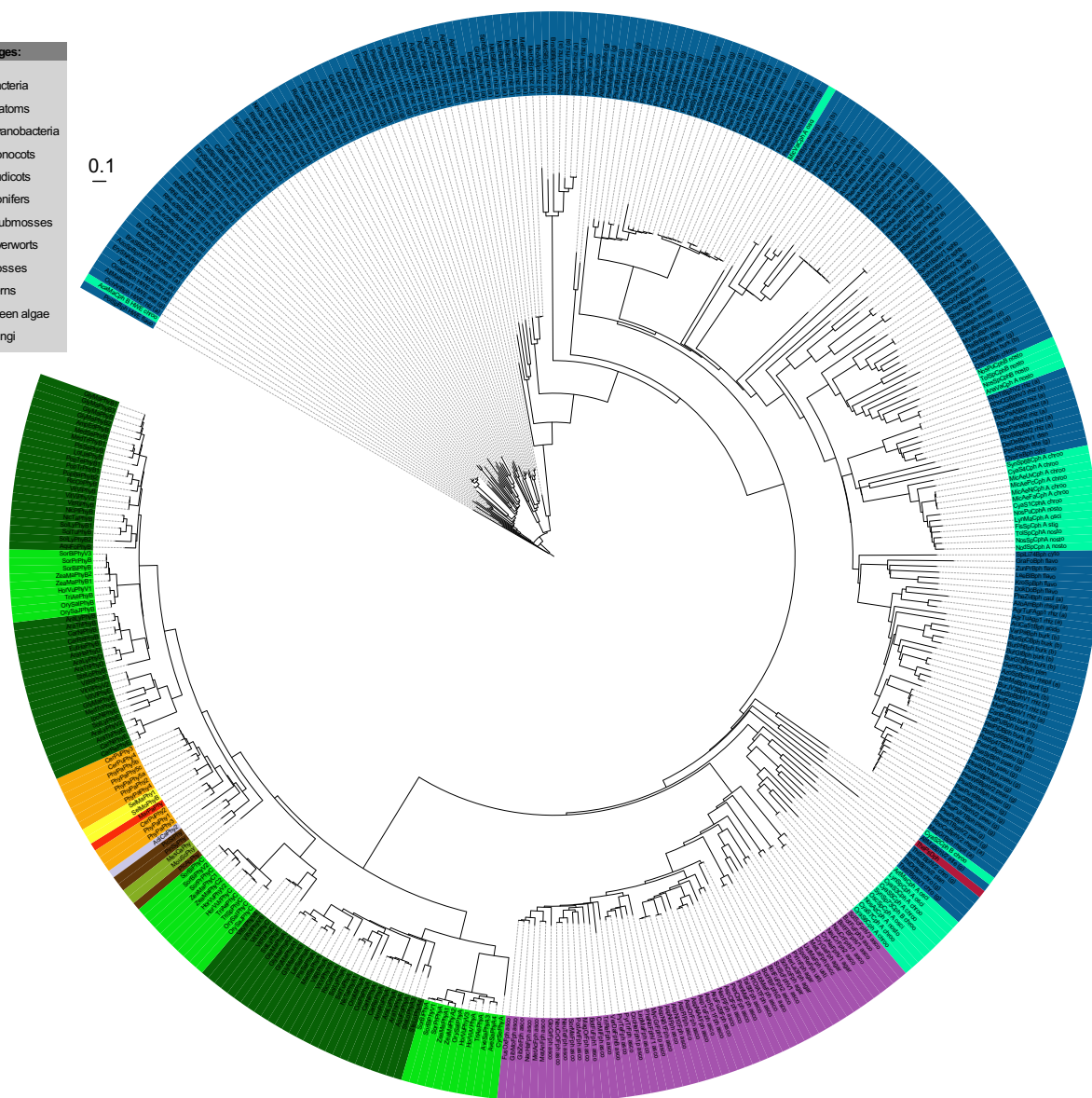
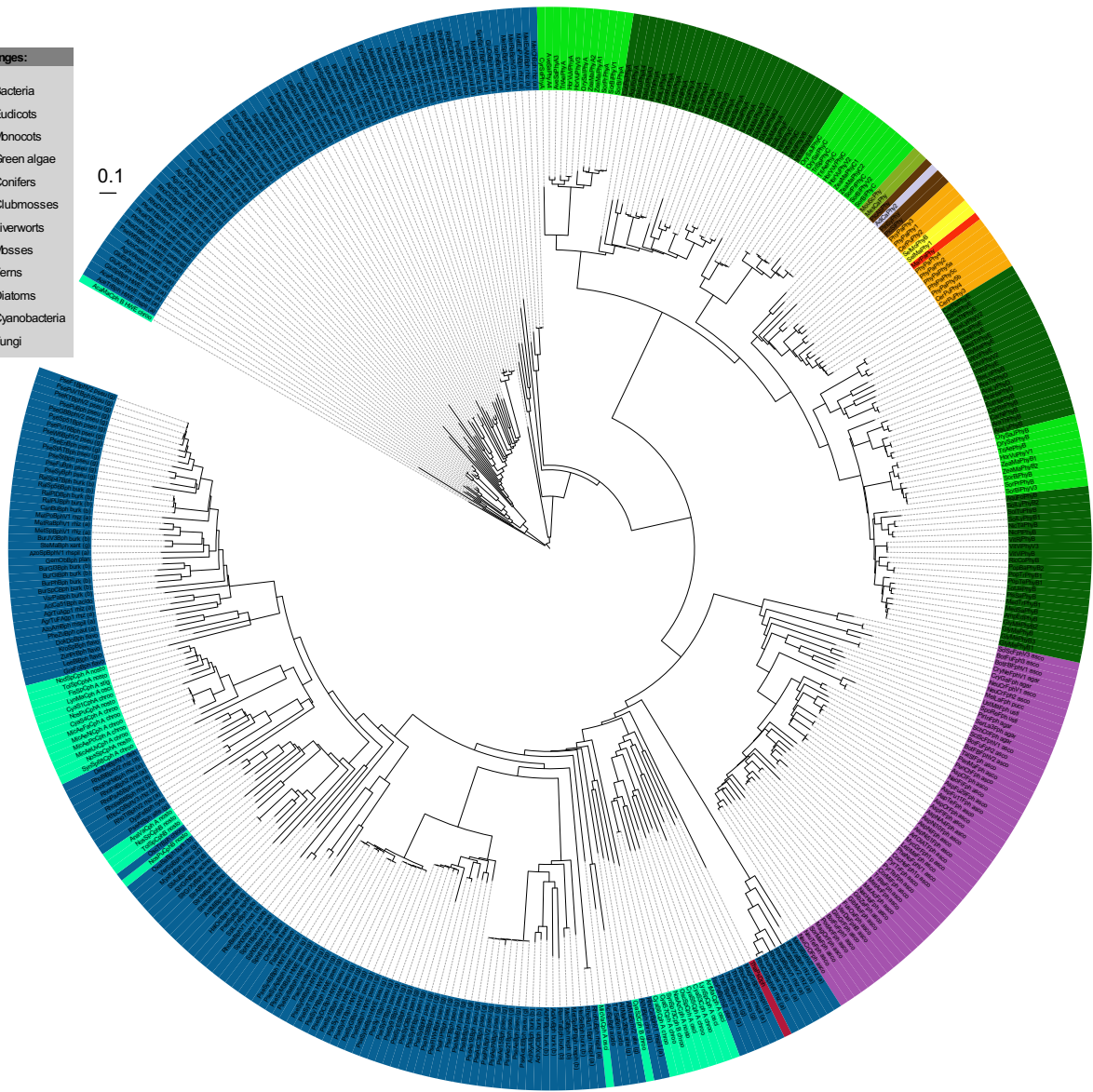
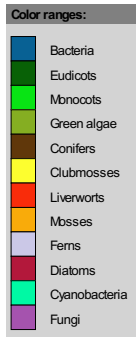


