EVOLUTIONARY HISTORY OF A UNIQUE MAMMALIAN STRUCTURE: THE CAUDAL TUBE OF GLYPTODONTIDAE (XENARTHRA, CINGULATA)

Panel/Poster

Macroevolución y Paleobiología

Daniel Barasoain [1], Alfredo E. Zurita [1], Rodrigo L. Tomassini [2], Darin A. Croft [3]

(1) Centro de Ecología Aplicada del Litoral (CONICET-UNNE), Laboratorio de Evolución de Vertebrados y Ambientes Cenozoicos, RP5 km 2.5, Corrientes, Argentina
(2) INGEOSUR, Departamento de Geología, Universidad Nacional del Sur-CONICET, Avenida Alem 1253, Bahía Blanca, Argentina
(3) Department of Anatomy, Case Western Reserve University, Euclid Avenue 10900, Cleveland, Ohio, United States of América

danielbarasoain@gmail.com

The most recent phylogenetic proposals recognize two major clades of glyptodonts. One, Glyptodontinae (*Boreostemma*+(*Glyptotherium*+*Glyptodon*)), has its oldest record in the late middle Miocene of northern South America. The other, not formally named, comprises the remaining diversity and has its oldest record in the early Miocene of the Argentinean Patagonia. Representatives of this "austral clade", except the most basal (*Propalaehoplophorus*, *Eucinepeltus*), share a remarkable synapomorphy unique among mammals: a rigid caudal tube, derived from the fusion of the mobile rings that compose the typical caudal armor of Cingulata. Here, we propose different stages in the development of this structure that can be identified through the evolutionary history of the "austral clade": 1) caudal armor composed only of caudal rings (“Propalaehoplophorinae”: *Propalaehoplophorus*, *Eucinepeltus*); 2) more distal caudal rings fused to form an incipient tube (*Cochlops*); 3) totally fused caudal tube that lacks ornamentation, with only sutures between osteoderms visible (“Palaehoplophorini”: *Palaehoplophorus*, *Palaehoplophoroides*); 4) totally fused caudal tube, with "rosette" ornamentation pattern and large lateral figures (i.e. *Eosclerocalyptus*, *Plohophorus, Neosclerocalyptus*); 5) development of specific modifications (club shape, spines) in some Pleistocene representatives (*Doedicurus*, *Panochthus*). The development of the caudal tube seems to coincide with climatic and environmental changes during the late Miocene and Pliocene in southern South America, with a transition from humid, tropical, forested biomes to arid, temperate, and open ones. From this moment, glyptodonts underwent a marked increase in size and, while some taxa maintained practically unaltered tube morphologies, others developed remarkable adaptations traditionally linked to defensive and intraspecific competitive behaviours.