

Discovery of ‘Dragon Man’ Skull in China May Add Species to Human Family Tree

A laborer discovered the fossil and hid it in a well for 85 years. Scientists say it could help sort out the human family tree and how our species emerged.

By **Carl Zimmer** [The New York Times](#) June 25, 2021



A digital reconstruction of the cranium nicknamed “Dragon Man” which could be a new species of ancient human. Video by Xijun Ni. Credit Xijun Ni

Scientists on Friday announced that a massive fossilized skull that is at least 140,000 years old is a new species of ancient human, a finding that could potentially change prevailing views of how — and even where — our species, *Homo sapiens*, evolved. The skull belonged to a mature male who had a huge brain, massive brow ridges, deep set eyes and a bulbous nose. It had remained hidden in an abandoned well for 85 years, after a laborer came across it at a construction site in China. The researchers named the new species *Homo longi* and gave it the nickname “Dragon Man,” for the Dragon River region of northeast China where the skull was discovered.

The team said that *Homo longi*, and not the Neanderthals, was the extinct human species mostly closely related to our own. If confirmed, that would change how scientists envision the origin of *Homo sapiens*, which has been built up over the years from fossil discoveries and the analysis of ancient DNA. But a number of experts disputed this conclusion, [published in three papers](#) that provided the first detailed look at the fossil. Nevertheless, many still thought that the find could help scientists reconstruct the human family tree and how modern humans emerged. All the experts who reviewed

the data in the studies said it was a magnificent fossil. “It’s a beautiful thing,” said John Hawks, a paleoanthropologist at the University of Wisconsin-Madison. “It’s very rare to find a fossil like this, with a face in good condition. You dream of finding this stuff.”

In 1933, a laborer working at a bridge construction site in the city of Harbin discovered the peculiar skull. It’s likely that the man — whose name has been withheld by his family — recognized that he had found a scientifically important specimen. Just four years earlier, researchers had found another humanlike skull, nicknamed Peking Man, near Beijing. It appeared to link the people of Asia to their evolutionary forerunners.



This image shows comparisons among Peking Man, Maba, Jinniushan, Dali and Harbin crania (from left to right) Credit...Kai Geng

Rather than hand over the new skull to the Japanese authorities who occupied northeast China at the time, the laborer chose to hide it. He did not mention the skull to anyone for decades. In an account of the fossil’s discovery, the authors of the new papers speculated that he was ashamed of having worked for the Japanese. Shortly before his death in 2018, the laborer told his family about the fossil. They went to the well and found it. The family donated it to the Geoscience Museum of Hebei GEO University, where scientists immediately could see that it had been exquisitely well preserved.

In the papers published Friday, the researchers argued that *Homo longi* appears to have been an adult of great size. His cheeks were flat and his mouth broad. The lower jaw is missing, but the researchers infer from the Dragon Man’s upper jaw and other fossil human skulls that he likely lacked a chin. They say that his brain was about 7 percent larger than the average brain of a living human.

The researchers argue that Dragon Man’s combination of anatomical features are found in no previously named species of hominin, the lineage of bipedal apes that diverged from other African apes. They later evolved into larger-brained species that set the stage for *Homo sapiens* to expand across the entire globe. “It’s distinctive enough to be a different species,” said Christopher Stringer, a paleoanthropologist at the Natural History Museum in London and co-author of two of the three Dragon Man papers. The scientists analyzed the chemical composition of the fossil, and determined it was at least 146,000 years old but no older than 309,000 years.

Today, the planet is home to just one species of hominin — *Homo sapiens*. But Dragon Man existed at a time when a number of drastically different kinds of hominins coexisted, including *Homo erectus* — a tall human with a brain two-thirds the size of our own — as well as tiny hominins including [Homo naledi](#) in South Africa, [Homo floresiensis](#) in Indonesia and [Homo luzonensis](#) in the Philippines. The [oldest Homo sapiens fossils](#) also date to this time. Neanderthals — which shared our large brain and sophisticated toolmaking — ranged from Europe to Central Asia during the period when Dragon Man may have lived.

