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MHC genes in Malayan tapir (*Tapirus indicus*): The implication in ex situ conservation

Statement of the Problem: Malayan tapir (*Tapirus indicus*) comes from family Tapiridae and presently facing high risk of extinction due to multiple factors including loss of habitat and human disturbance. Currently, Malayan tapir is listed as Endangered on the IUCN Red List, which calls for more serious conservation efforts for this mammal. Mating with relatives in captivity becomes common when the number of individuals decreases. As this happens, inbreeding depression and the reduction of population fitness will cause major threats to the viability of successive generation. Therefore, successful mating, fertilization and genetic diversity are vital to ensure the viability of the population. Major Histocompatibility Complex (MHC) is a set of highly polymorphic genes in vertebrates with hundreds of different alleles at some loci. Some of the functions related to MHC region include immune response, olfaction and reproduction. One of the mechanism MHC genes polymorphism is maintained is by disassortative mating selection by kin recognition that contributes to inbreeding avoidance. The objective of this study is to characterize the MHC genes of *Tapirus indicus*.

Methodology & Theoretical Orientation: gDNA was isolated from whole blood samples from seven individuals. Next, primers targeting MHC Class II loci were designed from closely related species on consensus region and amplified using PCR. Phylogenetic analysis of each MHC loci was performed on consensus alignment against sequences from other closely related species.

Findings: In exon 2, we found at least two alleles that encode for DR α and DQ α domains, while three alleles are found encoding DR β and DQ β domains. Evidence of selection was observed at DRB loci and exhibit possibility of trans-species polymorphism when aligned with closely related species.

Conclusion & Significance: This preliminary study in Malayan tapir will serve as a basis for further studies of MHC variability, mate choice and pathogen resistance which aims to increase the population size of Malayan tapir in Malaysia through ex situ conservation by improving its survival rate and reproduction success in long term.

Biography

Geetha Annavi has her expertise in population genetics, molecular and behavioral ecology and conservation biology, particularly of wild animals (i.e., mammals) and terrestrial ecosystems. Currently, her research is focused on the endangered Malayan tapir (*Tapirus indicus*) both in captive and wild in Peninsular Malaysia. She is investigating the genetic, ecology and behavior aspects of this animal to protect them from extinct further in the wild. She is also interested to develop an effective *ex situ* captive breeding model to maximize the number of healthy progeny that are produced in captivity and a successful reintroduction program of these captive born tapirs into wild.

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