

## TWO NEW CARNIVOROUS CYNODONTS FROM THE ISCHIGUALASTO FORMATION (UPPER TRIASSIC) OF ARGENTINA

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Two skulls representing new forms of carnivorous cynodonts were discovered recently in the Upper Triassic (Carnian) Ischigualasto Formation of northwestern Argentina. These specimens are the first complete carnivorous cynodonts described from the Late Triassic of Argentina, and provide critical evidence for the evolution of cranial form between well known Middle Triassic cynodonts, such as *Probainognathus*, and the first mammals in the latest Triassic.

The first skull (PVSJ 422) is proportionately long, with a posterior skull width only 35 per cent of basal skull length (9.5 cm.). Other distinctive features of the skull include the form of the postcanine crowns, which have two cusps posterior to the principal cusp and fine serrations on their leading edges, and which overlap each other in an imbricate pattern. Postcanines 5-7 are subequal in size, overlap the dentary laterally, and are substantially larger than postcanines 2-4. The dental formula in the upper jaw is I4-C1-PC7, with the small first postcanine separated fore and aft by small diastemas. As in other advanced eucynodonts, no pineal foramen is present. Some postcranial elements, as yet unstudied, were also found with this specimen.

The second skull (PVSJ 411) has broader proportions, the width between quadrates almost half that of basal skull length (7.5 cm.). These proportions, in combination with deep, curved zygomatic arches, resemble other Middle Triassic cynodonts such as *Probelesodon*. Distinctive features of this skull include bicusped postcanines in the upper jaw similar to those of *Probelesodon*, and a mandibular symphysis that extends back to the level of the fourth postcanine. The dental formula in the upper jaw is I4-C1-PC6. As in the first skull, a pineal foramen is absent.

Several advanced cranial features, such as a fused mandibular symphysis, occur in both skulls and strongly suggest that these new forms belong within the Eucynodontia (Hopson, 1991). Other advanced features, such as the absence of a pineal foramen, further suggest that these new forms are closer to mammals than are traversodontid cynodonts. In contrast, other characters appear to be curiously primitive, such as a short hard palate in the first skull. These new cynodonts thus may introduce previously unseen features and character combinations to the study of cynodont cranial evolution.

Hopson, J. A. 1991. Systematics of the nonmammalian Synapsida and implications for patterns of evolution in synapsids, p. 635-693. *In* H.-P. Schultze and L. Trueb (eds.), *Controversial Views on the Origin of Higher Categories of Vertebrates*. Cornell University Press, Ithaca.