Dataset

3D models related to the publication: Unexpected pampatheriid from the early Oligocene of Peruvian Amazonia: insights into the tropical differentiation of cingulate xenarthrans.

François Pujos[1,2], Lionel Hautier[3]*, Pierre-Olivier Antoine[3], Myriam Boivin[2,4,5], Benoit Moison[3], Rodolfo Salas-Gismondi[6,7], Julia V. Tejada[8], Rafael M. Varas-Malca[7], Johan Yans[9], Laurent Marivaux[3]

[1] *Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales (IANIGLA), CONICET-UNCUYO-Mendoza, Av. Ruiz Leal s/n, Parque Gral. San Martín, 5500, Mendoza, Argentina*

[2] *Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Godoy Cruz 2290, C1425FQB, Ciudad Autónoma de Buenos Aires, Argentina*

[3] *Institut des Sciences de l'Évolution de Montpellier, Univ. Montpellier, CNRS, IRD, Place Eugène Bataillon, 34095, Montpellier, France*

[4] *Grupo de Paleontología de Vertebrados, Instituto de Ecorregiones Andinas (INECOA), Universidad Nacional de Jujuy (UNJu), CONICET, Av. Bolivia 1661, 4600, San Salvador de Jujuy 4600, Jujuy, Argentina*

[5] *Instituto de Geología y Minería (IDGyM), Universidad Nacional de Jujuy, Av. Bolivia 1661, 4600, San Salvador de Jujuy, Argentina*

[6] *BioGeoCiencias Lab, Laboratorios de Investigación y Desarrollo (LID), Facultad de Ciencias y Filosofía, Centro de Investigación para el Desarrollo Integral y Sostenible (CIDIS), Universidad Peruana Cayetano Heredia, Av. Honorio Delgado 430, Lima 30, Peru*

[7] *Departamento de Paleontología de Vertebrados, Museo de Historia Natural-Universidad Nacional Mayor de San Marcos, Av. Arenales 1256, Lima 14, Peru*

[8] *Division of Geological and Planetary Sciences, California Institute of Technology, CA 91125, Pasadena, United States*

[9] *Department of Geology, Institute of Life, Earth and Environment (ILEE), University of Namur, 61 rue de Bruxelles, 5000 Namur, Belgium*

*__Corresponding author__: lionel.hautier@umontpellier.fr

Abstract

This contribution contains the 3D models described and figured in the following publication: Pujos F., Hautier L., Antoine P-O., Boivin M., Moison B, Salas-Gismondi R, Tejada J.V. , Varas-Malca R.M., Yans J., Marivaux L. (2025). Unexpected pampatheriid from the early Oligocene of Peruvian Amazonia: insights into the tropical differentiation of cingulate xenarthrans. *Historical Biology*.

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INTRODUCTION

We present here the 3D model of the molariform tooth MUSM 3965, an early Oligocene xenarthran tooth from the Peruvian Amazonia found at the TAR-22 fossil-bearing locality (Figure 1, Pujos et al., 2025). High-resolution microtomography of this specimen reveals a highly vascularised inner layer suggestive of osteodentine, a middle layer of orthodentine with densely S-curved dentinal tubules, and a thin outer layer. There is no clear evidence for the presence of cement, which is typically found in tree sloths. Its microstructure was compared with that of five extant (tree-sloths *Bradypus* and *Choloepus*; armadillos *Dasypus*, *Tolypeutes*, and *Euphractus*) and two extinct (Late Pleistocene giant ground sloth *Megatherium* and pampathere *Holmesina*) xenarthran genera (see Figure 1). Although its external appearance cannot completely rule out an assignment to a sloth, the microstructural pattern, such as well-developed osteodentine arranged in a row without ramifications, suggests that this tooth belongs to an early pampatheriid (Pujos et al., 20XX).

METHODS

We analysed the internal microstructure of the hard tissues of the MUSM 3965 molariform tooth from the *Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos*, and compared it with that of five extant (*Bradypus*, *Choloepus*, *Dasypus*, *Tolypeutes*, and *Euphractus*) and two extinct (*Megatherium* and *Holmesina*) xenarthran genera from the *Université de Montpellier* collection (UM; Table 1). All the teeth were imaged using high-resolution microtomography (µCT) at the MRI platform of the *Institut des Sciences de l'Evolution de Montpellier* (ISEM). Image segmentation of the teeth was performed on the µCT images with Avizo.Lite 2019.4 software (Visualization Sciences Group) using the segmentation threshold selection tool. The 3D virtual restoration was performed with MorphoDig software (v. 1.5.3; Lebrun, 2018). The 3D surface models of the teeth are provided in .vtp and .ply formats, and can therefore be opened with a wide range of freeware.

