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PHYLOGENY AND DIVERGENCE DATES OF THE MITOCHONDRIAL GENOME OF FIVE GIBBON SPECIES IN THREE GENERA

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This study presents that the use of the whole mitochondrial genome sequence can resolve the phylogeny and the divergence history of the gibbons (Hylobatidae), which could not be achieved by the partial mitochondrial genome sequences. We newly determined the whole mitochondrial genome sequences of four gibbon species among three genera (*Hylobates agilis*, *H. pileatus*, *Nomascus sp.* and *Symphalangus syndactylus*). Adding a published sequence of *H. lar* to our new data set, we obtained a highly reliable phylogenetic tree of these five gibbon species, which enabled us to estimate their divergence dates. Divergence of the three genera occurred in the late Miocene; *Nomascus* diverged from the others about 8.0 million years ago (MYA) and *Symphalangus* and *Hylobates* diverged each other about 7.0 MYA. Among the *Hylobates* group, divergence may have taken place in the Pliocene, 3.3-3.9 MYA, in the order of *H. pileatus*, *H. lar* and *H. agilis*. These results support the generic rank of *Nomascus*, *Symphalangus* and *Hylobates* in terms of the divergence dates. We propose a new scenario for the speciation of *Hylobates*: *Hylobates* gibbons' common ancestor spread over the Sundaland before climate changes in the Pliocene, which induced the fragmentation of rainforests and triggered the speciation of *Hylobates* gibbons.

Keywords: Hylobatidae, molecular phylogenetics, phylogeography, Southeast Asia