

Haaretz

DNA Study Sheds Light on ‘Missing Link’ in Birth of Indo-European Languages

Research suggests family of languages now spoken from Europe to India originated between the Caucasus and eastern Anatolia. But identity of first Indo-Europeans remains a mystery

Ariel David Aug 25, 2022



Karmir Blur, Urartian period, Armenia Credit: Hakob Simonyan

Where Indo-European languages actually originated has long been a mystery. It still is, but now new research has narrowed down the options, and indicates that the original speakers were likely a people living somewhere between the Caucasus and eastern Anatolia.

The research, based on sequencing hundreds of genomes of people who lived in west Asia and southeastern Europe over the last 11,000 years, brings new information about the birth and

spread of Indo-European languages, a vast family of tongues that includes everything from Latin and English to Farsi and Sanskrit. But it leaves shrouded in mystery the exact identity of the speakers of the ancestor tongue of most languages that are still used today from Europe to India.

The study published Thursday in [Science](#) reports on genetic data extracted from the teeth and bones of more than 700 individuals who lived thousands of years ago across Greece, the Balkans, Anatolia and the Caucasus. The work was led by Prof. David Reich a geneticist at Harvard University, and Prof. Ron Pinhasi, an anthropologist at the University of Vienna – two of the world’s most noted experts on ancient DNA.



Turkey Old Woman Marmara Ilipinar, Eastern Marmara region, Turkey. Late Neolithic (6000-5900 cal.BCE). Old woman buried on a wooden board. Wood stains on her bones may indicate that the body was buried in a coffin. Reich, David גנטיקאי ממצאים ארכיאולוגיים Credit: Jacob Roodenberg

Previous work by linguists, as well as Reich and other geneticists, has already elucidated much about the story of Indo-European languages. For centuries experts have been noting strange similarities between apparently unrelated tongues. Just think of the word “brother” in English, which is “frater” in Latin and “brather” in Sanskrit.

Since the 19th century, linguists have suspected that proto-Indo-European, the language from which eventually all the branches of the family developed, was originally spread by nomads who migrated from the steppes north of the Black Sea.

×

The so-called “steppe hypothesis” has received a massive boost from advanced genetic research that allows us to sequence the DNA of current and past populations and [reveal their ancestry](#).

In 2015, a [study by Reich and colleagues](#) showed that Europeans share a strong ancestral link to the [Yamnaya](#), a people who migrated out of the Ukrainian or Russian steppes some 5,000 years ago, right about when Indo-European languages are thought to have begun their journey across Eurasia. This finding strongly suggested that the expansion of these steppe pastoralist went hand in hand with the spread of Indo-European languages. Case closed, then? Not so much.

The Anatolian exception

More recent research, such as a [2018 DNA study of ancient Anatolians](#), has raised new questions. The problem is that ancient Anatolian languages, such as Hittite and Luwian, were a branch of the Indo-European family. However, unlike Europeans, the members of these ancient Anatolian cultures didn’t seem to have any steppe ancestry.

— Advertisement —

Nor do they, the newly published study confirms, based on genetic information from hundreds of ancient Anatolians and their neighbors during the early Bronze Age, the time of the Yamnaya migrations. Indeed, the new genetic data shows that ancient Anatolians, unlike their immediate neighbors to the west, in the Balkans, and to the east, in Armenia, did not mix with steppe pastoralists, says Iosif Lazaridis, a Harvard computer scientist who directed this research along with Songül Alpaslan-Roodenberg of the University of Vienna and Harvard.



Aerial view of the Karashamb Necropolis, Armenia Credit: Pavel Avetisyan and Varduhi Meli

“The Anatolian languages represent the first branching out of the Indo-European family tree,” Lazaridis says. “And it is now clear that Anatolia is really different: It’s the only place where Indo-European-related languages were spoken even though there was no steppe ancestry.”

The fact that the Yamnaya didn’t roll into Anatolia doesn’t mean however that the region’s demographics remained static in the Bronze Age.

From 7,000 to 5,000 years ago there was a gradual increase of ancestry from the Caucasus in the Anatolian genome, Lazaridis, Reich and colleagues report. This was probably not a single event but a series of migrations from the east, at the end of which

about a third of the ancestry of Anatolians could be traced to somewhere in the Caucasus, Lazaridis says.

Of course, it is still possible that a small number of steppe pastoralists reached the region and their language spread without them leaving a significant genetic signature on the local population. But it is more likely that it was the enigmatic migration from the Caucasus that brought proto-Indo-European to Anatolia.

