
Tracing back bio-cultural evolution using ancient DNA

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Abstract

In the context of the Anthropocene, marked by extreme global changes, living organisms are undergoing consequential damages. Crucial knowledge is though expected to understand how climatic and anthropic forcing interact in disorganizing and re-organizing living communities and affecting long term biodiversity. The Neolithic transition constitutes a unique case allowing us to analyze the impact of a major societal and cultural transformation (transition to farming) on local biodiversities at multi-regional scale. This anthropic "revolution" changed the place of humans in the ecosystem with a greater impact of their imprint through the introduction from the Near-East of domestic taxa and synanthropic species, triggered and facilitated by the development of agriculture and the general anthropization of landscapes. Pluridisciplinary studies, including paleogenomics, can provide informations on the response of living organisms to anthropogenic pressures. This is what we will illustrate with two examples. First we will focus on dog domestication and trace back their common history with humans through space and time. We will show how human cultural evolution and history strongly influenced dog evolution, dispersion and metabolism. In a second part influence of Neolithic transition on diachronic changes of past living communities will be investigated through past environmental genomic approaches in combination with archeology, geomorphology and bioinformatics.

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