

New analysis suggests body size increase did not play a role in the origins of *Homo* genus

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A new analysis of early hominin body size evolution led by a George Washington University professor suggests that the earliest members of the *Homo* genus (which includes our species, *Homo sapiens*) may not have been larger than earlier hominin species. As almost all of the hows and whys of human evolution are tied to estimates of body size at particular points in time, these results challenge numerous adaptive hypotheses based around the idea that the origins of *Homo* coincided with, or were driven by, an increase in body mass.

In "Body Mass Estimates of Hominin Fossils and the Evolution of Human Body Size," published online in the *Journal of Human Evolution*, Mark Grabowski assistant research professor in the GW Center for the Advanced Study of Human Paleobiology, and his co-authors provide the most comprehensive set of body mass estimates, species averages and species averages by sex for fossil hominins to date. Produced using cutting-edge methodology and the largest sample of individual early hominin fossils available, analysis of their results shows that early hominins were generally smaller than previously thought and that the increase in [body size](#) occurred not between australopiths and the origins of *Homo* but later with *H. erectus* (the first species widely found outside of Africa).

"One of our major results is that we found no evidence that the earliest members of our genus differed in body mass from earlier australopiths (some of the earliest species of hominins)," said Dr. Grabowski, who is also a Fulbright scholar at the Centre for Ecological and Evolutionary

Synthesis at the University of Oslo. "In other words, the factors that set our lineage apart from our earlier ancestors were unrelated to an increase in body size, which has been the linchpin of numerous adaptive hypotheses on the origins of our genus."

"There are several untested assumptions about the origin of *Homo*," said Bernard Wood, University Professor of Human Origins at GW, who was not an author on the study. "This study debunks the one that suggests that until the origin of our own genus, for one reason or another - and the usual explanation is not enough meat in the diet - all early hominins were small-bodied. This elegant study shows that body size did not make a sharp uptick with the arrival of early *Homo*. My prediction is that this is just the first of many preconceptions about early *Homo* that will be debunked in the next few years."

Until now, anthropologists have generally relied on estimates of hominin [body mass](#) presented in a paper by Henry M. McHenry in 1992. Since then, many more fossils have been discovered and researchers better understand the complexities of human evolution. Dr. Grabowski and his co-authors build on and update McHenry's results and apply new and novel methods to analyze a comprehensive fossil data set. The researchers hope their results will be the new standard for fossil hominin body estimates.

In addition, Dr. Grabowski and the co-authors found that the level of size difference between males and females (sexual dimorphism) appears to have only slightly decreased from earlier hominin species by the time of early *H. erectus*, and only decreased to modern human-like low levels later in our lineage. High levels of dimorphism such as in gorillas may correlate with more "harem"-like social structures. This result should give pause to evolutionary models that see a more modern human-like monogamous social structure evolving early in our lineage.

Provided by George Washington University

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