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*Morphological diversity of mammalian
and dinosaurian predators*

Mentor: David Fox, Geology

For approximately 150 million years, dinosaurs were the dominant terrestrial vertebrate fauna on Earth. Following their demise, the mammals diversified and have remained the dominant terrestrial fauna to this day. Both groups achieved success by radiating into vacant ecological space following a mass extinction, but the pattern and process of their respective radiations remain unclear. The goal of my research was to shed light on these important evolutionary events by assessing the morphological diversity of carnivores and theropods. These clades were selected for ease of comparison as their members are generally of the same trophic level. To quantify morphological diversity, a sliding semi-landmark analysis, followed by a principal components analysis, was performed on lateral skull and lower jaw outlines of various carnivores and theropods. The skull and lower jaw were used as they represent a rough proxy for ecological niche. Higher morphological diversity in one group could indicate greater niche diversity, and preliminary results suggest that carnivores possess greater lower jaw diversity, whereas dinosaurs had a greater diversity of skull shape.



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