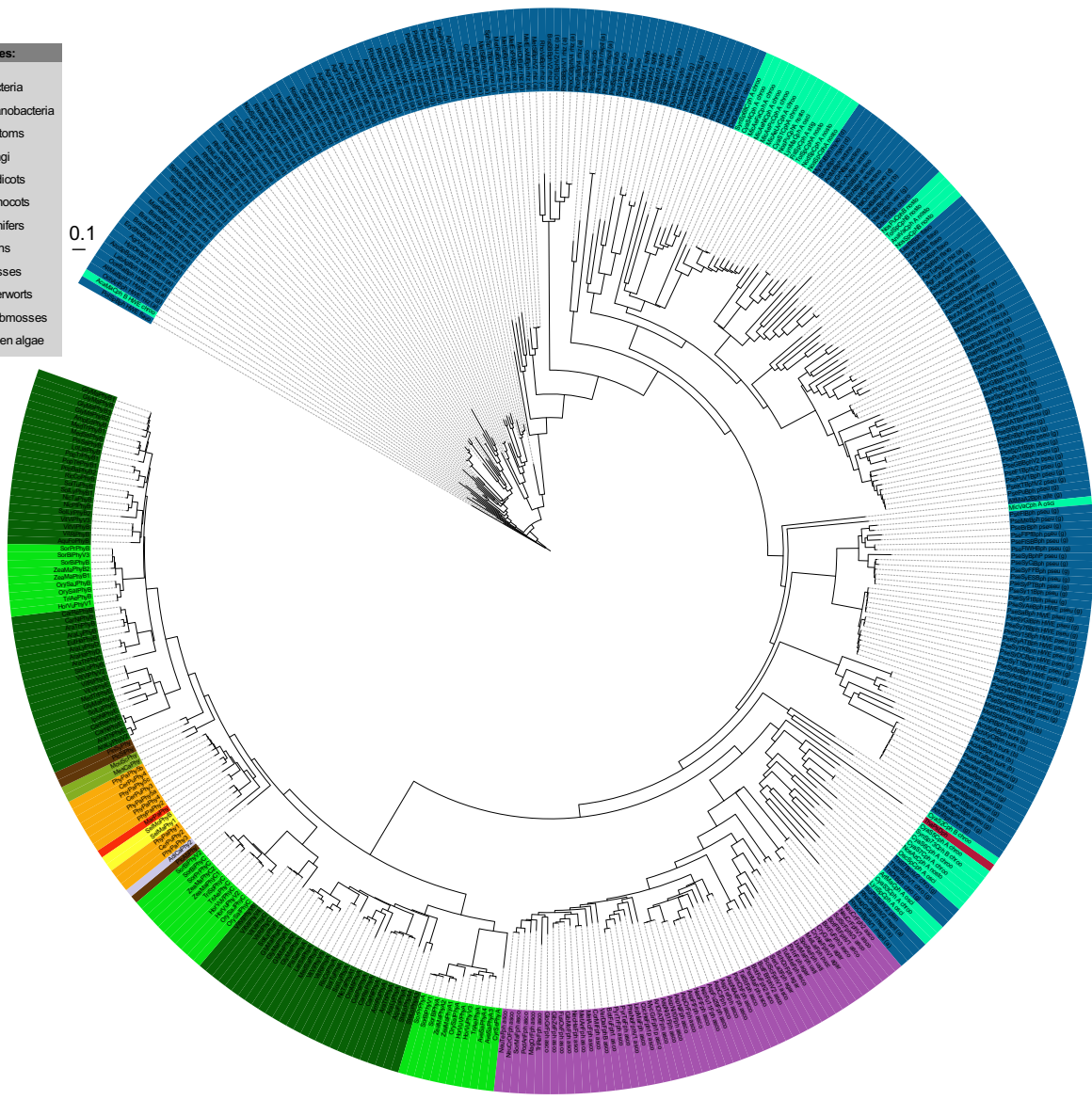
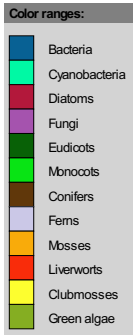
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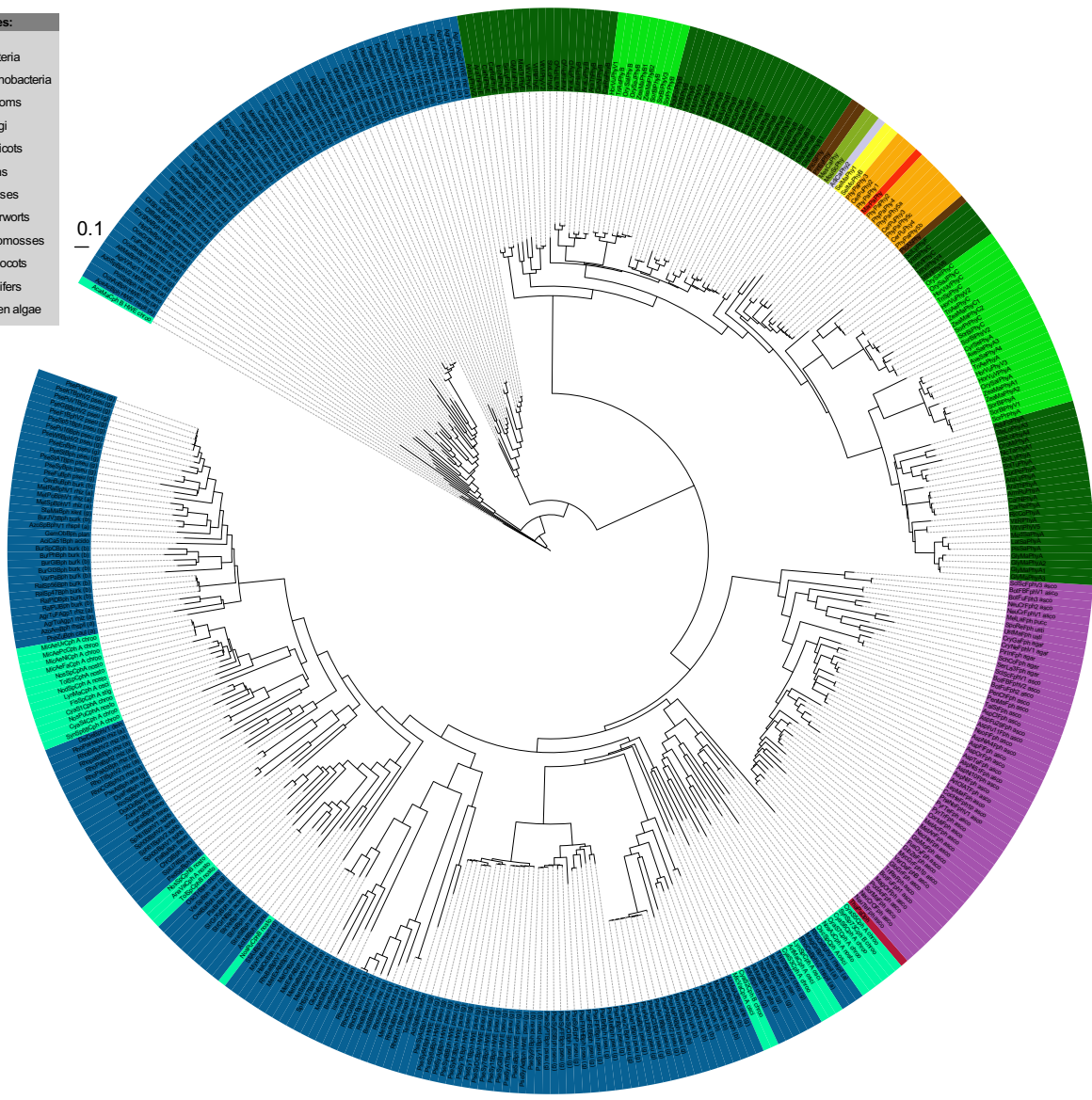
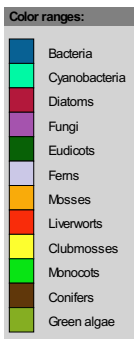
H1



