

《Research shows DNA dating back 45,000 years ago》



Interspecies sex between ancient humans and Neanderthals – a relative of our ancestors who had smaller figure and low, flat, elongated skulls like dwarfs in the in The Lord of the Rings – had given 1.6 to 1.8 percent Neanderthals' gene to every one in Europe and Asia nowadays.

An International research team led by Fu Qiaomei from the Institute of Vertebrate Paleontology and Paleoanthropology at the Chinese Academy of Sciences shows the reason that we did not inherit the dwarfs' figure is because their gene was eliminated by the process of natural selection.

The research drew the conclusion after analyzing genome-wide data from 51 Eurasians lived 45,000 to 7,000 years ago. Their findings were published as in Nature on Monday.

"Before our research, it was believed that the decrease in the proportion of Neanderthal ancestry in Eurasians was the result of interspecies sex with other human groups that diluted the Neanderthal's gene," said Fu.

"However, our research finds that the Neanderthal's gene decreased fast and steadily from between 37,000 and 14,000 years ago, in a period that there was not major admixture of other population outside of Europe."

Over this period of time, the proportion of Neanderthals ancestry in Eurasians decreased from six percent to around two percent within descents of a single founding population.

"This suggests that the Neanderthal's gene was eliminated in the evolution," Fu said.

Moreover, the influence of Neanderthal's origin in modern human is more muted in major functional gene fragments than in other genome parts, which points to the same conclusion.

"The Neanderthals might have had more inferior genes that their part did not manage to survive," Fu said.

An earlier research published by Nature in December 2013 found that the A gene that increases the risks for Type 2 diabetes was inherited from the Neanderthals.

Other studies suggested that modern Europeans and Asians have taken over the Neanderthals' fair skin and a number of their diseases such as lupus and Crohn's Disease.

David Reich, professor of genetics at Harvard Medical School and co-senior author of the paper, said, "This study raises by about tenfold the number of ice aged hunter-gatherers for which there is ancient DNA, and in so doing, it makes it possible to track genetic change over time."

"It's a great privilege to be able to work on these samples; it's like being an art historian given full access to the treasures of the Louvre."

Co-senior author Svante Pääbo said, "Prior to this work, we had a static view of the first 30,000 years of modern human history in Europe. Now we can begin to see how people moved around and mixed with one another during this period."

The second major surprise came when the researchers found another previously unknown population turnover: the Europeans started to show a genetic relationship to present-day Near Easterners during the first major warming period 14,000 years ago, some 6,000 years earlier than the agriculture established connection between the two parts of world.

The authors speculate that it could be the warming weather rather than development of agriculture - as it was previously believed - that drove early Near East residents to Europe and led to the gene fusion.

Fu, from Vertebrate Paleontology and Paleoanthropology at the Chinese Academy of Sciences, said, "The goal of our research is to figure out what happened to the human ancestors during the last ice age and its influence to modern people."

The research, as Fu said, is the largest-scale ancient DNA research on ancient humans living 45,000 to 10,000 years ago.

"Previous researches usually include genome-wide data on only one or two Upper Paleolithic individuals. But this research managed to collect valid genome-wide data from 51 individuals from a more than 100 sample bases."