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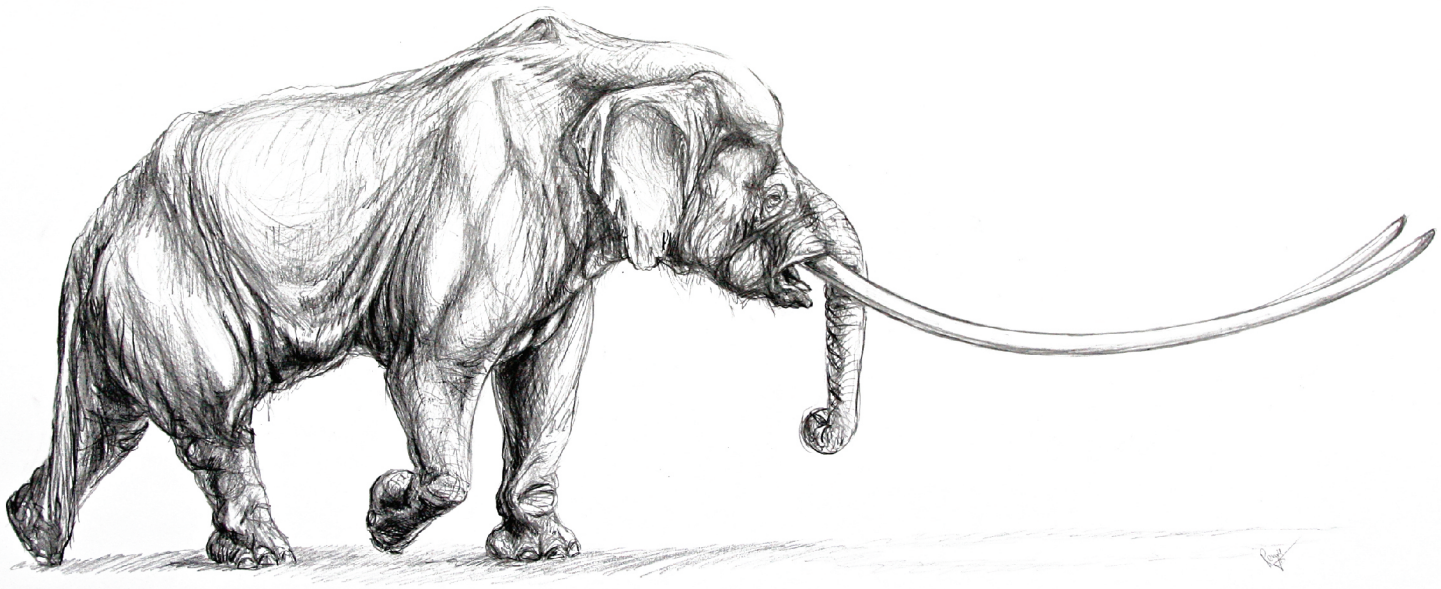

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ABSTRACT BOOK

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Earliest elephantid remains from the Late Miocene locality, Nakali, Kenya

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The family Elephantidae, which includes three genera *Loxodonta*, *Elephas* and *Mammuthus*, has been considered to be of African origin. However, the materials directly relating to the African origin of the elephantids have been represented only by three materials, a cranial fragment of a fairly derived tetralophodont from the late Miocene Namurungule Formation (ca. 9.3-9.6Ma) from Kenya (Nakaya et al., 1984) and two elephantid remains, a M3 of from the late Miocene Karara Formation of Uganda (Tassy, 1994) and a m3 from the Chorora Formation of Ethiopia (Geraads et al., 2002).

Recently, the Nakali Formation (ca. 9.7-9.9 Ma) of Kenya has yielded four pieces of the cheek teeth of an earliest elephant (dp2, p4, m1or 2, M3). They exhibit primitive characters comparable to those of the tetralophodont gomphotheres but at the same time share several derived features with later elephantids. In dp2, the second lophid is plate-like with hypo-, and entoconid connected to each other by mesoconelets. The p4 is similar to that of Tetralophodon longirostris but differs from the latter in the absence of cprp1, thinner enamel layer and stronger development of the distal cingulum. The anterior fragment of M3 is similar to the corresponding part of a M3 (KI 64' 92) from Karara Formation, which has been described as "Elephantidae, forme primitive, gen. et sp. incertae sedis" by Tassy (1994), though the former differs from the latter in greater anteroposterior width of the ridges. A fragment of a m2 or m1 is composed only of distal two ridges and distal cingulum, but it exhibits two derived elephantid features: the pret- and posttrite worn almost equally and ridges relatively thin.

The m3 of an earliest elephant from the Chorora Formation is smaller than those of the Nakali elephant and appears not conspecific with the latter. A tetralophodont from the late Miocene Namurungule Formation exhibits a fairly steep eruption angle of the cheek teeth and its close relation to the elephants has been argued (e.g., Tassy, 1999). However, geologically older Nakali elephantid lacks the secondary trefoil and shares more derived characters with later elephantids than the geologically younger tetralophodont from the Namurungule Formation. Tassy (1996) suggested the similarity between the earliest elephants and *Tetralophodon atticus* from the Pikermi of Greece, but the latter exhibits the secondary trefoil which does not developed in geologically older Nakali elephantids. Derived features seen in those derived tetralophodonts could be convergent characters rather than synapomorphy .

The same holds true for the stegodonts that share many derived characters with the elephants. The loph(id) structure of the cheek teeth of the earliest elephants from Nakali, Karara and Chorora is similar to those of *Tetralophodon longirostris* rather than *Stegolophodon*, suggesting that the elephantids have been derived from the advanced tetralophonts in Africa. If this is the case, the derived dentognathic features shared by the stegodonts and the elephants are convergent or parallel characters rather than synapomorphy.

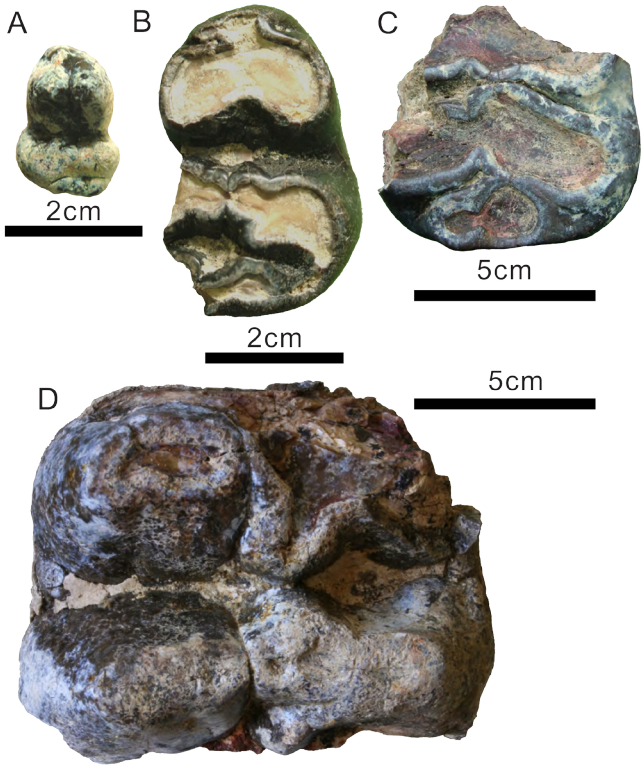

Fig. 1. Occlusal views of cheek teeth of Nakali elephantid. **A**, left dp2; **B**, right p4; **C**, distal fragment of right m1 or m2; **D**, mesial fragment of right M3.

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