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First Europeans Came From Asia, Not Africa, Tooth Study Suggests

Kate Ravilious, for National Geographic News
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Skull fragments from modern humans and the human ancestor *Australopithecus* include teeth—fossil features that can offer valuable clues to a species' genetic lineage.

New analysis of more than 5,000 fossil teeth suggests that early humans from Asia, not Africa, were the first to colonize Europe.

Europe's first early human colonizers were from Asia, not Africa, a new analysis of more than 5,000 ancient teeth suggests.

Researchers had traditionally assumed that Europe was settled in waves starting around two million years ago, as our ancient ancestors—collectively known as hominids—came over from Africa.

But the shapes of teeth from a number of hominid species suggest that arrivals from Asia played a greater role in colonizing Europe than hominids direct from Africa.

These Asian hominids may have originally come from Africa, the scientists note, but had evolved independently for some time. "Asia was also an important center for hominid speciation," said Maria Martinón-Torres, a scientist at the National Research Center on Human Evolution in Burgos, Spain, who led the study.

The finding suggests that the hominid family tree could be much more complex than previously thought (explore an interactive atlas of human migration).

Genetic Safe

Species from the genus *Australopithecus* and the genus *Homo* arrived in Europe between two million and 300,000 years ago. Until recently, a lack of fossils from this time period had made it difficult to

piece together hominid evolution and migration patterns. But using the latest fossil findings, Martinón-Torres and colleagues were able to examine more than 5,000 teeth from two-million-year-old *Australopithecus* and *Homo* skeletons from Africa, Asia, and Europe.

The shape of the teeth offered clues about each species' genetic lineages. "Teeth are like the safe-box of the genetic code," Martinón-Torres said. That's because—compared to bones—teeth change shape very little once they are formed, and their shape is strongly influenced by genetics.

The researchers classified each of the teeth using more than 50 indicators, such as fissure patterns, overall size, and length-to-width ratio. "We looked at the entire landscape of the teeth—the mountains, valleys, ridges—everything," Martinón-Torres said.

What they found is that European teeth were more similar to Asian teeth than they were to African teeth.

However, the results don't rule out African influence on European genes.

"This finding does not necessarily imply that there was not genetic flow between continents," Martinón-Torres and colleagues write in their paper, "but emphasizes that this interchange could have been both ways."

The work will be published in tomorrow's issue of the *Proceedings of the National Academy of Sciences.*

Fluid Migrations

Rather than a one-way stream of people coming from Africa, Martinón-Torres and colleagues think there must have been a more fluid pattern of migrations. "Just because people had come out of Africa didn't mean that they couldn't turn around and go back again," she said.

The researcher also believes that climate, food, and geography were major influences on hominid migration patterns. The Sahara, for example, presented a big barrier for movement out of Africa and directly into Europe (see photos and read a related feature about athletes who ran across the Sahara earlier this year). Rather than struggling across the Sahara, it appears that human ancestors spread in many directions before arriving in Europe.

Erika Hagelberg, a geneticist from the University of Oslo in Norway, is impressed with the study, but cautious about how it should be interpreted. "The study shows that the genetic impact of Asia on Europe is stronger than that of Africa. But the teeth can't tell us the direction or the time when people migrated," she said.

Nonetheless, the new study does complement direct gene studies and supports the idea that hominids evolved independently in many different parts of the world.

"The fossil teeth are a way to study the traits of past peoples," Hagelberg said, "and help balance the work being done on the genes of people alive today."