Martín, 5500 Mendoza, Mendoza, Argentina. *fpujos@mendoza-conicet.gob.ar*

In paleontology, studies based on computed tomographies (CT) and posterior digital reconstructions allow the observation of the internal cranial cavities of vertebrate skulls in a non-destructive way. In recent years, these studies have often been applied to xenarthrans and, among them, several extinct terrestrial sloths have been analyzed using these techniques. Here, we present the first 3D digital endocranial models of a juvenile specimen of the mylodontine *Glossotherium robustum* (Owen, 1842), housed and CT-scanned at the American Museum of Natural History (collection number: AMNH 11270). The early ontogenetic stage of this specimen is clearly suggested by its small size, open cranial sutural contacts, and conical dentition. The digital reconstructions of the inner ear, brain cavity, and paranasal sinuses are compared with the homologous structures from an adult representative of the same species. Among these anatomical areas, the inner ear appears to be the most conservative, with the labyrinthine morphology being almost identical in the juvenile and the adult. The brain cavity of the juvenile *G. robustum* lacks the olfactory bulbs, due to preservation issues. Nonetheless, the general shape of the brain endocast of AMNH 11270 appears more anteroposteriorly compressed than the adult conformation. The greatest juvenile-adult differences concern paranasal pneumatization. In the juvenile *G. robustum*, paranasal sinuses are limited to the frontal, whereas pneumatization in the adult extends far posteriorly, invading almost the entire basicranium. The pattern observed in the pneumatization of the juvenile *G. robustum* is strongly reminiscent of that of juvenile and adult members of Scelidotheriinae, the sister group of Mylodontinae, and other earlier non-mylodontid sloths, such as *Hapalops*. This suggests that the impressive sinus organization seen in the adult *G. robustum* may be the consequence of an extended development of this trait during late life stages (*i.e.*, peramorphosis). Analyzing trait evolution during the ontogeny of extinct sloth lineages may untangle interesting heterochronic patterns and further illuminate the evolutionary history of the group.

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NEW NON-MAMMALIAFORM CYNODONT FROM THE UPPER TRIASSIC LOS COLORADOS FORMATION, ISCHIGUALASTO-VILLA UNION BASIN (LA RIOJA, ARGENTINA)

L. C. Gaetano[1,2], F. Abdala[2,3], A. Tartaglione[4], M. Schulz[4], A. G. Martinelli[5], A. Otero[6], J. M. Leardi[1,7], C. Apaldetti[8], and V. Krapovickas[1]*

[1]Instituto de Estudios Andinos "Don Pablo Groeber" (IDEAN, Universidad de Buenos Aires-CONICET). Intendente Güiraldes 2160, C1428EGA Ciudad Autónoma de Buenos Aires, Argentina. *lcgaetano@gl.fcen.uba.ar*; *jmleardi@gl.fcen.uba.ar*; *veronicakrapovickas@gmail.com*
[2]Evolutionary Studies Institute, University of the Witwatersrand. Private Bag 3, WITS 2050, Johannesburg, South Africa.
[3]Unidad Ejecutora Lillo, CONICET-Fundación Miguel Lillo. Miguel Lillo 251, T4000JFE Tucumán, Tucumán, Argentina. *nestor.Abdala@wits.ac.za*
[4]Forschungs-Neutronenquelle Heinz Maier-Leibnitz (FRM II), Technische Universität. Lichtenbergstr. 1, D – 85747, Garching, Germany. *aureliano.tartaglione@frm2.tum.de*; *michael.schulz@frm2.tum.de*
[5]Sección Paleontología de Vertebrados, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia"- CONICET. Av. Ángel Gallardo 470, C1405DJR Ciudad Autónoma de Buenos Aires, Argentina. *agustin_martinelli@yahoo.com.ar*
[6]División Paleontología de Vertebrados (Anexo Laboratorios), Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata. Avenidas 122 y 60, B1900AVW La Plata, Buenos Aires, Argentina. *alexandros.otero@gmail.com*
[7]Departamento de Biodiversidad y Biología Experimental, Facultad de Ciencias Exactas y Naturales Universidad de Buenos Aires. Intendente Güiraldes 2160, C1428EGA Ciudad Autónoma de Buenos Aires, Argentina.
[8]Instituto y Museo de Ciencias Naturales, Universidad Nacional de San Juan. Avenida España 400 (Norte), J5400DNQ San Juan, San Juan, Argentina. *capaldetti@unsj.edu.ar*