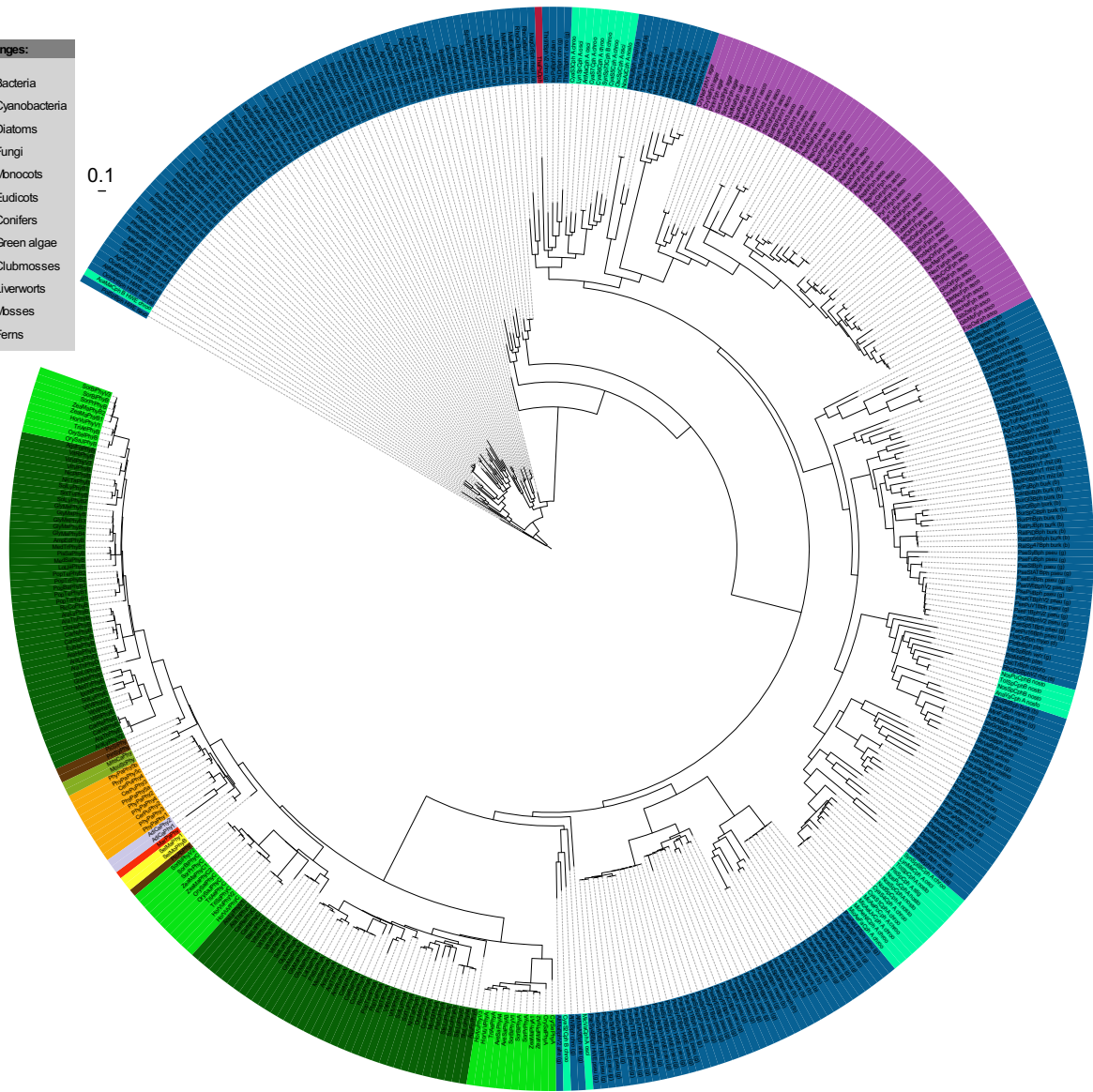
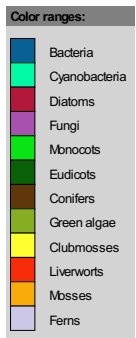
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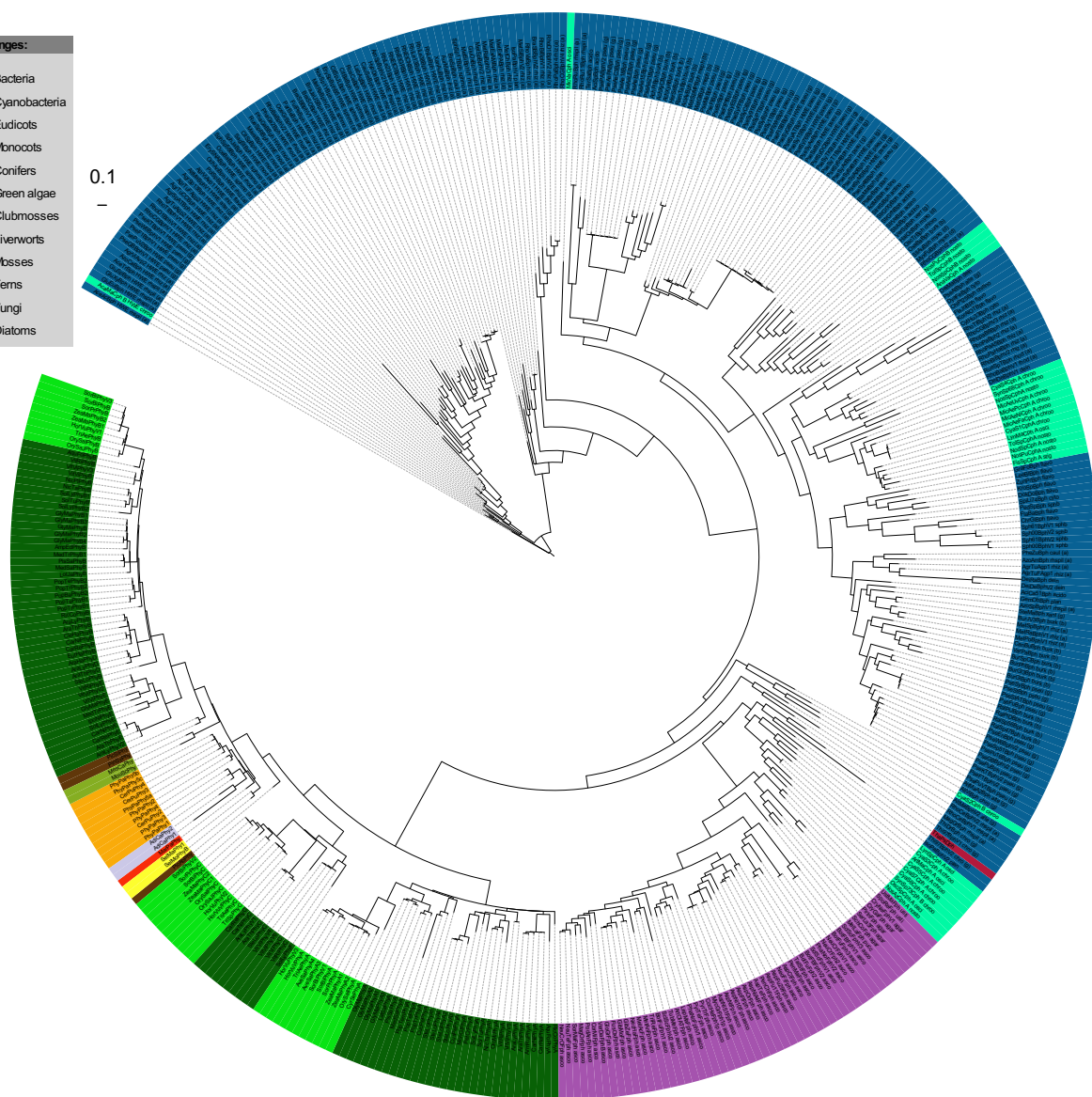
