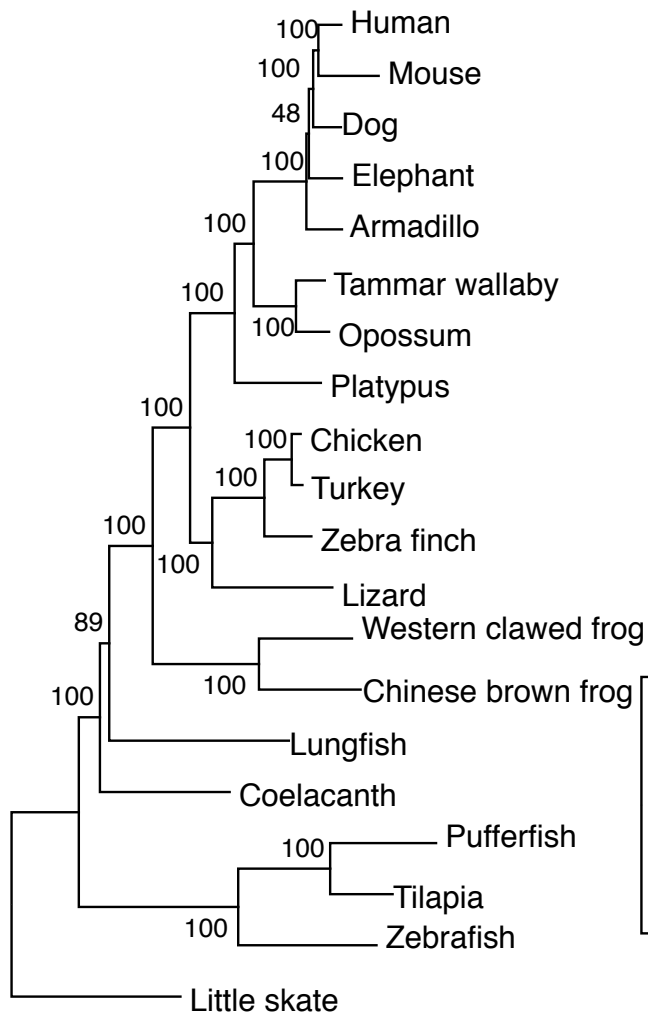


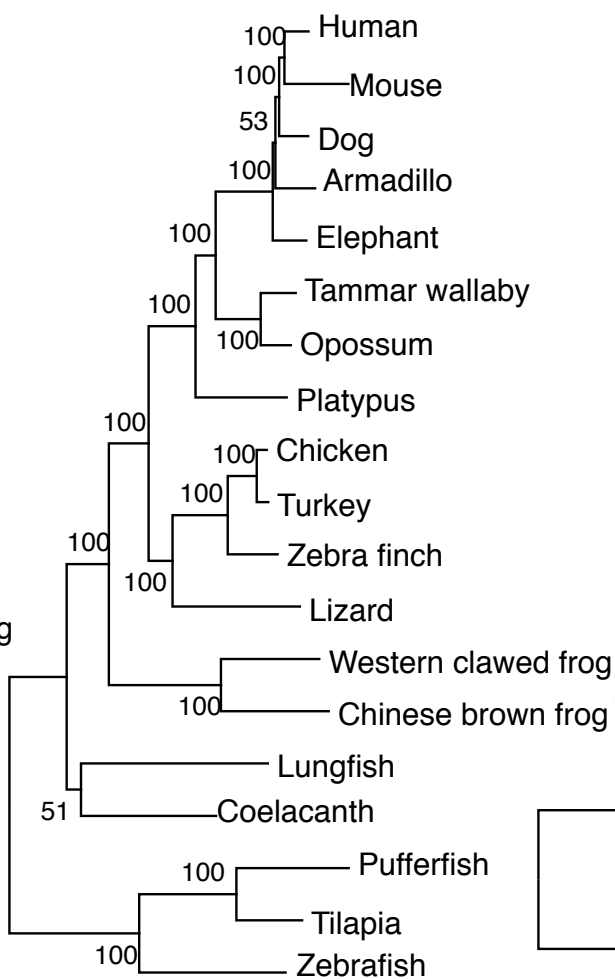
Figure S1. ML trees using CF as the outgroup. (a): Dataset I (Amemiya et al.). (b): Dataset II (Liang et al.). (c): Dataset III (data generated in this study). The numbers on the branches are BPs. JTTFG4 was assumed.

a)



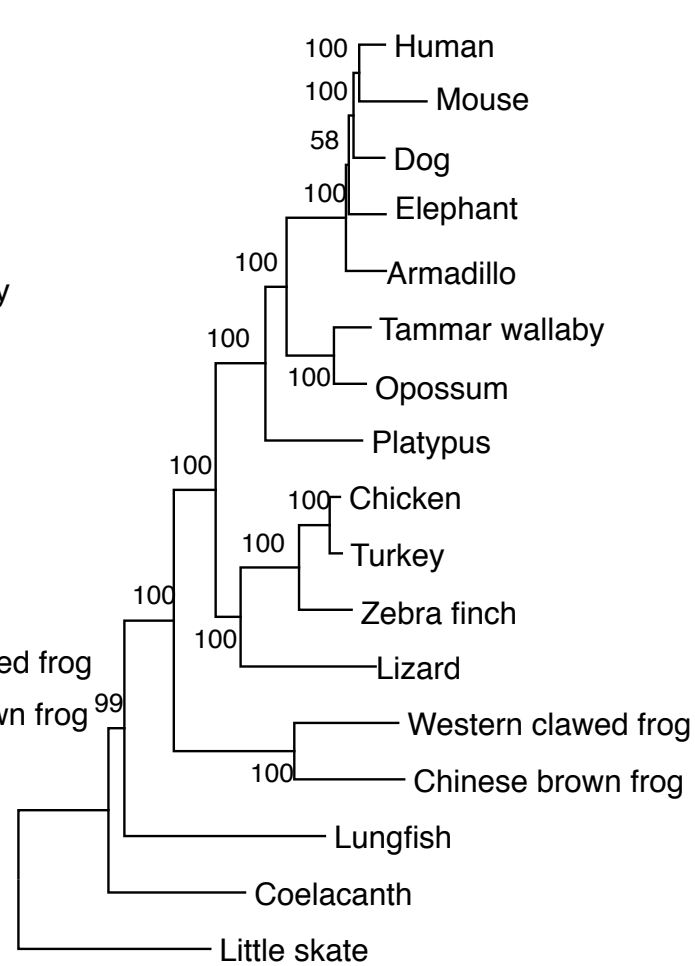
0.05

b)



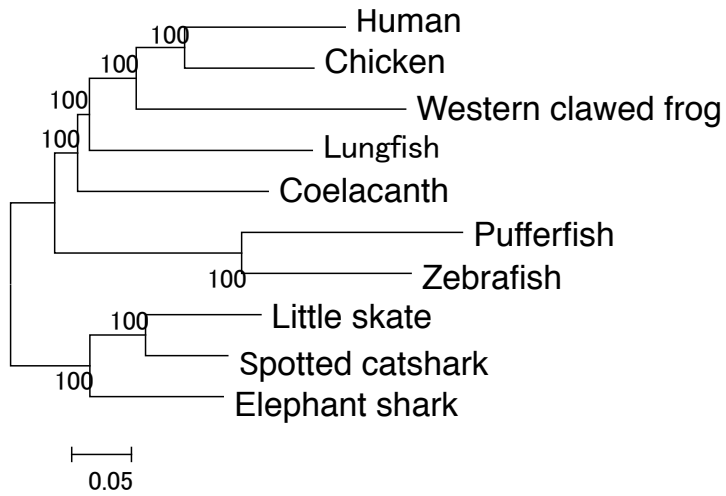
0.02

c)

