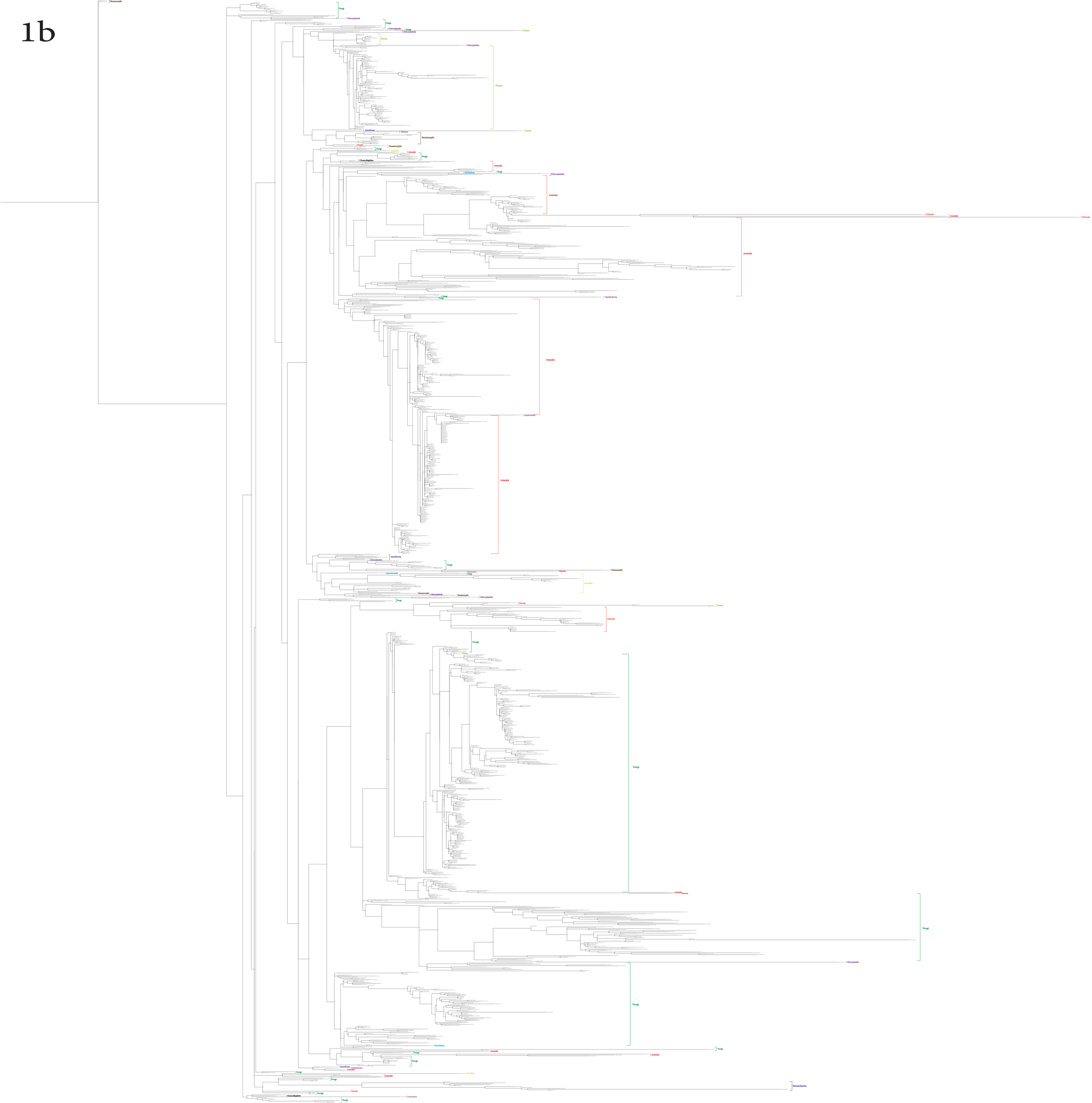
1a

Laccaria_bicolor_KU70
Ustilago_maydis_KU70
Malassezia_globosa_KU70
Schizosaccharomyces_pombe_KU70
Aspergillus_oryzae_KU70
Talaromyces_marneffei_KU70
Saccharomyces_cerevisiae_KU70
Saccharomyces_cerevisiae_KU80
Fungi
Ostreococcus_lucimarinus_KU70
Chloroplastida
Methanocella_paludicola_SANAE
Methanobacterium_paludis
Methanobacterium_formicicum_DS
Methanobacterium_formicicum
Methanobacterium_sp._MethCAN
Methanobacterium_aggregans
Methanobacterium_sp._SMA-27
Methanobacterium_lacus
Euryarchaeota
Parachlamydia_acanthamoebae_CC
Chlamydiota
Niastella_koreensis_2_AEW00550
Niastella_koreensis_1_AEV97944
Chitinophaga_pinensis_ACU58495
Bacteroidota
Opitutus_terrae_B1ZWL2.1_
Verrucomicrobiota
Cupriavidus_necator_1_AEI81269
Paraburkholderia_xenovorans_AB
Delftia_acidovorans_ABX36971.1
Achromobacter_xylosoxidans_ADP
Pseudomonadota
Nitrososphaera_sp._AFS
Candidatus_Nitrosocosmicus_exa
Candidatus_Nitrosocosmicus_arc
Candidatus_Nitrosocosmicus_ole
Thaumarchaeota
Methanothrix_soehngenii_GP6
Candidatus_Methanoperedens_sp.
Methanolinea_mesophila
Euryarchaeota
Thermodesulfatator_indicus_AEH
Thermodesulfobacteriota
Archaeoglobus_veneficus_SNP6
Geoglobus_ahangari
Archaeoglobus_fulgidus_DSM_430
Archaeoglobus_sulfaticallidus
Euryarchaeota
Streptomyces_cattleya_AEW97828
Streptomyces_ambofaciens_1
Streptomyces_sviceus_EDY54145.
Streptomyces_avermitilis_1_BAC
Streptomyces_griseus_2_WP_1643