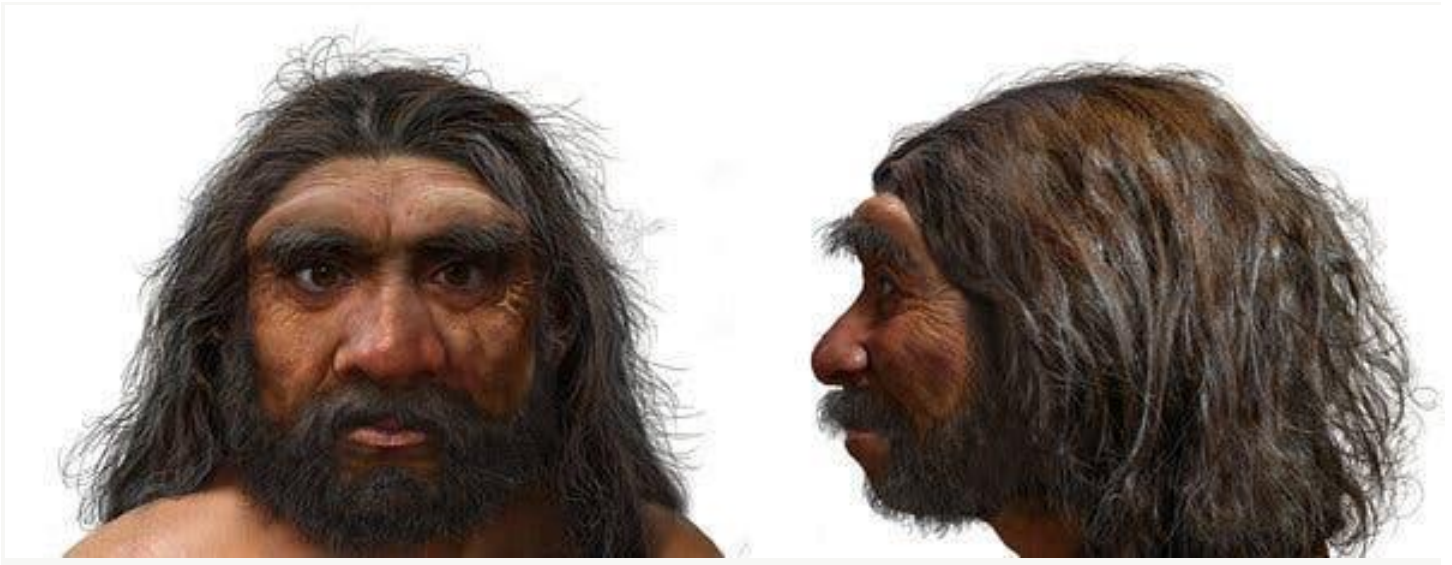
In recent years, studies of fossil DNA have also revealed yet another humanlike lineage in this period, the [Denisovans](#). The DNA came largely from isolated teeth, chipped bones and even dirt. Those remains are not enough to show us what Denisovans looked like. The most promising fossil yet found that could be evidence of Denisovans came [from a cave in Tibet](#): a massive jaw with two stout molars, dating back at least 160,000 years. In 2019, scientists isolated proteins from the jaw, and their molecular makeup suggests they belonged to a Denisovan, rather than a modern human or Neanderthal.

This molecular evidence — combined with fossil evidence — suggests that the common ancestors of Homo sapiens, Neanderthals and Denisovans lived 600,000 years ago. Our lineage split off on its own, and then 400,000 years ago, Neanderthals and Denisovans diverged. In other words, Neanderthals and Denisovans were our closest extinct relatives. They even [interbred](#) with the ancestors of modern humans, and [we carry bits of their DNA today](#).

But many puzzles still endure from this stage of human history — especially in East Asia. Over the past few decades, paleoanthropologists have found a number of fossils, many incomplete or damaged, that have some features that make them look like our own species and other features that suggest they belong elsewhere on the hominin family tree. Katerina Harvati, a paleoanthropologist at the University of Tübingen in Germany who was not involved in the new study, said that the Dragon Man skull could “help clarify some of the confusion.”

To figure out how Homo longi fits into the human family tree, the scientists compared its anatomy with 54 hominin fossils. The researchers found that it belongs to a lineage that includes the jaw in Tibet that has been identified as a Denisovan. The skull was even more similar to a portion of a skull discovered in 1978 in the Chinese county of Dali, dating back 200,000 years. Some researchers thought the Dali fossil was of our own species, while others thought it belonged to an older lineage. Still others even called the fossil a new species, Homo daliensis.

The authors of the new studies argue that Dragon Man, the Tibetan jaw and the Dali skull all belong to a single lineage — one that is the closest branch to our own species. While Homo longi had distinctive features, it also shared traits with us, such as a flat face tucked under its brow rather than jutting out, as was the case with Neanderthals. “It is widely believed that the Neanderthal belongs to an extinct lineage that is the closest relative of our own species. However, our discovery suggests that the new lineage we identified that includes Homo longi is the actual sister group of H. sapiens,” Xijun Ni, a co-author of the studies and a paleoanthropologist at the Chinese Academy of Sciences and Hebei GEO University said in a [news release](#).



Credit...Chuang Zhao

Those conclusions are spurring debate among paleoanthropologists — including the authors of the new papers. Some of the debate concerns what to call Dragon Man. Scientists follow strict rules about naming new species. That would require Dragon Man to share a name with the Dali skull, if they are as similar as the authors claim. “In my view, it is a distinct species which I would prefer to call *Homo daliensis*,” Dr. Stringer said.

Other experts thought the similarity between the Tibetan jaw, with the Denisovan-like proteins, and the skull from Harbin pointed to Dragon Man’s real identity. “When I first saw the picture of the fossil I thought, now we finally know what Denisovans looked like,” said Philipp Gunz, a paleoanthropologist at Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Karen Baab, a paleoanthropologist at Midwestern University in Arizona, agreed: “Harbin is better understood as a Denisovan.” An assortment of clues point that way. The tooth on Dragon Man’s upper jaw has the same massive shape as the one on the Denisovan jaw found in Tibet, for example. Both lack a third molar. Dragon Man also lived in Asia at the same time that Denisovan DNA tells us that they were in the same place.

Even if Dragon Man is a Denisovan, there would be more puzzles to solve. The DNA of Denisovans clearly shows that their closest cousins were Neanderthals. The new study, based instead on fossil anatomy, indicates instead that *Homo longi* and *Homo sapiens* are more closely related to each other than to Neanderthals. “I think that the genetic data in this case is more reliable than the morphological data,” said Bence Viola, a paleoanthropologist at the University of Toronto, who was not involved in the new study. “Obviously, something doesn’t match,” Dr. Stringer acknowledged. “The important thing is the recognition of a third human lineage in East Asia, with its own distinctive combination of features.”

One way to solve the mystery of Dragon Man would be to get DNA from his remarkable skull. Dr. Stringer said he is ready for more surprises. “It’s going to be a more complicated plot.”