

Fossil human traces line to modern Asians



The person shared a common origin with the ancestors of modern Asians

Researchers have been able to trace a line between some of the earliest modern humans to settle in China and people living in the region today.

The evidence comes from DNA extracted from a 40,000-year-old leg bone found in a cave near Beijing.

Results show that the person it belonged to was related to the ancestors of present-day Asians and Native Americans.

The results are published in the journal PNAS.

Humans who looked broadly like present-day people started to appear in the fossil record of Eurasia between 40,000 and 50,000 years ago.

But many questions remain about the genetic relationships between these early modern humans and present-day *Homo sapiens* populations.

For example, some evidence hints at [extensive migration into Europe](#) after the last Ice Age.

And fossil finds from [Red Deer Cave](#), also in China, and [Iwo Eleru in Nigeria](#) point to a hitherto unappreciated diversity among Late Pleistocene humans.

New technique

The team managed to extract genetic material from an ancient leg bone found in 2003 at the site of Tianyuan Cave outside Beijing.

They managed to extract the type of DNA found in the nuclei of cells (nuclear DNA) and genetic material from the cell's "powerhouses" - known as mitochondria.

They used new techniques that can identify ancient genetic information from an archaeological find, even when large amounts of DNA from soil bacteria are also present.

Analysis of the person's DNA showed that they were related to the ancestors of present-day Asians and Native Americans. But the analysis showed that this individual had already diverged from the ancestors of present-day Europeans.



The fossils were discovered in 2003

at Tianyuan near Beijing

"More analyses of additional early modern humans across Eurasia will further refine our understanding of when and how modern humans spread across Europe and Asia", said co-author Svante Pääbo, from the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

Research in the last few years has shown that early modern humans interbred with ancient human species such as the Neanderthals and Denisovans as they migrated from Africa and settled across the world.

Around 40,000 years ago, the Neanderthals and Denisovans were being replaced by *Homo sapiens*. Genetic studies of people living at this important crossover period could help scientists understand when and how this interbreeding took place.

The researchers found that the person from Tianyuan cave carried about the same proportion of Neanderthal and Denisovan DNA as people in the region today.

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Human fossils hint at new species



By Jonathan Amos Science correspondent, BBC News



Scientists say the specimens display features that are quite distinct from fully modern humans

The remains of what may be a previously unknown human species have been identified in southern China.

The bones, which represent at least five individuals, have been dated to between 11,500 and 14,500 years ago.

But scientists are calling them simply the Red Deer Cave people, after one of the sites where they were unearthed.

The team has told the [PLoS One journal](#) that far more detailed analysis of the fossils is required before they can be ascribed to a new human lineage.

"We're trying to be very careful at this stage about definitely classifying them," said study co-leader Darren Curnoe from the University of New South Wales, Australia.

"One of the reasons for that is that in the science of human evolution or palaeoanthropology, we presently don't have a generally agreed, biological definition for our own species (*Homo sapiens*), believe it or not. And so this is a highly contentious area," he told BBC News.

Much of the material has been in Chinese collections for some time but has only recently been subjected to intense investigation.

The remains of some of the individuals come from Maludong (or Red Deer Cave), near the city of Mengzi in Yunnan Province. A further skeleton was discovered at Longlin, in neighbouring Guangxi Province.

The skulls and teeth from the two locations are very similar to each other, suggesting they are from the same population.



DIGURNOE Scientists continue to excavate at Maludong

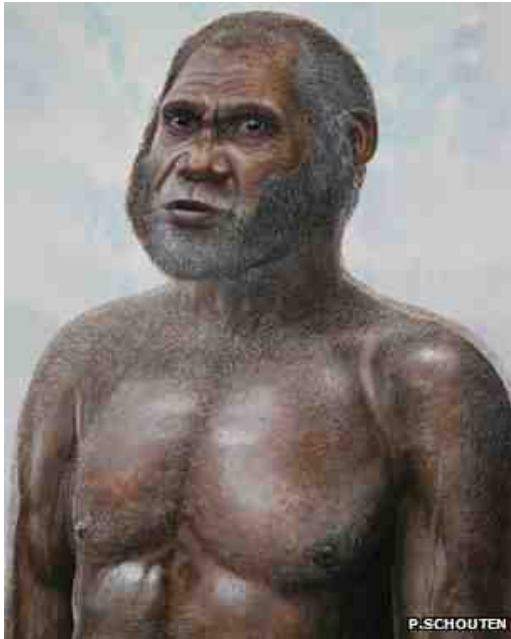
But their features are quite distinct from what you might call a fully modern human, says the team. Instead, the Red Deer Cave people have a mix of archaic and modern characteristics.

