

**Press release 18/2025**

**Unraveling the Eastern Maghreb’s ancient DNA: how foragers defied the “Neolithic wave”**

### **Ancient DNA Reveals Genetic and Cultural Resilience in North Africa’s Neolithic Transition**

A new study (**add link when ready**) published by an international team of African, American, and European researchers offers a fresh perspective on the Neolithic transition in North Africa, shedding light on the remarkable genetic and cultural continuity of forager populations in the eastern Maghreb (modern-day Tunisia and eastern Algeria). This research provides the most detailed glimpse yet into the genetic history of ancient populations in the region, revealing how local forager groups preserved their genetic identity despite the arrival of farming and associated populations from Europe and Southwest Asia.

The Neolithic period, which began roughly 12,000 years ago, marked a fundamental transformation in human history as societies shifted from hunting and gathering to food production. While much of Europe saw dramatic genetic changes due to migrations from Southwest Asia, North Africa’s role in this transition has remained poorly understood—also due to a lack of genetic studies. However, this new research challenges the assumption that the region was merely a passive recipient of Neolithic influences. Instead, the findings reveal that while some genetic input from early farmers reached the eastern Maghreb across the Mediterranean, the local populations retained a strong connection to their foraging heritage.

**Insights from Ancient DNA**

By extracting and analyzing genome-scale data from nine individuals who lived in the eastern Maghreb between 15,000 and 6,000 years ago, the researchers identified a striking pattern of continuity. While European farmers contributed some genetic material—generally less than 20%—their impact was far less significant than in other northern Mediterranean regions, where farming populations largely replaced indigenous hunter-gatherers. Both cultural and genetic evidence now challenge the notion that farming fully replaced earlier hunter-gatherer populations. Instead, eastern Maghreb populations demonstrated remarkable resilience—both cultural and genetic—allowing them to persist largely unaffected by the agricultural changes unfolding elsewhere.

One of the study’s most intriguing discoveries is the presence of European hunter-gatherer associated ancestry in some Tunisian individuals, marking the first clear genetic evidence of contact between early European and North African populations. This finding suggests that seafaring routes across the Strait of Sicily facilitated human interactions in the Mediterranean much earlier than previously thought. The discovery at Hergla—one of the sites where the human remains analyzed in this study were found—of obsidian from Pantelleria, a volcanic island in the Strait of Sicily, further reinforces the connections between the northern and southern shores of the Mediterranean.
Although no boat remains from this period have been found in North Africa, the presence of approximately 7,000-year-old dugout canoes at Lake Bracciano in central Italy suggests that open-sea navigation was already technologically feasible at the time.

**A Different Path to the Neolithic in North Africa**

Unlike the western Maghreb (modern-day Morocco), where European farmer ancestry reached up to 80% in some populations, the eastern Maghreb saw a much more limited genetic impact from incoming farming groups. Instead of large-scale population replacement, the introduction of food production in the region likely occurred through a mix of sporadic migration, cultural exchange, and the gradual diffusion of knowledge.

Another key finding of the study is the identification of early Levantine-related ancestry in the eastern Maghreb, likely postdating the arrival of European farmer ancestry by several centuries. This genetic signature is likely linked to the introduction of domesticated animals—such as sheep and goats—by early pastoralist groups moving westward from southwest Asia.

**Resilience and Adaptation in the Face of Change**

**O**ne of the most remarkable conclusions of this study is that the eastern Maghreb was a region of strong genetic and cultural resilience. While other parts of the Mediterranean experienced widespread population turnover due to the spread of agriculture—a process that also affected the western Maghreb—ancestry from the eastern Maghreb foragers maintained a lasting presence well into the Neolithic period. Archaeological evidence shows that the eastern Maghreb is unique in the Mediterranean rim in not fully adopting farming, in stark contrast to people of the western Maghreb (Morocco), people of eastern North Africa (Egypt), and people of Southern Europe. Crop farming did not take root in the eastern Maghreb until the first millennium BCE, and instead communities in the region primarily relied on pastoralism, raising sheep and goats while continuing to collect land snails, hunt wild game, and gather plant resources. The new study shows that the unique resistance of this part of the Mediterranean to crop farming until the Iron Age, was accompanied by a resistance to incorporation of ancestry from farmers, providing a striking case of genetic ancestry tracking economic strategy.

This discovery opens new avenues for understanding the complexity of the Neolithic transformation across the Mediterranean. In regions like the eastern Maghreb, food-producing economies based on pastoralism (the primary mode of food production in the eastern Maghreb until the first millennium BCE) were integrated in ways that allowed foragers to preserve much of their genetic and cultural identity. This study demonstrates that the transition to food production was not a uniform process but rather a dynamic and regionally diverse phenomenon. By examining these ancient human movements, researchers gain valuable insights into patterns of migration and adaptation—processes that continue to shape societies today.

**The importance of genetic data from North Africa**

This study is one of the first to analyze the genetic history of Neolithic North Africa, offering insights into the interactions between ancient societies in the Mediterranean. It also underscores the importance of interdisciplinary research, combining genetics, archaeology, and anthropology to reconstruct the deep history of human populations.

By doing so, it highlights the distinctive role of North Africa in the broader story of human prehistory.

The research was conducted through a collaboration between institutions including Harvard University (USA), the Max Planck Institute (Germany), the National Research Council of Italy (CNR), the Institut National du Patrimoine (Tunisia), the Centre National de Recherche Préhistorique, Anthropologique et Historique (Algeria), the Institut de Paléontologie Humaine (France), the University of Vienna (Austria), Sapienza University of Rome (Italy), and ISMEO – The International Association for Mediterranean and Oriental Studies (Italy).

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**Link to download photos**

**https://filesender.garr.it/?s=download&token=fc2491ba-fe7b-46fa-826d-48735fd60e5d**

**Captions**

**Figure 1:** Map of the eastern Maghreb (1: Afalou Bou Rhummel; 2: Djebba; 3: Doukanet el Khoutifa; 4: Hergla)

**Figure 2:** Doukanet el Khoutifa, Tunisia (Photo: Giulio Lucarini)

**Figure 3:** Excavation of human remains at Doukanet el Khoutifa, Tunisia (Photo: Giulio Lucarini)

**Figure 4:** Burial at Hergla (Photo: Simone Mulazzani)

**Figure 5:** Sample processing at Harvard Medical School (Photo: David Reich)

Roma, 12 marzo 2025

**La scheda**

**Chi:** Harvard University (USA), Max Planck Institute (Germania), Consiglio Nazionale delle Ricerche, Institut National du Patrimoine (Tunisia), Centre National de Recherche Préhistorique, Anthropologique et Historique (Algeria), Institut de Paléontologie Humaine (Francia), Università di Vienna (Austria), Sapienza Università di Roma e ISMEO – Associazione Internazionale di Studi sul Mediterraneo e l’Oriente

**Che cosa:** studio sulla resilienza genetica e culturale delle popolazioni neolitiche del Maghreb orientale

**Dove:** ‘Nature’, https://rdcu.be/edizV

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