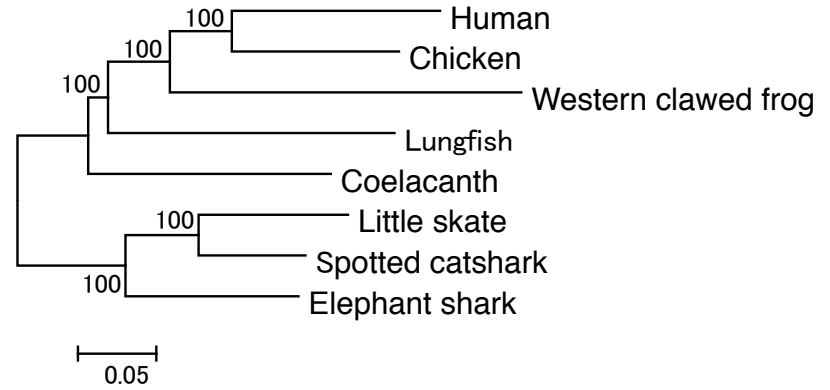


0.02

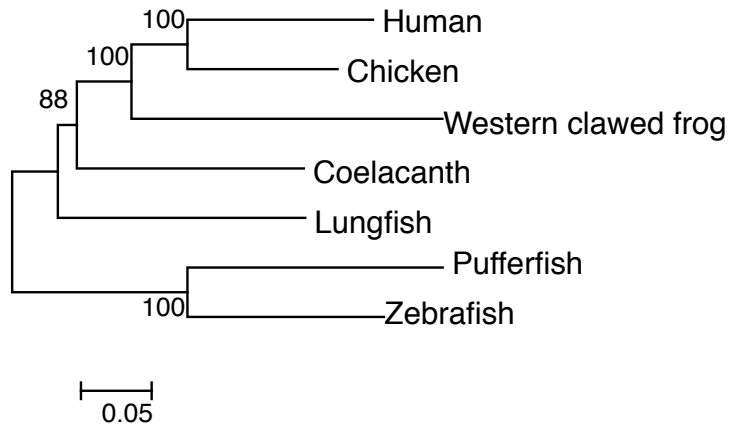
d)



f)



e)



