

## **New insights on the evolution of the sweet taste receptor of primates adapted to harsh environments**

### **ABSTRACT**

Taste perception is an essential function that provides valuable dietary and sensory information, which is crucial for the survival of animals. Studies into the evolution of the sweet taste receptor gene (TAS1R2) are scarce, especially for Bornean endemic primates such as *Nasalis larvatus* (proboscis monkey), *Pongo pygmaeus* (Bornean orangutan), and *Hylobates muelleri* (Muller's Bornean gibbon). Primates are the perfect taxa to study as they are diverse dietary feeders, comprising specialist folivores, frugivores, gummivores, herbivores, and omnivores. We constructed phylogenetic trees of the TAS1R2 gene for 20 species of anthropoid primates using four different methods (neighbor-joining, maximum parsimony, maximum-likelihood, and Bayesian) and also established the time divergence of the phylogeny. The phylogeny successfully separated the primates into their taxonomic groups as well as by their dietary preferences. Of note, the reviewed time of divergence estimation for the primate speciation pattern in this study was more recent than the previously published estimates. It is believed that this difference may be due to environmental changes, such as food scarcity and climate change, during the late Miocene epoch, which forced primates to change their dietary preferences. These findings provide a starting point for further investigation.

**Keyword:** Primate; Phylogenetic; Sweet taste receptor gene; Diet preference; Divergence date; Late Miocene