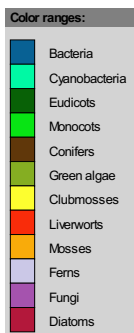
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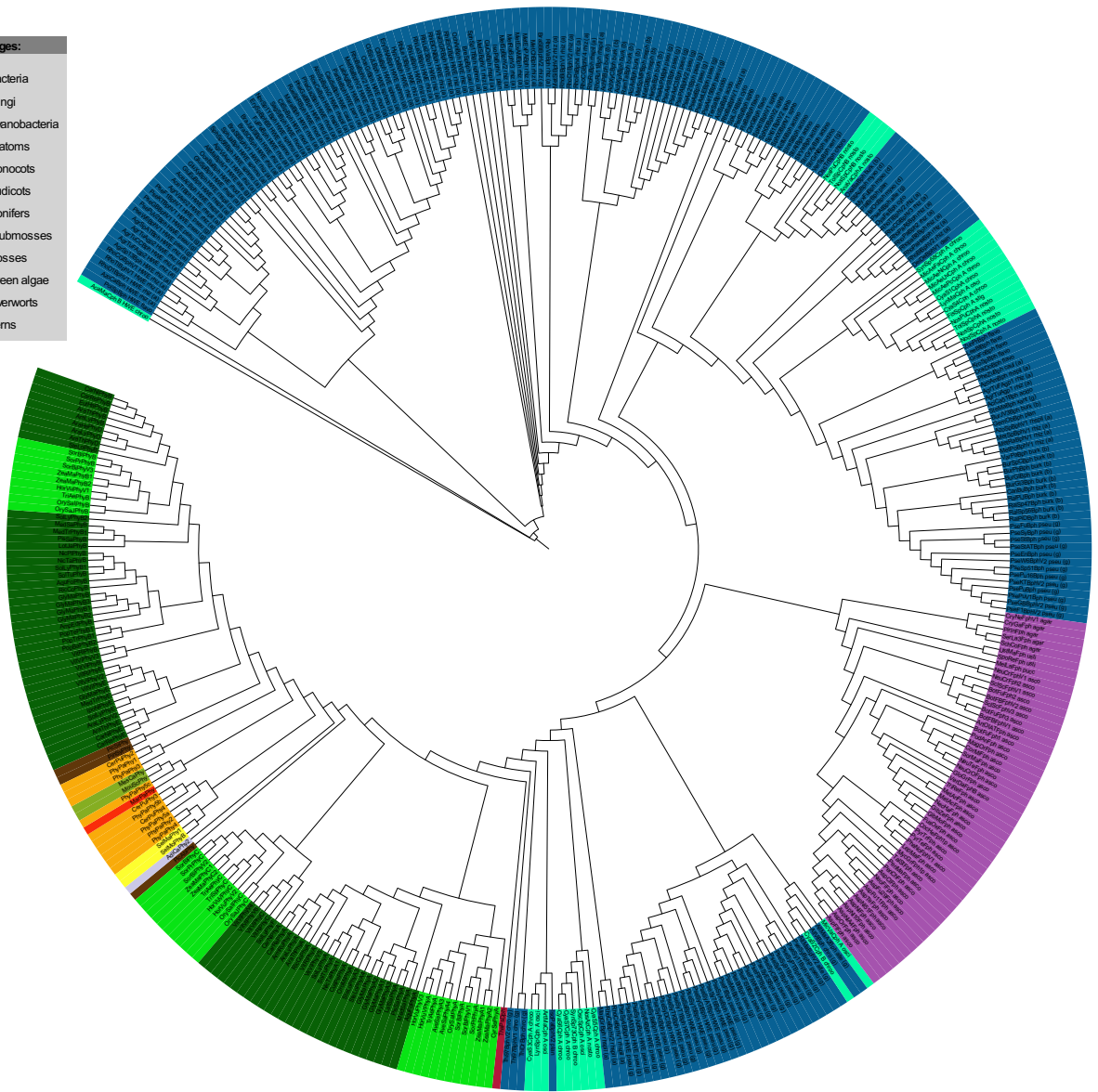
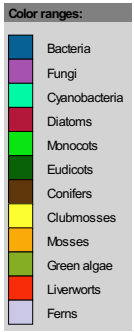
H4



