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Phylogeny and evolutionary patterns of South American octodontoid rodents

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Octodontoidea is the most diverse clade of hystricognath rodents, and is richly recorded in South America since at least the Oligocene. A parsimony-based morphological phylogenetic analysis of a wide range of extant and extinct octodontoids recovered three major clades, here recognised as Echimyidae, Octodontidae, and Abrocomidae. Taxa previously assigned to Echimyidae or Octodontoidea incertae sedis are here interpreted for the first time as early representatives of Ctenomyinae (Octodontidae), Octodontinae or Abrocomidae. Based on our results, we estimate the divergence of octodontoid families and subfamilies to have occurred during the Late Oligocene, which is consistent with molecular estimates, but older than previous inferences based on the fossil record. Contrary to previous suggestions, we show the first appearances of modern members of Abrocomidae, Octodontinae and Ctenomyinae to be distinctly decoupled from the origin of these clades, with different stages in the evolutionary history of octodontoids seemingly following distinct phases of palaeoenvironmental change. Depending on the phylogenetic pattern, fossils from the stage of differentiation bear evolutionary information that may not be provided by crown groups, thus highlighting the unique and important contribution of fossils to our understanding of macroevolutionary patterns.

Key words: Mammalia, Rodentia, Hystricognathi, Octodontoidea, phylogeny, evolution, divergence dates, Cenozoic, South America.

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