**145 Cypriniform Tree of Life, Pavillion East, Sunday 26 July 2009**

Masaki Miya[1], Tetsuya Sado[1], Kenji Saitoh[2], Michael Doosey[7], Henry Bart, Jr.[7], Ignacio Doadrio[8], Yazdan Keivany[4], Jiwan Shrestha[5], Vachira Lheknim[9], Rafael Zardoya[8], Mutsumi Nishida[6], Richard Mayden[3]

*[1]Natural History Museum and Institute, Chiba 260-8682, Japan, [2]National Research Institute of Fisheries Science, Yokohama 236-8648, Japan, [3]Saint Louis University, MO, United States, [4]Isfahan University of Technology, Isfahan, Iran, Islamic Republic of, [5]Nepal Academy of Science and Technology, Kathmandu, Nepal, [6]Ocean Research Institute, The University of Tokyo, Tokyo, Japan, [7]Tulane University, LA, United States, [8]Museo Nacional de Ciencias Naturales, Madrid, Spain, [9]Prince of Songkhla University, Songkhla, Thailand*

## Cypriniformes Tree of Life: A Mitochondrial Phylogenomic Approach Based on 363 Sequences

Fishes of the order Cypriniformes are almost completely restricted to freshwaters and comprise over 3400 species placed in six families, each with poorly-defined subfamilies and/or tribes. After publication of the mitochondrial phylogenomic study by Saitoh et al. (2006) based on 53 sequences, we newly determined over 300 whole mitogenome sequences for cypriniforms and this study represents the second step towards resolution of the higher-level relationships of the clade based on more extensive taxon sampling from 355 cypriniforms (including phylogenetically enigmatic *Psilorhynchus*, *Ellopostoma* and *Paedocypris*). Unambiguously aligned, concatenated mitogenome sequences from 13 protein coding (11,286 bp), two rRNA (2198 bp) and 22 tRNA (1463 bp) genes were divided into five partitions (1st, 2nd, and 3rd codon positions, rRNA and tRNA), with the entire 3rd codon positions converted into R (purine) and Y (pyrimidine) to take into account only transversional changes. Phylogenetic analyses based on partitioned maximum likelihood method using RAxML 7.04 were conducted and the resultant phylogenies were largely congruent with previous findings in Saitoh et al. (2006), although the addition of 302 new sequences provided a much more detailed picture of cypriniform relationships even at the generic level. As for the most unusual taxa, *Psilorhynchus* is the sister group of the subfamily Cyprininae (sensu lato); *Ellopostoma* is closely related to the subfamily Balitorinae (not Nemacheilinae as previously thought); and *Paedocypris* occupied a position sister to all the remaining members of the family Cyprinidae (not a rasborin as previously demonstrated). Also *Sundadanio* represented a unique lineage, independent of other rasborin taxa.

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Koji Mochida

*Kyoto University, Kyoto, Japan*