Dataset

3D models related to the publication: *Gnathovorax cabreirai*: a new early dinosaur and the origin and initial radiation of predatory dinosaurs

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Abstract
The present 3D Dataset contains the 3D models of the skull, brain and inner ear endocast analyzed in "*Gnathovorax cabreirai*: a new early dinosaur and the origin and initial radiation of predatory dinosaurs".

Keywords: brain, Dinosauria, endocranial morphology, Herrerasauridae, inner ear.

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Model IDs	Description
M3#442	3D model of the skull
M3#443	3D model of the braincase
M3#444	Endocast of brain, inner ear, and cranial nerves

Table 1. List of 3D models of *Gnathovorax cabrerai* from the Upper Triassic (Carnian) of southern Brazil. The original specimen (CAPPA/UFSM 0009) and 3D models belong to the paleontological collection of the Centro de Apoio à Pesquisa Paleontológica da Quarta Colônia, Universidade Federal de Santa Maria.

INTRODUCTION

Gnathovorax cabreirai is a herrerasaurid dinosaur described based on an exquisite specimen found as part of a multitaxic association form southern Brazil. The type specimen comprises a complete and well-preserved articulated skeleton, preserved in close association (side by side) with rhynchosaur and cynodont remains. Given its superb state of preservation and completeness, the new specimen sheds light into poorly understood aspects of the herrerasaurid anatomy, including endocranial soft tissues. This contribution contains the 3D models of the skull, brain, and inner ear of this early dinosaur (Table 1 and Fig. 1).

METHODS

The skull of CAPPA/UFSM 0009 (Centro de Apoio à Pesquisa Paleontológica da Quarta Colônia, Universidade Federal de Santa Maria) was scanned with a Philips Brilliance 64-Slice CT Scanner (located at Santa Maria city), using 120 kV, 150.52 mAs. The analysis generated 1002 slices with a 0.67 mm thickness, increment of 0.33 mm, and pixel size of 0.553 mm. To access the endocranial information of CAPPA/UFSM 0009, its braincase was scanned with a CT scan Skyscan™ 1173 at Laboratório de Sedimentologia e Petrologia of the Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, Brazil, using 130 kV and 61µA. The scan resulted in 2,631 tomographic slices, with a voxel size of 29.98 µm. Before segmenting the regions of interest, slices without information were deleted, and the remaining files were cropped and binned using the software ImageJ (Abràmoff et al. 2004). After these procedures, the sequence of tomographic slices was limited to 1200, with a voxel size of 59.96 µm. The slices were imported in Avizo, the internal cavities were manually segmented, and 3D-models were generated (.stl format). The 3D surface models are provided in .ply format, and can therefore be opened with a wide range of freeware.

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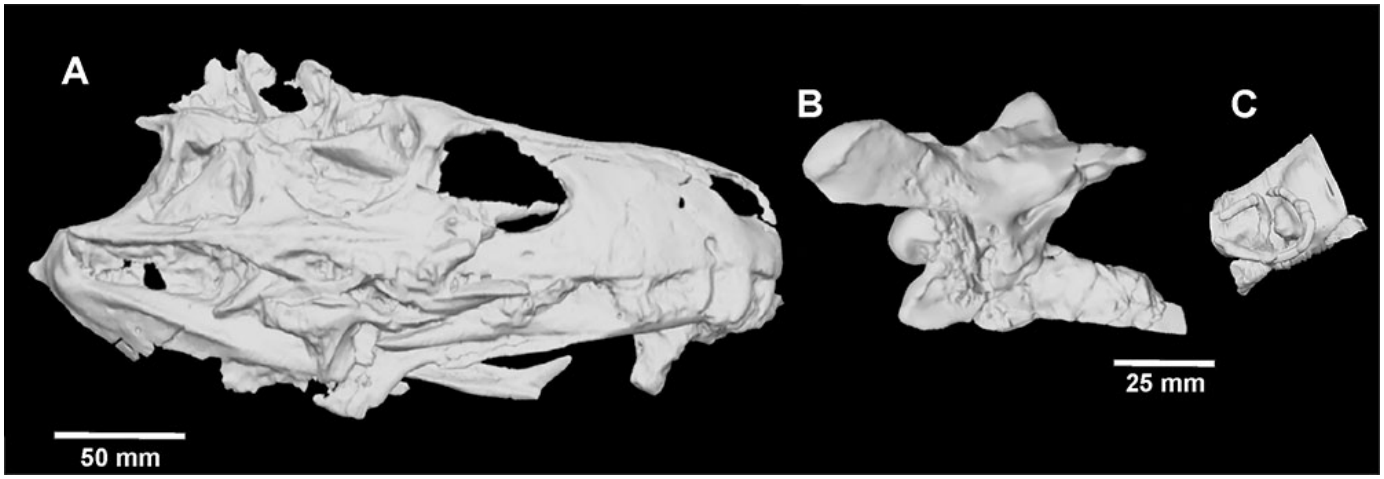

Figure 1. 3D models of the skull (**A-B**) and endocast of brain, inner ear, and cranial nerves (**C**) of *Gnathovorax cabreirai* from the Upper Triassic (Carnian) of southern Brazil.

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