## Actinopterygian species tree hypothesis Erpetoichthys calabaricus Reedfish Lepisosteidae Lepisosteus oculatus Spotted gar Actinopterygii Osteoglossidae (Sallan 2014) Scleropages formosus Asian arowana Osteoglossomorpha (Inoue et al. 2009) Mormyrida Elephantfish Paramormyrops kingsleyae Denticeps clupeoides Denticle herring Neopterygi Clupeiforme Clupeidae Atlantic herring Clupea harengus Zebrafish Danio rerio Otocephala Cypriniformes Cyprinidae Goldfish Carassius auratus (Mayden et al. 2009) Cyprinini (Nakatani et al. 2011) Sinocyclocheilus grahami Golden-line barbel TGD (Wu et al. 2010) CGD -Teleostei Sinocyclocheilus/ Cyprinus Otophysi Cyprinus carpio Common carp (Inoue et al. 2003 (Saitoh et al. 2003) Gymnotiformes Flectric eel Electrophorus electricus Tachysurus fulvidraco Characiphysae Siluriforme Pangasiidae (Nakatani et al. 2011) Pangasianodon hypophthalmus Striped catfish Siluroide Ictaluridae Ictalurus punctatus Channel catfish Siluriformes/ Characiformes Characidae Astyanax mexicanus Characiformes Serrasalmidae Clupeocephala (Inoue et al. 2003) Red-bellied piranha Pygocentrus nattereri Esociformes Northern pike Esox lucius Protacanthopterygii Salmo salar Atlantic salmon (Ishiguro et al. 2003) SaGD Salvelinus alpinus Arctic char Salmoniformes Salvelinus/Oncorhynchus Oncorhynchus mykiss Oncorhynchus mykiss (Campbell et al. 2013) Oncorhynchus Oncorhynchus tshawytscha Chinook salmon (Campbell et al. 2013) tshawytscha/kisutch (Campbell et al. 2013) Oncorhynchus kisutch Coho salmon Gadiformes Gadus morhua Atlantic cod Protacanthopterygii/ Acanthomorphata Labridae Ballan wrasse (Ishiguro et al. 2003) Labrus bergylta Labridae/ Tetraodontiformes Gasterosteidae Gasterosteus aculeatus Three spined stickleback Perciformes (Near et al. 2013) Bovichtidae Cottoperca gobio Channel bull blenny erciformes/ Notothenioidei Notothenia coriiceps Yellowbelly rockcod Acanthomorphata Sciaenidae/ Tetraodontiformes (Near et al. 2013) Larimichthys crocea Large yellow croaker (Miya et al. 2003 Moloide Ocean sunfish (Near et al. 2013) Spotted green pufferfish Tetraodon nigroviridis Tetraodontoidei Takifugu rubripes Torafugu Cynoglossidae Cynoglossus semilaevis Tongue sole Pleuronectiformes Scophthalmidae Scophthalmus maximus Turbot Paralichthyidae Paralichthys olivaceus Pleuronectiformes/ Carangiformes (Campbell et al. 2014) Japanese flounder Percomorphaceae (Near et al. 2013) (Song et al. 2014) Barramundi perch Seriola lalandi dorsalis Yellowtail amberjack (Li et al. 2011) Carangiformes Seriola dumerili Greater amberjack Bicolor damselfish Stegastes partitus Pomacentridae Amphiprion ocellaris Clown anemonefish Amphiprion/Acanthochromis Pomacentridae/ (Cooper and Westneat 2009) Acanthochromis polyacanthus Spiny chromis New World cichlids Pleuronectiformes/ Atherinomorpha (Song et al. 2014) (Mabuchi et al. 2007) Amphilophus citrinellus Midas cichlid Cichlidae Tilapia Oreochromis niloticus Yretail cichlid Neolamprologus brichardi African cichlids Pundamilia nyererei Makobe Island cichlid (Meyer et al. 2015) Haplochromini Mavlandia zebra (Meyer et al. 2015) Zebra mbuna Pomacentridae/ Atherinomorpha (Smith and Carleton 2010) Haplochromis burtoni Burton's mouthbrooder (Mabuchi et al. 2007) Hippocampus comes Tiger tail seahorse Syngnathiformes Syngnathiformes/Gobiiformes Mastacembelus armatus Zig-zag eel (Song et al. 2014) Periophthalmus magnuspinnatus P. magnuspinnatus Great blue-spotted mudskipper Gobiiforme Boleophthalmus pectinirostris Synbranchiformes Monopterus albus Swamp eel Nothobranchiidae Nothobranchius furzeri Syngnathiformes/ Atherinomorpha (Song et al. 2014) Turquoise killifish Aplocheiloidei (Braganca et al. 2018) Austrofundulus limnaeus Rivulid Cyprinodontiformes Cyprinodontidae Cyprinodon variegatus Sheepshead minnow Synbranchiformes/ Atherinomorpha (Song et al. 2014) (Braganca et al. 2018) Fundulidae Fundulus heteroclitus Mummichog Cvprinodontoidei (Braganca et al. 2018) Platvfish Xiphophorus maculatus (Braganca et al. 2018) Poeciliidae Atherinomorpha (Braganca et al. 2018) Poecilia Poecilia formosa Amazon molly

(Mabuchi et al. 2007)

Beloniformes

Poecilia reticulata

Orvzias latipes

Adrianichthyidae

Oryzias melastigma

Guppy

Medaka

Indian medaka