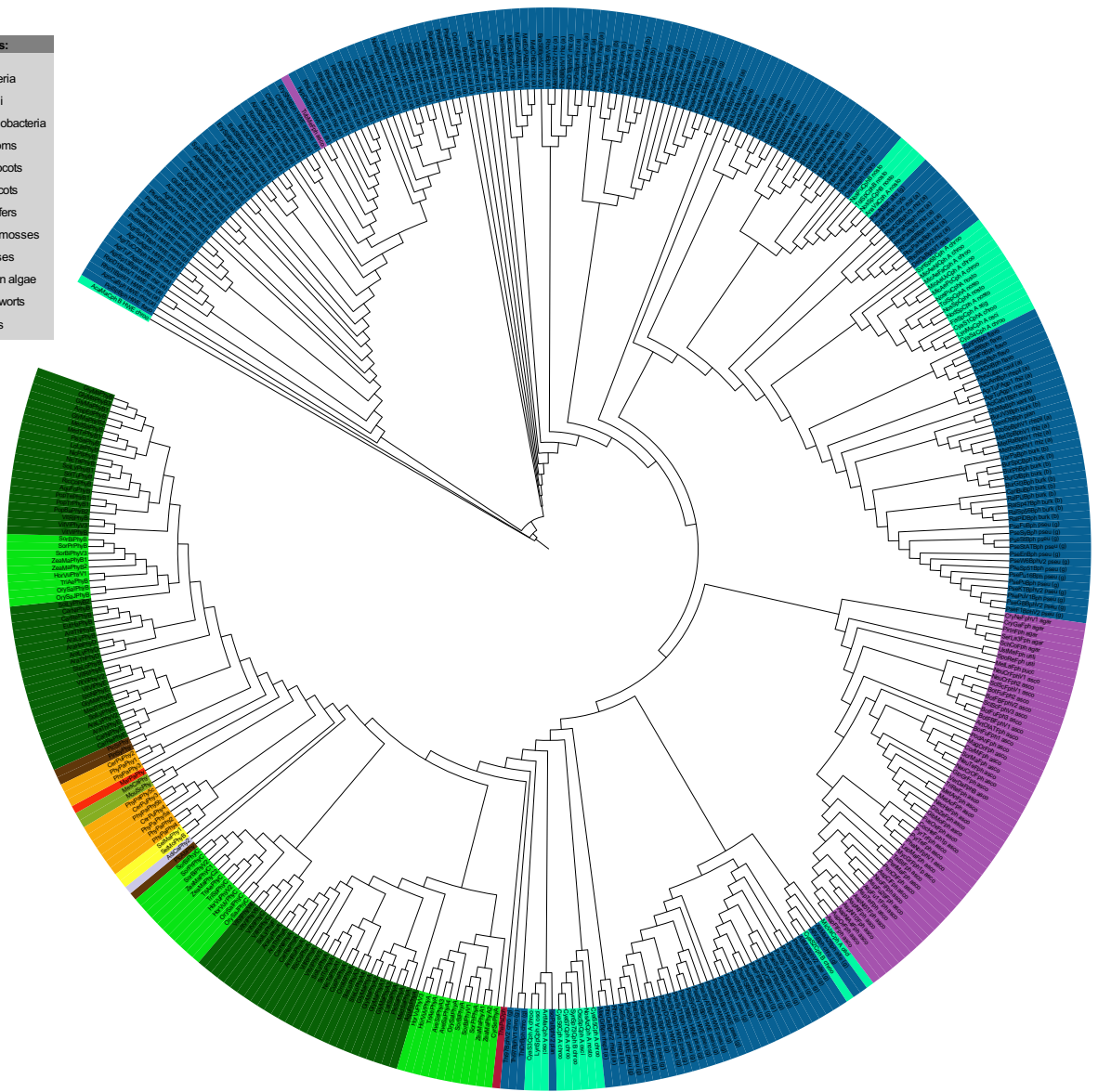
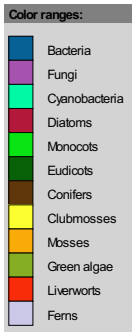
H5