Streptomyces_albulus_2_WP_0640
Streptomyces_griseus_3_WP_1150
Streptomyces_albulus_3_WP_1579
Streptomyces_albulus_5_WP_0640
Streptomyces_griseus_1_WP_0307
Streptomyces_avermitilis_2_Q82
Streptomyces_ambofaciens_3_WP_
Streptomyces_coelicolor_1_WP_0
Streptomyces_albulus_1_WP_0531
Streptomyces_albulus_4_WP_0443
Streptomyces_phage_BillNye
Actinomycetota
Saccharothrix_espanaensis_1_CC
Saccharothrix_espanaensis_2_CC
Actinoplanes_WP_014687497.1
Mycobacterium_virus_Corndog
Virus
Mycobacterium_tuberculosis_P9W
Actinomycetota
Mycobacterium_virus_Baka
Mycobacterium_phage_Wanda
Mycobacterium_phage_Minerva
Mycobacterium_phage_Thibault
Mycobacterium_virus_Omega
Mycobacterium_virus_Littlee
Mycobacterium_phage_Redno2
Mycobacterium_phage_Ariel
Mycobacterium_phage_MiaZeal
Virus
Rhodococcus_jostii_ABG98966.1
Nocardia_brasiliensis_AFU03477
Actinomycetota
Paenibacillus_mucilaginosus_AF
Desulfosporosinus_orientis_AET
Bacillus_thuringiensis_AFU1150
Bacillota
Candidatus_Solibacter_ABJ88738
Acidobacteriota
Desulfomonile_tiedjei_AFM25046
Thermodesulfobacteriota
Streptomyces_coelicolor_2_AAF2
Streptomyces_ambofaciens_2_WP_
Actinomycetota
Bradyrhizobium_japonicum_3_BAL
Rhizobium_leguminosarum_bv.vic
Bradyrhizobium_japonicum_2_BAL
Bradyrhizobium_japonicum_1_BAL
Alphaproteobacteria
Terriglobus_roseus_AFL88371.1_
Granulicella_mallensis_AEU3571
Acidobacterium_capsulatum_C1F7
Acidobacteriota
Haliangium_ochraceum_ACY15831.
