

New DNA research suggests second migration influx of early farmers to Europe

June 2 2011, by Bob Yirka

(PhysOrg.com) -- In a paper published in the *Proceedings of the National Academy of Sciences (PNAS)* a French team led by molecular anthropologist Marie Lacan of Paul Sabatier University documents the results of their DNA testing of a group of skeletons found in a cave in the 1930's in southern France. The group tested both female lineage (mitochondrial) and male (Y-Chromosomal) and found evidence to support the theory that one way that farming made its way into southern Europe was via migration of male farmers from Mediterranean areas, who produced offspring with resident female hunter-gatherers.

The cave, known as Treilles, held the skeletons of 149 people, both adult and children, and mostly male; all of whom were laid to rest there some 5000 years ago. Testing using mtDNA on 29 of the remains showed lineages associated with hunter gatherers of early central [Europe](#), while Y-chromosome testing showed a lineage more closely aligned with the people that lived along the Mediterranean and farmed for a living. The results also revealed that most of the people buried in the cave were related to one another along patrilineal lines; i.e. father-son, brothers, etc. which suggested that they lived in a community of sorts which of course meant growing food to sustain themselves.

The researchers conclude that these results show that farmers from along the Mediterranean moved into southern Europe, began planting crops and mated with the local women, thus introducing farming into south central Europe.

In addition, the research also showed that the people buried in the cave lacked the allele (DNA coding that occupies a given position on a chromosome) necessary for humans to digest lactate as they grow into adults, as contrasted with other skeletal remains found in other parts of central Europe from roughly the same time period that did have the allele and thus were able to drink the milk produced from domesticated cows. People from the Mediterranean also generally lack the allele, which accounts for the domestication of goats and sheep instead, which can be fermented and thus contains less lactate.

The new research suggests that there were at least two major routes of farmer migrants into central Europe, as [recent research](#) done in Germany shows DNA from early populations there were of mixed local hunter gatherers and [farmers](#) from other regions as well.

More information: Ancient DNA reveals male diffusion through the Neolithic Mediterranean route, *PNAS*, Published online before print May 31, 2011, [doi: 10.1073/pnas.1100723108](https://doi.org/10.1073/pnas.1100723108)

Abstract

The Neolithic is a key period in the history of the European settlement. Although archaeological and present-day genetic data suggest several hypotheses regarding the human migration patterns at this period, validation of these hypotheses with the use of ancient genetic data has been limited. In this context, we studied DNA extracted from 53 individuals buried in a necropolis used by a French local community 5,000 y ago. The relatively good DNA preservation of the samples allowed us to obtain autosomal, Y-chromosomal, and/or mtDNA data for 29 of the 53 samples studied. From these datasets, we established close parental relationships within the necropolis and determined maternal and paternal lineages as well as the absence of an allele associated with lactase persistence, probably carried by Neolithic cultures of central Europe. Our study provides an integrative view of the genetic past in

southern France at the end of the Neolithic period. Furthermore, the Y-haplotype lineages characterized and the study of their current repartition in European populations confirm a greater influence of the Mediterranean than the Central European route in the peopling of southern Europe during the Neolithic transition.

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