# 3D models related to the publication:

Hannah Keppeler[1]*, Julia A. Schultz[1], Irina Ruf[2], Thomas Martin[1]

[1] *Institut für Geowissenschaften, Abteilung Paläontologie, Universität Bonn, 53115 Bonn, Germany*
[2] *Abteilung Messelforschung und Mammalogie, Senckenberg Forschungsinstitut und Naturmuseum Frankfurt, 60325 Frankfurt am Main, Germany*
*__Corresponding author__: hannah_keppeler@web.de

**Abstract**
The present 3D Dataset contains the 3D models analyzed in Keppeler, H., Schultz, J. A., Ruf, I., & Martin, T., 2023. Cranial anatomy of *Hypisodus minimus* (Artiodactyla: Ruminantia) from the Oligocene Brule Formation of North America. Palaeontographica Abteilung A.

**Keywords:** 3D reconstruction, CT data set, Hypertragulidae, skull

| Specimen | Data id | Description |
|---|---|---|
| SMNK-PAL 27212 | M3#1036 | 3D surface models |
| SMNK-PAL 27212 | M3#1031 | μCT image stack |
| SMNK-PAL 27213 | M3#1035 | 3D surface models |
| SMNK-PAL 27213 | M3#1033 | μCT image stack |

**Table 1.** Specimen and 3D data of *Hypisodus minimus*. SMNK: Staatliches Museum für Naturkunde Karlsruhe, 76133 Karlsruhe, Germany.

## INTRODUCTION

This dataset contains 3D models and image stacks of two skulls of *Hypisodus minimus* (Artiodactyla: Ruminantia). The specimens SMNK-PAL 27212 and SMNK-PAL 27213 were collected in the Oligocene Brule Formation of the White River Group in North America (see Table 1 for specimen list). The skulls were used to provide anatomical descriptions of the cranial bones as well as an atlas of a poorly known species. Figure 1 shows the skull of SMNK-PAL 27212 in lateral left view. The data is published in Keppeler *et al.* (2023).

## METHODS

Species identification was done after Meehan & Martin (2004). The skulls were scanned using a GE phoenix v—tome—x s 240 μCT scanner (SMNK-PAL 27212: 150 kV, 300 mA, 0.05171813 mm isotropic voxel size, timing 500 ms; SMNK-PAL 27213: 120 kV, 240 mA, 0.06168795 mm isotropic voxel size, timing 1000 ms). The image stacks were generated using VGSTUDIO MAX and processed manually in the data visualization and analysis software Avizo 8.1 (Thermo Fisher Scientific). The 3D surface models were exported from Avizo as .ply, allowing the models to be opened with freeware like MeshLab. Further reduction of the number of surfaces was done using MorphoDig (version 1.6.4) and MeshLab (version 2022.02) to fit the file size requirements of MorphoMuseuM.

## ACKNOWLEDGEMENTS

## BIBLIOGRAPHY

Keppeler, H., Schultz, J. A., Ruf, I., & Martin, T., 2023. Cranial anatomy of *Hypisodus minimus* (Artiodactyla: Ruminantia) from the Oligocene Brule Formation of North America. Palaeontographica Abteilung A. https://doi.org/10.1127/pala/2023/0140

