

EVOLUTION

Filling gaps in early human history

Research on dental remains unearthed from the newly excavated Fuyan Cave in Daoxian County has placed modern humans in southern China at least 80,000 years ago, that is, approximately 20,000 years before modern lineages were thought to have left Africa. These findings are shedding light on the complexity of modern human dispersal routes across Asia.

A collection of 47 human teeth was excavated from a single stratigraphic layer of the cave site, and the researchers used a combination of zoological and geological evidence to date this layer to between approximately 80,000 and 120,000 years old. A calcific floor that formed after deposition of the remains sealed the layer from contamination with fossils from later periods. Uranium–thorium dating of a stalagmite showed that

this floor was laid down around 80,000 years ago. Morphological analysis and radiocarbon dating indicated that mammalian fossils found in the same layer were from the late Pleistocene, providing an upper age limit for the stratum of around 120,000 years.

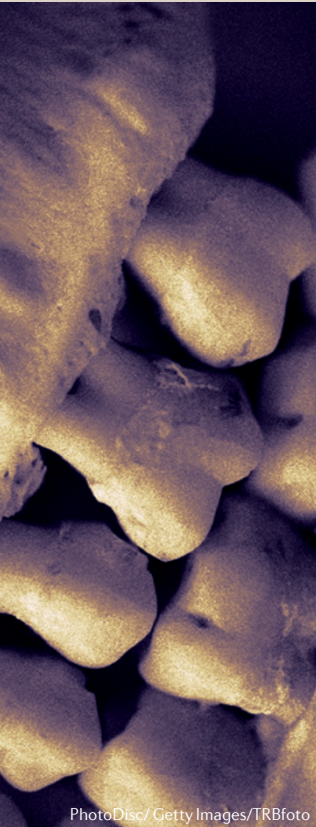
Previous studies of human remains from this period, found in the Levant, showed that these hominins retained primitive features. This observation supported the hypothesis that early human migration from Africa was unsuccessful and did not contribute to modern populations. By comparing the morphology of the Daoxian teeth to those from contemporary humans and other late Pleistocene human specimens, Liu *et al.* were able to demonstrate that the Daoxian fossils were more similar to European than to African or Asian late Pleistocene

specimens and in many ways closely resemble present-day teeth. Therefore, not only were the Daoxian undoubtedly modern, but they probably lived at a time when more primitive populations occupied other parts of China. This finding suggests the existence of multiple origins or migration routes for modern human populations across Asia throughout the late Pleistocene period.

Finally, Daoxian humans appeared in southern China approximately 30,000–70,000 years before the first evidence of modern humans in Europe and the Levant. The authors propose that the delay in entering Europe may have resulted from competition between *Homo sapiens* and *Homo neanderthalensis*, who might have posed a long-term ecological barrier to modern human dispersal from Asia, although this hypothesis remains to be determined in future studies.

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Nature Reviews Disease Primers

ORIGINAL RESEARCH PAPER Liu, W. *et al.*
The earliest unequivocally modern humans in southern China. *Nature* <http://dx.doi.org/10.1038/nature15696> (2015)



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