Actinopterygian species tree hypothesis Erpetoichthys calabaricus Reedfish Lepisosteidae Lepisosteus oculatus Spotted gar Actinopterygii Osteoglossidae (Sallan 2014) Scleropages formosus Asian arowana Osteoglossomorpha Mormyridae (Inoue et al. 2009) 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 (Inoue et al. 2003) (Nakatani et al. 2011) Sinocyclocheilus grahami Golden-line barbel (Wu et al. 2010) CGD -Sinocyclocheilus/ Cyprinus Common carp Otophysi Cyprinus carpio (Saitoh et al. 2003) Gymnotiformes Electrophorus electricus Flectric eel Bagridae Tachysurus fulvidraco Yellow catfish Characiphysae Siluriforme Pangasiidae (Nakatani et al. 2011) Pangasianodon hypophthalmus Striped catfish Siluroide Ictaluridae Ictalurus punctatus Channel catfish Clupeocephala (Inoue et al. 2003) Siluriformes/ Characiformes Characidae Astyanax mexicanus Characiformes Serrasalmidae Red 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) Coho salmon Oncorhvnchus kisutch Gadiformes Protacanthopterygiii Acanthomorphata Gadus morhua Atlantic cod Labridae (Ishiguro et al. 2003) Ballan wrasse Labrus bergylta Labridae/ Tetraodontiformes Gasterosteidae Gasterosteus aculeatus Three spined stickleback Perciformes (Near et al. 2013) Nototheniidae Perciformes/ Notothenia coriiceps Yellowbelly rockcod Tetraodontiformes Sciaenidae Larimichthys crocea Croceine croaker (Near et al. 2013) Sciaenidae/ Tetraodontiformes Acanthomorphata (Miya et al. 2003) Tetraodon nigroviridis Spotted green pufferfish (Near et al. 2013) Tetraodontiformes Takifugu rubripes Torafugu Cynoglossidae Cynoglossus semilaevis Half-smooth tongue sole Pleuronectiformes Paralichthyidae Pleuronectiformes/ Carangiformes Paralichthys olivaceus Japanese flounder Percomorphaceae Centropomida (Near et al. 2013) (Song et al. 2014) Centropomidae/ Carangiformes Lates calcarifer Barramundi perch Seriola lalandi dorsalis Yellowtail amberjack (Li et al. 2011) Carangiformes Seriola dumerili Greater amberjack Stegastes partitus Bicolor damselfish Pomacentridae Amphiprion ocellaris Clown anemonefish Amphiprion/Acanthochromis Pomacentridae/ Cichlidae (Cooper and Westneat 2009) Pleuronectiformes Acanthochromis polvacanthus Spiny chromis (Mabuchi et al. 2007) (Song et al. 2014 Oreochromis niloticus Nile tilapia Cichlidae Neolamprologus brichardi Yretail cichlid (Meyer et al. 2015) Pundamilia nyererei Python island Neolamprologus/Haplochromini Haplochromini Maylandia/ Haplochromis (Meyer et al. 2015) Zebra mbuna Maylandia zebra (Mever et al. 2015) Pomacentridae/ Atherinomorpha (Mabuchi et al. 2007) (Smith and Carleton 2010) Haplochromis burtoni Burton's mouthbrooder Syngnathiformes Hippocampus comes Tiger tail seahorse Syngnathiformes/Gobiiformes Sobiiformes (Song et al. 2014) Boleophthalmus pectinirostris Great blue-spotted mudskipper Synbranchiformes Monopterus albus Nothobranchiidae Nothobranchius furzeri Syngnathiformes/ Atherinomorpha (Song et al. 2014) Turquoise killifish (Braganca et al. 2018) Rivulidae Austrofundulus limnaeus Cyprinodontiformes Cyprinodontidae Cyprinodon variegatus Sheepshead minnow Synbranchiformes/ Atherinomorpha (Song et al. 2014) (Braganca et al. 2018) Fundulidae Atlantic killifish (Mummichog) Fundulus heteroclitus Fundulidae Poeciliidae Cyprinodontoidei (Braganca et al. 2018) Xiphophorus maculatus Southern platyfish (Braganca et al. 2018) Poeciliidae Atherinomorpha Amazon molly Poecilia formosa (Braganca et al. 2018) (Mabuchi et al. 2007 ecilia Poecilia reticulata Indian medaka Oryzias melastigma Beloniformes Adrianichthyidae

Oryzias latipes

Medaka