

New basal synapsid supports Laurasian origin for therapsids

Jun Liu, Bruce Rubidge, and Jinling Li

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The distant evolutionary ancestry of mammals is documented by a rich therapsid fossil record. While sphenacodontid synapsids are considered the sister-group of therapsids, the place of origin of therapsids is an enigma, largely because of a long standing morphological and temporal gap (Olson's Gap) in their fossil record. We describe a new large predatory synapsid, *Raranimus dashankouensis* gen. et sp. nov., from the Middle Permian of Dashankou in China which has a unique combination of therapsid and sphenacodontid features. This specimen is of great significance as it is a basal therapsid which is the sister taxon to all other therapsids. The fact that it was found in association with Early Permian tetrapods (*Anakamacops* and *Belebey*) suggests that it is the oldest therapsid and provides the first evidence of therapsid-bearing rocks which cover Olson's Gap. It further supports that therapsids may have had a Laurasian rather than Gondwanan origin.

Key words: Therapsida, Dashankou, Permian, Laurasia, China.

Jun Liu [liujun@ivpp.ac.cn] and Jinling Li [li.jinling@ivpp.ac.cn], Key Laboratory of Evolutionary Systematics of Vertebrates, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing 100044, China Bruce Rubidge [bruce.rubidge@wits.ac.za], Bernard Price Institute for Palaeontological Research, University of the Witwatersrand, Private Bag 3, WITS, Johannesburg, 2050, South Africa

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