Myxococcota
Cupriavidus_necator_2_AEI82225
Pseudomonadota
Volvox_carteri_f._nagariensis_
Chloroplastida
Arabidopsis_thaliana_KU80_AAF7
Plantae
Mortierella_alpina_KU80
Ustilago_maydis_KU80
Laccaria_bicolor_KU80
Fungi
Sphaeroforma_arctica_KU80
Opisthokonta
Tetrahymena_thermophila_KU70_3
Alveolata
Paramecium_tetraurelia_KU80_XP
Puccinia_graminis_f._sp._triti
Schizosaccharomyces_pombe_KU80
Neurospora_crassa_KU80
Aspergillus_oryzae_KU80
Talaromyces_marneffei_KU80_2
Fungi
Homo_sapiens_KU80
Monodelphis_domestica_KU80
Hydra_vulgaris_KU80
Nematostella_vectensis_KU80
Strongylocentrotus_purpuratus_
Animalia
Dictyostelium_discoideum_KU80
Acanthamoeba_castellanii_KU80
Amoebozoa
Monosiga_brevikolis_KU70
Choanoflagellate
Volvox_carteri_KU70
Chloroplastida
Arabidopsis_thaliana_KU70
Plantae
Hydra_vulgaris_KU70
Nematostella_vectensis_KU70
Branchiostoma_floridae_KU70
Strongylocentrotus_purpurat_KU
Monodelphis_domestica_KU70
Homo_sapiens_KU70_P12956
Animalia
Dictyostelium_discoideum_KU70_
Amoebozoa
Tetrahymena_thermophila_KU70_1
Tetrahymena_thermophila_KU70_2
Paramecium_tetraurelia_KU70_XP
Stylonychia_lemnae_KU70_CDW841
Oxytricha_trifallax_KU70_EJY72
Alveolata
Talaromyces_marneffei_KU80_1
Fungi
Puccinia_graminis_KU70_1_KAA10
Puccinia_graminis_KU70_2_XP_00

1b


Stramenopila
Fungi
Chlorophytida
Fungi
Chlorophytida
Fungi
Chlorophytida
Plantae
Plantae
Chlorophytida
Plantae
Amoebozoa
Rhizaria
Plantae
Stramenopila
Stramenopila
Fungi
Alveolata
Animalia
Fungi
Choanoflagellata
