

## ZHELESTIDS: STEM EUTHERIANS OR BASAL LAURASIATHERIANS, BUT NO EVIDENCE FOR PLACENTAL ORDERS IN THE CRETACEOUS

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Zhelestidae are best known by as many as ten species from the Cenomanian through Turonian of Uzbekistan and Kazakhstan. At the best-known sites at Dzharakuduk, four species are known (*Aspanlestes aptap*, *Parazhelestes mynbulakensis*, *P. robustus*, and *Zhelestes temirkazyk*) and an additional very small and very large species may be present. At the Cenomanian Sheikhdzheili sites to the west, two (*Eozhelestes mangit* and *Sheikhdzheilia rezvyii*) and maybe three species are present. These are the oldest published zhelestids. “*Sorlestes*” *kara* from Kazakhstan is Turonian in age. Other species from the Coniacian through Paleocene of Japan (“*Sorlestes*” *mifunensis*), Europe (*Lainodon orueetxebarriai*, *Labes quintanillensis*, *L. garimondi*), and North America (*Alostera saskatchewanensis*, *Gallolestes pachymanibularis*, *G. agujaensis*, *Avitotherium utahensis*) have been ascribed to this clade. Most taxa are known from fragmentary dental remains, but some of those from Uzbekistan are now known from associated cranial and dental remains. From the same localities ear regions and referred tarsal elements are known, although there is debate as to which tarsal elements belong to zhelestids. In all but a few phylogenetic analyses zhelestids cluster with early Tertiary archaic ungulates, largely because of dental characters. If these archaic ungulates are crown eutherians (placentals), then zhelestids are also crown eutherians (placentals). Most studies have used too few Cenozoic placentals or too few Cretaceous eutherians to determine whether this is the case, but for now zhelestids are probably best considered to be basal laurasiatherian placentals. These are, however, not members of extant placental orders, and thus counter to recent molecular studies, there is no evidence that members of extant placental ordinal clades existed in the Cretaceous.

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