Dataset

3D model related to the publication: Morphology and distribution of scales, dermal ossifications, and other non-feather integumentary structures in non-avialan theropod dinosaurs

Christophe Hendrickx[1]*, Phil Bell[2]*, Michael Pittman[3], Andrew R. C. Milner[4], Elena Cuesta[5], Jingmai O'Connor[6], Mark Loewen[7,8], Philip J. Currie[9], Octávio Mateus[10,11], Thomas G. Kaye[12], Rafael Delcourt[13]

[1] *Unidad Ejecutora Lillo, CONICET-Fundación Miguel Lillo, Miguel Lillo 251, San Miguel de Tucumán 4000, Tucumán, Argentina*
[2] *School of Environmental and Rural Science, University of New England, Armidale, NSW 2351, Australia*
[3] *Vertebrate Palaeontology Laboratory, Division of Earth and Planetary Science, The University of Hong Kong, Pokfulam, Hong Kong SAR, China*
[4] *St. George Dinosaur Discovery Site at Johnson Farm, St. George, 2180 East Riverside Drive, St. George, Utah, USA*
[5] *Bayerische Staatssammlung für Paläontologie und Geologie, Richard-Wagner-Str. 10 80333 Munich, Germany*
[6] *Field Museum of Natural History, 1400 S Lake Shore Drive, Chicago, Illinois 60605, USA*
[7] *Natural History Museum of Utah, 301 Wakara Way, Salt Lake City, Utah 84108, USA*
[8] *Department of Geology and Geophysics, University of Utah, Frederick Albert Sutton Building, 115 South 1460 East, Salt Lake City, Utah, USA*
[9] *Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada*
[10] *GeoBioTec, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal*
[11] *Museu da Lourinhã, Lourinhã, Portugal*
[12] *Foundation for Scientific Advancement, Sierra Vista, Arizona, USA*
[13] *Universidade Estadual de Campinas (UNICAMP), Instituto de Geociências, Cidade Universitária, Rua Carlos Gomes, 250, 13083-855, Campinas, SP, Brazil*
*__Corresponding authors__: christophendrickx@gmail.com; pbell23@une.edu.au

Abstract
The present 3D Dataset contains the 3D model of the skin of *Allosaurus* described in Hendrickx, C. et al. *in press*. Morphology and distribution of scales, dermal ossifications, and other non-feather integumentary structures in non-avialan theropod dinosaurs. Biological Reviews.

Keywords: Allosauridae, basement scales, Integument, juvenile, non-avian Theropoda

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INTRODUCTION

We here present a 3D model of the scaly integument of the theropod dinosaur *Allosaurus* (Allosauridae: Allosauroidea; Table 1 and Fig. 1). The material consists of a 3D reconstruction of the counterpart of a 30 cm2 patch of skin impression (Fig. 1F-G) associated with the anterior dorsal ribs/pectoral region (Fig. 1A) of the specimen of *Allosaurus jimmadseni* UMNH VP C481 deposited at the Natural History Museum of Utah, University of Utah, Salt Lake City, USA. The 3D model was generated from a plastic cast of the natural mould of the skin of WDC DMQ-A 053 (Fig. 1E) deposited at the Wyoming Dinosaur Center, Thermopolis, Wyoming, USA. WDC DMQ-A 053 is a nearly complete and articulated skeleton of a juvenile *Allosaurus jimmadseni* whose body length was estimated to be around four meters (Loewen, 2010; Pinegar et al., 2003). This *Allosaurus* specimen was discovered in the lower part of the Morrison Formation (Kimmeridgian; Upper Jurassic) of the Meilyn Quarry, Medicine Bow, Carbon County, Wyoming. The skin shows a semi-uniform basement of 1-2 mm diameter pebbles with a smaller number of slightly larger (up to 3 mm) ovoid scales (Fig. 1B-D). The irregular shape, distribution, and overall small size of these larger scales suggest that they are not classifiable as feature scales but rather as variations in the basement scales.

Inv nr.	Description
UMNH VP C481	Counterpart of a 30 cm2 patch of skin impression associated with the anterior dorsal ribs/pectoral region.

Table 1. Related 3D skin model of *Allosaurus jimmadseni* (UMNH VP C481, plastic cast). Collection: Natural History Museum of Utah (UMNH), University of Utah, Salt Lake City, USA

METHODS

The cast specimen of the skin from the pectoral region of *Allosaurus jimmadseni* (UMNH VP C481) was examined first hand on November 1, 2016, and the three-dimensional (3D) model was generated by Ryan Felice using a Creaform Go!SCAN 20 surface scanner at 0.2 mm resolution. The 3D model was exported, oriented, and scaled in Meshlab version 1.3.4BETA (Cignoni et al., 2008).

