Genetic evidence suggests that human evolution accelerated with the development of agriculture

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A just-published article in the journal *Nature*—"Ancient DNA reveals pervasive directional selection across West Eurasia," (Akbari et al, 15 April 2026)—describes how the development of agriculture in Europe and the Middle East resulted in an acceleration in human evolution in those regions over the last 10,000 years. The article was coauthored by 17 researchers from Germany, Austria, Iran and the US, headed by David Reich of Harvard University. Sophisticated statistical analyses were employed to tease out recognizable patterns from "noise."

This research is a valuable contribution to a materialist understanding of the mechanisms that drive evolution. At the same time, it has prompted a rabid, racist response on X (formerly Twitter) which focuses on one tenuous finding that the posters distort as demonstrating European racial superiority.

The data on which the study is based consists of DNA obtained from nearly 16,000 human remains ranging over the last 18,000 years, encompassing roughly 10,000 ancient (from fossils) and 6,000 modern individuals. This substantial database, the largest available from any region of the world, permits a detailed examination of changes in specific gene variant (allele) frequencies (i.e., evolution) ranging from a time when the peoples of the region lived exclusively by hunting and gathering through the development of agriculture. That fundamental and all-encompassing change in the economy had profound implications for human health, as well as social and political organization.

Hunter-gatherers tend to live in relatively small, more-or-less mobile groups relying on the seasonal abundance of particular plant and animal species for food and other useful materials. Population densities are relatively low and interaction between groups is usually limited. One result is that infectious disease transmission is restricted, technology is simple and hunger is possible if natural food sources fail. Also, social and political organization tends to be egalitarian, with different roles generally based on age and sex. This all changed with the adoption of agriculture.

With agriculture, the scale and reliability of food is more controllable and predictable, though still subject to fluctuations. As a result, group size increases, settlements become permanent, inter-group trade develops and social and political organization become more complex. One of the negative effects is that disease transmission, both within and between groups, is increased. The period during which agriculture developed in Eurasia and Africa is known as the Neolithic (c. 10,000–2,000 BCE).

All of this is likely to affect the health and lifespan of individuals as well as their likely reproductive success, i.e., via natural/directional selection. This would be expected to affect the relative frequencies of particular gene alleles in the population that were more or less suited for survival under the changed conditions created by the transition from hunting and gathering to agriculture.

Indeed, the new study found this to be the case in a significant number of examples. A total of 479 genetic variants were found to increase or decrease in frequency during the time span under examination. This strongly indicates that adaptation due to natural selection was taking place in many of these cases.

Among the characteristics observed in agricultural populations were traits associated with increased tuberculosis resistance and lower body fat. The former is apparently a consequence of enhanced disease transmission resulting from larger and denser settlements and increased inter-group contacts. The latter would presumably reflect a change in the reliability of the diet. For hunter-gatherers, the uncontrollable natural variations in the abundance of wild food resources would make it advantageous to "stock up" when possible. Since food preservation and storage techniques were limited or nonexistent for most hunter-gatherers, the only available "storage" location was in the individual's body (i.e., fat). With agriculture, the food supply would become more, if not totally, reliable, and the

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negative effects of obesity, such as diabetes susceptibility, would be reduced.

Other notable patterns include genes related to autoimmunity diseases and host-pathogen interactions. Again, these are likely associated with changes in the increasing consumption of domesticated plants and proximity to domesticated animals, the latter being subject to diseases to which humans are susceptible (e.g., bird flu).

Not all apparent patterns have such obvious explanations. The authors warn, “How phenotypes manifest today may be very different from how they manifested in past populations living in different environments with different lifestyles, so any signals discovered by this approach should not be interpreted as evidence for selection on the exact phenotype being tested.”

Phenotype is the expression of the interaction between an individual’s genetic makeup (genotype) and the environment in which he/she develops. This interaction is complex and dialectical. (Note: the interpretation of the phenotypic expression of specific alleles was based on modern analogies).

A major complicating factor in interpreting the identified genetic patterns is migration. Resident farming populations were often intermingled with migrant, mobile herders. This resulted in admixtures of economic, social and genetic characteristics. The latter resulted in changes in gene frequencies due to the blending of formerly separate populations, which had previously adapted to different environments, not to new selective pressures. The researchers attempted to compensate for this complication using statistical manipulation but outside commentators differ on the degree of success.

The article has been distorted by some right-wing commentators, notably on X, to support the conception that since populations in Western Eurasia have evolved at a greater pace than in the past, they are more “advanced” than people in other regions of the world. In particular, this research is misrepresented as evidence of a strong influence of genetics on supposed relative intelligence of different “races.”

One racist observes approvingly, “So now David Reich of Harvard has gone public about it, is it now socially acceptable to state the fact that black average IQ is far lower than white for genetic reasons?” And another, “Mass immigration from the third world will undo 18,000+ years of human evolution.” There are many more, equally foul.

What all of these commentators conveniently ignore is that the agricultural revolution took place not only in Western Eurasia but also independently in East Asia, Africa, and North and South America. And, in each area, great civilizations developed. If the advent of agriculture was a trigger for such evolutionary developments in one area, why not in the others? The lack of an equally robust body of available genetic data from the other areas is ignored in order to support the spewing of racist filth.

These racist interpretations are manifestations of an ideology of the ruling class that seeks to divide and oppress the working class by fomenting all sorts of socially constructed mechanisms of race, language, gender, etc. These ideas will be sustained, despite all evidence to the contrary, as long as capitalism exists.

While not surprising in retrospect, the finding of a marked acceleration in genetic change since the development of agriculture run counter to previous conceptions that since modern *Homo sapiens* first evolved (~300,000 years ago) there had been relatively little further physical evolution. Previous research suggested that over the broad span of human evolution change took place at a relatively slow pace, although the lack of detailed information may mask episodes of rapid change. The new study finds that the pace of change in gene allele frequency (i.e., evolution) sped up significantly over roughly the last 10,000 years due to the development of agriculture.

The authors propose that if a similar rate of evolution had occurred among human populations during tens of thousands of years prior to the development of agriculture, “we would expect many fixed differences across populations, despite the fact that previous studies have shown that there are only a handful, hardly more than would be expected based on random drift.”

This study highlights the immense potential contribution that can be made by the study of ancient DNA, for example in understanding the origins and development of diseases. The main limitation is that the source of data (i.e., human fossils) is much less available in the rest of the world, beyond western Eurasia. Without that, and greater time depth to the record throughout the world, the potential cannot be fully realized.

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