H6

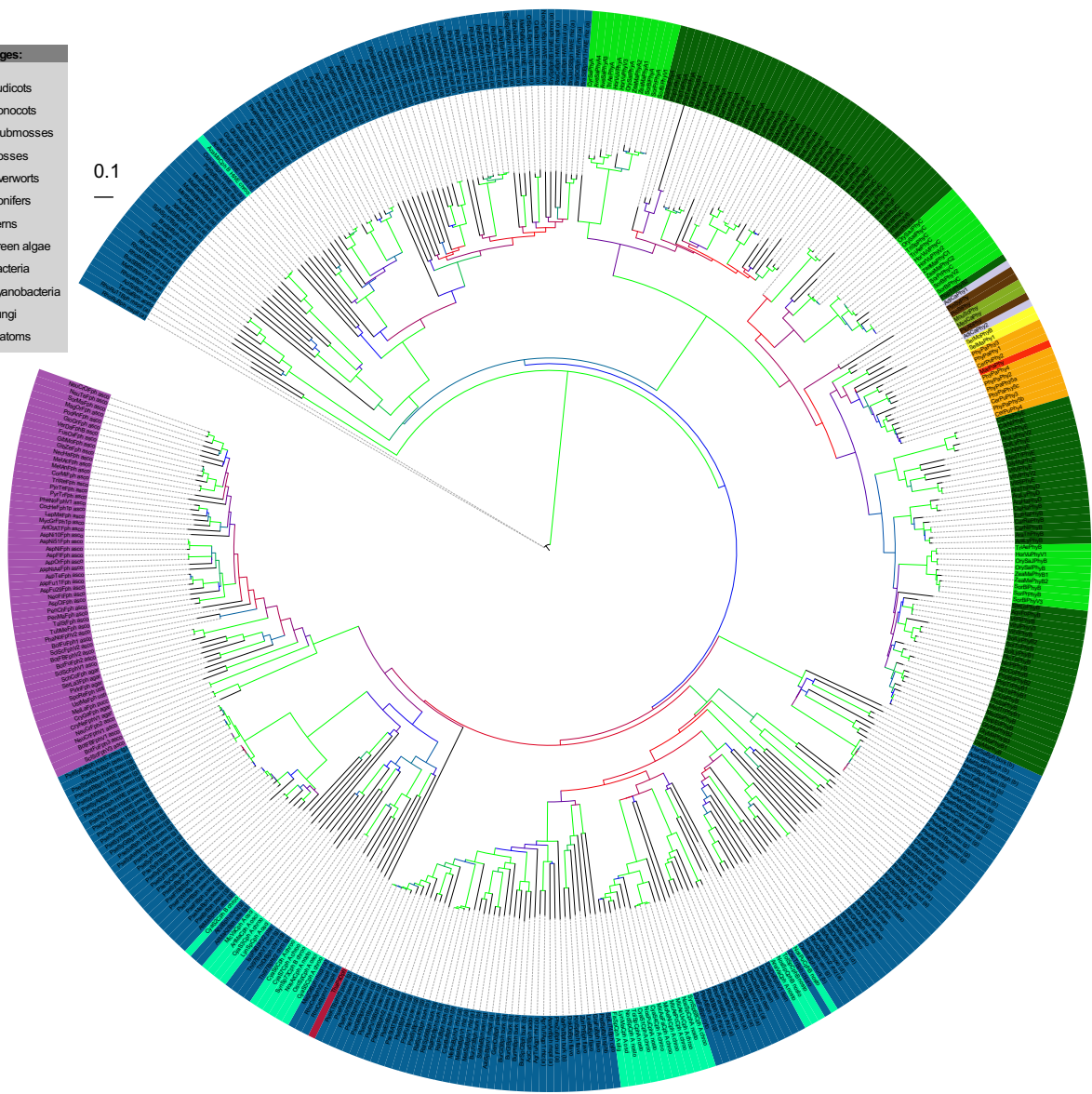
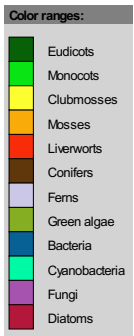


