

# HistoGenes Factsheet

Title: HistoGenes – Integrating genetic, archaeological and historical perspectives on Eastern Central Europe, 400-900

ERC Synergy Grant Projekt (ERC-2019-SyG 856453)

Duration: 1.5.2020 – 30.4.2026

[www.histogenes.org](http://www.histogenes.org)

HistoGenes introductory video: [https://www.youtube.com/watch?v=myla0\\_cCEWU](https://www.youtube.com/watch?v=myla0_cCEWU)

HistoGenes video channel: <https://www.youtube.com/@histogenes5071>

## The Project-Team

Principal Investigators (PIs):

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3. PI Prof. Tivadar Vida, Eötvös Loránd University Budapest (ELTE), HU
4. PI Prof. Patrick Geary, Institute for Advanced Study Princeton, USA (IAS)

Further beneficiaries:

- Institute of Archaeogenomics, Bölcsészettudományi Kutatóközpont / Research Centre for the Humanities, Budapest, HU
- Natural History Museum Vienna, Anthropological Department, AT
- University of Vienna, Institute of Austiran Historical Research, AT
- University of Natural Resources and Life Sciences, Vienna, AT
- Curt-Engelhorn-Zentrum für Archäometrie, Mannheim, DE
- Veeramah Lab, Department of Ecology and Evolution, Stony Brook University, New York, USA

## About

This is about the population history of East Central Europe from around 400 to 900 CE. This was a time of great change in Europe: the collapse of the Roman Empire, the 'Migration Period', the emergence of new kingdoms and peoples, the Slavisation of Eastern Europe and the Christianisation of many regions.

The focus of the study is the Carpathian Basin (essentially the area of present-day Hungary and the neighbouring plains), but also eastern Austria, the eastern Alps, eastern Germany, Moravia, Slovenia, northern Serbia and Transylvania. During this period, this area was particularly affected by historically documented migrations, political upheavals and population changes.

However, the effects of these migrations on population development are still unclear – did only the ruling groups change, or did the entire population largely change?

In contrast to prehistoric times, we have written records of the main events, but they come almost exclusively from outside. We do, however, have particularly rich archaeological evidence from over 100,000 excavated graves, many of which contain burial objects and grave goods. Archaeogenetics has now been added to this, providing significant new data. Together, these disciplines can tell us a lot about the living conditions of the population at that time.

## Methodology

Previously, archaeogenetics was mainly used to research prehistoric periods. Only in recent years have the instruments for sequencing the genome and the bio-informatic methods of population genetics been refined enough to be able to decipher the subtle genetic differences between the population groups of Europe in historical times. HistoGenes was the first large-scale project to utilise and further develop these new possibilities. It was not only the large number of samples analysed (approx. 6600) that was new.

The methodological approaches were also innovative:

- From project design to the selection of the approximately 100 sampled cemeteries to the interpretation of the data, all interested disciplines were constantly involved. Only this intensive interdisciplinary co-operation makes it possible to fully exploit the new insights offered by genetics.
- Whereas in the past archaeogenetics tended to investigate population development on a large local and temporal scale and with a small number of samples from as many sites as possible, in HistoGenes entire cemeteries or at least cemetery sections are sampled wherever possible. Only in this way can the composition of local communities and their relationships be assessed.
- Where many of the buried individuals are related to each other, this method can be used to reconstruct family trees with six or more generations. Together with anthropological age determination, the dating of archaeological finds and carbon isotope dating ( $^{14}\text{C}$ ), this allows us to infer reproductive strategies, assess the social and cultural significance of biological relationships, reconstruct demographic development and create a much more precise chronology of burial grounds.
- It is also important not to identify genetic clusters or archaeological find groups from the outset with peoples known from written sources, as has often been done. Not every mounted warrior with an Asian genetic background who was buried in the Hun period must have been a Hun, while people of European origin could also be regarded as Huns. It is already clear from our research that genetic origin and cultural habitus do not always coincide. The various criteria of affiliation often overlap, but this must be analysed in each individual case.

## Some research topics

- Who lived in the towns and forts on the Danube around 400 CE? And what happened to the Roman population in the former provinces of Noricum and Pannonia when Roman rule came to an end? For this purpose, we took 400 samples from a part of the cemetery in front of the Roman fort Favianis (Mautern). It is precisely from this area that we know from the life of St Severin that the provincial population was relocated to Italy in 487/88. Where can we find traces of them later on?
- What impact did the arrival or rule of Goths, Huns, Rugians, Gepids, Lombards, Slavs and others have on the areas under investigation? It is already clear that the genetic footprint of people of Eastern origin in and after the Hunnic period is small, in contrast to the great importance of King Attila and his Huns in written records, and the interest they still attract today.
- The ‘Justinianic Plague’ had almost as dramatic consequences under Emperor Justinian in the years from 541 as the ‘Black Death’ around 1348. This is well attested in written sources for the Mediterranean region. How far did the plague spread in sparsely populated East-Central Europe? The plague germs can be found in the teeth of at least some of the plague victims. A study rich in material is currently in preparation.
- The Avars, who according to written sources moved into the Carpathian Basin in 567/68 CE and ruled here until around 800 CE, actually came mainly from eastern Central Asia, probably from present-day Mongolia. Numerous women also took part in this migration of more than 7,000 kilometres. This genetic signature makes it possible to analyse the long-term effects of this migration on population development – to what extent did Avars mix with the previous population? They lived in the new settlement area together with groups from the steppe as well as groups of Romanic, Germanic and Slavic origin. A major study on this topic will be published in ‘Nature’ in autumn 2024, which comes to surprising conclusions about some Avar burial grounds in the Vienna Basin.
- In the 6th-8th centuries, large parts of Central and Eastern Europe were Slavified. This process is difficult to trace archaeologically, as the early Slavs cremated their dead and left hardly any lasting traces in the ground, apart from simple pit houses and hand-moulded pottery. For some time now, researchers have been discussing whether the Slavisation of huge areas was due to migratory movements or to the Slavisation of the previous population.

