Dataset

3D models related to the publication: Brain endocast of two non-mammaliaform cynodonts from southern Brazil: an ontogenetic and evolutionary approach.

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Abstract
This contribution contains the 3D model(s) described and figured in the following publication: Carolina A. Hoffmann, P. G. Rodrigues, M. B. Soares & M. B. Andrade. 2021. Brain endocast of two non-mammaliaform cynodonts from southern Brazil: an ontogenetic and evolutionary approach, Historical Biology, 33:8, 1196-1207, https://doi.org/10.1080/08912963.2019.1685512

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Inv nr.	Taxon
MCP1600PV	*Probelesodon kitchingi*
MCP3871PV	*Massetognathus ochagaviae*

Table 1. List of brain endocasts. Collection: Pontifícia Universidade Católica do Rio Grande do Sul, Brasil

INTRODUCTION

The evolution of the brain can be studied through casts of the cranial cavities of extinct vertebrate species (e.g. Jerison, 1973). More recently, non-destructive methods, such as the computed tomography (CT) are being applied to paleoneurological studies concerning derived non-mammaliaform cynodonts, mammaliaforms and basal mammals (e.g. Macrini et al., 2006; Rowe et al., 2011; Rodrigues et al., 2019). Considering this, we scanned two skulls of non-mammaliaform cynodonts (MCP 1600 PV – *Probelesodon kitchingi*, and MCP 3871 PV – *Massetognathus ochagaviae*) and digitally extracted the brain endocasts (Table 1 and Fig. 1) in order to study the evolution of the mammalian brain. The Encephalisation Quotient (EQ) of both species were also calculated.

METHODS

The images were obtained from the medical CT scanner (Pet CT Multislice 16d Discovery) located in the Instituto do Cérebro facility, São Lucas Hospital. As a result of the CT scans we obtained 676 slices of both skulls in transversal, coronal and sagittal planes, with a resolution of 512x512 pixels, 0,625 mm slices, 140kV and 380mA, using the soft protocol. The 3D surfaces were manually extracted within VGStudio Max (version 1.2.1; Volume Graphics GmbH) using the segmentation threshold selection tool in coronal view. The 3D surfaces models were edited and manipulated in the freeware software MorphoDig and are provided in .ply format.

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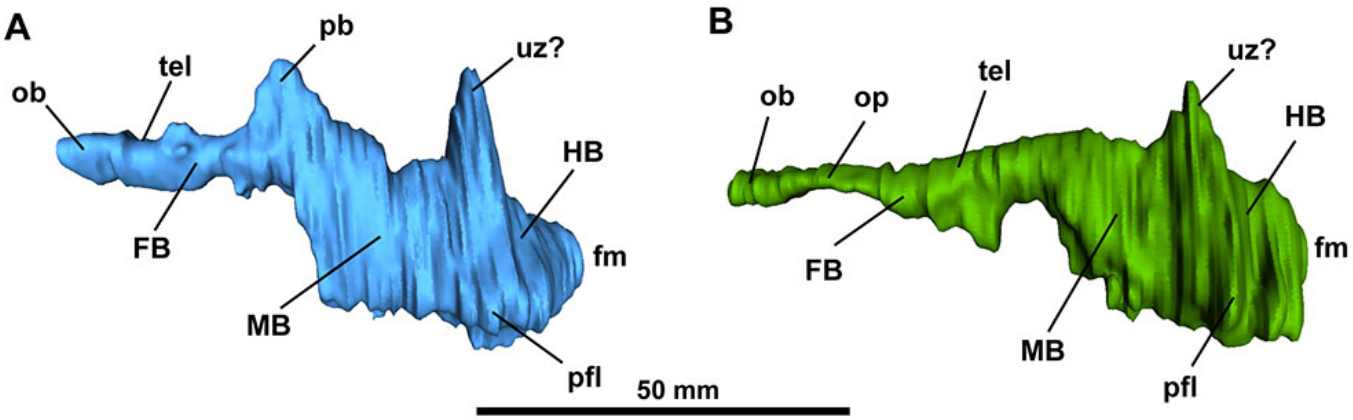

Figure 1. Brain endocast of MCP 3871 PV, *Massetognathus ochagaviae* (A) and MCP 1600 PV, *Probelesodon kitchingi* (B) in left lateral view. Abbreviations: FB, forebrain; fm, foramen magnum; HB, hindbrain; MB, midbrain; ob, olfactory bulbs; op, olfactory peduncles; pb, pineal body; pfl, parafloccular cast; tel, telencephalon; uz, unossified zone.

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