

PALAEOANTHROPOLOGY

Plaque DNA hints at Neanderthal lifestyle

Tooth analysis paints intimate picture of ancient lives.

BY EWEN CALLAWAY

The Neanderthals of El Sidrón Cave in northern Spain lived hardscrabble lives. But before they died some 50,000 years ago, they dined on mushrooms, moss and pine nuts. One individual may even have used plants and moulds to treat his ailments.

This intimate portrait is revealed in an analysis of DNA from the hardened tooth plaque of five Neanderthals (L. S. Weyrich *et al.* *Nature* <http://dx.doi.org/10.1038/nature21674>; 2017).

The study also reconstructs the first microbiomes from an extinct hominin species, and hints at intimacy — perhaps kisses — between humans and Neanderthals. “It really paints a different picture, almost of their personalities, of really who they were,” says Laura Weyrich, a palaeomicrobiologist at the University of Adelaide in Australia who co-led the study.

Her team compared plaque DNA from Neanderthals from El Sidrón and from the Spy cave in Belgium. The analysis revealed that whereas Spy denizens seemed to consume woolly rhinoceros and wild sheep, El Sidrón’s foraged for plants. Both ate mushrooms.

However, Hervé Bocherens, a palaeobiologist at the University of Tübingen, Germany, is unconvinced that the plaque DNA identifies meals and dietary differences. Databases of plant and animal DNA tend to lack the extinct species that Neanderthals would have eaten, and previous studies have suggested that both groups ate meat. “At the moment I would not consider the conclusion robust,” he says.

The El Sidrón Neanderthals probably also used plants to self-medicate. DNA from poplar trees (parts of which contain salicylic acid, historically used in aspirin), and *Penicillium* mould (the source of penicillin) turned up on

one individual’s teeth. Weyrich suspects that they were trying to treat a visible tooth abscess and a stomach infection caused by the bacterium *Enterocytozoon bieneusi*.

Genetic evidence of a microbe called *Methanobrevibacter oralis* offers another insight, because it is also found in the mouths of modern humans. Genome comparisons suggest that the microbe’s modern lineage split from the Neanderthal one hundreds of thousands of years after the hominins’ last common ancestor lived. This suggests the archaeobacterium was transmitted between them. “If you’re swapping spit between species, there’s kissing going on, or at least food sharing,” says Weyrich. ■

CORRECTIONS

The News story ‘How to kill wild animals humanely for conservation’ (*Nature* **543**, 18–19; 2017) misstated the affiliation for Sara Dubois. She is at the British Columbia Society for the Prevention of Cruelty to Animals. And the Editorial ‘Keep science on track’ (*Nature* **542**, 137; 2017) gave the wrong reference for research on the boycott of South Africa in the 1980s; it should have been F. W. Lancaster *Perspectives on the Professions* **15** (1), 2–4 (1995).