



## Family Constellations

What makes humans human? How and when did we become what we are today? How did our ancestors live? These questions are of great interest to a lot of people. The scientists at the Max Planck Institute for Evolutionary Anthropology use different methods to investigate them systematically. One of these methods involves extracting DNA from human fossils. Using a new procedure, Svante Pääbo and his team can isolate and sequence ancient genetic material from just a few grams of bone powder, allowing them to compare the genomes of different prehistoric humans with one another and with people living today.

However, the first challenge consists in finding usable remains of prehistoric humans: bones normally decay in less than one hundred years; only under very special conditions are they able to survive for millennia. Important discovery sites include caves, such as the Tianyuan Cave near Beijing, shown here. Discovered accidentally by workers in 2001, the cave was examined archaeologically by a research team from the Chinese Academy of Sciences. The excavations yielded human fossils that are around 40,000 years old, making them among the oldest remains of anatomically modern man found outside of Africa.

Genetic analysis revealed that the early modern human from the Tianyuan Cave and the ancestors of many present-day Asians and Native Americans share a common origin. On the other hand, their ancestral line had already diverged from that of the predecessors of present-day Europeans. Moreover, the DNA is not the only material that brought interesting facts to light: chemical analysis of the bone collagen from a lower jaw reveals that the Tianyuan people regularly ate freshwater fish. In other words, fish was on the menu long before the time indicated by archaeological finds of fishing implements.