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Genetic variation associated with adaptive traits in the African forest (*Loxodonta cyclotis*) and savanna elephant (*L. africana*)

Diana Ortiz & Lori Eggert

There are two species of African elephant, the forest (*Loxodonta cyclotis*) and savanna elephant (*L. africana*). The savanna elephant is believed to have diverged from the forest species approximately 2.6 million years ago. The different ecologies of the forest and savanna habitat have produced unique adaptations in both species. Variation in behavior and morphological traits are observed between these species, and they likely possess variation in genes underlying adaptive traits. In particular, genetic variation may have helped the savanna elephant adapt to the direct sunlight of the savanna versus the shade of the canopy, and from a browsing diet in the forest that is poor in iron to a grazing diet that is rich in iron. This type of genetic variation is of great importance since patterns of adaptive variation may help predict future effects of adaptive selection in these species. Future conservation efforts may be tailored to fit the species adaptive needs, promoting their long-term survival. We are comparing sequences of genes believed to underlie adaptive mechanisms in both species to determine whether there is variation. DNA was extracted from 15 savanna elephant blood samples and 15 forest elephant fecal samples. We screened three primers used in other species and chose the IRBP and HFE1 loci for amplification and sequencing in the sampled populations. Sequences for both species were aligned and compared. We found variation at the HFE1 locus between the two species. We are currently establishing homology between the elephant sequence and rhinoceros and horse HFE. Once homology is established, we will investigate the nature of the amino acid changes to determine whether they are likely to affect the function of the protein.