

Using isotope and ancient DNA analysis to learn more about the mobility of Anatolian and Levantine populations

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This map shows the location and extent of the Fertile Crescent, a region in the Middle East incorporating Ancient Egypt; the Levant; and Mesopotamia. Credit: Nafsadh /Wikimedia Commons, [CC BY-SA](#)

A team of researchers affiliated with a host of institutions across Germany, working with a colleague from South Africa, has used isotope

and ancient DNA analysis to learn more about the mobility of Anatolian and Levantine populations during the Pre-Pottery Neolithic B (the ninth to eighth millennium BC).

For their paper published in *Proceedings of the National Academy of Sciences*, the group conducted several types of [isotopic analysis](#) of human remains and DNA studies to learn more about the shift from the mobile lifestyle associated with hunting and gathering in the region to one where people remained mostly in place growing crops and raising animals. The regions they focused on were Anatolia (modern Asia Minor) and the Levant (large parts of what is now the Eastern Mediterranean).

The team carried out oxygen and carbon isotopic analyses of 28 human and 29 animal remains unearthed at a site called Nevalı Çori. They compared their results with strontium levels found in local wild animals such as fox and pigs. The isotopic ratios revealed a decline in mobility among people living in the region at the time, i.e., there were fewer nonlocals living in the area. The isotopes also showed that the people were also living on a largely vegetarian diet.

The researchers also conducted a DNA analysis of tissue recovered from the remains of six people excavated from Nevalı Çori and from another nearby site. Evidence showed that genetic relationships were growing closer during the transition period, another sign that people had stopped moving around and were living near one another.

The researchers suggest that taken together, their evidence shows that during the early part of the Pre-Pottery Neolithic B, there was a diverse gene pool at Nevalı Çori and that it became less diverse as the people living there began to put down roots, which involved growing crops and raising animals to provide their food. The study also helped to more clearly outline the timeframe involved in the changeover.

More information: Xiaoran Wang et al, Isotopic and DNA analyses reveal multiscale PPNB mobility and migration across Southeastern Anatolia and the Southern Levant, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2210611120](https://doi.org/10.1073/pnas.2210611120)

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