UW Professor: Chad Fossil Is Not an Early Human Ancestor

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A 7 million-year-old primate cranium found in central Chad does not represent the earliest human ancestor as reported previously, according to University of Wyoming Anthropology Professor James Ahern.

When it was discovered in 1999, scientists thought the ancient Toumai Skull was the earliest recorded hominid -- a unique human ancestor representing evidence of the human evolutionary line. But due to missing key features that could link previously unknown crania with the earliest hominids, Ahern and his research team dispute the previous findings.

In a recent edition of the online journal *PaleoAnthropology* (www.paleoanthro.org/journal/contents.htm), Ahern writes with colleagues from the universities of Michigan and Wisconsin, and from the Museum National d'Histoire Naturelle and the College de France in Paris. They expose inconsistencies between Toumai Skull's characteristics and those of definitive hominids.

Foremost among the details that identify all hominids is evidence of posture and locomotion. According to Ahern, none of these details on the Toumai Skull provide any indication of obligate bipedalism -- the anatomy of walking only upright on two legs. Ordinarily, he says, obligate bipedalism is reflected in certain features on the base of the cranium that support the neck muscles and that show how the spine meets the cranium. In this case, the team suggests the Toumai Skull characterizes the anatomy of living apes that walk on all four limbs.

"One of the biggest issues that we raise (in the paper) is that based on the skull alone, it can never be certain whether or not an ape walked on two legs," he says. "To tell for sure, you really need legs, a pelvis or a spinal column."

Scientists have known for some time that the chimpanzee is the species most closely related to humans, Ahern says. Toumai's age, however, is much before the time geneticists agree the two species began to diverge.

"Evidence suggests humans and chimps diverged as recently as 4.5 million years ago, so that would post-date this fossil," Ahern says.

The size and wear pattern of canine teeth also are important in assessing whether early primates could be hominids.

"What probably spurred the founding scientists to conclude the Toumai Skull was a hominid was the canine. The Chad fossil has a relatively small canine compared to living apes and gorillas, and, the wear on it also is unlike most male chimps and gorillas," Ahern says.

Generally, humans wear their canines from the tip while nonhuman primates wear from the back, keeping the tooth constantly pointed.

"In the Chad fossil, the canines are worn from the front and the back. If we just had apes and humans to look at we'd say it's probably a species in between," he says. "However, we can demonstrate similar canine wear when we compare (the skull) to several genuine apes that we know not to be hominids."

While the Toumai Skull could be a common ancestor to both human and chimpanzee lines, so little is known of primate fossils during the time between six and 12 million years ago, that Ahern and his team say "the critter" could just as easily be something else.

Even if Toumai doesn't represent human ancestry, Ahern insists the skull is still a significant discovery and jokes that his team is not suggesting that someone "throw the fossil away."

"Most Miocene apes that we know of are 10 million years old or older, so instead of being the earliest hominid, the Toumai Skull becomes an example of the latest Miocene apes," he says. "The fossil is still informative about hominid origins and can help us see what some of the potential ancestors for hominids look like."

Source: University of Wyoming