

The main aim of the proposed project is to assess the diversity of paternally inherited Y chromosome variants in wolves inhabiting Europe. Similar research on humans significantly contributed to understanding of our origin (out-of-Africa theory), as well as to study of past human migrations and history of colonization of new continents. Y chromosome is also a popular marker in genealogical studies and forensics. Yet, it was rarely used in the past to study wildlife species, but recently published studies have proven its usefulness in research on wild mammals. In case of wolves, Y chromosome markers were used mostly to study hybridization with dogs, but also to assess diversity of endangered isolated populations such as Italian and Scandinavian ones. We plan to investigate diversity of wolf male lineages on much wider geographical scale, including unique samples from understudied regions such as Ural or Caucasus. We hypothesize that in continuous eastern European wolf range this diversity is significantly higher than reported for isolated populations studied before.

Comparison of geographical distribution of Y chromosome variants with results obtained using different markers (maternally inherited mitochondrial DNA and autosomal DNA inherited from both parents) could help to determine if the contribution of male and female wolves to gene flow between populations is equal. There are presumptions allowing to hypothesize that long-distance dispersals of male wolves are the most important vectors of gene flow linking distant regions. As population isolation leads to inbred, which often has deleterious consequences, retaining such genetic connections is crucial for species' survival.

We plan parallel studies of chromosome Y diversity on Europe-wide as well as local scale that should help to understand better the role of male wolves in these processes. Moreover, we will investigate the history of newly established Central European Lowland wolf population that is now dynamically expanding westwards from its core areas in Poland and eastern Germany, recently reaching the Benelux countries and try to determine the role of male "pioneer" dispersants at the expansion front. Additionally, we will try to assess how wolf-dog hybridization is widespread across studied areas of Europe.