Arctic Ark – Human-Animal Adaptations to the Arctic Environment: Natural and Folk Selection Practices (ARC-ARK)

The Arctic region is often seen as a biodiversity-poor area where animal husbandry is solely based on the herding of reindeer (*Rangifer tarandus*). However, in northern Europe and Siberia, also breeding of special autochthonous cattle (*Bos taurus*) and horse (*Equus caballus*) breeds has a long tradition (e.g. Northern Finncattle, Yakutian cattle, Mezen horse and Yakutian horse). The Arctic Ark project studies animals’ adaptation to the Arctic as a complex human-environmental process. Old traditions of ‘folk selection’ rather than those implemented by institutions have been shaping Arctic animals’ valuable traits. Each of the ethnic groups studied in this project (Finns, Sámi, Nenets, Pomors, Russians, Sakha and Eveny) have myths and legends connected to orally transmitted narratives of domestication and selection animals. This kind of cultural adaptation assistance is mostly due to symbiotic domesticity, an intimate human-animal partnership. As a result of natural and folk selection, reindeer and Arctic cattle and horse breeds show metabolic, morphological and reproductive adjustments.

Using methods of genetics, ecology and anthropology, we investigate how indigenous and nonindigenous societies raise reindeer, cattle and horse breeds in Finnish Lapland, Archangelsk and Eveno-Bytantaj, Russia. In the animal genomics analyses, we focus on animals’ metabolic adaptation and structural and functional genome variations. We use modern genomic analysis approaches: whole-genome sequencing of animals and gene expression analyses of host animals and their rumen microbiota. In the socio-anthropological studies and across several regions, we compare animal farmers’ knowledge of the environment and desired animal characteristics that facilitate a sustainable Arctic livelihood. The data of these two disciplines are integrated through approaches of ecological anthropology. The close association between animals and humans over many centuries in the Arctic allows us to identify the human and natural footprints in animal adaptations as well as the importance of different animal species for the resilience of Arctic cultures and economies.

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