

## Unraveling the genetic roots of the world's most spoken language group

The vast majority of languages spoken today in Europe and parts of Asia from Iran to India are derived from a single root, called Proto-Indo-European (PIE) language. The origin of PIE has been a subject of intense research by linguists, archaeologists, anthropologists, and, recently, archaeogeneticists. The theory that gained most traction places the cradle of PIE in the arid grasslands (steppes) north of the Black Sea (the North Pontic steppe) located within the borders of Ukraine. The people responsible for carrying the PIE branches to Europe and Asia 5000 years ago are known as the Yamna (Pit Grave). A study titled “A Genomic History of the North Pontic Region from the Neolithic to the Bronze Age” published in *Nature* on February 5, 2025, dives into the biological origins of the Yamna.



*Facial reconstruction of a Yamna individual from southwest Ukraine, 2800-2600 BC (Cyberpunk Generator, deepai.org).*

An interdisciplinary group of international scholars that included GVSU's Biology professor Alexey G. Nikitin (first author on the paper) and Sofiia Svyryd, a Kindschi Undergraduate Research Fellow, studied the genetic ancestry of the people living in the North Pontic steppe and adjacent areas during the times before the Yamna, to understand the origins of the people of this important prehistoric culture. By comparing genetic profiles of ancient inhabitants of the North Pontic with their neighbors from the Balkans, the Caucasus, and the Urals, the study identified that the core Yamna genetic ancestry was formed in Ukraine. The study authors further suggested the geographic place of the Yamna ancestry formation to be around a famous archaeological site of Mykhailivka on the west bank of the lower Dnipro River, the main aquatic artery of Ukraine. Ukrainian territory on the east bank of the river is currently occupied by Russia, which launched in 2022 the biggest and bloodiest war in Europe since World War II. Numerous archaeological sites and depositories of Ukrainian national heritage have since been damaged, relocated to museums in Russia, or destroyed. The Genomic History paper includes some of the key to the origin of the Yamna specimens from the occupied territories of Ukraine, many of them sampled weeks before the destruction of the collections where these were held. All wars eventually come to an end, and the war in Ukraine is no exception. As the people of Ukraine begin rebuilding their country, they may find renewed appreciation for their ancient history and the role their ancestors played in the shaping of the modern world. In the meantime, the Genomic History of the North Pontic Region paper offers a captivating exploration of the extraordinary journey of the individuals who resided in Europe's crossroads during a turning point in its history, which was discovered during a critical juncture in its present.

The paper can be accessed at the following URL:

<https://www.nature.com/articles/s41586-024-08372-2>

<https://rdcu.be/d8Kzu>