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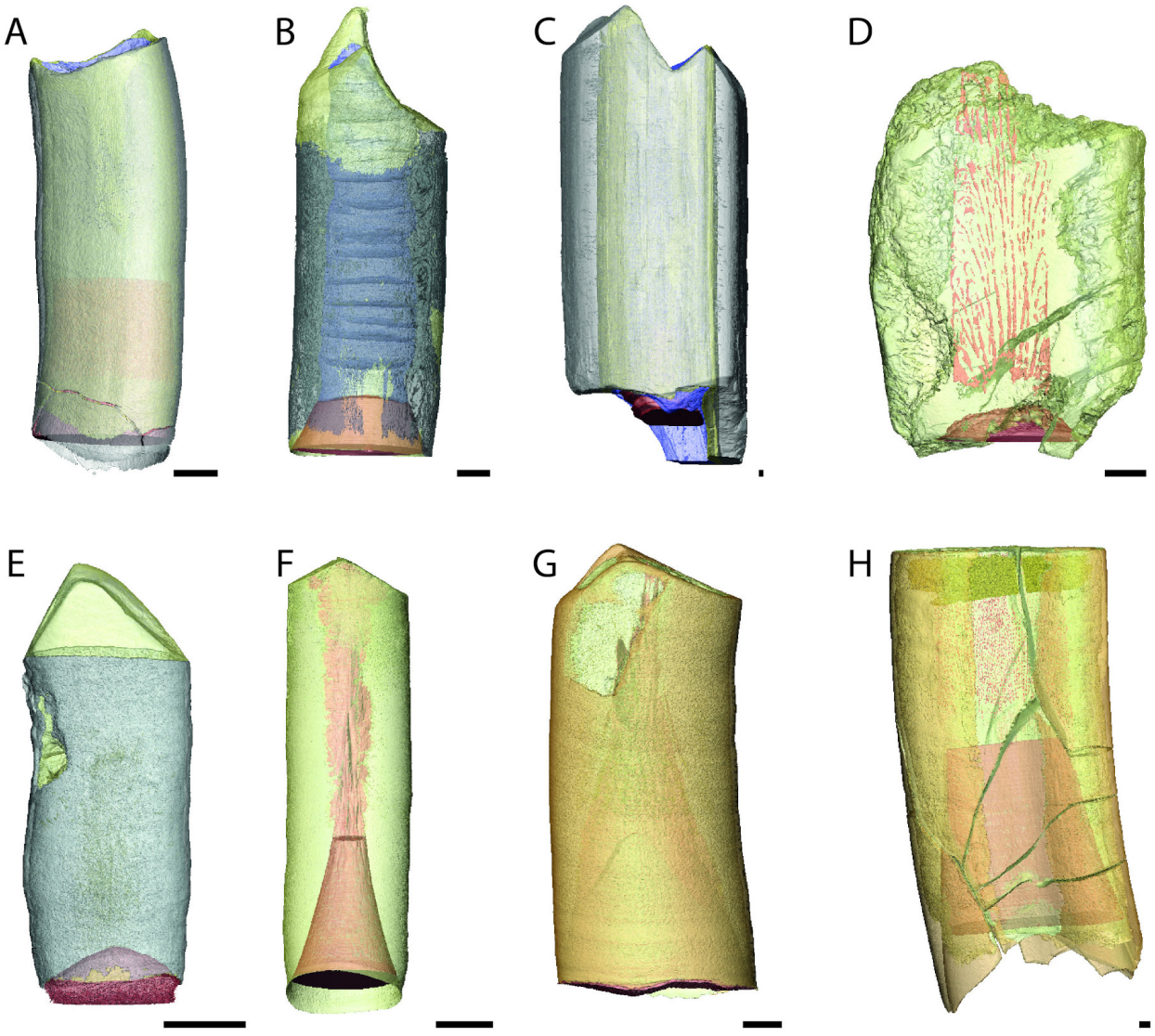

Figure 1. 3D reconstructions of all specimens used in the study. **A**, *Bradypus*, right upper molariform (MF4); **B**, *Choloepus*, left upper molariform (MF3, inverted image); **C**, *Megatherium*, left lower molariform (cf. mf1); Pampatheriid indet. from Tar-22; **E**, *Dasypus*, left upper molariform (MF6); **F**, *Tolypeutes*, right upper molariform (MF7 or 8, inverted image); **G**, *Euphractus*, right upper molariform (MF7, inverted image); **H**, *Holmesina*, right lower molariform (cf. mf5-mf8). Sale bars correspond to 1mm.

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Inv nr.	Taxon	Collection
UM-ZOOL-V69	*Bradypus tridactylus*	UM, Montpellier
UM-ZOOL-V12	*Choloepus didactylus*	UM, Montpellier
UM-ZOOL-2787	*Dasypus mexicanus*	UM, Montpellier
UM-ZOOL-2789	*Tolypeutes matacus*	UM, Montpellier
UM-ZOOL-2790	*Euphractus sexcinctus*	UM, Montpellier
UM-FLD-1	*Holmesina septrionalis*	UM, Montpellier
UM-TAR-1	*Megatherium* sp.	UM, Montpellier
MUSM-3965	Panpatheriidae indet.	MUSM, Lima

Table 1. List of molariform teeth used in the study. Collections: University of Montpellier, Montpellier, France. Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru.

Historia Natural de la Universidad Nacional Mayor San Marcos (Lima, Peru) and the *Institut des Sciences de l'Evolution de Montpellier-Université de Montpellier*, Thanks to the MRI platform, member of the national infrastructure France-BioImaging supported by the French National Research Agency [ANR-10-INBS-04, ≪Investments for the future≫]) for the access to scanning facilities. This is ISE-M publication 2025-055 Sud.

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