

Review of: "Computed tomographic analysis of dental system of three Jurassic ceratopsians: implications for the evolution of the tooth replacement pattern and diet in early-diverging ceratopsians"

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In this study, the authors investigate the tooth morphology and patterns of tooth development and replacement in three early ceratopsians from the Late Jurassic of China to shed light on the origins of the derived dental traits characteristics of Neoceratopsia and, in particular, Ceratopsidae. This work is thus critical to providing context for the evolution of the ceratopsid dental batteries system, a highly specialized dinosaurian adaptation that made ceratopsids one of the most significant herbivorous clades of Late Cretaceous terrestrial ecosystems—along with hadrosaurids.

To that end, the authors rely chiefly on new 3D reconstructions based on the high-resolution micro-CT scans of several specimens representing three early ceratopsian taxa (*Yinlong*, *Hualianceratops*, and *Chaoyangsaurus*). Their work reveals previously unknown details of dental morphology in the three species, from early mineralization stages to eruption, wear, and shedding, as well as tooth replacement patterns within the jaw. Notably, *Yinlong downsi* is represented by four specimens forming a putative ontogenetic series, which allows the team to point out changes to tooth replacement patterns during ontogeny. These results are presented along with previous works describing the dentitions of Cretaceous ceratopsians, allowing for fruitful comparisons between the earlier and later members of the group. The article is well-written and easy to read. The background, methods used, and rationale for the study are well-presented and understandable for readers unfamiliar with the field. The descriptions are meticulous and efficiently accompany the 3D reconstructions. The figures themselves are of excellent quality and constitute the main strength of the paper. Overall, the authors provide well-presented and robust evidence supporting their conclusions regarding dental evolution in Ceratopsia. I concur with previous public reviews of this version of the manuscript (available [here](#)), noting the lack of measurements for the different tooth dimensions, the necessity to include raw micro-CT scan data as supporting files for reproducibility, and the need to further flesh out the reasoning supporting the inferred feeding strategies of *Yinlong*. It appears all these aspects have been revised in a later version of the manuscript, and I commend the authors for addressing them. Adding to these comments, I would point out that, first, the authors refer several times to cross-sections of the teeth or jaws that are not shown in the manuscript (lines 158-160 and 170-172). Ideally, these should be made available as supplementary figures. Secondly, in the discussion, the team proposes a decrease in tooth replacement rate and resorption rate through ontogeny for *Yinlong*. It would have been interesting to see the authors suggest explanations for this pattern, e.g., ontogenetic shifts in feeding strategies (which are common in living herbivorous saurians). I also list below a few minor issues I could spot throughout the manuscript (some of which may have been addressed in the latest version). Beyond

these minor points, the manuscript is fit for publication and will greatly interest dinosaur workers, palaeontologists in general, developmental biologists, and a wider audience alike.

Minor issues:

- Line 129: the text should refer to Fig. 3C (premaxillary and maxillary teeth) rather than Fig. 3D (dentary teeth).
- Line 145: idem.
- Line 187: the reference to Fig. 3D (dentary teeth) should be removed, as the section concerns maxillary teeth.
- Lines 202-206: the authors propose that, in *Yinlong*, “the lingual surfaces of the crowns are flat and gradually become concave as the wear facet develops.” However, they note earlier that M9 has a convex lingual surface. To uphold their hypothesis, the authors should explain why this tooth's morphology is uniquely different and justify that the initial state of maxillary teeth prior to wearing is a flat rather than convex lingual surface.
- Lines 209-210: “The smallest specimen IVPP V18638 has the most replacement teeth in the maxilla with and CT data reveal...” A word or sentence fragment seems missing after “with.”
- Line 220: the text should refer to Fig. 2C (right side teeth) rather than Fig. 2D (left side).
- Line 237: the text should refer to Fig. 3F (dentary teeth) rather than Fig. 3H (premaxillary and maxillary teeth).
- Lines 262-263: “the maxillary teeth of *Chaoyangsaurus* possess a different crown morphology from *Yinlong*.” (missing article).
- Line 297: the text should most likely refer to Fig. 1D (lingual view, showing especially the replacement tooth rM2) rather than Fig. 1C (labial view, where the least mature replacement teeth are not visible).