H7

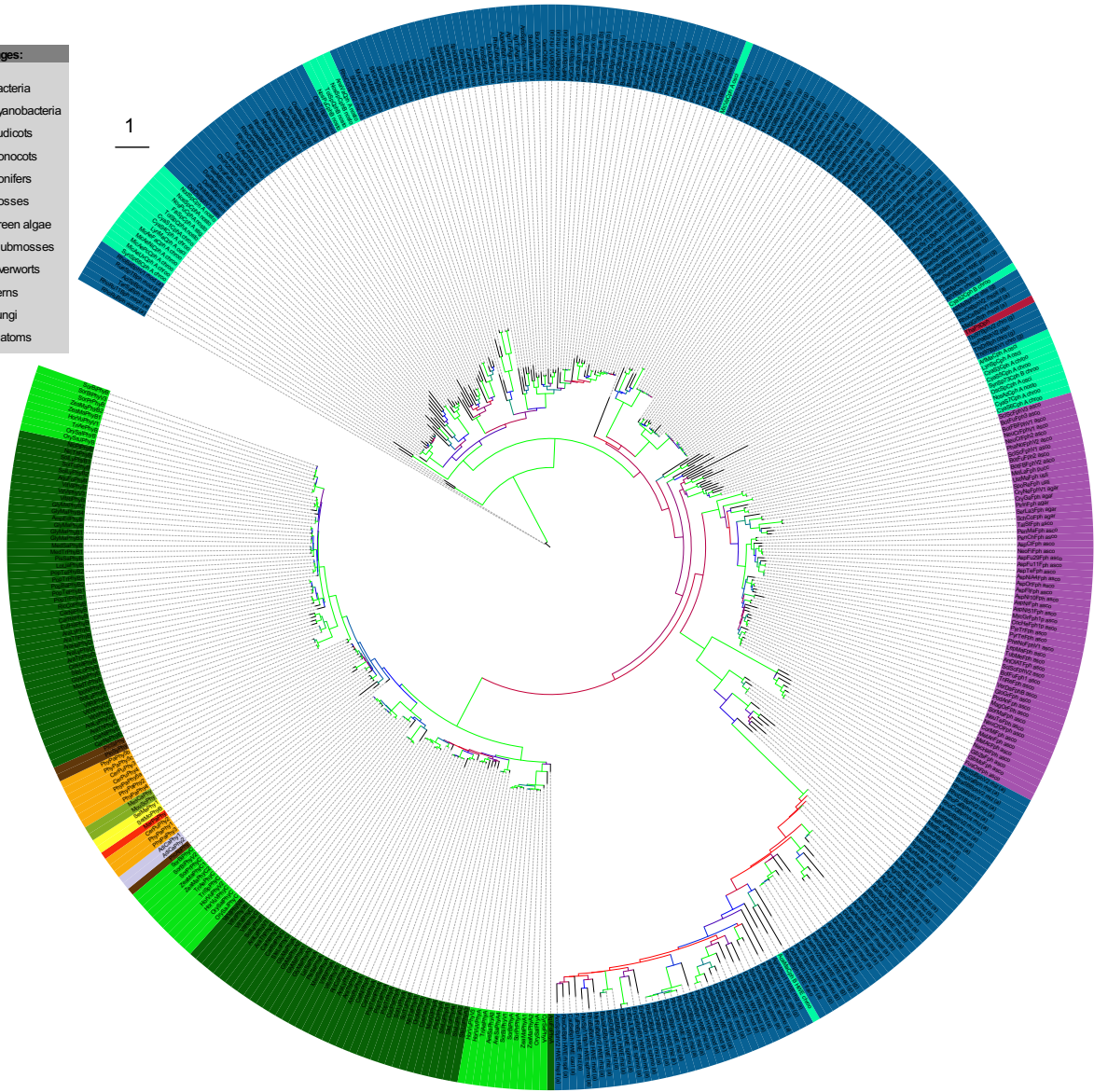
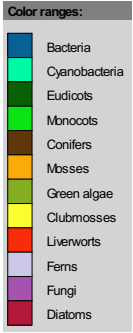


