

3D models related to the publication: New insights into the diversity of strepsirrhine primates from the late early – early middle Eocene of North Africa (Algeria and Tunisia)

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Abstract

This contribution contains the three-dimensional digital models of the dental fossil material of strepsirrhine primates (Azibiidae and ?Djebeluridae) from the late early to early middle Eocene of the Gour Lazib Complex in western Algeria and of Djebel Chambi in central-western Tunisia. These fossils were described, figured and discussed in the following publication: Marivaux et al. (2025), New insights into the diversity of strepsirrhine primates from the late early – early middle Eocene of North Africa (Algeria and Tunisia). *Journal of Human Evolution*, 103729. <https://doi.org/10.1016/j.jhevol.2025.103729>

Keywords: Azibiidae and Djebeluridae, Chambi, Gour Lazib, Northern Africa, Paleogene

Submitted: 23/06/2025, published online: 27/08/2025. <https://doi.org/10.18563/journal.m3.270>

INTRODUCTION

We present here the three-dimensional (3D) digital models of a set of dental fossil specimens of strepsirrhine primates (Fig. 1; Table 1) dating from the late early to early middle Eocene. Fossils were obtained after several rounds of acid etching (10 % acetic acid) and screen-washings of the indurated calcareous matrices of the sediments from the Glib Zegdou HGL50 locality (Gour Lazib Complex) situated in western Algeria, and from the Chambi CBI-1 locality (Djebel Chambi) situated in central-western Tunisia. These primates, Azibiidae and Djebeluridae, are considered as “advanced” stem strepsirrhines, i.e., more closely related to crown Strepsirrhini (tooth-combed primates) than to Adapiformes (other stem strepsirrhines, lacking a tooth-comb). From the Gour Lazib Complex, we provide 3D digital models of the former known azibiid taxa, *Algeripithecus minutus* and *Azibius trerki* (Godinot and Mahboubi, 1992, 1994; Tabuce et al., 2004, 2009), as well as of a new taxon, *Azibius magnus* (new taxon in Marivaux et al., 2025), and of a possible djebelurid *Lazibadapis anchomomyinopsis* (new taxon in Marivaux et al., 2025). From Chambi, we provide the digital models of a new azibiid species, *Algeripithecus minimissimus* (new taxon in Marivaux et al., 2025). The digital models of the former known djebelurid *Djebelur martinezi* from Chambi (Hartenberger and Marandat, 1992; Marivaux et al., 2013) is available in Marivaux et al. (2018). These new fossils from Chambi and Glib Zegdou extend our knowledge of the paleodiversity of these two extinct families of strepsirrhines, and reveal their wider paleogeographic distribution across North Africa at the onset of the Eocene (Marivaux et al., 2025). The fossils from Djebel Chambi, referenced (CBI-1-xx), are housed in the paleontological collections of the museum of the *Office National des Mines* (ONM) of Tunis, Tunisia. The fossils from Glib Zegdou, referenced (HGL50-xx), are housed at the *Institut des Sciences*

de l'Évolution de Montpellier (ISE-M) in the paleontological collections of the *Université de Montpellier* (UM), France.

METHODS

The dental specimens figured here were scanned with a resolution of 6 µm, using a µCT-scanning station EasyTom 150/Rx Solutions (Montpellier Ressources Imagerie [MRI], ISE-M, Montpellier, France). AVIZO 2020.2 (Visualization Sciences Group) software was used for visualization, segmentation and three-dimensional renderings. These fossil specimens were prepared within a “labelfield” module of AVIZO, using the segmentation threshold selection tool. The crown and roots of each dental specimen were virtually delimited by manual segmentation. The 3D models are provided in “.ply” format, and thus can be opened with a wide range of software programs (e.g., MorphoDig 1.6.7., an open-source 3D freeware (Lebrun, 2018; <https://morphomuseum.com/Pages/morphodig>).

