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# A well-preserved vertebra provides new insights into rebbachisaurid sauropod caudal anatomical and pneumatic features

Guillermo J. Windholz, Juan D. Porfiri, Domenica Dos Santos, Flavio Bellardini, and Mathew J. Wedel
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Rebbachisauridae is a clade of sauropod dinosaurs whose maximum diversification and abundance are known from the Cretaceous of South America. We describe an anterior caudal vertebra, MDPA-Pv 007, from the Upper Cretaceous of Argentine Patagonia, whose characters allow it to be referred to this clade. Also, two phylogenetic analyses reinforce the referral of the new material more exclusively to Rebbachisaurinae. We analyze pneumatic structures using the first CT scans of a caudal element of a rebbachisaurid. The excellent preservation of MDPA-Pv 007, combined with CT images, allows us to document external fossae and foramina that connect to larger internal chambers, constituting unambiguous evidence of pneumaticity. The centrum of MDPA-Pv 007 is camerate, with large interconnected internal chambers; this is accompanied by a neural arch with wide and deep fossae. Caudal pneumaticity has a complex phylogenetic distribution among neosauropods. This feature may have evolved independently in diplodocoids and titanosauriforms, or it could be ancestral for Neosauropoda but secondarily lost in a few lineages. Future investigations, taking advantage of new technologies, will provide insights into the phylogenetic distribution and paleobiological implications of pneumaticity in sauropod dinosaurs and other fossil archosaurs.

**Key words:** Dinosauria, Sauropoda, Diplodocoidea, Rebbachisauridae, pneumaticity, Cretaceous, Neuquén Basin, Argentina.

Guillermo J. Windholz [gwindholz@unrn.edu.ar; ORCID: https://orcid.org/0000-0002-3240-2392 ] and Flavio Bellardini [flaviobellardini@gmail.com; ORCID: https://orcid.org/0000-0003-1616-8548 ], Universidad Nacional de Río Negro, Instituto de Investigación en Paleobiología y Geología, Río Negro, Argentina; IIPG, UNRN, Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Av. Roca 1242, (R8332EXZ) General Roca, Río Negro, Argentina; Museo Carlos Ameghino, Belgrano 1700, Paraje Pichi Ruca (predio Marabunta), Cipolletti, Río Negro, 8300, Argentina. Juan D. Porfiri [jporfiri@gmail.com ; ORCID: https://orcid.org/0000-0003-1720-5961] and Domenica Dos Santos [domenicasantos@gmail.com; ORCID: https://orcid.org/0000-0002-3247-4660 ], Museo del Desierto Patagónico, Calle 6 S/N, Añelo, Neuquén, 8305, Argentina; Museo de Ciencias Naturales, Universidad Nacional del Comahue, Buenos Aires 1400, Neuquén, 8300, Argentina; Catedra de

Reptiles Mesozoicos, Facultad de Ingeniería, Universidad Nacional del Comahue, Buenos Aires 1400, Neuquén, 8300, Argentina. Mathew J. Wedel [mathew.wedel@gmail.com ; ORCID: https://orcid.org/0000-000 1-6082-3103] College of Osteopathic Medicine of the Pacific and College of Podiatric Medicine, Western University of Health Sciences, Pomona, California, 91711, USA.




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