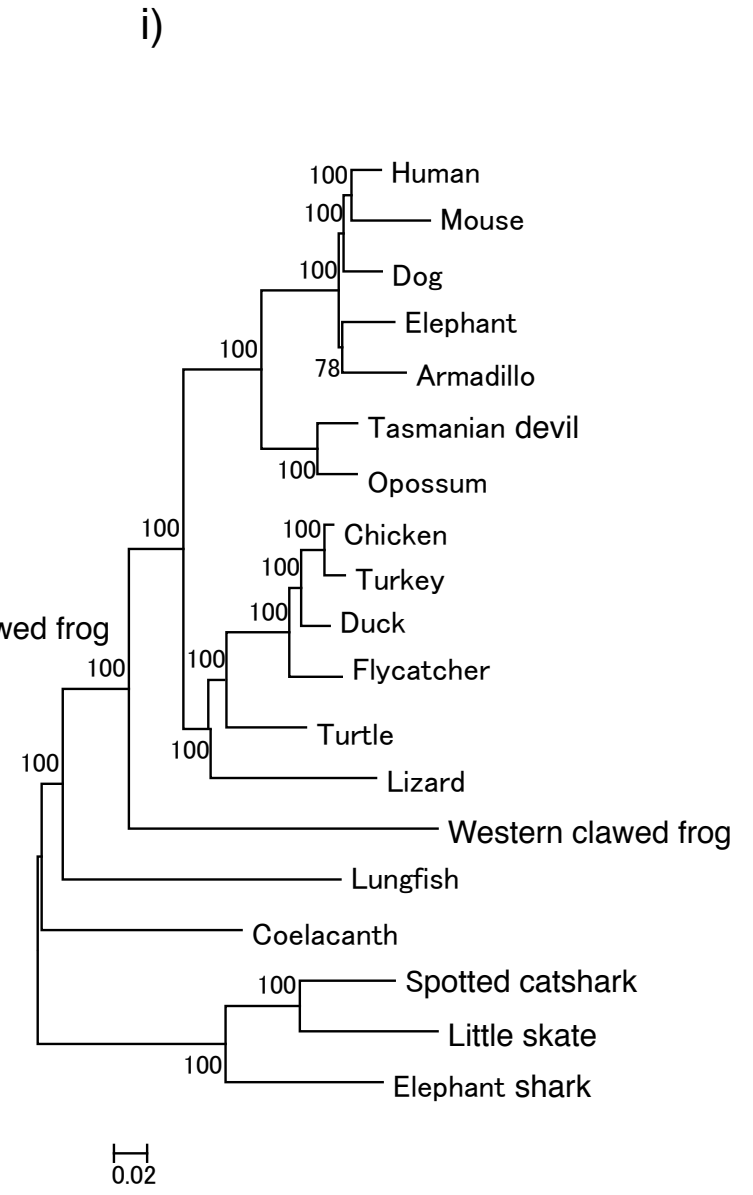
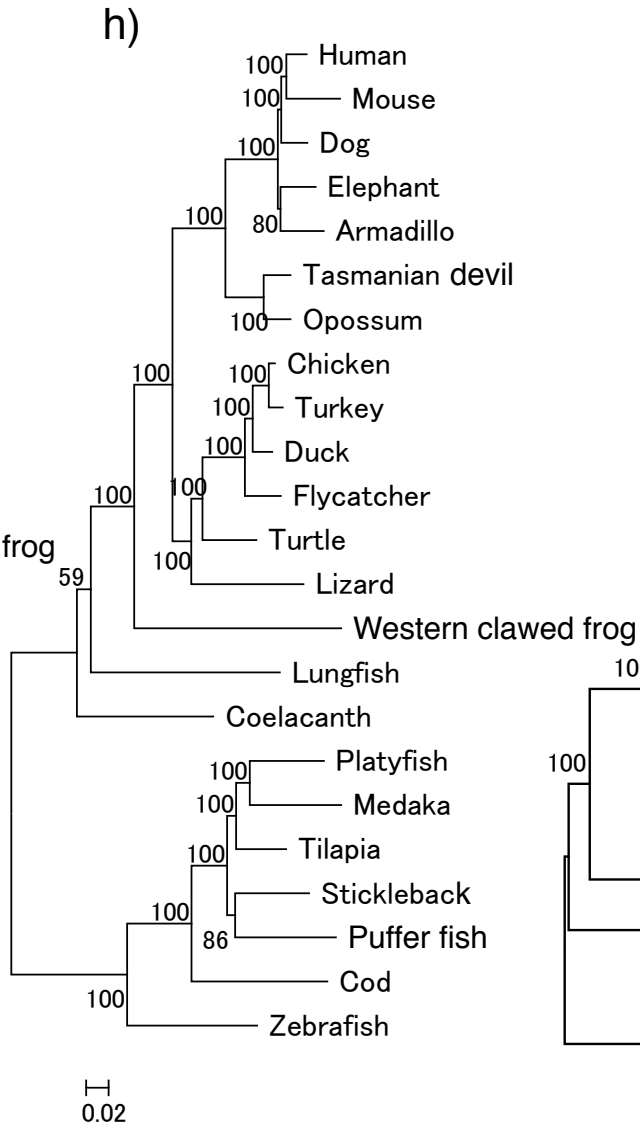
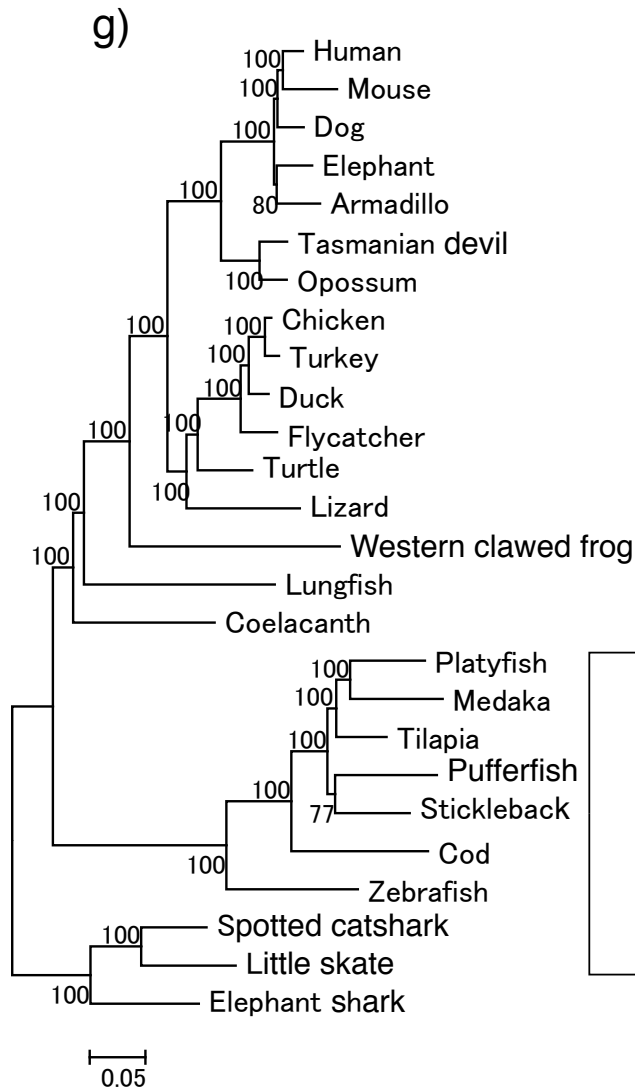
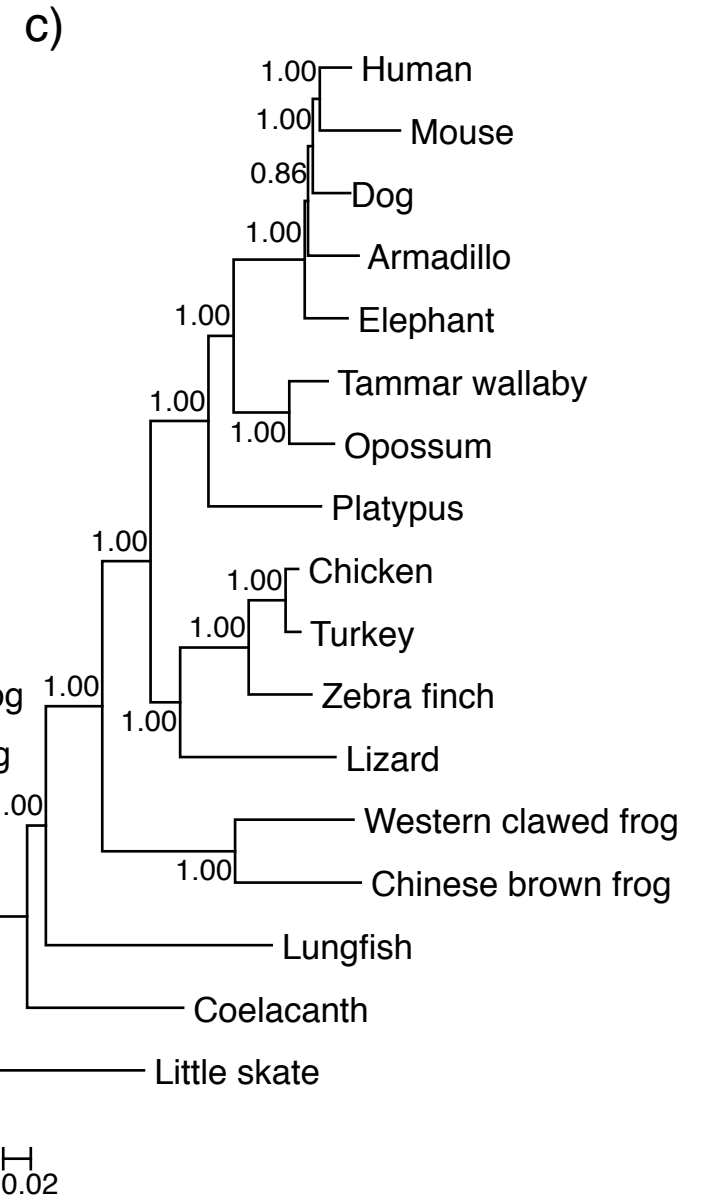
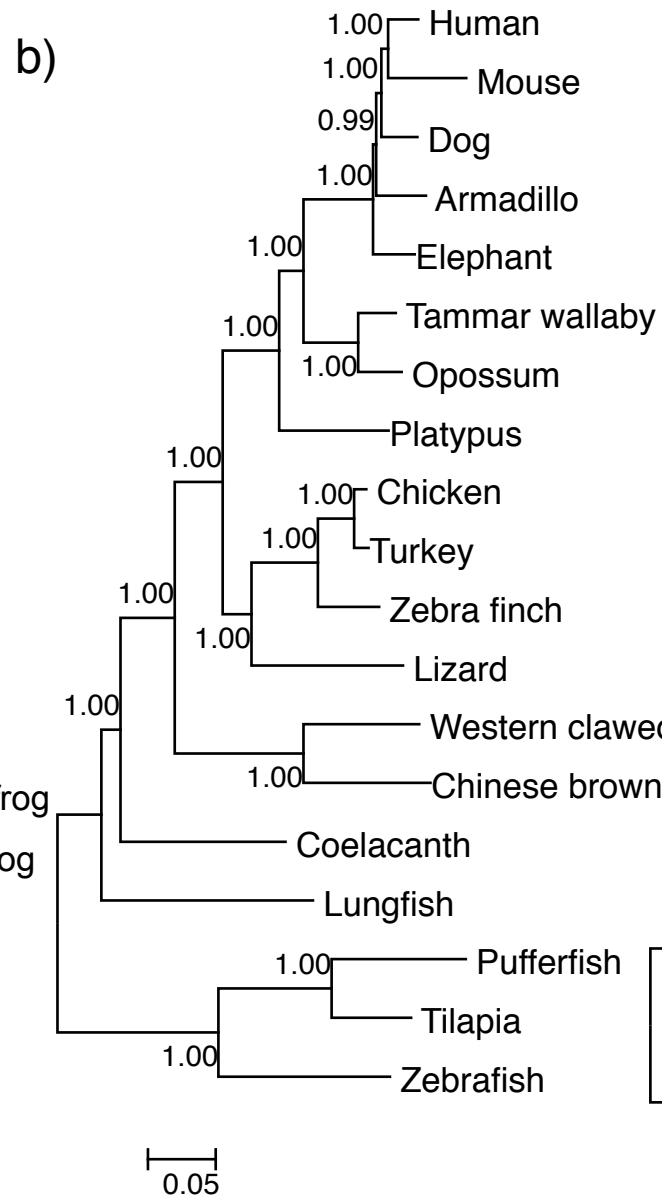
