OR THE MID-MIOCENE CLIMATIC OPTIMUM
OF PATAGONIAN ARIDIFICATION AND ECOLOGICAL SHIFTS AT THEONSET
Fellowship and Midwestern University ORSP Intramural Funding.
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Grant Information

Diplobunops
Our study is the first step in evaluating this genus and our preliminary data suggest that
measurements were taken using Mitutoyo digital calipers and an osteometric board. To

a valid genus, while others think the opposite. Based on our study of closely-related taxa
is an intriguing taxon that is restricted to the late Uintan interval of the middle Eocene

of Theodor and Foss (2005) but unlike the published tree of these authors, the addition
valid genus. Our study is the first to describe in detail the skeleton of

and thorough investigation of this new specimen, we hypothesize that

and many basal taxa arose that formed many of the taxonomic groups of

toed ungulates, such as sheep, cows, deer). During this period, artiodactyls began to

latitude) record this expansion. The SCF. has produced a diverse assemblage of vertebrate

stratigraphic section. Large herbivores (plants consumed) and the atmosphere, MAP decreased ~50% over the interval from ~1200

Modelled δ 18O values increased ~2‰ over the interval. Based on δ13C of tooth enamel

 MORPHOMETRIC AND BIOMECHANICAL ANALYSES SUGGEST STRUCTURE-FUNCTION COVARIATION WITH NON-FEEDING STRUCTURAL FEATURES OF THE HIP JOINT IN DIPTEROCARP SAVANNAHS

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model databases in allowing use of structural morphing to test hypotheses about complex structure-function relationships in the skulls of carnivorans (dogs, cats, seals, and relatives) through covariance with masticatory performance. Using a recently built Computed Tomography database of carnivoran skulls at the American Museum of Natural History, we estimated measures of masticatory performance related to ecological variables that covary with cranial shape in the mammalian order Carnivora, integrating geometric morphometrics and finite element analyses. Even after accounting for phylogenetic autocorrelation, cranial shapes are significantly correlated to both feeding and non-feeding ecological variables, and covariation with both stable types generate significant masticatory performance gradients. This suggests that mechanisms of obligate shape covariance with non-feeding variables can produce performance changes resembling those arising from feeding adaptations in Carnivora. These findings are of direct relevance to efforts underway to study the effect of complex structure-function linkages in paleoecological reconstructions of fossil carnivorans in our dataset, we have highlighted the power of digital 3D model databases in allowing use of structural morphing to test hypotheses about complex structure-function linkages.

Grant Information

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Poster Session II (Thursday, October 18, 2018, 4:15 – 6:15 PM)

ESTIMATION OF BODY MASS FROM THE CALCANEUM OF LAND MAMMALS

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in mammalian skeletons, calcaneum and astragali are compact and easily handled bones, and their fossil remains have relatively higher chances of being discovered as undamaged specimens. Fossil calcaneum and astragali have been well studied as indicators of the