

A NEW EARLY EOCENE ARCTOSTYLOPID (ARCTOSTYLOPIDA, MAMMALIA) FROM THE ERLIAN BASIN, NEI MONGOL (INNER MONGOLIA), CHINA

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Fossil mammals from the Bumbanian Asian Land Mammal Age are critical for understanding mammalian faunal turnover across the Paleocene–Eocene (P–E) transition in Asia. The Bumbanian fauna is characterized by fossils from the Bumban Member of the Naran Bulak Formation in Mongolia (Russell and Zhai, 1987). Bumbanian faunas were undocumented in Inner Mongolia, China until the recent discovery of a typical Bumbanian gliriform mammal, *Gomphos elkema*, in the Huheboerhe area of the Erlian Basin (Meng et al., 2004). Here, we report another mammalian species from the same bed, representing an arctostylopid in the fauna.

Arctostylopidae, an extinct mammalian group, have been reported from the Paleocene and early Eocene of Asia and North America (McKenna and Bell, 1997; Zack, 2004). Among 15 named species of Asian arctostylopids, most have been recovered in association with typical Paleocene mammal assemblages of Gashatan or Nongshanian age (Matthew and Granger, 1925; Matthew, Granger, and Simpson, 1929; Tang and Yan, 1976; Chow and Qi, 1978; Zheng, 1979; Zheng and Huang, 1986; Nesson, 1987; Huang and Chen, 1997; Huang and Zheng, 1997; Meng, Zhai, and Wyss, 1998; Huang, 2003; Huang and Zheng, 2003; Kondrashov and Lucas, 2004). Only a few arctostylopids have been reported previously from early Eocene rocks in China (Zhai, 1978; Huang, Zheng, and Ding, 2001; Tong and Wang, 2006), none of which has been unequivocally assigned to the Bumbanian age. Dashzeveg (1982:277) mentioned the occurrence of *Arctostylops* in the Bumban Member of the Naran Bulak Formation of Mongolia, but this record has never been confirmed. The arctostylopid reported here therefore provides the first solid evidence for the occurrence of this group in Asian Bumbanian faunas.

The ordinal position of Arctostylopidae remains in dispute. When he described *Arctostylops steini* from the North American Paleocene, Matthew (1915) referred it to Entelonychia, a primitive group of notoungulates. Cifelli, Schaff, and McKenna (1989) reviewed the known arctostylopid taxa and proposed a new order, Arctostylopida, for the family. Discovery of a semi-articulated partial skeleton of *Arctostylops* from the North American Clarkforkian led to reconsideration of the relationship between arctostylopids and South American notoungulates (Bloch, 1999). Kondrashov and Lucas (2004) reasserted the close relationship between arctostylopids and true notoungulates, but this proposal was disputed by Missiaen et al. (2006). Because the phylogenetic position of Arctostylopidae in relation to Notoun-

gulata and other mammalian orders has not yet been established, and because our new specimens do not provide further evidence to clarify the issue, we provisionally leave the Arctostylopidae in its own order Arctostylopida, as proposed by Cifelli, Schaff, and McKenna (1989).

In describing the new material of arctostylopids, we use the cusp nomenclature for arctostylopid molars proposed by Cifelli, Schaff, and McKenna (1989) and modified by Kondrashov and Lucas (2004), with two exceptions. Cifelli, Schaff, and McKenna (1989:fig. 1) termed a crest, extending from the pseudohypocone to the metaconule, as the postprotocrista. Based on its relationship to the pseudohypocone, a more appropriate name for this crest would be the postpseudohypocrista. Kondrashov and Lucas (2004) use the term parastyloid to replace Cifelli et al.'s paracristid for the anteroexternally extended cristid. Because no distinct cuspid exists at the end of this cristid, it is more informative to call it the anterobuccal cristid.

SYSTEMATIC PALEONTOLOGY

Order ARCTOSTYLOPIDA Cifelli, Schaff, and McKenna, 1989

Family ARCTOSTYLOPIDAE Schlosser, 1923
Genus ANATOLOSTYLOPS Zhai, 1978

Type Species—*Anatolostylops dubius* Zhai, 1978

Included Species—*Anatolostylops dubius* Zhai, 1978, and *A. zhaii* sp. nov.

Emended Diagnosis—Differs from all other known arctostylopid genera in having the following combination of characters: Relatively large arctostylopid; molars high crowned; ectoloph straight and moderately elongate, crests of protocone and pseudohypocone connecting and forming a relatively deep and enclosed fossate, no ectocingulum; entocristid contacting ectolophid and oriented nearly transversely; ectolophid joining the trigonid at metaconid, ectoflexid deep and relatively wide.

Distribution—Early Eocene, Xinjiang and Inner Mongolia, China.

ANATOLOSTYLOPS ZHAI sp. nov.
(Figs. 1–5)

Holotype—Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) specimen V 14657, a right maxilla fragment with M2, lingual halves of P4 and M1, and roots of M3 (Fig. 1).

Hypodigm—IVPP V 14633.1, a right maxilla fragment with lingual halves of P4–M3; IVPP V 14633.2, a right maxilla frag-

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