ACKNOWLEDGEMENTS

The 3D data presented in this work were produced through the technical facilities of the Montpellier Ressources Imagerie (MRI) platform, member of the national infrastructure France-BioImaging (<https://ror.org/01y7vt929>) supported by the French National Research Agency (ANR-24-INBS-0005 FBI BIOGEN). ISE-M publication n° 2025-112.

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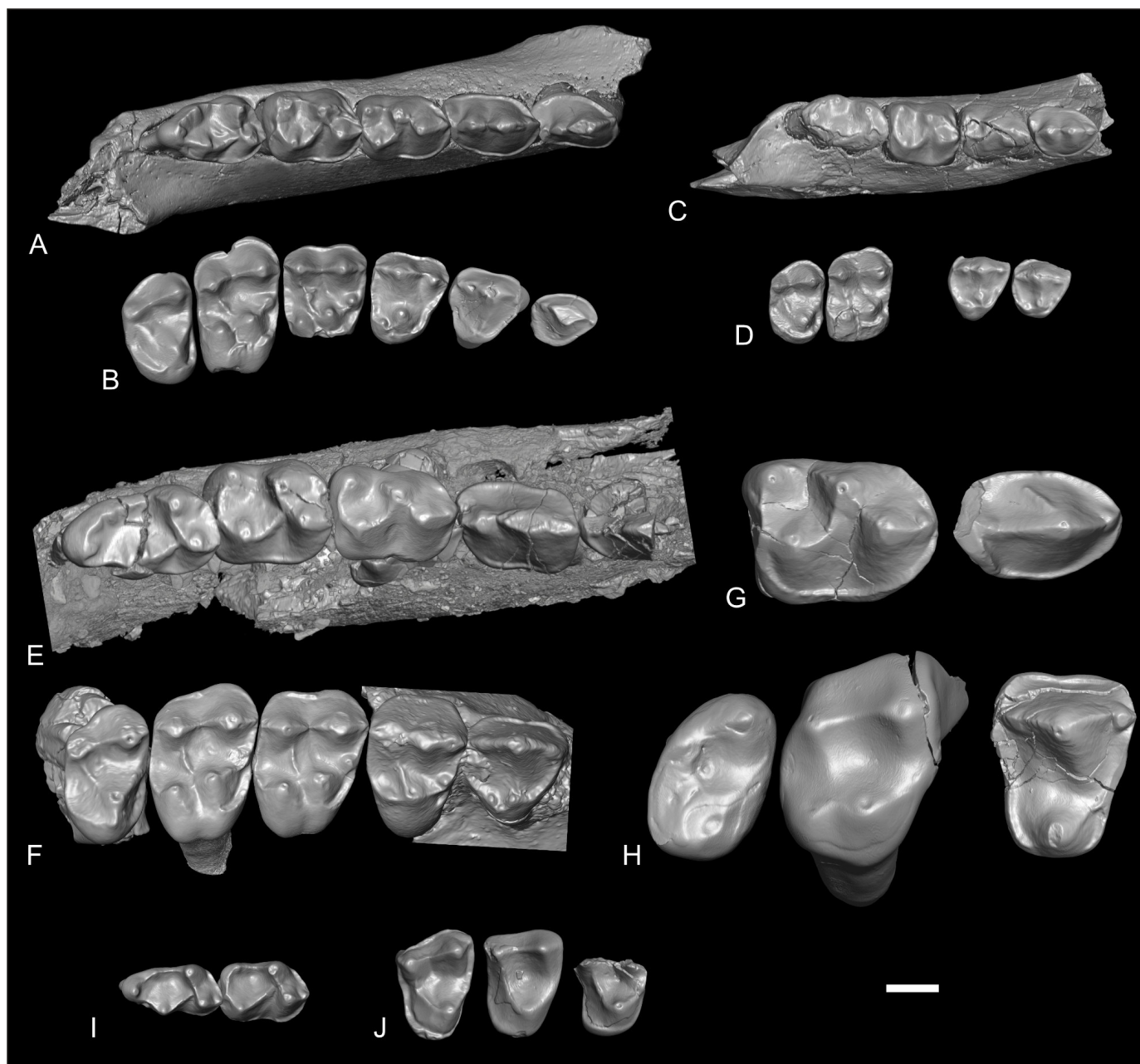