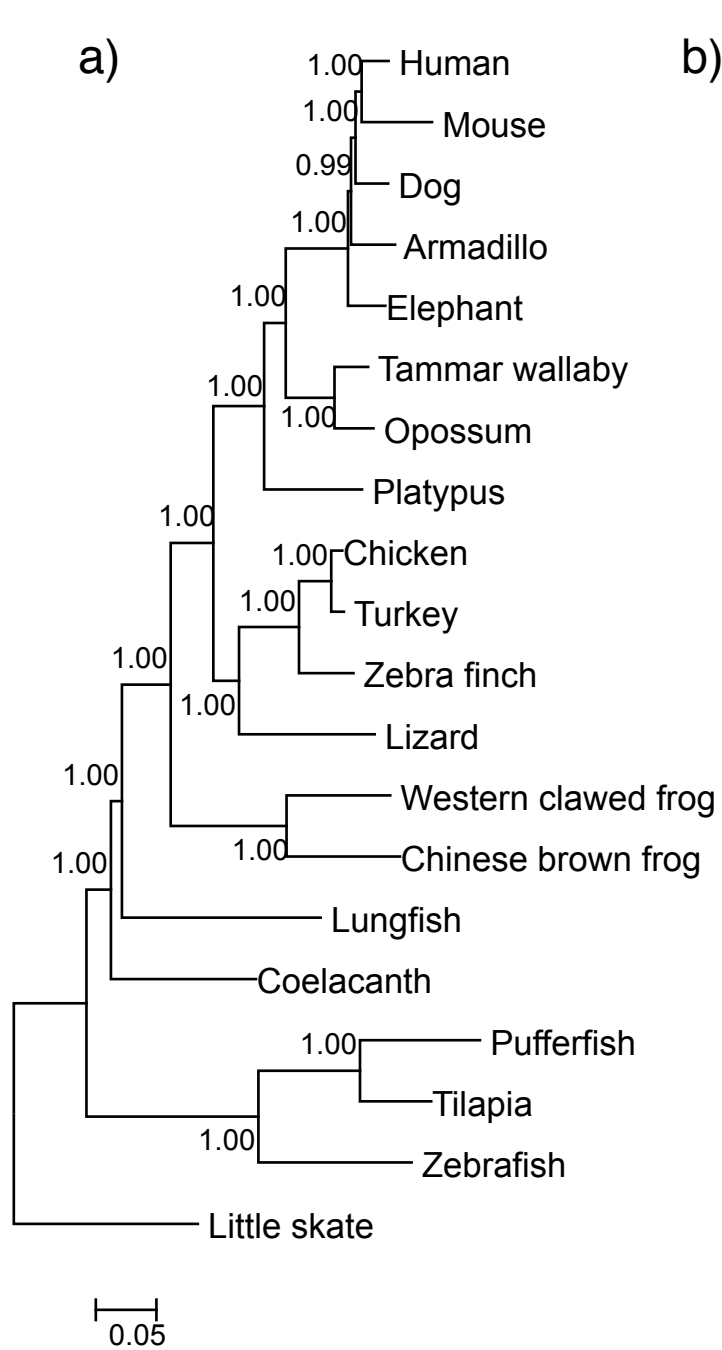
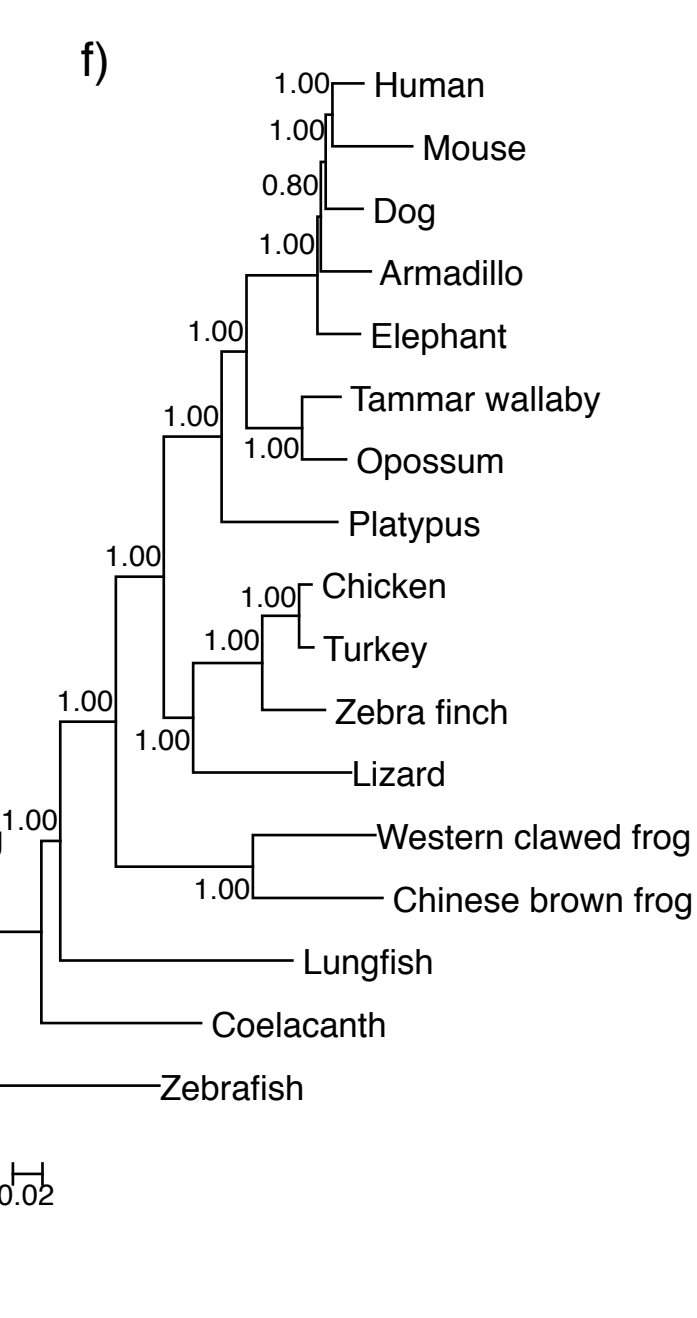
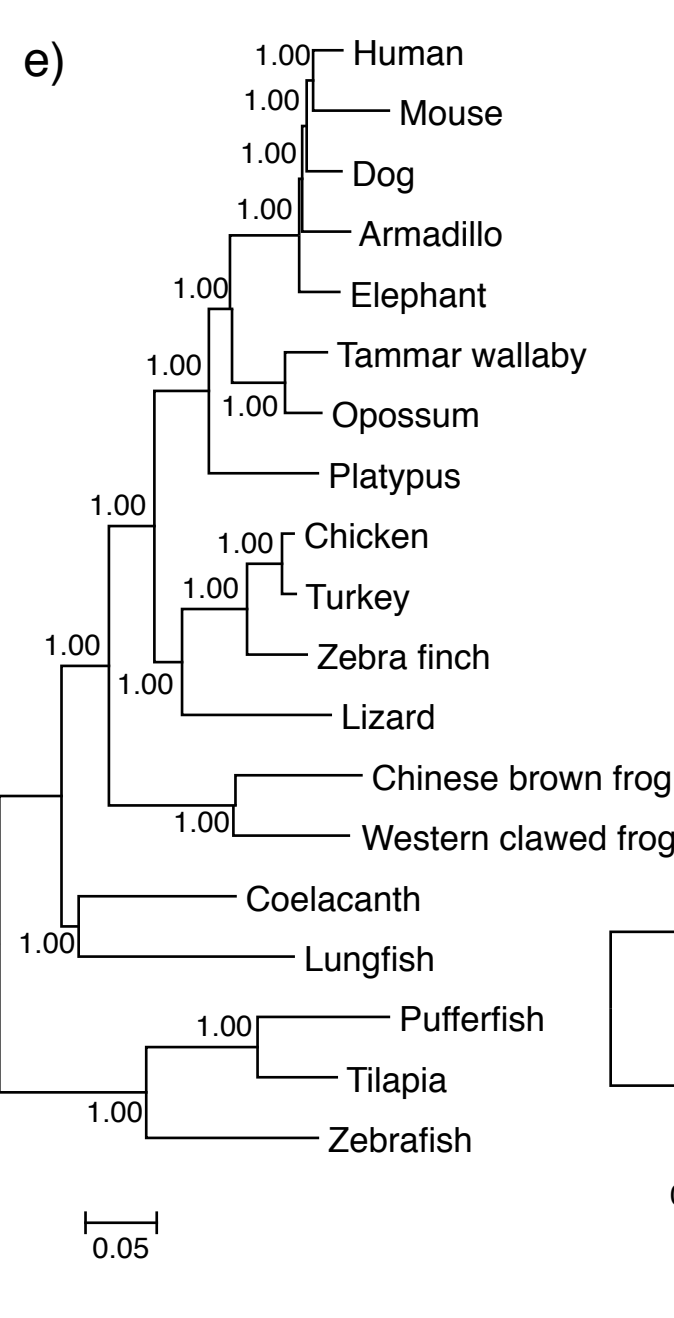
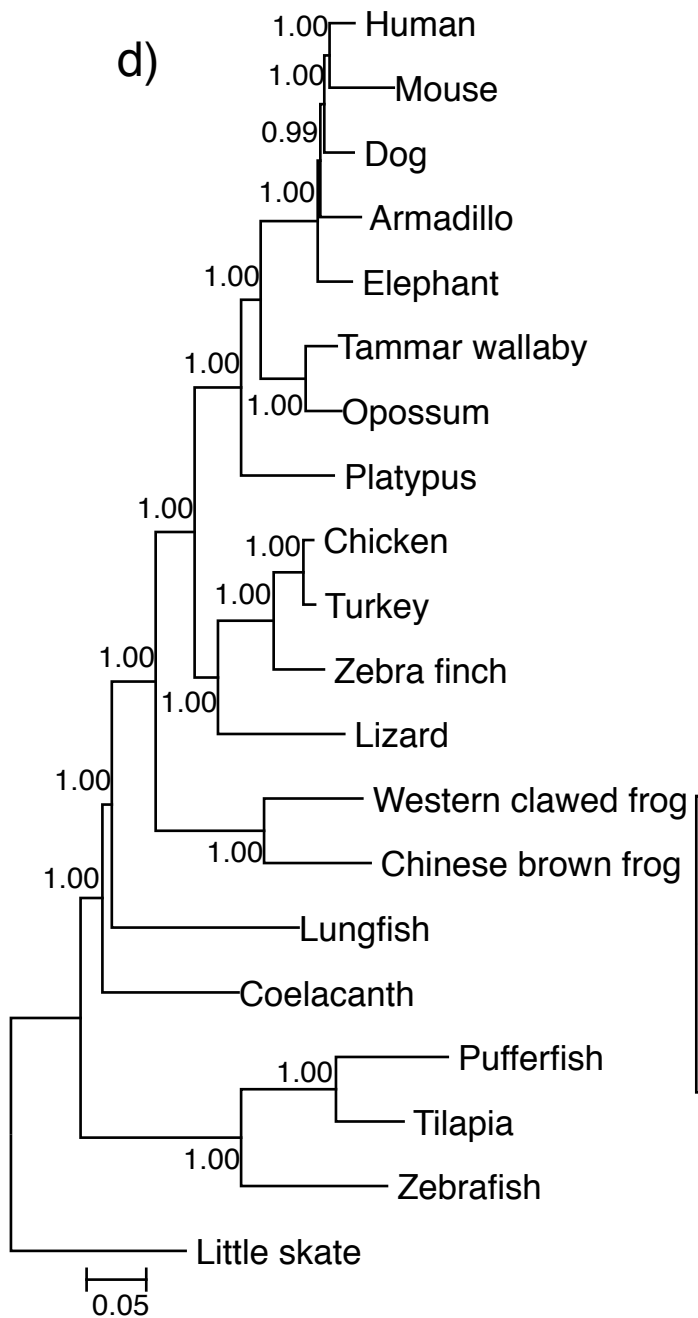
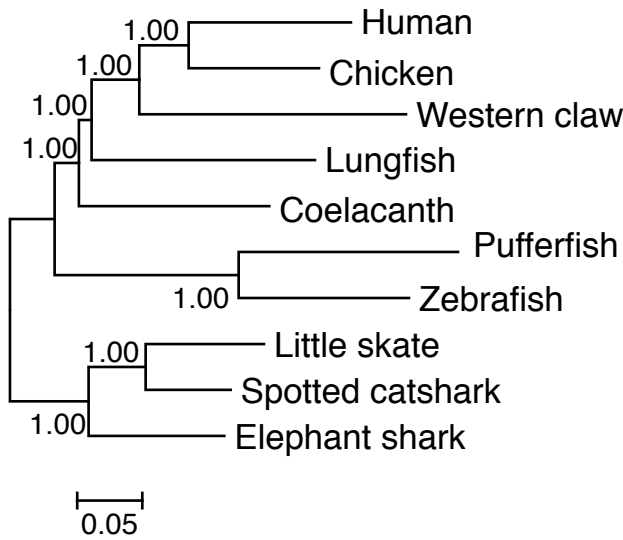