H8

H9

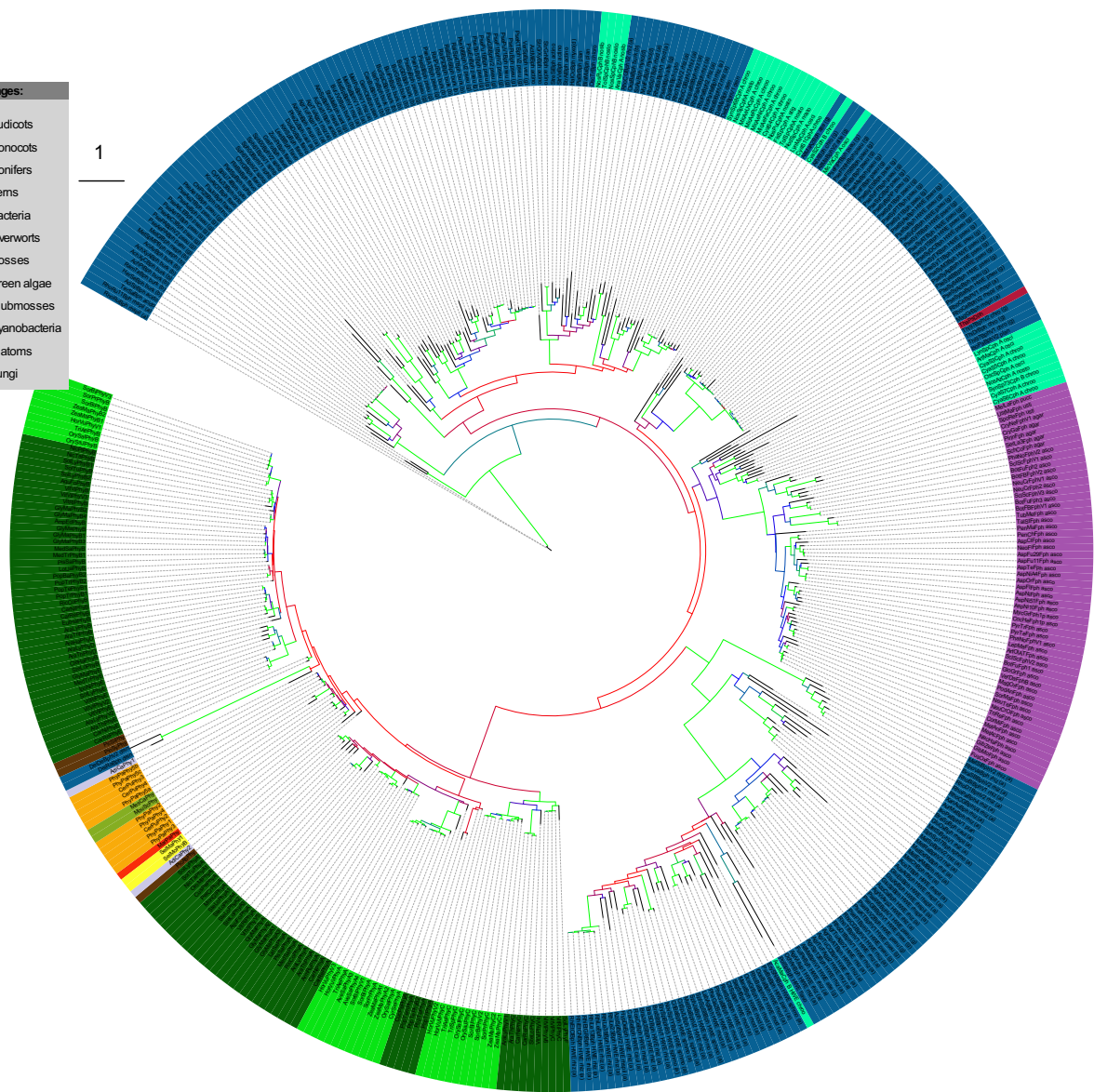


H10

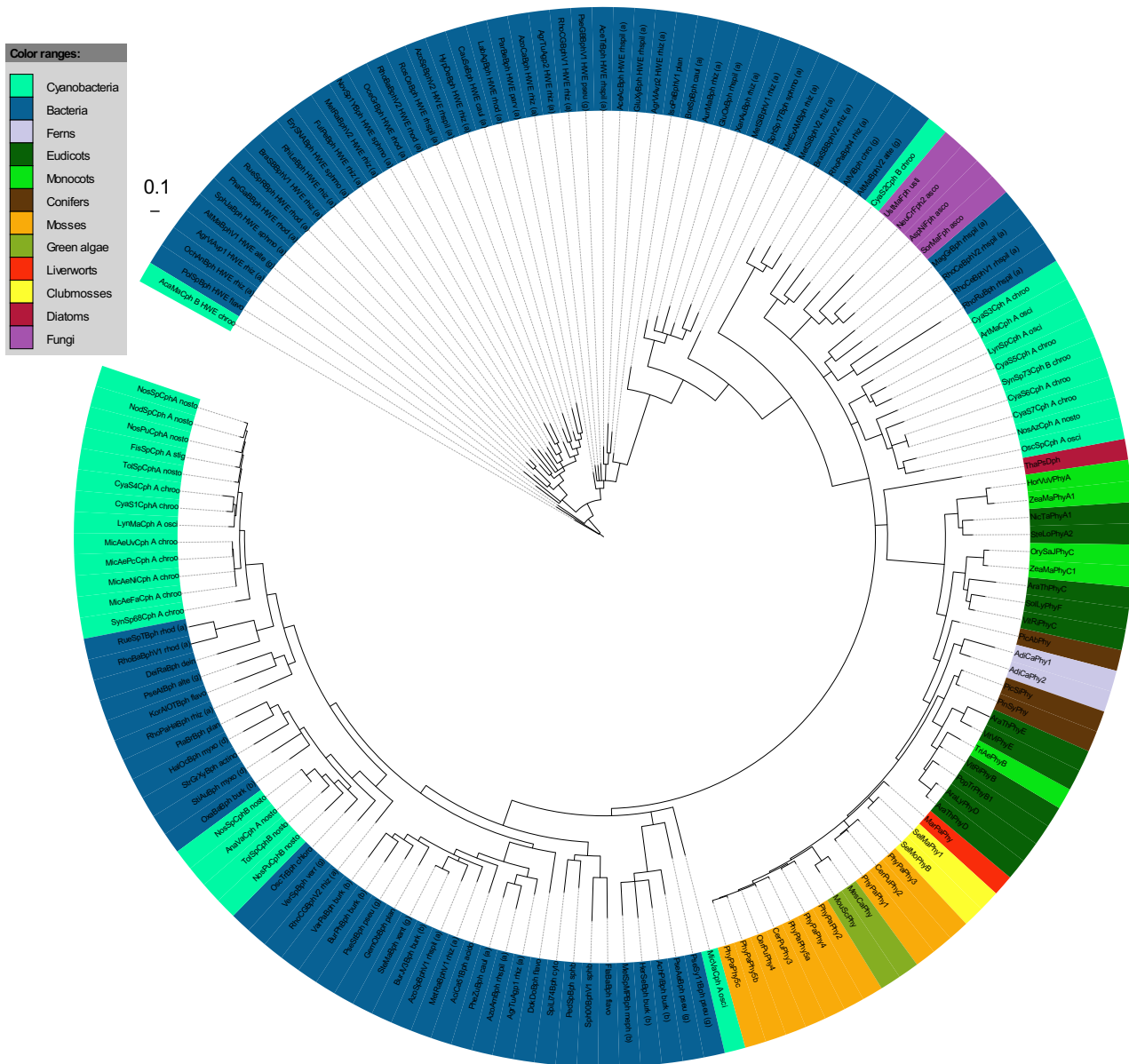


H11

- Color ranges:
- █ Eudicots
 - █ Monocots
 - █ Conifers
 - █ Ferns
 - █ Bacteria
 - █ Liverworts
 - █ Mosses
 - █ Green algae
 - █ Clubmosses
 - █ Cyanobacteria
 - █ Diatoms
 - █ Fungi



H12



H13

Additional file 3. Phylogenetic HK trees H1 to H13. The tree numbers refer to Table 2 which gives details for tree construction and a summary. The color code is: blue for bacteria, light blue for cyanobacteria, orange for mosses, green for dicotyledonous plants, light green for monocotyledonous plants, brown for gymnosperms, red for liverworts, grey for ferns, purple for fungi and dark violet for diatom. Typically, phytochromes are denominated by a 5 letters species code together with an abbreviation for the particular group of phytochrome. Accession numbers and species / strain names are listed in supplemental Table 1. After each phytochrome abbreviation, additional taxonomic information is given for bacterial and fungal sequences: (a), α -proteobacterium; (b), β -proteobacterium; (g), γ -proteobacterium; (d), δ -proteobacterium; acido, Adicobacterales; actino, Actinomycetales; agar, Agaricomycetes (basidiomycetes); asco, Ascomycota; burk, Burkholderiales; caul, Caulobacterales; chitno, Chitinophagaceae; chroo, Chroococcales; cyto, Cytophagales; dein, Deinococcales; flavo, Flavobacteria; HWE, HWE histidine kinase; meph, Methylophilales; myxo, Myxococcales; nosto, Nostocales; osci, Oscillatoriales; parv, Parvulaculales; plan, Planctomycetales; pseu, Pseudomonadales; pucci, Pucciniomycetes (basidiomycetes); rhizo, Rhizobiales; rhod, Rhodobacterales; rhspil, Rhodospirillales; sphmo, Sphingomonadales; stig, Stigonematales; ussti, Ustilagomycotina (basidiomycetes); verr, Verrucumicrobiales; xant, Xanthomonadales. The color of the branches indicate bootstrap values of 10-30% (red), 80-100% (green). Intermediate values are colored blue or with mixed colors.