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THE ORIGIN AND EVOLUTION OF THE FIRST PRIMATE RADIATION: NEW EVIDENCE FROM THE FOSSIL RECORD

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Results from cladistic analysis utilizing cranial, postcranial, and dental evidence that includes new data from recently discovered, late Paleocene-early Eocene plesiadapiform skeletons, unambiguously allies plesiadapiforms with Euprimates to the exclusion of other euarchontan groups, making plesiadapiforms the taxa critical to testing hypotheses about Primate Origins Adaptive scenarios proposed to explain the origin of Euprimates include visual predation on insects, grasp-leaping locomotion, or exploitation of angiosperm products on terminal branches. The earliest known euprimate skulls and skeletons differ from those of plesiadapoids in having forward facing orbits with postorbital bars and adaptations for arboreal leaping. However, anatomical features associated with specialized manual and pedal grasping (including a nail on at least the hallux), as well as a petrosal bulla, are shared by the common ancestor of plesiadapoids and Euprimates, even accounting for the morphological diversity of plesiadapiforms. The existing fossil record is not consistent with either the grasp-leaping or visual predation models of primate origins in showing that specialized grasping is adaptively dissociated from leaping and forward facing orbits, respectively. We infer that the common ancestor of plesiadapoids and Euprimates was an arboreal grasper adapted for terminal branch feeding on fruits, flowers, and nectars.

Keywords: plesiadapiforms, paleoprimatology, Paleocene, primate origins