Figure 1. Fossil dental material of Azibiidae and ?Djebelemuridae from the late early to early middle Eocene of North Africa (Algeria and Tunisia). The tooththrows presented are either individual specimens or composite tooththrows, i.e., incorporating isolated dental specimens from different individuals. Tooththrows represent right-side rows (some of which have thus been reversed, as indicated below). The best-preserved specimens are figured and sometimes reversed (mirrored), to produce a coherent tooththrow. Teeth are in occlusal view. The dental loci are listed below from right to left. **A-B**, *Algeripithecus minutus* from Glib Zegdou (Algeria): **A**, UM-HGL50-397, left mandible (preserving p3-m3; reversed); **B**, composite upper tooththrow including UM-HGL50-297 (right P2), UM-HGL50-298 (right P3), UM-HGL50-303 (left P4; reversed), UM-GZC-7 (left M1, lingually broken; reversed), UM-GZC-1 (left M2; reversed), and UM-HGL50-319 (left M3; reversed). **C-D**, *Algeripithecus minimissimus* from Chambi (Tunisia): **C**, ONM-CBI-1-1205, right mandible (preserving m1-3), including ONM-CBI-1-1207 (right p4) and ONM-CBI-1-1209 (left m2; reversed); **D**, composite upper tooththrow including ONM-CBI-1-38 (right P3), ONM-CBI-1-37 (right P4), ONM-CBI-1-36 (left M2; reversed), and ONM-CBI-1-35 (left M3; reversed). **E-F**, *Azibius terki* from Glib Zegdou (Algeria): **E**, UM-HGL50-256, left mandible (preserving p4-m3; reversed) with m1 badly crushed but here replaced by UM-HGL50-248 (left m1; reversed); **F**, composite upper tooththrow including UM-HGL51-46, a fragmentary maxilla (preserving P3-4 and M3), and UM-HGL50-396 (left M1-2; reversed). **G-H**, *Azibius magnus* from Glib Zegdou (Algeria): **G**, lower dentition with UM-HGL50-263 (left p3; reversed) and UM-HGL50-264 (right m1); **H**, upper dentition with UM-HGL50-258 (right P3 or P4), UM-HGL50-260 (right M2, corroded), and UM-HGL50-261 (left M3, corroded; reversed). **I-J**, *Lazibadapis anchomyinopsis* from Glib Zegdou (Algeria): **I**, UM-HGL50-325 fragment of distal mandible (preserving m2-3; reversed); **J**, upper dentition with UM-HGL50-326 (right M1, lacking its buccal part), UM-HGL50-290 (right M2, strongly corroded), and UM-HGL50-170 (right M2 or M3). The images presented here are renderings of 3D digital models of the fossil specimens (except for ONM-CBI-1-35 and ONM-CBI-1-36, which are renderings of 3D digital models of casts), obtained by X-ray micro-computed (μ CT) surface reconstructions (segmented enamel surfaces). Scale bar = 1 mm.

