

## Convergent allometric trajectories in Devonian–Carboniferous unornamented *Polygnathus* conodonts

Félix Nesme, Catherine Girard, Carlo Corradini, and Sabrina Renaud


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The shape of feeding structures is reputed to be under functional constraints related to the processing of food particles. Their morphological variation through evolution and ontogeny may thus provide an insight into changes in occlusal dynamics and diet. The present study therefore aims at characterizing allometric trajectories of oral elements of *Polygnathus* conodonts, with a focus on caudal P1 elements that functioned in occlusion like mammalian molars. The shape of the elements, collected at the Puech de la Suque section, France, ranging from the uppermost Devonian to the lowermost Carboniferous, was quantified using a three-dimensional morphometric geometric approach, focusing on the most abundant unornamented conodonts. *Polygnathus* elements varied in size and shape along the record, leading to the definition of four successive Operational Taxonomic Units (OTUs). The pattern of bilateral asymmetry remained stable across these OTUs. In contrast, allometric trajectories displayed several reorientations, due to different juvenile morphologies but similar adult shapes. Both within and across OTUs, small-sized unornamented *Polygnathus* elements displayed a higher disparity than large-sized ones, suggesting higher constraints on the morphology of the later. These findings suggest that the constraints on adult *Polygnathus* remained important but relatively stable over

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Félix Nesme [[felix.nesme@umontpellier.fr](mailto:felix.nesme@umontpellier.fr); ORCID: <https://orcid.org/0009-0001-2489-7647>], and Catherine Girard [[catherine.girard@umontpellier.fr](mailto:catherine.girard@umontpellier.fr); ORCID: <https://orcid.org/0000-0003-3123-8276>], ISEM, Université de Montpellier, CNRS, EPHE, IRD, Montpellier, France. Carlo Corradini [[ccorradini@units.it](mailto:ccorradini@units.it); ORCID: <https://orcid.org/0000-0002-5153-7612>], Università degli Studi di Trieste, Dipartimento di Matematica, Informatica e Geoscienze, via Weiss 2, 34128 Trieste, Italy. Sabrina Renaud [[sabrina.renaud@univ-lyon1.fr](mailto:sabrina.renaud@univ-lyon1.fr); ORCID: <https://orcid.org/0000-0002-8730-3113>], Laboratoire de Biométrie et Biologie Evolutive, UMR 5558 CNRS, Université Claude Bernard Lyon1, Campus de la Doua, Bâtiment Mendel, 2 rue Dubois, 69100 Villeurbanne, France.

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