Since the Anatolian branch of Indo-European languages was born right around the time of this migration from the Caucasus, it makes more sense to link the linguistic development to this massive population influx, Lazaridis tells Haaretz.



Decorated pottery vessel (or urn) from the Areni-1 cave, Armenia Credit: Dina Zardaryan

The new information has wider implications for the history of Indo-European languages, because the Yamnaya themselves are roughly a 50-50 mix of eastern European hunter gatherers and the same Caucasus component found in Anatolia, Reich notes.

Given that this mysterious Caucasian link is the only ancestral commonality between the Yamnaya and the ancient Anatolians, it seems plausible that this enigmatic migration from the Caucasus brought the ancestral form of Indo-European to both

these peoples. It thus follows that the homeland and “ur-language” of Indo-European are to be found somewhere in the Caucasus.

Who exactly these people were and where they lived is still unclear, largely because the ancient population of the Caucasus has not yet been well sampled by ancient DNA researchers, Reich says.

One possible candidate is the [Maikop culture](#), which slightly preceded the Yamnaya and lived in the northern Caucasus in the fourth millennium B.C.E., Reich says. The Maikop shared cultural similarities with the Yamnaya, such as burying their dead in kurgans (signature burial mounds), but genetic studies have so far not revealed a link between these two populations, he notes.

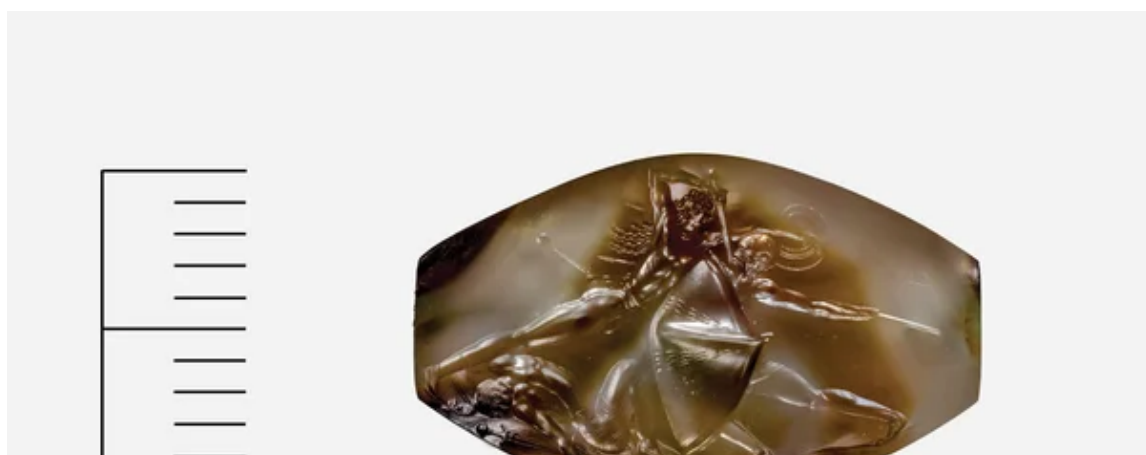
Further sampling of individuals from the Maikop and other preceding Chalcolithic cultures of the Caucasus is likely to reveal this “missing link” in the history of Indo-European peoples, Lazaridis adds. After all, ancient DNA researchers have been in this position before, he says: They knew that Europeans had some strong steppe ancestry before they identified the Yamnaya as the purveyors of this admixture.

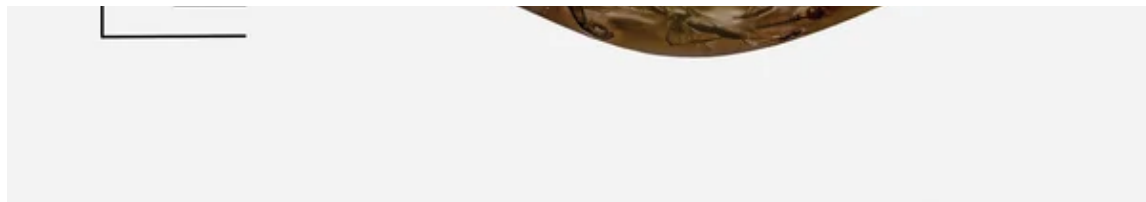
It’s not all Greeks

The broad genetic study conducted by Lazaridis and colleagues, which is detailed in three separate papers in [Science](#), provides a treasure of additional information about the history of the descendants of those early Indo-European migrants across different centuries and geographies.

