

A NEW PROTEROCHAMPSID *CHANARESUCHUS ISCHIGUALASTENSIS* (DIAPSIDA, ARCHOSAURIFORMES) IN THE EARLY LATE TRIASSIC ISCHIGUALASTO FORMATION, ARGENTINA

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The proterochampsids are a group of crocodile-like archosauriforms usually considered as one of the potential successive sister taxa of the crown group Archosauria (e.g., Sereno and Arcucci, 1990; Sereno, 1991; Dilkes and Sues, 2009; Ezcurra et al., 2010). The clade is currently endemic to the late Middle and early Late Triassic of South America. The best-known proterochampsids come from the Chañares and Ischigualasto formations, which belong to the Ischigualasto-Villa Unión Basin (Fig. 1), which formed during the breakup of Gondwana (Uliana and Biddle, 1988; Ramos and Kay, 1991). The tetrapod assemblage from the Chañares Formation (Anisian–early Carnian; Desojo et al., 2011) has been usually interpreted to differ from that of the Ischigualasto Formation (late Carnian–earliest Norian; Martínez et al., 2011), and this traditional view also applies for proterochampsids. In the Chañares Formation, the proterochampsid genera *Chanaresuchus*, *Gualosuchus*, and *Tropidosuchus* (Romer, 1971, 1972; Arcucci, 1990) are documented, whereas in the Ischigualasto Formation only the genus *Proterochampsia* has been reported (Reig, 1959). The latter highlighted a complete replacement at a generic level among these proterochampsid assemblages in southwestern Pangaea. However, an almost complete proterochampsid skeleton from the Late Triassic Ischigualasto Formation is given a preliminary description here and assigned to the traditionally Middle Triassic genus *Chanaresuchus* (cf. Sill et al., 1994). Accordingly, the new proterochampsid record reported here changes the pattern of macroevolutionary history of the group during the Middle to Late Triassic in southwestern Pangaea.

SYSTEMATIC PALEONTOLOGY

DIAPSIDA Osborn, 1903
ARCHOSAURIFORMES von Huene, 1946
ARCHOSAURIFORMES Gauthier, 1986
PROTEROCHAMPSIDAE Sill, 1967
CHANARESUCHUS Romer, 1971

Emended Diagnosis—Proterochampsid archosauriform with the following combination of characters: skull ornamented by longitudinal crests and depressions on the dorsal surfaces of the premaxillae, maxillae, and nasals; lateral fossa in the centra of presacral vertebrae; low deltopectoral crest on the humerus; and absence of phalanges on pedal digit V.

CHANARESUCHUS ISCHIGUALASTENSIS, sp. nov.
(Figs. 2–4)

Etymology—The specific epithet refers to the Ischigualasto Formation, the stratigraphic unit producing the new specimen.

Holotype—PVSJ 567, an articulated incomplete skeleton including skull with lower jaws, vertebral series lacking the distal-most caudals, pectoral girdle, both partial humeri, partial pelvic

girdle, both femora, tibiae, fibulae, and pes, and some gastralia (Figs. 2–4).

Diagnosis—*Chanaresuchus* species characterized by the following autapomorphies: basal tubera wide (basal tubera width/parabasisphenoidal complex axial length ratio of 0.31) with rostralateral contour transversely oriented; paroccipital processes distally expanded; articular surface of caudal prezygapophyses elliptical and notably anteriorly developed; astragalus lacking perforations in the posterior sulcus; and ornamentation of dermal plates consisting of only a longitudinal sulcus.

Type Locality and Horizon—Valle Pintado, Hoyada de Ischigualasto, Ischigualasto Provincial Park, San Juan Province, Argentina (Fig. 1). Cancha de Bochas Member (Currie et al., 2009), Ischigualasto Formation (late Carnian–earliest Norian; Martínez et al., 2011), Ischigualasto-Villa Unión Basin (Romer and Jensen, 1966).

DESCRIPTION

Skull

The skull of PVSJ 567 is comparable to that of *Proterochampsia barrionuevoi* (Sill, 1967) and *Chanaresuchus bonapartei* (Romer, 1971), in being dorsoventrally compressed, subtriangular in outline, and with an anteriorly elongated snout (Fig. 2). The skull is strongly ornamented by several longitudinal crests and depressions present on the dorsal surfaces of the premaxillae, maxillae, and nasals. These crests and depressions acquire a radial pattern of ornamentation on the dorsal surfaces of the parietals and frontals. This ornamentation is very similar to *Chanaresuchus bonapartei*, but different from the rounded crests on the skull of *Proterochampsia*. The orbits are placed dorsally, similar to the condition in *Chanaresuchus bonapartei* (Romer, 1971) and *Proterochampsia*. The external nares are located near to the midline of the snout, and nearly on the top of the snout, as in the majority of proterochampsids. As in other proterochampsids, the small supratemporal fenestrae are dorsally oriented, the infratemporal fenestrae are exposed laterally, and the teeth are labiolingually compressed, similar to *Chanaresuchus bonapartei*. The teeth of *Chanaresuchus ischigualastensis* lack striated enamel and wear facets. There are six premaxillary, and eight maxillary, teeth. The maxillary teeth are the longest, as in *Chanaresuchus bonapartei* and *Proterochampsia*. In ventral view, the skull has a secondary bony palate composed of the premaxillae, maxillae, and palatines (Fig. 3), similar to *Chanaresuchus bonapartei* and *Proterochampsia*. In this view, the posterolateral development of the pterygoid of *Chanaresuchus ischigualastensis* contacts the ectopterygoid laterally, similar to *Chanaresuchus bonapartei*. The complete braincase is ventrally exposed; it is axially short and horizontally oriented, thereby differing from the axially longer braincase of *Chanaresuchus bonapartei* and *Proterochampsia*. The basal tubera are wide, with a basal tubera width/parabasisphenoidal complex axial length ratio of 0.31,

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