

## **A morganucodontan mammaliaform from the Upper Jurassic Morrison Formation, Utah, USA**

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We describe two skull fragments of a new morganucodontan from the Cisco Mammal Quarry (Upper Jurassic Morrison Formation), preserving portions of the palate and snout in excellent 3D detail as well as the complete upper postcanine dentition.

Morganucodontans are best known by isolated elements and relatively complete skulls of several species of *Morganucodon* from the Lower Jurassic of Wales and China; this group is fundamental to our understanding of the early evolution of mammals. *Cifellilestes ciscoensis* gen. et sp. nov. possesses derived features of the snout paired with plesiomorphic construction of the molars; the distal premolars are complex and there is an unusually low count (two) of strongly imbricated molars. This character combination expands craniodental variation for the group. We sampled mudstone from the Cisco Mammal Quarry for ash-fall zircon analysis and obtained a date of  $151.50 \pm 0.28$  Ma. This dates the locality to the earliest Tithonian and slightly younger than other major dated mammal-bearing localities in the Morrison Formation. *Cifellilestes* represents one of the youngest members of this group and extends the record of morganucodontans in North America by more than 30 Ma. Morganucodontans are a rare component of Late Jurassic faunas but display surprising dental diversity through variations in a tooth count and cusp morphology of a deeply conserved, generalized mammalian tooth pattern, which was fully established in brasilodontid (non-mammalian) ancestors at least 80 my prior.

**Key words:** Mammalia, Morganucodonta, dentition, Jurassic, Morrison Formation.

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