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3D models related to the publication: New middle Eocene proboscidean from Togo illuminates the early evolution of the elephantiform-like dental pattern.

Lionel Hautier^{1*}, Rodolphe Tabuce¹, Koffi Evenyon Kassegne², Yawovi Zikpi Amoudji², Mickaël Mourlam¹, Maëva Orliac¹, Frédéric Quillévéré³, Anne-Lise Charruault¹, Ampah Kodjo Christophe Johnson^{2*}, Guillaume Guinot¹

¹Institut des Sciences de l'Evolution de Montpellier, Université Montpellier, CNRS, IRD, Cc 064; place Eugène Bataillon, 34095 Montpellier Cedex 5, France; email: lionel.hautier@umontpellier.fr.

²Département de Géologie, Faculté des Sciences, Université de Lomé, B.P. 1515 Lomé, Togo.

³Univ Lyon, Université Claude Bernard Lyon 1, ENS de Lyon, CNRS, UMR 5276 LGL-TPE, F-69622 Villeurbanne, France.

*Corresponding authors: Dr. Lionel Hautier lionel.hautier@umontpellier.fr and Dr. Christophe Johnson christophe.johnson@yahoo.fr

Abstract

This contribution contains the 3D models described and figured in the following publication: Hautier L, Tabuce R, Kassegne KE, Amoudji YZ, Mourlam M, Orliac M, Quillévéré F, Charruault A-L, Johnson AKC, Guinot G. 2021. New middle Eocene proboscidean from Togo illuminates the early evolution of the elephantiform-like dental pattern.

Keywords: Comparative anatomy, Middle Eocene, Molar, Proboscidea, Togo

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| Inv nr. (model Id) | Description |
|--------------------|---|
| ULDG-DAG1(M3#769) | 3D surfaces of the dentine and enamel. |
| ULDG-DAG1(M3#771) | μCT scan of the molar (resolution: 47.6 μm) |

Table 1. 3D data representing the specimen ULDG-DAG1 (*Dagbatitherium tassyi*). Collection: University of Lomé, Togo.

INTRODUCTION

We present here the 3D model of a proboscidean specimen discovered in middle Eocene phosphate deposits from Dagbati (Togo) and belonging to a new genus and species, *Dagbatitherium tassyi* (Hautier et al., 2021; see Table 1 and Fig. 1). *Dagbatitherium* displays several elephantiform dental characteristics such as a three-layered Schmelzmuster, the presence of a mesoconid, transversely enlarged buccal cusps, and the individualization of a third lophid associated to a minute distal cingulid. This new proboscidean taxon potentially represents the oldest record of the Elephantiformes and bridges a critical temporal and morphological gap in the proboscidean fossil record (Hautier et al., 2021). A 3D model of the enamel cap and dentine was reconstructed in order to reveal hidden anatomical features and characterize differences in enamel thickness.

METHODS

The molar ULDG-DAG1 was imaged using high-resolution microtomography (μCT) at the MRI platform of the *Institut des Sciences de l'Evolution de Montpellier* (ISE-M). The scan resolution was 23.8 μm. Image segmentation of the cranium elements was performed on the μCT images with Avizo Lite 2019.4 (ThermoFisher Scientific) software using the segmentation threshold selection tool. The 3D virtual restoration was performed with MorphoDig software (v. 1.5.3; Lebrun, 2018). The 3D surface model of the molar ULDG-DAG1 is provided in

VTK polydata format, and can therefore be opened with a wide range of freeware.

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Hautier L, Tabuce R, Kassegne KE, Amoudji YZ, Mourlam M, Orliac M, Quillévéré F, Charruault A-L, Johnson AKC, Guinot G. 2021. New middle Eocene proboscidean from Togo illuminates the early evolution of the elephantiform-like dental pattern. *Proceedings of the Royal Society B*. <https://doi.org/10.1098/rspb.2021.1439>

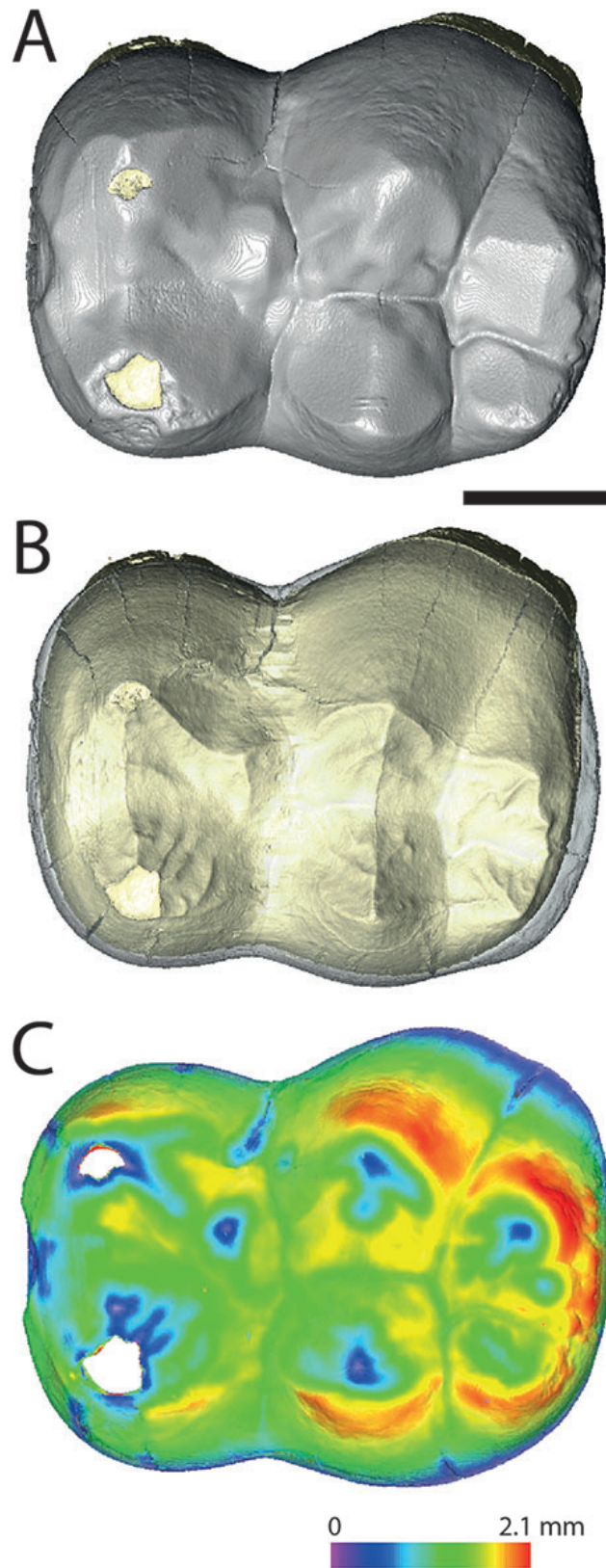


Figure 1. 3D reconstructions of the molar ULDG-DAG1. A and B, occlusal views; the enamel is in grey, the dentine in yellow. C, 3D enamel thickness distribution maps with spectral colors. The thickest enamel is represented in red, the thinnest enamel is represented in dark blue. Color scale: 0-2.1 mm. Scale bar represents 1cm.