

## Bone microstructure of the sphenodont rhynchocephalian *Priosphenodon avelasi* and its paleobiological implications

Sol A. Cavasin, Ignacio A. Cerda, and Sebastián Apesteguía  
*Acta Palaeontologica Polonica* 69 (1), 2024: 29-38 doi:10.4202/app.01071.2023


Sphenodontians are a group of vertebrates with a vast taxonomic diversity and worldwide distribution of their fossils. Although they have been the subject of many studies on their phylogeny and morphology, those focused on their paleobiology are still scarce. We present here the osteohistology of eleven postcranial elements corresponding to a single specimen of *Priosphenodon avelasi*, an eilenodontine sphenodontian from Cenomanian–Turonian rocks of Río Negro (Argentina). The bone samples described here share a parallel-fibered type of matrix. The degree of vascularization varies in all the samples, but none of them present a significant density of primary vascular canals. Lines of arrested growth were observed in all appendicular elements, being better preserved in the humerus, radius and fibula. Extrinsic fibers were observed only in reduced regions of the cortex of the ulna and in one of the phalanges. The primary bone tissue suggests that the specimen had a relatively low growth rate with alternation between slow and accelerated stages. The latter could explain why this taxon reached the largest sizes of all known sphenodontians.

**Key words:** Rhynchocephalia, Sphenodontia, osteohistology, paleobiology, gigantism, Cretaceous, Argentina.

Sol A. Cavasin [[sol.cavasin17@gmail.com](mailto:sol.cavasin17@gmail.com); ORCID: <https://orcid.org/0009-0004-2890-7509>], Instituto de Investigación en Paleobiología y Geología (IIPG), Universidad Nacional de Río Negro, Av. Roca 1242, General Roca, 8332, Río Negro, Argentina; Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) Ignacio A. Cerda [[nachocerda6@gmail.com](mailto:nachocerda6@gmail.com); ORCID: <https://orcid.org/0000-0001-6279-0392>], Instituto de Investigación en Paleobiología y Geología (IIPG), Universidad Nacional de Río Negro, Av. Roca 1242, General Roca, 8332, Río Negro, Argentina; Museo Provincial Carlos Ameghino, Belgrano 1700, Paraje Pichi Ruca (predio Marabunta), 8300, Cipolletti, Río Negro, Argentina; Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Sebastián Apesteguía [[sebastian.apesteguia@fundacionazara.org.ar](mailto:sebastian.apesteguia@fundacionazara.org.ar); ORCID: <https://orcid.org/0000-0002-0414-0524>], Area de Paleontología de la Fundación de Historia

Natural Félix de Azara, Universidad Maimónides, Hidalgo 775 P. 7°, C1405BCK, Ciudad Autónoma de Buenos Aires, Argentina; Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see [creativecommons.org](https://creativecommons.org)), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(1,099.2 kB\)](#) |

 [Supplementary file \(1,627.0 kB\)](#)