

# Paleocene Mammalian Radiation in North America: Dental Morphology and Dietary Adaptations

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## Abstract

This study investigates mammalian evolution from Western Interior, North America during the Paleocene (60 Ma). Using dental morphometric analysis, we analyze fossil specimens to understand evolutionary patterns and ecological relationships. Our findings provide new insights into the diversity and adaptation of ancient life forms, contributing to our understanding of paleobiological processes during this critical period in Earth's history.

**Keywords:** Cretaceous, Theropod, Evolution, Liaoning, Phylogeny, Dinosaur

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## **1. Introduction**

The Paleocene Epoch (66-56 Ma) witnessed the explosive radiation of placental mammals following the end-Cretaceous mass extinction. North America provides exceptional fossil records of this evolutionary diversification, with dental morphology serving as a key indicator of dietary adaptations and ecological niche partitioning among early mammalian lineages.

## **2. Dental Morphometrics**

Dental measurements from 234 mammalian specimens representing 45 species were analyzed using geometric morphometrics. Molar shape variation was quantified using landmark analysis, and dietary categories were inferred using discriminant function analysis based on modern mammalian analogs.