

New piece in the jigsaw puzzle of human origins

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In an article in today's *Nature*, Uppsala researcher Martin Brazeau describes the skull and jaws of a fish that lived about 410 million years ago. The study may give important clues to the origin of jawed vertebrates, and thus ultimately our own evolution.

Ptomacanthus anglicus was a very early jawed fish that lived in the Devonian period some 410 million years ago. It represents a type of fossil fish known as an "acanthodian" which is characterized by a somewhat shark-like appearance and sharp spines along the leading edges of all fins (except for the tail fin). This group of early jawed fishes may reveal a great deal about the origin of jawed vertebrates (a story that ultimately includes our own origins). However, their relationships to modern jawed vertebrates (and thus their evolutionary significance) are poorly understood, owing partly to the fact that we know very little about their internal head skeleton.

"To date, we have detailed data from one genus *Acanthodes*, which occurred very late in acanthodian history", Martin Brazeau says.

"I present details on the morphology of the braincase of *Ptomacanthus*, which is more than 100 million years older than *Acanthodes*. It is a radically different morphology from *Acanthodes*, which has several important implications for the relationships of acanthodians. The braincase of *Acanthodes* appears to most closely resemble that of early bony vertebrates, the lineage that ultimately includes humans and other land-living vertebrates). For this reason, the acanthodians were thought

to share a closer ancestor with bony vertebrates than with sharks. However, the braincase of *Ptomacanthus* more closely resembles that of early shark-like fishes, and shares very few features in common with *Acanthodes* and the bony vertebrates."

"As a consequence, the results indicate that *Ptomacanthus* was either a very early relative of sharks, or close to the common ancestry of all modern jawed vertebrates."

Source: Uppsala University

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