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Reexamination of the mandibular and dental morphology of the Early Jurassic mammaliaform *Hadrocodium wui*

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CT visualization of the mandible and dentition of *Hadrocodium wui*, a stem mammaliaform from the Lower Jurassic Lower Lufeng Formation of Yunnan, China has revealed new features not accessible by previous microscopic study of the fossil. Its mandible shows a postdentary trough with an overhanging medial ridge and a short Meckel's sulcus. An incomplete part of the ectotympanic and possibly a remnant of Meckel's element are preserved in the postdentary trough. Thus, *Hadrocodium* is similar to other mammaliaforms in retaining a mandibular middle ear, contrary to our earlier interpretation. The mandible exhibits a large postcanine diastema from shedding of anterior premolars without replacement, an age-dependent feature better developed in older adults. Another adult feature is the alignment of the ultimate molar to the coronoid process. This is consistent with age-dependent changes in other mammaliaforms where the last molars of the toothrow shift from medial of the coronoid process in the juvenile, to a position in front of the coronoid process in the adult. The mandible has a short mobile symphysis. The dentition consists of I5, C1 (two-rooted), P3 (including P1 position) and M2 (M2 with confluent roots), and i4, c1 (partially two-rooted), p3, and m2 (m2 with partially confluent roots). The two-rooted upper canines are more derived than other Early Jurassic mammaliaforms from the same fauna, although similar to docodontans. *Hadrocodium* is unique in that the lower m2 cusp a occludes in the embrasure between upper M1–M2, but the posterior part of m2 shows between-cusp occlusion with upper M2 main cusp A. M2 is half the size of the lower m2, and occludes only with the distal half of m2. The upper postcanines show a steep gradient of posteriorly decreasing tooth size, more so than other mammaliaforms. The CT examination corroborates that there are no unerupted teeth in the upper or lower jaws, and the holotype of *H. wui* is dentally and osteologically mature and capable of independent feeding.

Key words: Mammaliaformes, *Hadrocodium*, dental morphology, growth pattern, Jurassic, China.

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