Figure S2. ML trees constructed with GTR+G4. (a)-(c): Dataset I. (d)-(f): Dataset II. (g)-(i): Dataset III. Outgroups used were CF+RF for (a), (d), (g); RF for (b), (e), (h), and CF for (c), (f), (i). RaXML was used for phylogeny construction.

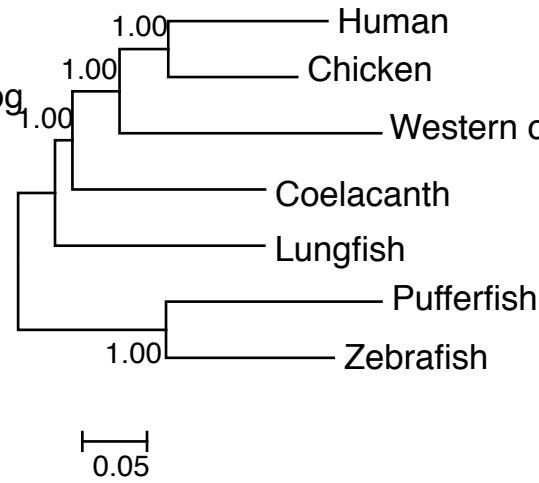




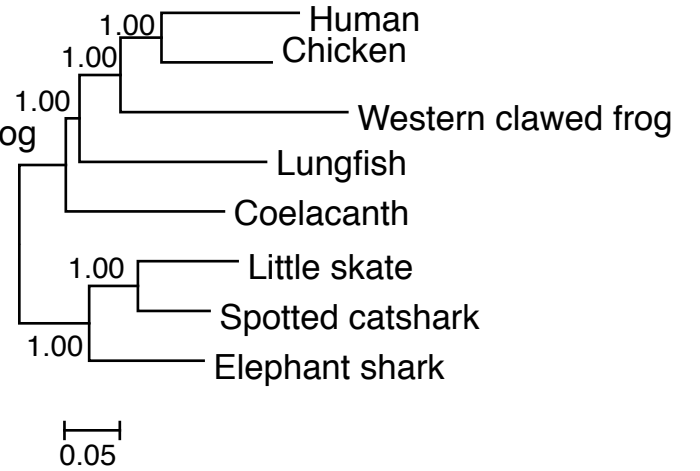
g)



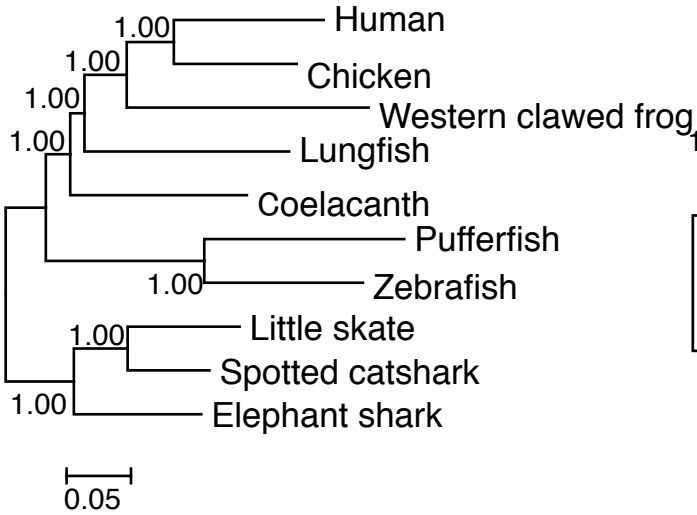
h)



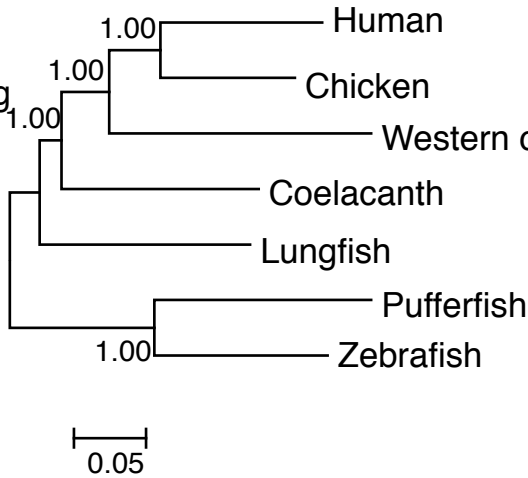
i)



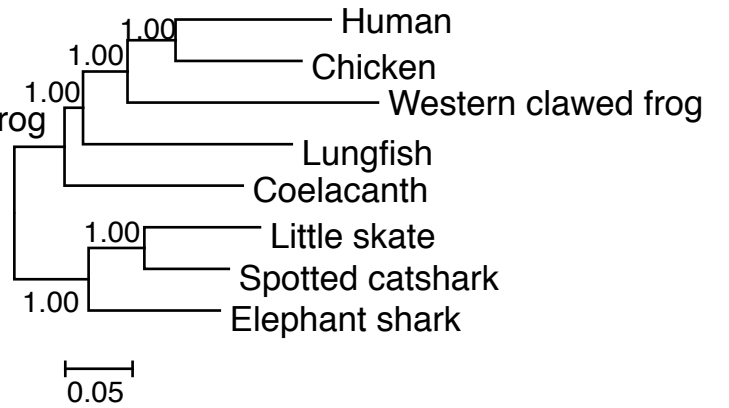
j)



k)