In general, the individuals had rounded brain cases with prominent brow ridges. Their skull bones were quite thick. Their faces were quite short and flat and tucked under the brain, and they had broad noses.

Their jaws jutted forward but they lacked a modern-human-like chin. Computed Tomography (X-ray) scans of their brain cavities indicate they had modern-looking frontal lobes but quite archaic-looking anterior, or parietal, lobes. They also had large molar teeth.

Dr Curnoe and colleagues put forward two possible scenarios in their PLoS One paper for the origin of the Red Deer Cave population.

One posits that they represent a very early migration of a primitive-looking *Homo sapiens* that lived separately from other forms in Asia before dying out.



How the Red Deer Cave people might have looked 11,500 years ago

Another possibility contends that they were indeed a distinct *Homo* species that evolved in Asia and lived alongside our own kind until remarkably recently.

A third scenario being suggested by scientists not connected with the research is that the Red Deer Cave people could be hybrids.

"It's possible these were modern humans who inter-mixed or bred with archaic humans that were around at the time," explained Dr Isabelle De Groote, a palaeoanthropologist from London's Natural History Museum.

"The other option is that they evolved these more primitive features independently because of genetic drift or isolation, or in a response to an environmental pressure such as climate."

Dr Curnoe agreed all this was "certainly possible".

Attempts are being made to extract DNA from the remains. This could yield information about interbreeding, just as genetic studies have on the closely related human species - the Neanderthals and an enigmatic group of people from Siberia known as the Denisovans.

Whatever their true place in the *Homo* family tree, the Red Deer People are an important find simply because of the dearth of well dated, well described specimens from this part of the world.

And their unearthing all adds to the fascinating and increasingly complex story of human migration and development.



Project leaders Darren Curnoe and Ji Xueping discuss the Longlin skull

"The Red Deer People were living at what was a really interesting time in China, during what we call the

epipalaeolithic or the end of the Stone Age," says Dr Curnoe.

"Not far from Longlin, there are quite well known archaeological sites where some of the very earliest evidence for the epipalaeolithic in East Asia has been found.

"These were occupied by very modern looking people who are already starting to make ceramics - pottery - to store food. And they're already harvesting from the landscape wild rice. There was an economic transition going on from full-blown foraging and gathering towards agriculture."

Quite how the Red Deer People fit into this picture is unclear. The research team is promising to report further investigations into some of the stone tools and cultural artefacts discovered at the dig sites.

The co-leader on the project is Professor Ji Xueping of the Yunnan Institute of Cultural Relics and Archaeology.

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Skull points to a more complex human evolution in Africa

By Daniel Boettcher BBC News



Professor Chris Stringer compares one of the 13,000-year-old skulls (centre) with modern (l) and ancient (r) African fossils

Scientists have collected more evidence to suggest that ancient and modern humans interbred in Africa.

Reanalysis of the 13,000-year-old skull from a cave in West Africa reveals a skull more primitive-looking than its age suggests.

The result suggests that the ancestors of early humans did not die out quickly in Africa, but instead lived alongside their descendents and bred with them until comparatively recently.

The results are [published in PLoS ONE](#).

The skull, found in the Iwo Eleru cave in Nigeria in 1965, does not look like a modern human.

It is longer and flatter with a strong brow ridge; features closer to a much older skull from Tanzania, thought to be around 140,000 years old.

Prof Katerina Harvati from the University of Tuebingen in Germany used new digitising techniques to capture the surface of the skull in detail.

The new technique improved upon the original measurements done with callipers by letting researchers see subtler details about the skull's surface.



The cast of the Iwo Eleru skull shows marks of a more ancient ancestor

"[The skull] has got a much more primitive appearance, even though it is only 13,000 years old," said Chris Stringer, from London's Natural History Museum, who was part of the team of researchers.

"This suggests that human evolution in Africa was more complex... the transition to modern humans was not a straight transition and then a cut off."

Prof Stringer thinks that ancient humans did not die away once they had given rise to modern humans.

They may have continued to live alongside their descendants in Africa, perhaps exchanging genes with them, until more recently than had been thought.

The researchers say their findings also underscore a real lack of knowledge of human evolution in the region.

But palaeontologists are not all agreed on precisely what the new analysis is telling us - or, indeed, whether it is telling us anything definitive at all.

"I do not think that these findings add anything new to our view," said Prof Clive Finlayson, director of the Gibraltar Museum, who was not connected to the study.

"We have a few fossils, and no idea of natural variation within populations. That the situation is not simple and is deep and complex is what we would expect.

"In my view, it is the field of genetics that will help us most in clarifying matters," he told BBC News.

Separate research published earlier this month suggests that genetic mixing between hominin species happened in Africa up to 35,000 years ago.