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Molar morphology and occlusion of the Early Jurassic mammaliaform *Erythrotherium parringtoni*

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The South African Early Jurassic morganucodontan *Erythrotherium* is considered by some authors to be potentially synonymous with *Morganucodon*, due to similar tooth morphology. However, despite their similar dental morphology, the occlusal pattern of *Erythrotherium parringtoni* has been described as embrasure occlusion, close to the mode of *Megazostrodon rudnerae* , rather than that of *Morganucodon*. In this study the molars of *Erythrotherium* were re-examined and the two alternative occlusal hypotheses were tested using the Occlusal Fingerprint Analyser (OFA). Morphological comparison of the molars of *Erythrotherium parringtoni* to those of *Morganucodon watsoni* showed similarities in cusp height and shape in lingual/buccal views, but the molars and individual cusps of *Erythrotherium parringtoni* are considerably narrower linguo-buccally, and more gracile. With cusps a and c close together in *Erythrotherium parringtoni*, cusp positioning differs from that of *Morganucodon watsoni* and shows similarities to the pattern in *Megazostrodon rudnerae*. Also, the upper molars of *Erythrotherium parringtoni* are aligned in a straight row and lack the angle, relative to the longitudinal axis, between the first and second upper molars that is present in *Morganucodon watsoni* . This results in embrasure occlusion being the only viable occlusal mode for *Erythrotherium parringtoni* , which was confirmed by the OFA analysis. A *Morganucodon*-like occlusion would allow only the main cusps a/A to contact their antagonists and thus major gaps would be present, causing considerable reduction of functionality of the dentition. Based on the morphological evidence and the differing occlusal mode, the perpetuation of *Erythrotherium parringtoni* as a separate genus is confirmed.

Key words: Mammalia, Morganucodonta, dental morphology, occlusion, dental function, Mesozoic, Lesotho, South Africa.

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