

# 'Creative' genes gave Homo sapiens edge over Neanderthals: study

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This handout picture released on April 7, 2021, by the National Museum of Prague shows the skull of a modern human female individual from Zlatý kůň. Genetic sequencing of human remains dating back 45,000 years has revealed a previously unknown migration into Europe and showed intermixing with Neanderthals in that period was more common than previously thought.

Researchers have discovered a series of creativity-linked genes that may have given Homo sapiens a significant edge over Neanderthals, enabling them to avoid extinction.

The findings suggest that these genes played "a fundamental role in the evolution of creativity, self-awareness and cooperative behaviour," the multinational research team wrote Wednesday in the *Nature* journal *Molecular Psychiatry*.

Such genes were like "a secret weapon" that gave

modern humans "a significant advantage over now-extinct hominids by fostering greater resilience to ageing, injury, and disease," they wrote.

Led by Granada University in Spain, the experts identified 267 genes unique to humans, and through genetic markers, genetic expression data and AI-related MRI techniques, found they were related to creativity.

"The scientists were able to identify the regions of the brain in which those genes (and those with which they interacted) were overexpressed," they wrote.

"These regions are involved in human self-awareness and creativity, and include the regions that are strongly associated with human well-being and that appeared relatively recently."

Previously, the same team had identified a pool of 972 genes organised into three brain networks, the oldest—which relates to learning habits, social attachment and conflict resolution—dating back 40 million years.

The second network—which relates to intentional self-control—emerged 2 million years ago, while the newest, governing creative self-awareness, only emerged 100,000 years ago.

"Thanks to these genes, Homo sapiens enjoyed greater physical fitness than now-extinct hominids, providing them with a superior level of resilience to ageing, injury, and disease," they wrote.

"Physical fitness, or resilience, is intrinsic to the definition of creativity," said the study's lead author Igor Zvir.

The finding offers fresh insight into the mystery of why Homo sapiens outlived the Neanderthals and other species.

The authors said creativity may have encouraged cooperation between individuals which would have set the stage for technological innovation, behavioural flexibility and openness to exploration, enabling them to spread out more successfully than their predecessors.

**More information:** I. Zvir et al. Evolution of genetic networks for human creativity, *Molecular Psychiatry* (2021). DOI: [10.1038/s41380-021-01097-y](https://doi.org/10.1038/s41380-021-01097-y)

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