

Tracing changes to the human diet during the transition from hunting to agriculture

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Profile of a mandible from a Southern Italian Neolithic sample (~5.000 BC).
Credit: Andrea Quagliariello

A large team of researchers affiliated with a host of institutions across Italy has used DNA found in the dental calculus of ancient peoples to

help trace changes to the human diet during the transition from hunting to agriculture in Italy over thousands of years. In their paper published in the journal *Nature Communications*, the group describes their study of calcified plaque found on the teeth of people living during the Copper, Neolithic and Paleolithic Ages to learn more about changes wrought by a move from hunting for food to growing it.

Prior research has shown that much can be learned about the [oral microbiome](#) of people from long ago by studying the DNA found in material clinging to their teeth. The oral microbiome is the assortment of microbes living in the mouth, and study of the oral microbiome can tell scientists a lot about the diet of the people who once used such teeth to chew their food.

In this new work, the researchers removed bits of dental calculus from the teeth of people who lived in parts of Italy during different time periods to assess changes to their diet over time. In so doing, they were able to identify dietary shifts over a 30,000-year period—a period that included the time that people in the region were dramatically changing their lifestyle. As people learned to grow food, they not only changed their [diet](#), but the ways in which they lived. They ceased wandering around looking for food in small groups, and formed large communities centered around agricultural efforts.



Example of anterior teeth with a huge dental calculus deposit from Copper Age Italy (~3,000 BC). Credit: Andrea Quagliariello

In looking at the oral microbiome of such people, the researchers found that it changed from one that supported eating mostly meat to one that relied on plant-based and fermented foods such as those produced by [dairy products](#).

More specifically, the team sequenced the DNA of material found in 76 [dental calculus](#) samples, covering the years 31,000 BC to 2,200 BC. By doing this, the researchers found two major shifts in the makeup of the oral biome—an early subtle shift as people began to eat homegrown food, and then a more pronounced shift that occurred as eating [agricultural products](#) became mainstream during the Neolithic Age.

More information: Andrea Quagliariello et al, Ancient oral microbiomes support gradual Neolithic dietary shifts towards agriculture, *Nature Communications* (2022). [DOI: 10.1038/s41467-022-34416-0](https://doi.org/10.1038/s41467-022-34416-0)

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