We report a new species of a small probainognathian cynodont found in the uppermost third of the Los Colorados Formation at the Parque Nacional Talampaya (La Rioja, Argentina). It is represented by a partial cranium with articulated lower jaw. The specimen, PULR-V121, housed at the Universidad Nacional de La Rioja, was analyzed through X-ray micro-tomography in YPF Tecnología S.A. (Y-TEC, Ensenada, Buenos Aires, Argentina) using the Bruker SkyScan 1173 instrument. Although the results were acceptable, the resolution was not ideal due to the presence of ferruginous material in the sample. To overcome this issue, we performed a neutron tomography with the highest possible spatial resolution at the ANTARES instrument in the Forschungs-Neutronenquelle Heinz Maier-Leibnitz Zentrum (FRM II, Garching, Germany). The new species is a tritheledontid with a unique character state combination. PULR-V121 has a large upper canine in conjunction with a reduced lower one, which is only shared with *Riograndia* among probainognathian cynodonts and with the mammaliaform *Morganucodon*. It bears a semicircular, very well-developed, ventrally projected angular process dissimilar from that in other non-mammaliaform cynodonts. It shares with other tritheledontids the presence of upper postcanines with a symmetrical main cusp with convex mesial and distal margins flanked by smaller, lingually placed accessory cusps; lower postcanines with a large, asymmetrical, mesial main cusp followed by smaller distal accessory cusps; and a ventrally bowed secondary

osseous palate that reaches posteriorly up to the level of the tips of the upper postcanines and forms deep, narrow, lateral grooves for the lower postcanines. It is unique among prozostrodontians in the presence of a short osseous secondary palate that ends well-anteriorly to the anterior margin of the orbit, not reaching the end of the upper tooth row. Unlike Pachygenelinae, the upper postcanines lack cingula and their major axis is parallel to the tooth row. PULR-V121 is reconstructed as bearing 12 or 13 upper postcanines, a similar number to that observed in *Elliotherium* (13) and *Chaliminia* (13), a diagnostic feature of Chalimininae. A reduced number of lower postcanines (seven), regarding the number of upper ones, is a distinctive feature of PULR-V121, in which the last six upper postcanines lack a lower counter-element. PULR-V121 further differs from *Chaliminia* in having a notably shorter lower tooth row with the ascending process of the dentary well-posterior to the last lower postcanine and the masseteric fossa not reaching the level of the last lower postcanine. PULR-V121 lacks the strong osseous platform in the dentary, lateral to the last lower postcanines, which produces a strong lateral ridge present in the holotype of *Chaliminia*. The small non-procumbent posterior and the also small anterior (interpreted as i1) lower incisors preserved in PULR-V121 contrast with the relatively large, procumbent lower incisors observed in *Chaliminia*. PULR-V121 represents a new species that constitutes the second cynodont taxon recognized and the sixth reported cynodont specimen from the Upper Triassic Los Colorados Formation, adding to the diversity and knowledge of Norian South American probainognathians.

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NASAL CAVITY OF *SIPALOCYON EXTERNUS* (METATHERIA, SPARASSODONTA)

C. Gaillard[1] and A. M. Forasiepi[1]*

[1]Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales (IANIGLA), CCT CONICET Mendoza. Av. Ruiz Leal s/n Parque General San Martín, 5500 Mendoza, Mendoza, Argentina. *borhyaena@hotmail.com*; *charlene.gaillard.pal@gmail.com*

The nasal cavity of *Sipalocyon externus* (Hathliacynidae; MACN-Pv-CH 1911, housed at the Museo Argentino de Ciencias Naturales) from Sacanana, Chubut, Sarmiento Formation, Colhuehuapian age, is studied through µCT-scanning. The preservation of the thin bones of the nasal cavity is exceptional in this specimen compared to other studied sparassodonts. The general organization of the elements in the nasal cavity is similar to extant marsupials studied by T. Macrini and T. Rowe. The maxilloturbinal is treelike with at least four branches. The nasoturbinal extends along the entire cavity. The rostral nasoturbinal is small and thick, similar to *Dromiciops gliroides*. The caudal nasoturbinal occupies a large portion of the cavity and has one pneumatic cavity resembling *Dasyurus viverrinus*. The vomer is fused caudally to the ethmoid plate and is very similar in shape to the one of *Dasyurus hallucatus*. The nasal septum is less ossified rostrally than the one of marsupials. The posterior transverse lamina does not contribute to the cribriform plate, a common condition for extant marsupials. The encranial surface of the cribriform plate is concave with five pairs of large foramina and several smaller size foramina for the passage of the olfactory nerve (CNI). The cribroethmoidal foramen, crossed in life by a division of the ethmoidal nerve (CNV_1), is the largest foramen. The cribriform plate surface area is 83.2 mm^2. Considering the body mass estimation of 2.3 kg for the specimen (using the equations of Myers, Gordon and Ekdale), the number of functional olfactory receptor genes are estimated between 516 to 623. These values are half the ones of the extant didelphid *Monodelphis domestica* and slightly lower than the number of functional olfactory receptor genes of *Felis catus.* The olfactory bulbs cast represents 5.8% of the total volume of the endocranial cavity, similar to the value of *Sipalocyon gracilis*, but smaller than the percentages recorded for the borhyaenid *Borhyaena tuberata* and the didelphid *Monodelphis domestica*. Overall, although the architecture of the nasal cavity of *Sipalocyon externus* resembles extant marsupials, its cribriform plate resembles more the one of extant cats with similar functional olfactory receptor genes values and likely similar olfactory sensitivity.

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