

'Pit of bones' catches Neanderthal evolution in the act

Skulls from rich human-fossil site suggest that the species evolved feature by feature.

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The emergence of Neanderthals is just as mysterious as their disappearance about 30,000 years ago. A study of skulls from a possible burial pit in northern Spain offers a glimpse into the [early evolution](#) of the big-bodied hunter-gatherers, who dominated Europe long before modern humans arrived there. The fossils seem to confirm that their distinctive facial features evolved stepwise.

Sima de los Huesos — Spanish for 'pit of bones' — is one of the richest human-fossil sites in the world. Since ancient human bones were first discovered there in the 1970s, a team now led by Juan Luis Arsuaga, a palaeoanthropologist at the Complutense University of Madrid, has recovered the remains of an estimated 28 individuals in the 13-metre pit.

Missing traits

In an analysis of 17 of those skulls published today in *Science*, Arsuaga's team notes that the 430,000-year-old skulls display key Neanderthal features, such as the beginning of a prominent brow ridge, a distinctive jaw shape and patterns of cusps on the teeth¹. Yet the skulls lack other traits that define the species — notably a large cranium (holding a brain bigger than that of *Homo sapiens*, on average). Arsuaga sees this as evidence for the theory that Neanderthals evolved in a piecemeal fashion, after their common ancestor with *H. sapiens* left Africa more than half a million years ago.

[Not quite Neanderthals](#), the Sima de los Huesos humans probably represent one of many small, isolated groups that dotted the European continent at the time, notes Jean-Jacques Hublin, a palaeoanthropologist at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Such isolation is ideal for anatomical features to be established by chance, and this genetic drift could explain many of the attributes that would later define Neanderthals.

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References

1. Arsuaga, J. L. *et al. Science* **344**, 1358–1363 (2014).