One interesting finding comes from the samples taken from individuals who were part of the Mycenaean civilization in Greece during the Bronze Age. While it was known that the Mycenaeans had some steppe ancestry (about one tenth) the new study shows that this percentage was not homogenous throughout the population. In fact, even among the elites it was possible to find people who had no genetic link to the Yamnaya.

For example, this was the case with the genome of the so-called [Griffin Warrior](#), who was buried in a lavish tomb near the Mycenaean palace of Pylos, in the southwestern Peloponnese. While other individuals buried in the palace had the same Y-chromosomes as those found in Yamnaya from Russia, indicating direct patrilineal descent from the newcomers, the Griffin Warrior showed no evidence of steppe ancestors.





Pylos Combat Agate” found in the Grave of the Griffin Warrior Credit: Photo Jeff Vanderpool. Courtesy

The sampled Myceneans from Pylos lived between 1500–1100 B.C.E., while the proto-Indo-Europeans reached Greece around 2,000 B.C.E. This means that, at least a few centuries later, it didn’t matter whether or not you were related to the migrants from the east.

“It’s not like the steppe migrants established a rule over the natives and kept to themselves, but rather they admixed with them and there were still people without steppe ancestry with elite roles,” Lazaridis posits.

Perhaps it was this inclusiveness that helped the Indo-Europeans spread variations of their language across two continents, the researcher adds. “It is also possible that, because there was a lot of genetic and geographical fragmentation in Bronze Age Europe, the language of these nomadic newcomers became a lingua franca that allowed everyone to communicate – even if the original speakers of the tongue did not establish political dominance over a specific region,” he says.



Golden chain is in tomb of a (male) warrior, dated circa 1500 B.C in Pylos Credit: REUTERS

Romans weren’t Roman

Moving a few centuries forward in time, the new genetic analysis provides some interesting information on another distant descendent of those Indo-European migrants: the Latin speaking Romans.

It was already known that during Roman imperial times, starting in the first century B.C.E., there was a major change in the genetic makeup of the Italian population due to massive immigration from somewhere in the Near East. Now, Lazaridis and colleagues have compared the genome of imperial Romans to their databank of DNA from across the eastern Mediterranean

and have pinpointed the exact source of that migration: again, it's all about Anatolia.

“It was quite surprising when I looked at imperial Romans and their ancestral [genetic] proportions were virtually identical to those in Anatolians from the same period,” Lazaridis tells Haaretz. “I wouldn’t expect them to be so identical as the Roman empire had conquered many other regions in the east: the Balkans, Syria, Lebanon, Israel, but the genetic connection is very specific to Anatolia.”

This major influx of Anatolians into Rome and Italy is hinted to also by ancient writers. Already in the first century C.E., the satirical poet Juvenal complained that Rome “is become Greek,” and specifically is flooded by “the dregs of Greece” as “the Orontes has long since flowed into the Tiber.”

The Orontes is a river that runs from Lebanon through Syria and Turkey, so clearly the Roman writer was not railing against Greeks from Greece, but against Anatolian immigrants who of course, by then, had long been part of the Hellenistic world (thanks to [Alexander the Great](#)).

There are several historical ironies in the discovery that Anatolia caused such a demographic change to Italy, as the region was first brought under the Roman heel by Pompey the Great after decades of bloody wars in the first century B.C.E. Ultimately, Anatolia would become not only the demographic powerhouse of the empire but its political center, housing the capital of the Eastern Roman Empire, Constantinople, which would survive its Western counterpart by centuries.

Why migrants specifically from Anatolia sparked such a huge genetic shift in the original Italian heartland of the empire is not clear. Lazaridis doesn’t believe this was the result of the involuntary movement of enslaved people, who did not have many opportunities to reproduce. He suspects that it is the consequence of the freedom of movement and opportunities allowed by this cosmopolitan empire coupled with the fact that Anatolia for millennia had a larger population than its neighbors. This is also visible when the region was finally conquered in the Middle Ages by a non-Indo-European people, the Turks from central Asia.

When it comes to modern Turks, only between nine to 22 percent of their ancestry can be traced to Turkic populations that came from Central Asia starting in the 11th century, Lazaridis notes (the rest is Anatolian ancestry). This means that even when Anatolia went through a major conquest and migration that transformed the local culture and language, this only had a relatively minor impact on the region’s demographics. “All of this speaks to this large population base of Anatolia that persists through the centuries,” Lazaridis concludes.