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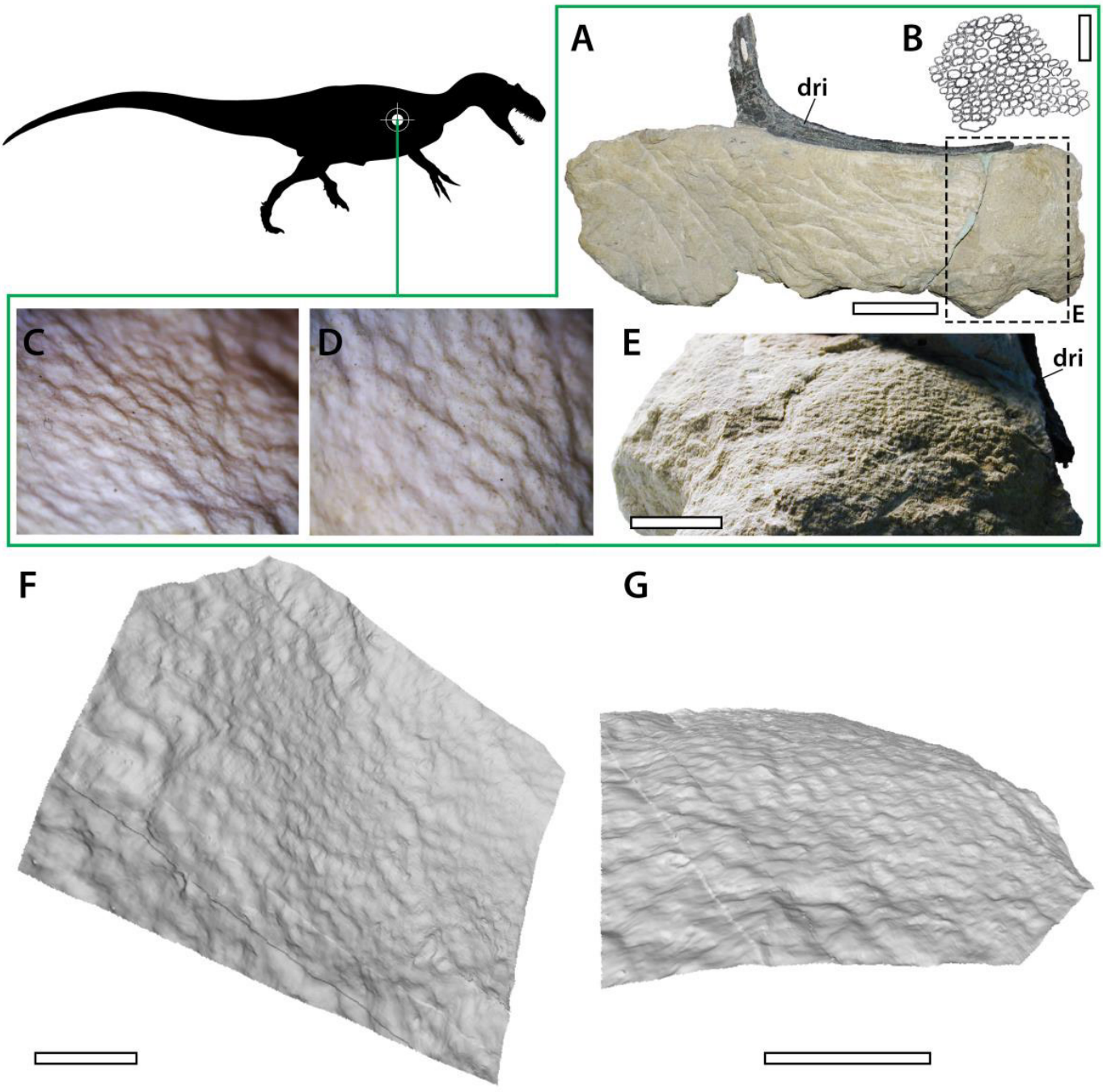

Figure 1. A) Scaly skin associated with a dorsal rib from the scapular region of a juvenile individual of *Allosaurus jimmadseni* (WDC DMQ-A 053). (B) Interpretive drawing of the basement scales. Close up on (C–D) a plastic cast of the counterpart of the basement scales (UMNH VP C481) and (E) a natural mould of the scaly skin anterior to the distal portion of a dorsal rib (WDC DMQ-A 053). (F–G) 3D-Model of the skin. Scale bars = 5 cm (A), 2 cm (E) and 1 cm (B, F–G).

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