

Evaluation of Molecular Markers for Species Phylogeny of Genus *Acropora* (Cnidaria; Scleractinia; Acroporidae)

*Nu-Wei V WEI**, Carden C WALLACE, Ho-I LIN, Jackie WOLSTENHOLME, Chang-Feng DAI, Chaolun A CHEN

R403, Institute of Zoology, Academia Sinica, Nankang, Taipei, Taiwan Taiwan
teresa@gate.sinica.edu.tw

Acropora is the most speciose genus in coral reef with 113 species currently described. Diversified morphology and potential of cross-species hybridization have drawn our attention in defining the species boundary, constructing species-level phylogeny, and inferring mechanism of speciation for this genus. Although endeavours have been taking in developing molecular markers in the last decade, several unique features such as slow evolution of mitochondrial genome and abundant ribosomal pseudogenes of *Acropora* neither provide little resolution for phylogenetic inference, nor equivocal conclusions in contrast to phylogenies based on fossil records and morphological characters. In this study, we evaluated 4 molecular markers, including mitochondrial cytochrome b gene (*Cytb*), mitochondrial intergenic spacer spanning between *Cytb* and ND gene (mtigs), mini-collagen intron 2 (*mci2*), and nuclear histone 2a and 2b gene (*H2ab*), for constructing species phylogeny of genus *Acropora*. All the 4 loci supported the two subgenera, *Isopora* and *Acropora*, as two distinct evolutionary lineages, and relocated *Acropora togianensis* as the fifth species in the subgenus *Isopora*. However, *Cytb*, mtigs, and *mci2* suffering from either low variability or sharing unsorted polymorphisms between the Caribbean and Indo-Pacific species provided no further resolution in resolving phylogeny in subgenus *Acropora*. In contrast, phylogeny constructed based on *h2ab* gene using Bayesian approach supported, in part, to Wallace (1999) that *A. humilis* group and *A. austera* form the basal clades of morphological phylogeny. The utility of nuclear coding genes in resolving species phylogeny of *Acropora* is highlighted.