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Inv nr.	Taxon	Description	Collection
ONM-CBI-1-38	<i>Algeripithecus minimissimus</i>	Isolated right P3	ONM, Tunis
ONM-CBI-1-37	<i>Algeripithecus minimissimus</i>	Isolated right P4	ONM, Tunis
ONM-CBI-1-1206	<i>Algeripithecus minimissimus</i>	Isolated right p4	ONM, Tunis
ONM-CBI-1-1207	<i>Algeripithecus minimissimus</i>	Isolated right p4	ONM, Tunis
ONM-CBI-1-1205	<i>Algeripithecus minimissimus</i>	Fragment of right mandible bearing m1-3 (Holotype)	ONM, Tunis
ONM-CBI-1-1209	<i>Algeripithecus minimissimus</i>	Isolated left m2	ONM, Tunis
ONM-CBI-1-1208	<i>Algeripithecus minimissimus</i>	Isolated right m2	ONM, Tunis
UM-HGL50-294	<i>Algeripithecus minutus</i>	Left DP4	ISEM, Montpellier
UM-HGL50-297	<i>Algeripithecus minutus</i>	Isolated right P2	ISEM, Montpellier
UM-HGL50-298	<i>Algeripithecus minutus</i>	Isolated right P3	ISEM, Montpellier
UM-HGL50-299	<i>Algeripithecus minutus</i>	Isolated right P4	ISEM, Montpellier
UM-HGL50-303	<i>Algeripithecus minutus</i>	Isolated left P4	ISEM, Montpellier
UM-GZC-7	<i>Algeripithecus minutus</i>	Isolated left M1 (lingually broken)	ISEM, Montpellier
UM-GZC-1	<i>Algeripithecus minutus</i>	Isolated left M2 (Holotype)	ISEM, Montpellier
UM-HGL50-319	<i>Algeripithecus minutus</i>	Isolated left M3	ISEM, Montpellier
UM-HGL50-397	<i>Algeripithecus minutus</i>	Fragment of left mandible bearing p3-m3	ISEM, Montpellier
UM-HGL50-258	<i>Azibius magnus</i>	Isolated right P3 or P4	ISEM, Montpellier
UM-HGL50-260	<i>Azibius magnus</i>	Isolated right M2	ISEM, Montpellier
UM-HGL50-261	<i>Azibius magnus</i>	Isolated left M3	ISEM, Montpellier
UM-HGL50-263	<i>Azibius magnus</i>	Isolated left p3	ISEM, Montpellier
UM-HGL50-264	<i>Azibius magnus</i>	Isolated right m1 (Holotype)	ISEM, Montpellier
UM-HGL50-265	<i>Azibius magnus</i>	Isolated right m1 (lingually broken)	ISEM, Montpellier
UM-HGL50-266	<i>Azibius magnus</i>	Isolated right m2 (corroded)	ISEM, Montpellier
UM-HGL50-166	<i>Azibius trecki</i>	Isolated right DP4	ISEM, Montpellier
UM-HGL50-295	<i>Azibius trecki</i>	Isolated left DP4	ISEM, Montpellier
UM-HGL51-46	<i>Azibius trecki</i>	Fragment of right maxillary bearing P3-4	ISEM, Montpellier
UM-HGL51-46	<i>Azibius trecki</i>	Fragment of right maxillary bearing M3	ISEM, Montpellier
UM-GZC-41	<i>Azibius trecki</i>	Isolated left P4	ISEM, Montpellier
UM-HGL50-396	<i>Azibius trecki</i>	Boneless fragment of a left maxillary bearing M1-2	ISEM, Montpellier
UM-HGL50-270	<i>Azibius trecki</i>	Fragment (taloid) of an isolated right dp4	ISEM, Montpellier
UM-HGL50-248	<i>Azibius trecki</i>	Isolated left m1	ISEM, Montpellier
UM-HGL50-256	<i>Azibius trecki</i>	Fragment of left mandible bearing p4-m3	ISEM, Montpellier
UM-HGL50-326	<i>Lazibadapis anchomyinopsis</i>	Isolated right M1 (buccally broken)	ISEM, Montpellier
UM-HGL50-169	<i>Lazibadapis anchomyinopsis</i>	Isolated right M2 (corroded)	ISEM, Montpellier
UM-HGL50-170	<i>Lazibadapis anchomyinopsis</i>	Isolated right M2 or M3	ISEM, Montpellier
UM-HGL50-325 (m2)	<i>Lazibadapis anchomyinopsis</i>	Boneless fragment of left mandible preserving m2-3 (Holotype). m2	ISEM, Montpellier
UM-HGL50-325 (m3)	<i>Lazibadapis anchomyinopsis</i>	Same as line above, but 3rd lower molar (m3)	ISEM, Montpellier
UM-HGL50-290	<i>Lazibadapis anchomyinopsis</i>	Isolated left m3	ISEM, Montpellier

Table 1. List of models. Collections : Office National des Mines, Tunis; Université de Montpellier, Institut des Sciences de l'Evolution, Montpellier.