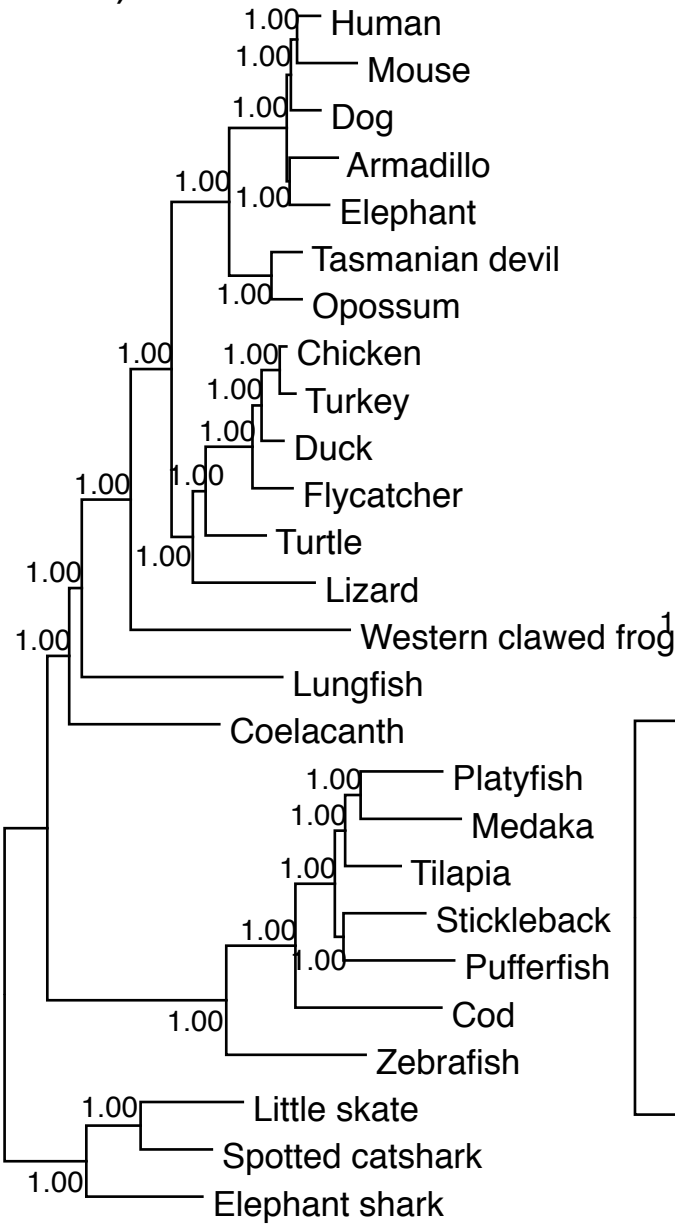


l)



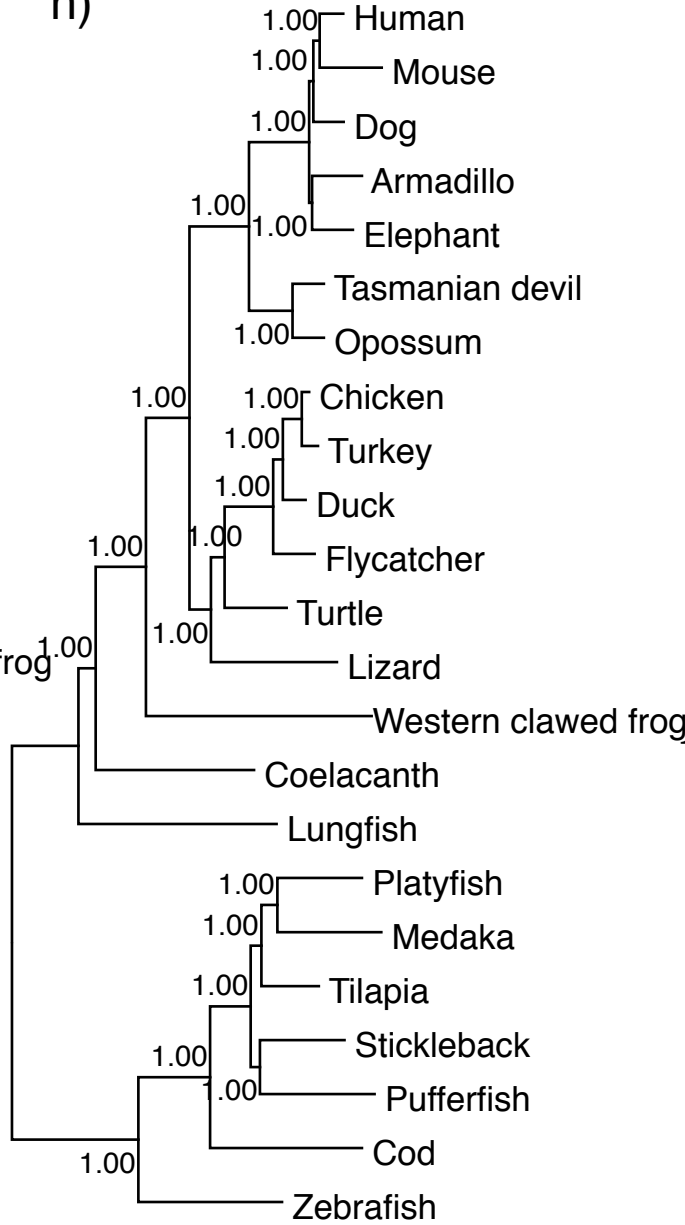


m)



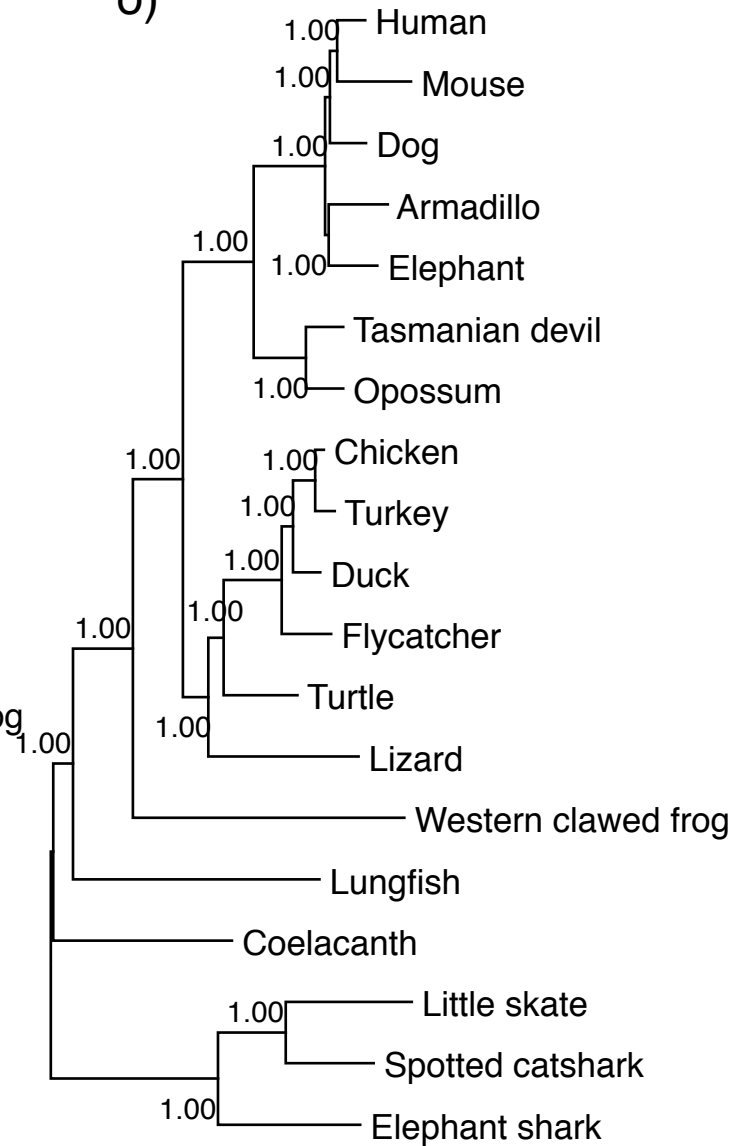
0.05

n)



0.02

o)



