

3D models related to the publication: The endocranial cast of *Indohyus* (Artiodactyla, Raoellidae): the origin of the cetacean brain

Maëva Orliac^{1*}, J. G. M. Thewissen²

¹ Institut des Sciences de l'Évolution de Montpellier, Université de Montpellier, CNRS, IRD, EPHE, Place Eugène Bataillon, 34095 Montpellier Cedex 5, France

² Department of Anatomy and Neurobiology, Northeast Ohio Medical University, 4209 State Route 44, Rootstown, OH 44272, USA

*Corresponding author: maeva.orliac@umontpellier.fr

Abstract

The present 3D Dataset contains the 3D models of the endocranial cast of two specimens of *Indohyus indirae* described in the article entitled “The endocranial cast of *Indohyus* (Artiodactyla, Raoellidae): the origin of the cetacean brain” (Orliac and Thewissen, 2021). They represent the cast of the main cavity of the braincase as well as associated intraosseous sinuses.

Keywords: brain, Cetacea, CT scan, Endocast, Eocene

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INTRODUCTION

The 3D models presented here (see Table 1 and Fig. 1.) are described by Orliac and Thewissen (2021), and allows for accessing the external features of the brain and associated sinuses of *Indohyus indirae* Ranga Rao, 1971. *Indohyus* belongs to the Raoellidae, extinct small-sized semiaquatic artiodactyls that are the closest relatives to the Cetacea clade (Thewissen *et al.* 2007; Cooper *et al.* 2012; Orliac & Ducrocq 2012; Gatesy *et al.* 2013). Raoellid remains are documented from the Middle Eocene in South Asia, in the same fossil yielding localities as early cetaceans (Thewissen *et al.* 2001, 2007, 2009). The virtual reconstruction of the endocranial cast of two crania RR 207 and RR 601 from the locality Sindkhatudi in the Kalakot region of Kashmir, India (Thewissen *et al.* 2001, 2007) allows for describing the endocranial morphology of Raoellidae for the first time and for discussing the earliest phase of differentiation of the cetacean brain. It presents the symplesiomorphic brain pattern observed in earliest Artiodactyla combined with characters that also occur in early cetaceans: narrow elongated olfactory bulbs and peduncles, and a posterior location of the braincase in the cranium. We provide here a labelled 3D model for the specimen RR 207 which presents both cast of the main cranial cavity and cast of intraosseous sinuses.

METHODS

The 3D data acquisition was performed at the μ -CT scanner facility of the Montpellier Rio Imaging platform (MRI) with an EasyTom 150 μ -CT scanner and a resolution of 91.2 μ m. The seg-

Inv nr.	Taxon	Description
RR207	<i>Indohyus indirae</i>	cast of the main endocranial cavity and associated intraosseous sinuses
RR601	<i>Indohyus indirae</i>	casts of the main endocranial cavity

Table 1. List of models. Collection: Hennecke Family Foundation

mentation and the measurements were performed using Avizo® 9.3 (Thermo Fisher Scientific-FEI). The segmentation was performed slice by slice manually using the pencil segmentation tool. The cast of the main cranial cavity and the sinuses were segmented separately on different label fields. The 3D surface models are provided in .ply format, and can therefore be opened with a wide range of freeware.

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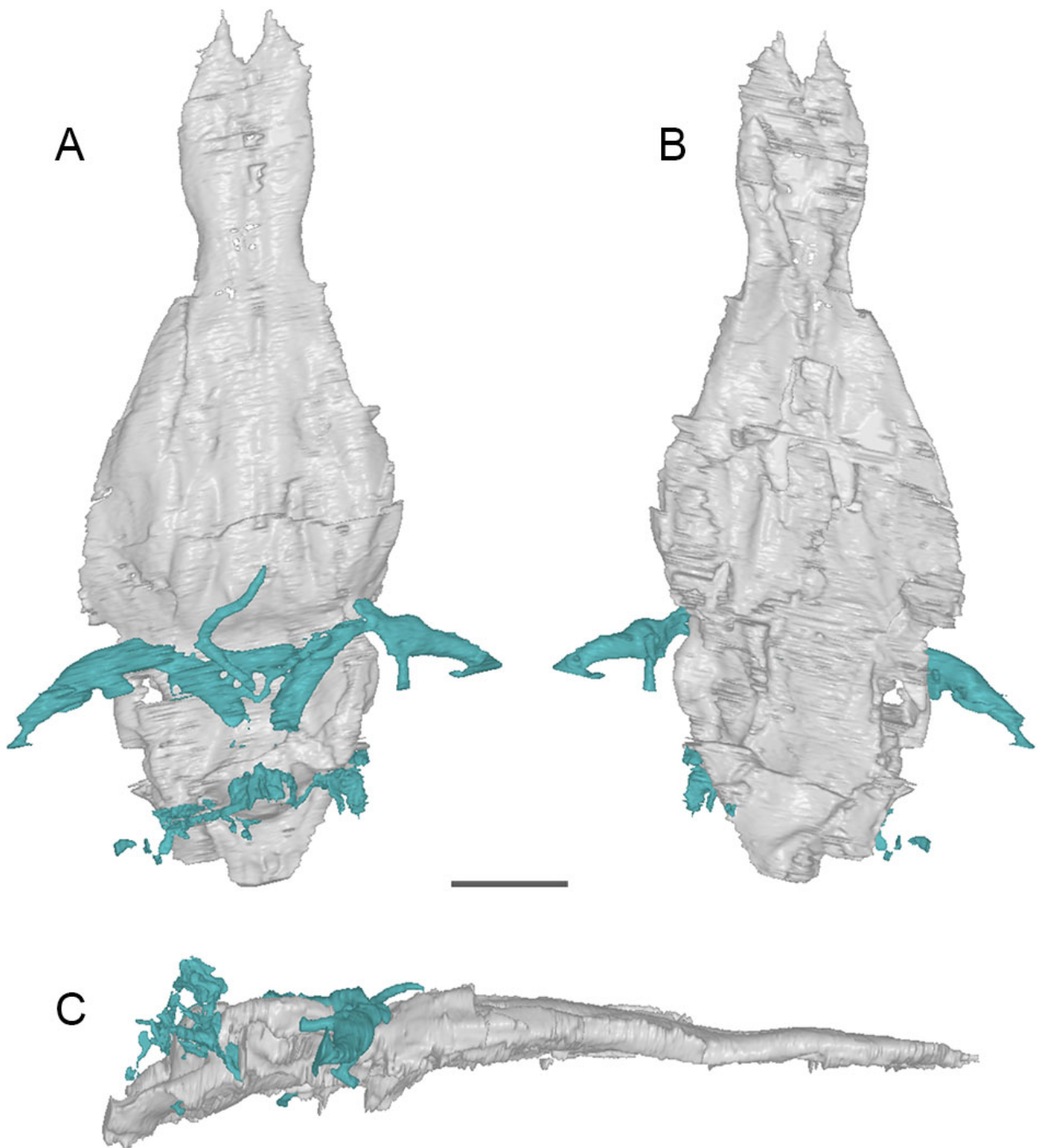


Figure 1. 3D model of the casts of the main endocranial cavity (in grey) and associated intraosseous sinuses (in blue) of *Indohyus indirae* (specimen RR 207) in A) dorsal, B) ventral, and C) lateral views. Scale bar = 1cm.

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