

# Study finds human population expanded during late Stone Age

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Genetic evidence is revealing that human populations began to expand in size in Africa during the Late Stone Age approximately 40,000 years ago. A research team led by Michael F. Hammer (Arizona Research Laboratory's Division of Biotechnology at the University of Arizona) found that sub-Saharan populations increased in size well before the development of agriculture.

This research supports the hypothesis that population growth played a significant role in the evolution of [human](#) cultures in the Late Pleistocene. The team's findings are published in the online peer reviewed journal *PLoS ONE* on July 29.

Reconstructions of the timing and magnitude of changes in human population size are important for understanding the evolution of our species. There has been a longstanding disagreement whether humans began to increase in number as a result of innovative technologies and/or behaviors formulated by hunter-gatherer groups in the Late Pleistocene, or with the advent of agriculture in the Neolithic. Hammer's research integrates empirical genetics with discoveries in paleontology and archeology to help provide answers to interdisciplinary questions about which kinds of innovations led to the evolutionary success of humankind.

Hammer's UA team, together with their collaborator from the University of California San Francisco's Institute for [Human Genetics](#) and Department of Epidemiology and Biostatistics, surveyed the genetic

material of ~184 individuals from seven human populations and used a computational approach to simulate the evolution of genetic lineages over time. The researchers found that both hunter-gathers and food-producing groups best fit models with approximately ten-fold population growth beginning well before the origin of agriculture. For the first time ever, Hammer's team was able to investigate the timing of human population expansion by applying sophisticated inferential statistics to a large multilocus autosomal data set re-sequenced in multiple contemporary sub-Saharan African populations.

The team's finely executed experimental design and use of supercomputing power enabled them to determine that this expansion in [population size](#) likely began at the start of the Late Stone Age—a period in prehistory that shows an intensification of archeological sites, an increased abundance of blade-based lithic technologies, and enhanced long-distance exchange. The next step in the project is to gather more data by testing more populations and additional parts of the genome.

More information: Cox MP, Morales DA, Woerner AE, Sozanski J, Wall JD, et al. (2009) Autosomal Resequencing Data Reveal Late [Stone Age](#) Signals of Population Expansion in Sub-Saharan African Foraging and Farming Populations. [PLoS ONE](#) 4(7): e6366. [doi:10.1371/journal.pone.0006366](https://doi.org/10.1371/journal.pone.0006366)

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