0.02

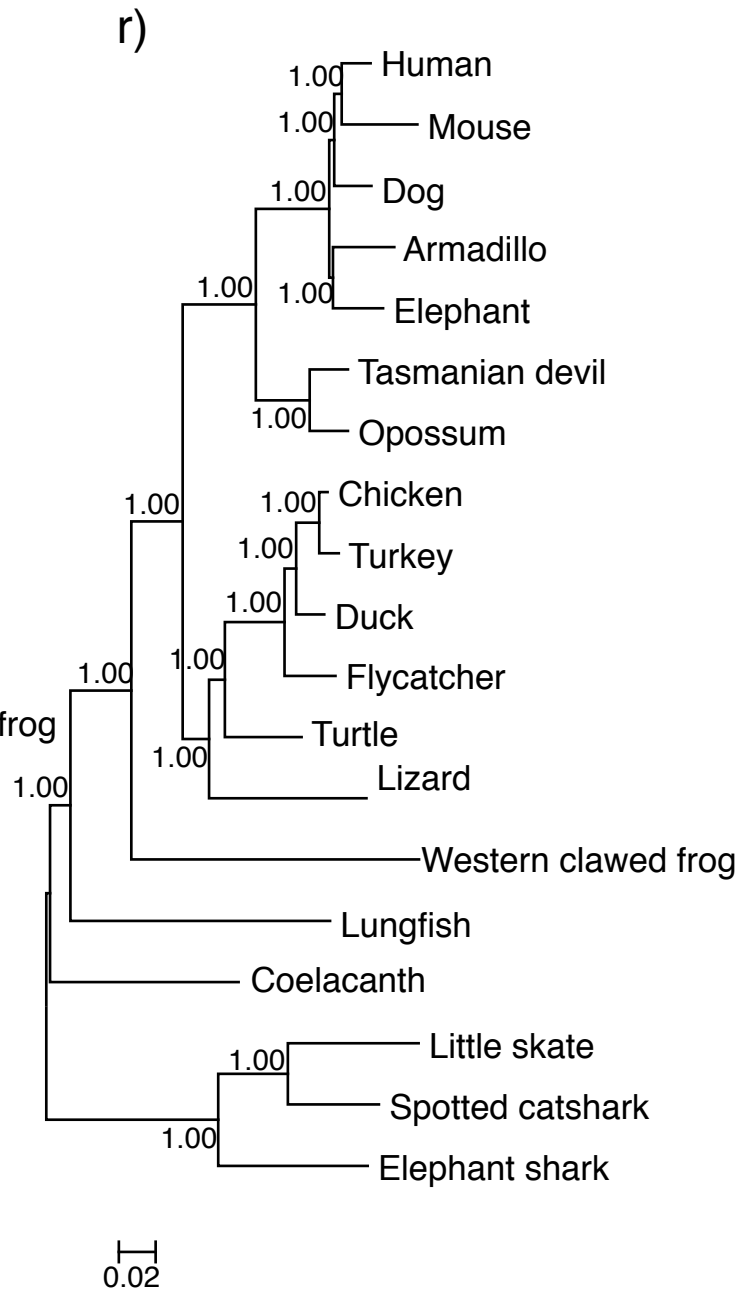
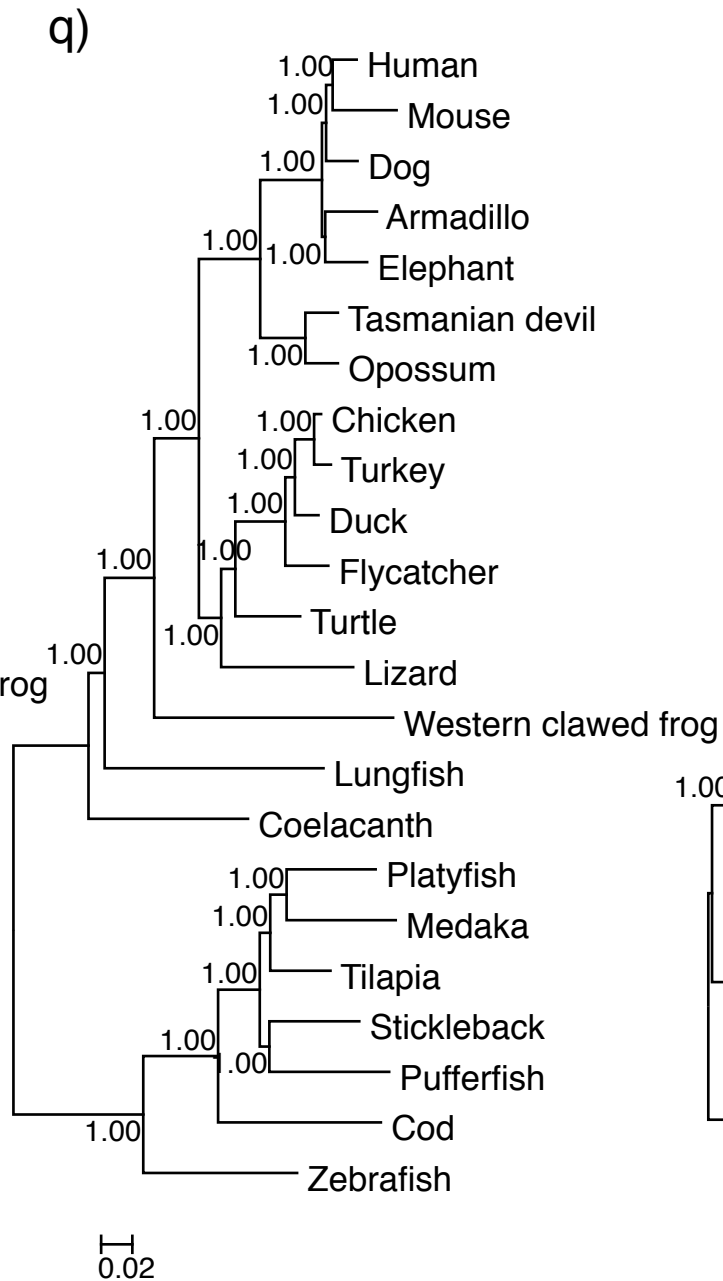
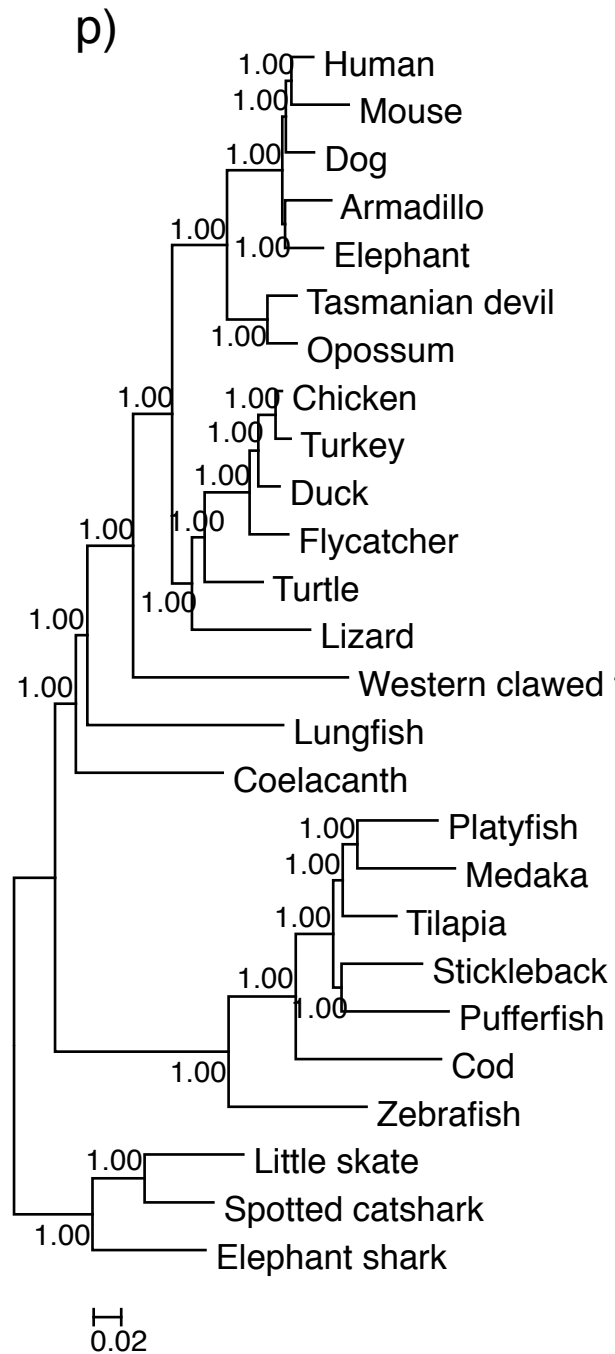
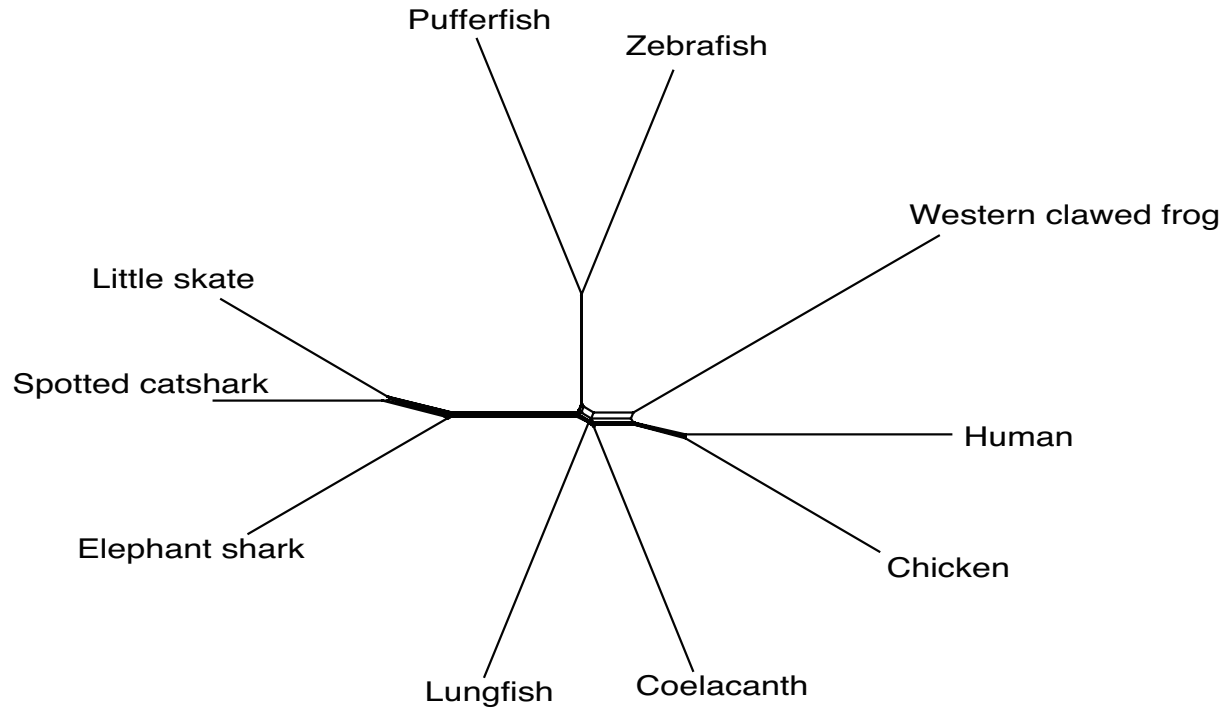


