

27 March 2008

By: Stefan Anitei, Science Editor



The 1.2-Ma-old Spanish fossil jaw
EIA/Jordi Mestre/courtesy Nature

[The Oldest European: 1.2 Million Years Old](#)

A Spaniard

Millions of years ago, we started our evolution in Africa. Then, at a given moment, we began to colonize the rest of the world. When did humans enter Europe for the first time?

In June 2007, archaeologists discovered the oldest European human fossils in the Sima del Elefante Cave, 60-ft (18 m) long, at the Sierra Atapuerca archaeological site in the Burgos Province (northern Spain), just 15 mi (25 km) east of the city of Burgos, not very far from the famous Altamira cave. And what they have suspected now it is confirmed: the ancient jaw and teeth are 1.2 million years old, as found by the analysis published in the journal "Nature."

The prehistoric fossils were encountered together with stone tools used for butchering meat and were attributed to *Homo antecessor*, first described in 1997 based on fossils discovered at Atapuerca and who could have been a species unique to Europe. The sex was not determined, but the individual was 30 to 40-year old at the time of death.

The fossil was exposed by a railway cutting through a limestone area rich in early human and ancient animal remains. Its dating was made using an array of methods, from magnetic analysis to radioactive dating, and geologic studies of the bones and artifacts. The remains of an extinct mouse species encountered at the site suggested the age of the human tooth by offering a time frame of the period when the individual could have lived.

"32 stone flints also excavated from the cave date to the same age as the fossils," said dig co-director José Maria Bermúdez de Castro of the National Research Center on Human Evolution, in Burgos, Spain.

The flint tools appear to have been used by *Homo antecessor* for cutting carcasses and getting at bone marrow, as showed by cut marks encountered on herbivore mammal limbs found nearby.

"They used the stone tools to take meat off animals, cut the muscles, and break their bones. The bones show the marks of these implements," said Bermúdez de Castro.

Associated with these human fossils were those of rhinoceroses, deer, bison, monkey, lynx, wolves, and bears.

"Since we now know those fossils date to 900,000 [years ago], the time difference is not great, and, provisionally at least, I think it's logical to assign the mandible to *Homo antecessor*," said Bermúdez de Castro.

The high number of small insectivorous species shows that these humans lived in a warm and humid climate.

Homo antecessor

The first humans discovered outside Africa were from Dmanisi, in Georgia. They are 1.7 Ma old, were discovered in 2002 and could be either *Homo erectus* or *Homo ergaster*.

"The Republic of Georgia is the crossroads between Africa and Eurasia from a geographical point of view. But *H. erectus* fossils estimated to be 1.6 million years old have been located as far away as Java in Indonesia. We think that in Europe we are going to find more hominin fossils probably older than those of Sima del Elefante," said Bermúdez de Castro.

This new fossil could be a first stage in the development of *Homo antecessor*, whose 1997 fossils were 800,000 years old.

"We see that these fossils are different from other populations in Asia or in Africa. We think that when populations come to an extreme part of a continent, or to an island, a process of speciation usually occurs," said Bermúdez de Castro.

When *Homo antecessor* was found, some thought it could be an ancestor of modern humans.

"But the age of the new fossil find makes this theory less likely. *Homo antecessor* may be very, very old in Europe, and modern humans came from Africa, making the previous theory difficult to support. More likely, *Homo antecessor* gave rise to Neanderthals in Europe," said Bermúdez de Castro.

"The jaw is remarkably modern looking compared with similar or younger hominin fossils known from Africa. If we would find this kind of mandible in Africa, we would be a bit surprised," said Fred Spoor, professor of evolutionary anatomy at University College London.

"The idea that the Atapuerca hominins represent a distinct European species is entirely plausible, given that the region would have been a far-flung human outpost. Spain is about the furthest point you could go to the west," Spoor said.

Homo antecessor ("pioneer" human) could be the same with *Homo ergaster*, the last common ancestor of modern humans and Neanderthals. It could also be the same with *Homo heidelbergensis*, that appeared some 600,000 years ago and that is strongly related to Neanderthals.