

By: [Gina Whitei](#), Science Editor

## [The Oldest Vertebrates](#)

### *From China*

Chinese researchers from the University of Xi'an found in 1999, in Kunming area, Yunan (southern China) vertebrate fossils older than 500 Ma. Myllokunmingia and Haikouichthys had muscles with a "W" shape (myomeres) in transversal section of the body and a cartilaginous skull and spine. The previous oldest vertebrate fossils were 480 Ma old, but from the Cambrian (542-488 Ma) when most living groups of animals had already emerged, vertebrate fossils were unknown. These fossils increased by 50 Ma the age of the vertebrates and offered precious data about the emergence of the cartilages and bones, organs specific to vertebrates. [img=2]Myllokunmingia was a 530 Ma old agnathan (jawless) "fish" encountered in Maotianshan shales, resembling vaguely modern [hagfish](#) and [lampreys](#). It was 2.8 cm (1.12 in) long and 6 mm (0.24 in) high. Its skeleton shows no sign of mineralization (ossification). The fossil displays a distinct head and trunk with a forward sail-like (1.5 cm or 0.6 in) dorsal fin and a ventral fin fold (probably paired) further back. The head has five or six gill pouches and the rear myomeres of the total of 25 had chevrons. The notochord (the primitive axis of the spine) is also present. The mouth cannot be clearly identified. The fins do not have radials and there may be a pericardic cavity, like in the case of pre-vertebrate lancelets. The only found specimen had the tip of its tail buried in sediment.[img=3]Similar is Haikouichthys, found at the same site and of the same age, which resembled lampreys. This animal is 2.5 cm (1 in) long and narrower than the Myllokunmingia. The head has 6-9 gills. The "fish" has a prominent dorsal fin with fin radials, which angle "forward" toward the end, a very rare situation in the case of modern fish. The "fish" has a ventral fin fold and 13 circular structures along the bottom, which could be anything: gonads, slime organs, or anything else.