c14110_g1_i3.p1 Eukaryota-Chlorophyta-Chlorophyceae-Chlamydomonadales-Chlamydomonadaceae-Chlamydomonas_euryale_MMETSP0063_c29440_g1_i1.p1 ukaryota-Chlorophyta-Trebouxiophyceae-Chlorellales-Chlorellaceae-Chlorella_vulgaris_jgi43809 Eukaryota-Chlorophyta-NA-NA-Pycnococcaceae-Pycnococcus_provasolii_MMETSP1316_c8943_g1_i1.p1 Eukaryota-Streptophyta-Liliopsida-Asparagales-Asparagaceae-Asparagus_officinalis_XP_020242761.1 Eukaryota-Streptophyta-Liliopsida-Poales-Poaceae-Panicum_hallii_XP_025798000.1 Eukaryota-Streptophyta-NA-Cucurbitales-Cucurbitaceae-Cucumis_melo_XP_008442241.1 — Eukaryota-Streptophyta-NA-Fabales-Fabaceae-Arachis_hypogaea_XP_025671417.1 — Viruses-Mimiviridae-NA-NA-NA-Megavirus_chiliensis_YP_004895145.1 Viruses-Pithoviridae-NA-NA-NA-Cedratvirus_A11_YP_009329210.1 Viruses-Pithoviridae-NA-NA-NA-Pithovirus_sibericum_YP_009000992.1 Viruses-NA-NA-NA-Pandoravirus_dulcis_YP_009430286.1 Archaea-Euryarchaeota-Methanomicrobia-Methanosarcinales-CandidatusMethanoperedenaceae-Candidatus_Methanoperedenaceae_archaeon_WP_116481558.1 —— Archaea-Euryarchaeota-Methanomicrobia-Methanosarcinales-Methanosarcinaceae-Methanohalobium_evestigatum_WP_013194210.1 - Eukaryota-Euglenida-NA-Eutreptiales-NA-Eutreptiella_gymnastica-like_MMETSP0809_c1952_g1_i1.p1 — Eukaryota-Euglenida-NA-NA-Unranked-Neobodo_designis_MMETSP1114_c6533_g1_i1.p1 Eukaryota-Kinetoplastida-Kinetoplastida-Kinetoplastida-Trypanosomatidae-Leptomonas pyrrhocoris XP 015654851.1 — Viruses-Siphoviridae-NA-NA-NA-Gordonia_virus_Ghobes_YP_009281153.1 — Archaea-CandidatusBathyarchaeota-NA-NA-NA-Candidatus_Bathyarchaeota_archaeon_WP_119818961.1 —— Archaea-Crenarchaeota-Thermoprotei-Desulfurococcales-Desulfurococcaceae-Desulfurococcaceae_archaeon_AG1_WP_109159295.1 Archaea-Crenarchaeota-Thermoprotei-Sulfolobales-Sulfolobaceae-Sulfolobus_sp._JCM_16833_WP_054844886.1 —— Archaea-Crenarchaeota-Thermoprotei-Desulfurococcales-Desulfurococcaceae-Desulfurococcus_amylolyticus_WP_048815847.1 — Archaea-CandidatusBathyarchaeota-NA-NA-NA-Candidatus_Bathyarchaeota_archaeon_WP_116596616.1 —— Archaea-Thaumarchaeota-NA-NA-NA-Marine_Group_I_thaumarchaeote_SCGC_AAA799O18_WP_048069988.1 Archaea-Thaumarchaeota-NA-NA-NA-NA_WP_048079375.1 Archaea-Thaumarchaeota-NA-Nitrosopumilales-Nitrosopumilaceae-Nitrosopumilus_maritimus_WP_012215803.1 ——— Archaea-Thaumarchaeota-NA-Nitrosopumilales-Nitrosopumilaceae-Candidatus Nitrosarchaeum limnium WP 010191071.1

was and world, and the north trains and the same of the same of