Figure S3. Bayesian trees. (a)-(f): Dataset I. (g)-(l): Dataset II. (m)-(r): Dataset III. The setting of the substitution pattern was JTTFG4 for (a)-(c), (g)-(i), (m)-(o) and GTRG4 for (d)-(f), (j)-(l), (p)-(r). The outgroups were CF+RF for (a), (d), (g), (j), (m), (p); RF for (b), (e), (h), (k), (n), (q) and CF for (c), (f), (i), (l), (o), (r).

a)



b)

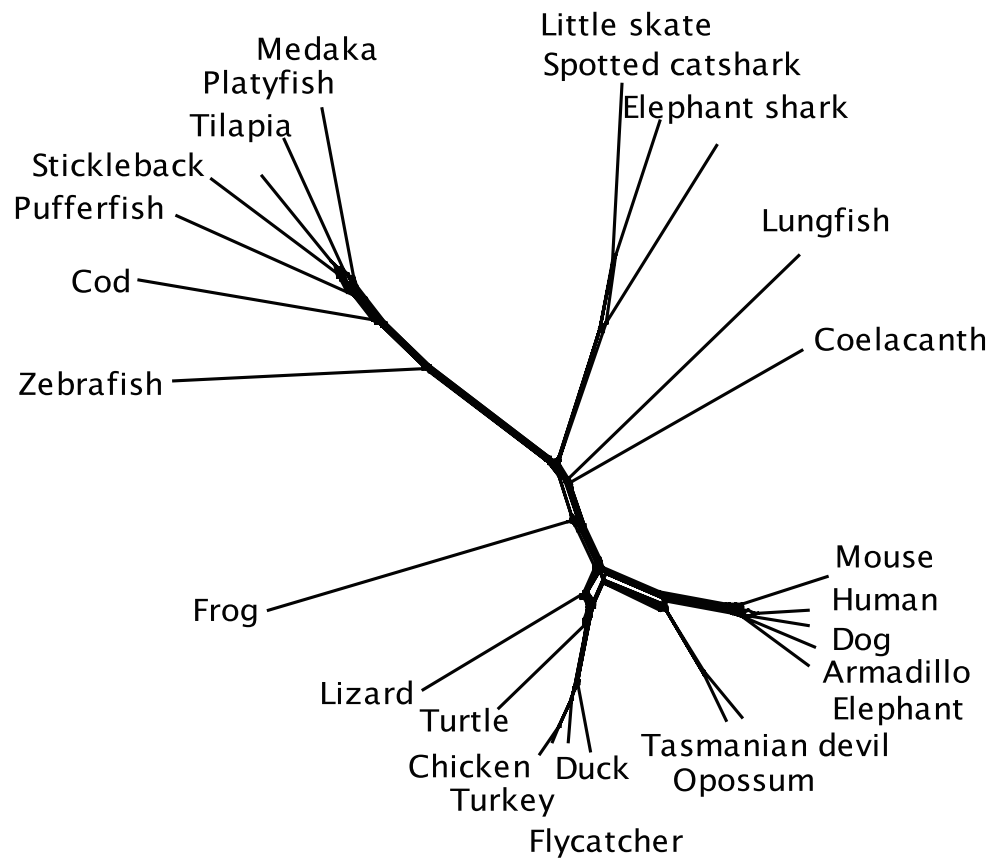
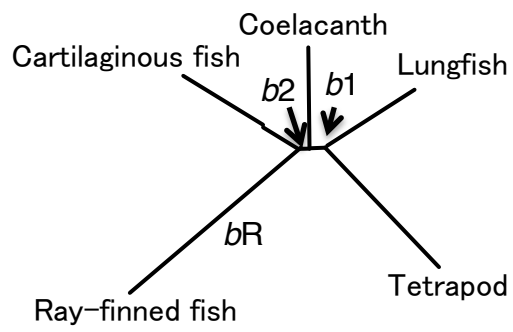
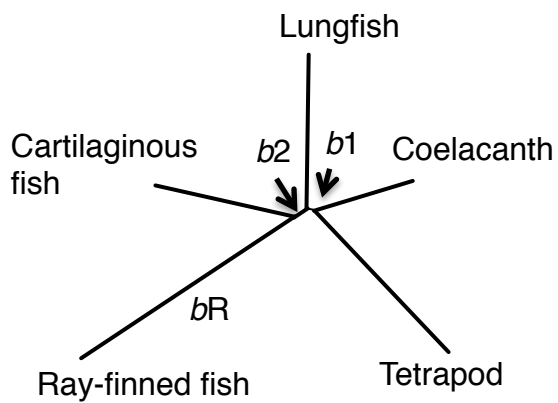


Figure S4. Network trees for P20L datasets. (a) Dataset II. (b) Dataset III.

a)



b)



c)

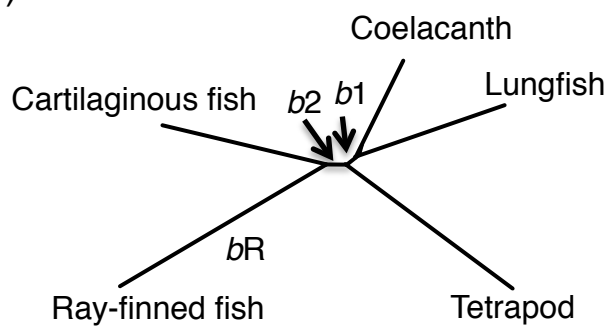


Figure S5. Tree topologies of five taxonomic groups. (a) Tree 1 topology. (b) Tree 2 topology. (c) Tree 3 topology. The branch lengths are proportional to the estimated for dataset I (table 5).