Animalia
Fungi
Rhodophyta
Chlorophytida
Animalia
Dikonda
Animalia
Discoba
Animalia
Fungi
Opisthokonta
Animalia
Opisthokonta
Animalia
Amoebozoa
Chlorophytida
Fungi
Haptista
Stramenopila
Apusomonada
Haptophyta
Fungi
Alveolata
Stramenopila
Chlorophytida
Stramenopila
Chlorophytida
Fungi
Discoba
Plantae
Discoba
Fungi
Plantae
Fungi
Animalia
Rhizaria
Fungi
Chlorophytida
Fungi
Rhodophyta
Fungi
Animalia
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Animalia
Fungi
Amoebozoa
Opisthokonta
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Discoba
Fungi
Choanoflagellata
Cryptophyta
Fungi

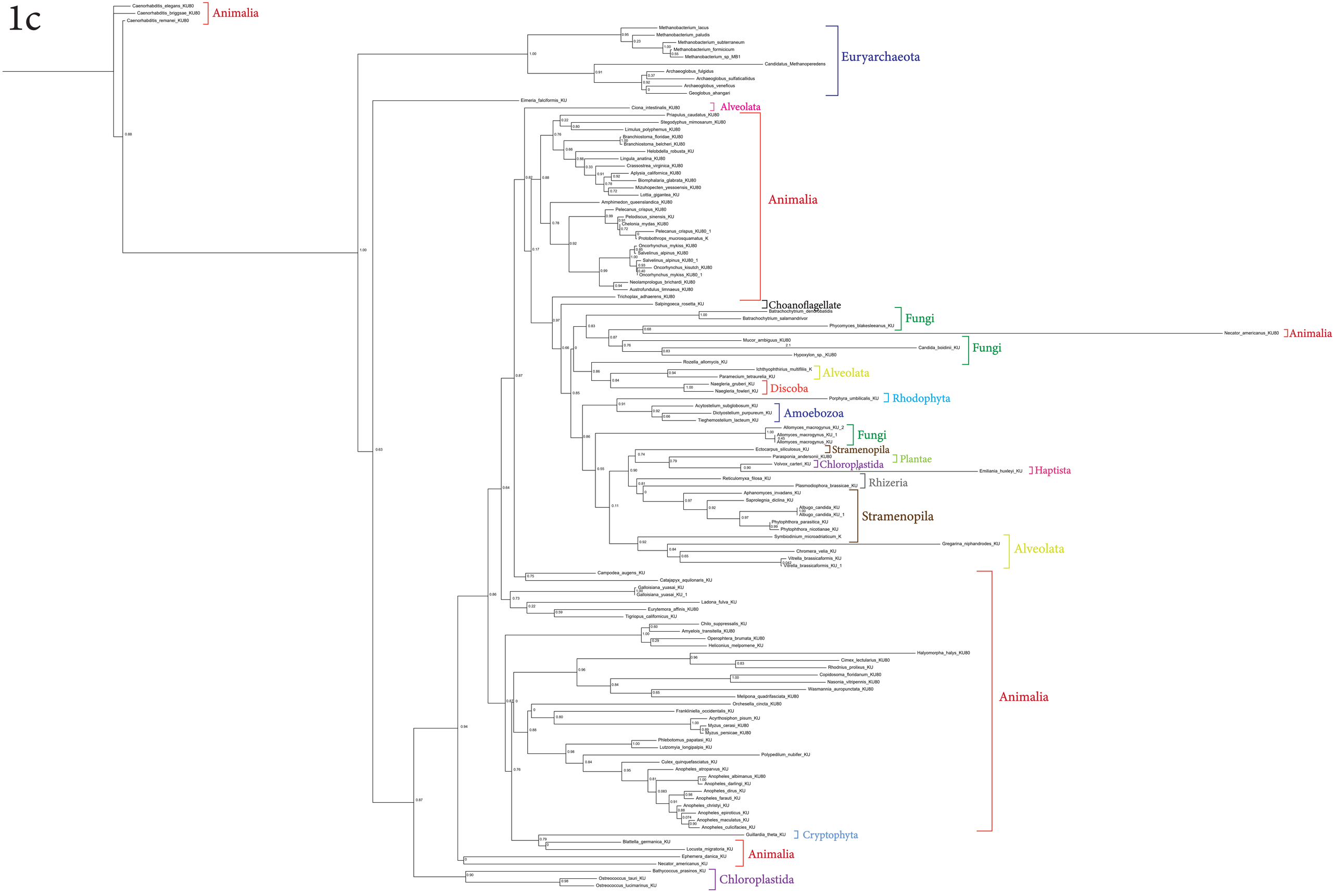

Figure 1: Phylogenetic trees of Ku protein inferred by using the Maximum Likelihood method using Baysian analysis. Phylogenetic trees were drawn using PhyML. Automatic model selection based on lowest BIC (Bayesian Information Criterion) was done using Smart Model Selection (SMS) in PhyML. The supports for each branch were established using Shimodaira–Hasegawa [SH]-aLRT (appromixate Likelihood Ratio Test). (a) General Ku phylogenetic tree was drawn using 124 Ku70, Ku80, viral as well as prokaryotic Ku sequences. Ku70 showed the highest divergence. Ku80 and prokaryotic Ku clustered together. (b) Ku70 phylogenetic tree was drawn using 1187 Ku sequences, most of them Ku70 sequences derived from OrthoDB website. (c) Ku80 phylogenetic tree was drawn using 122 Ku sequences most of which are Ku80 derived from OrthoDB website.