Meehan, T. J., & Martin, L. D., 2004. Emended Genus Description and a New Species of *Hypisodus* (Artiodactyla: Ruminantia: Hypertragulidae). New Mexico Museum of Natural History and Science Bulletin, 26, 137–143.
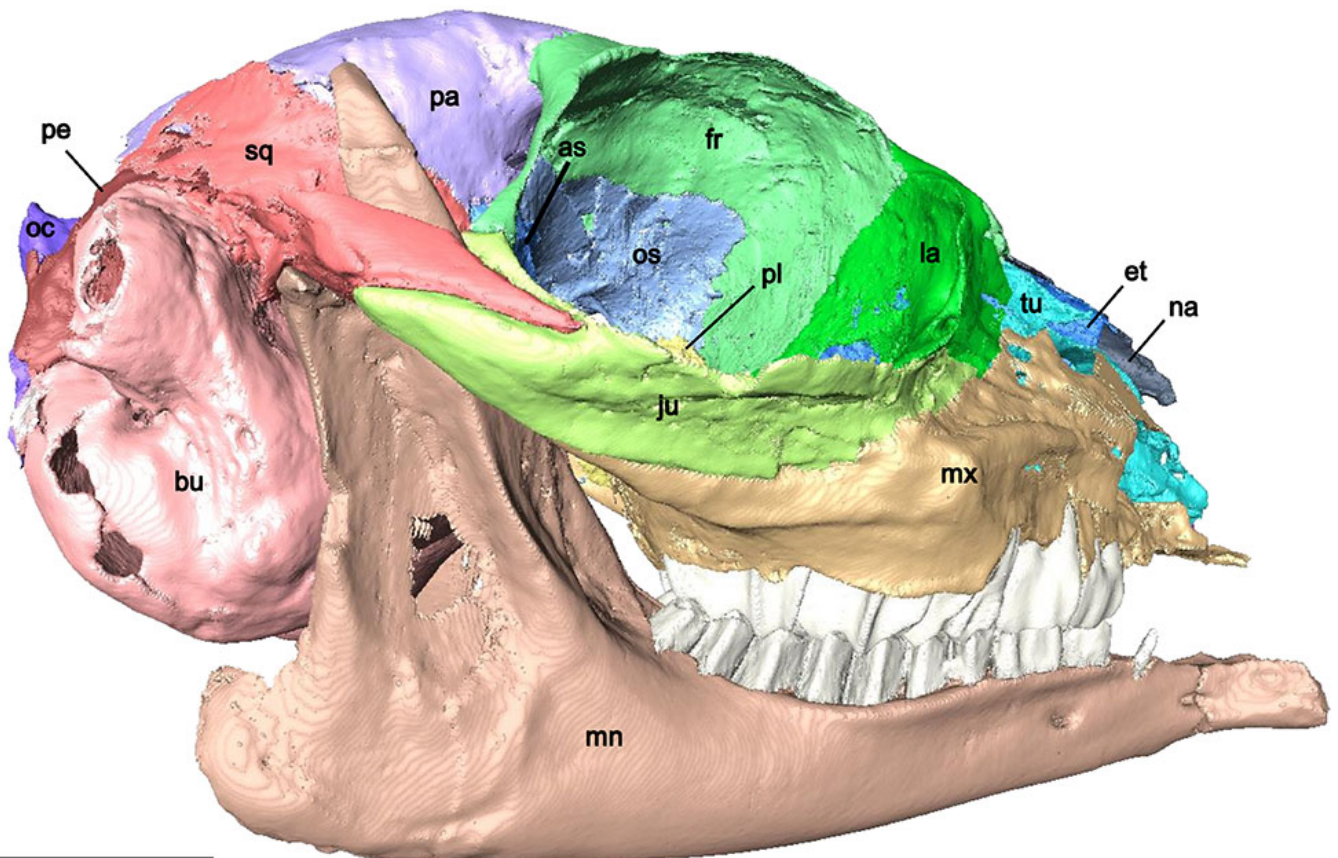
**Figure 1.** Reconstruction of the skull of *Hypisodus minimus* (SMNK-PAL 27212) in right lateral view. Abbreviations: **as** alisphenoid, **bu** bullae tympanicae, **et** os ethmoidale, **fr** os frontale, **ju** os jugale, **la** os lacrimale, **mn** mandibula, **mx** os maxillare, **na** os nasale, **oc** os occipitale, **os** orbitosphenoid, **pa** os parietale, **pe** os petrosum, **pl** os palatinum, **sq** os squamosum, **tu** turbinals. Scale bar = 10 mm.