

# Natural Selection and the Human Skull

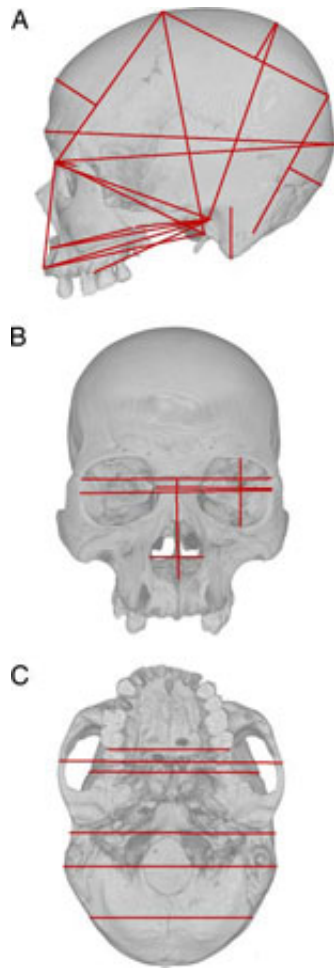
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New research led by UC Davis anthropologist Tim Weaver adds to the evidence that chance, rather than natural selection, best explains why the skulls of modern humans and ancient Neanderthals evolved differently. The findings may alter how anthropologists think about human evolution.

Weaver's study appears in the March 17 issue of the *Proceedings of the National Academy of Sciences*.

It builds on findings from a study he and his colleagues published last year in the *Journal of Human Evolution*, in which the team compared cranial measurements of 2,524 modern human skulls and 20 Neanderthal specimens.



The approximate locations of the cranial measurements used in the analyses are superimposed as red lines on lateral (A), anterior (B), and inferior (C) views of a human cranium. (National Academy of Sciences, PNAS (Copyright 2008))

The researchers concluded that random genetic change, or genetic drift, most likely account for the cranial differences.

In their new study, Weaver and his colleagues crunched their fossil data using sophisticated mathematical models -- and calculated that Neanderthals and modern humans split about 370,000 years ago. The estimate is very close to estimates derived by other researchers who have dated the split based on clues from ancient Neanderthal and modern-day

human DNA sequences.

The close correlation of the two estimates -- one based on studying bones, one based on studying genes -- demonstrates that the fossil record and analyses of DNA sequences give a consistent picture of human evolution during this time period.

"A take-home message may be that we should reconsider the idea that all morphological (physical) changes are due to natural selection, and instead consider that some of them may be due to genetic drift," Weaver said. "This may have interesting implications for our understanding of human evolution."

Weaver conducted the research with Charles Roseman, an anthropologist at the University of Illinois at Urbana-Champaign, and Chris Stringer, a paleontologist at the Natural History Museum in London.

Source: UC Davis

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