Proceedings of the Plant and Animal Genome Conference XXV (San Diego)
Abstract W424

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W424
The Divergent Evolutionary Histories of the Black and White Rhinoceros

Date: Tuesday, January 17, 2017
Time: 10:30 AM
Room: Royal Palm Salon 5-6

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Despite being among the most critically endangered mammals in the world, the evolutionary histories of the black (Diceros bicornis) and white (Ceratotherium simum) rhinoceros are largely unknown. This is all the more surprising when one considers that their conservation management is heavily dependent on sound knowledge of species-wide phylogeography. To complicate matters even further, both species have undergone drastic population crashes at various times during the 20th Century, which have resulted in their extermination throughout most of their native ranges, leaving a handful of geographically isolated relict populations with unknown genetic affinities. To fill these present-day gaps in the species distributions and to measure the effect of population reductions on extant genetic diversity, we undertook a long term sampling strategy that focussed on 19th and 20th century museum collections. These allowed the first reconstruction of range-wide genealogies using the same molecular loci for cross species comparison. We found that geographic barriers such as rivers and tectonic rifts have hindered historic gene flow in both species. Apart from this similarity, their evolutionary histories appear markedly different. Historically, genetic variation in black rhinoceros was high, but severely reduced in extant populations. In contrast, the two white rhinoceros populations seem to have always featured very low genetic variation, implying that extant populations are still recovering from a recent prehistoric demographic collapse. Thus, unlike the browsing black rhinoceros, which has remained relatively unaffected throughout Plio-Pleistocene paleoclimatic fluctuations, the grazing white rhinoceros underwent several population crashes during interglacial grassland contraction, and its two remaining populations appear not to have ever come into secondary contact.