

The domestication of various species of plants and animals during the Neolithic Period is one of the key events in the history of the development of human civilization. Different animal species have been domesticated differently and for various purposes, mainly as farm animals. In the case of a domestic cat, most likely it happened through a relationship known in ecology as commensalism. The process of cat domestication began with the development of agriculture in the Middle East and the formation of early human settlement. A settled lifestyle and accumulated food storages caused an increase in the number of pests (mainly rodents), which in turn attracted wildcats. The wild ancestors of cats began to live near people, attracted by a large amount of easily available food. Man benefited from the presence of these small predators, as it protected food resources from pests. In this way, the wildcat was first tamed and later domesticated. However the true domestication, in the sense of intentional breeding of selected individuals, occurred probably only in the 19<sup>th</sup> century, when the first breeds of domestic cat emerged (differing in coat colour and length or body size).

Still many details of the process of domestication of cat remain elusive for scientists. Genetic analysis of contemporary cats showed that only one of the five subspecies of wildcats was domesticated, the Near Eastern wildcat. Further diversification was found within the clade of the Near East wild cat/domestic cat where five mitochondrial DNA lineages were distinguished without clear phylogeographic pattern. Analyses of ancient DNA showed that they originated from at least two domestication centres. The first one was the Near East around 10,000 years ago during the early Neolithic and the second one Egypt around 3,500 years ago. From these two centres tamed/domesticated cat spread across the world.

The earliest evidence of domestic cats in Poland is dated to the 1st century AD and supports other archaeological evidence that domestic cats in this part of Europe appeared in Roman period. Archaeozoological studies indicate that in the Early Middle Ages in Poland, the cat was not a popular pet. Perhaps due to the paucity of the cats, grain storages were then protected by other tamed predators, like weasels and snakes. Certainly cats were valued especially on ships and in granaries (shipping and maritime trade are considered the most important factor responsible for the spread of the cat since ancient times). The popularity of cats as a pet among citizens of towns has been recorded since the second half of the 13<sup>th</sup> century.

This state of knowledge has been changed by recent studies of cats carried out by the Principal Investigator of this project and her team. The ancient DNA analysis revealed the presence of cats with mitochondrial DNA haplotypes of the Near Eastern wildcat in Poland, in prehistoric times. These remains are dated about 5,000 years ago. The result may indicate that the Near Eastern cat came to Central Europe from the Near East together with early farmers during the Neolithic period, much earlier than previously thought.

The main objective of the project is to present the synthetic approach to the history of the appearance of domestic cat in Central Europe. This project's aim is to fill the gaps in the current knowledge on the cat prehistory and history in Europe, i.e., between its domestication in the Near East, its early appearance in Poland during Neolithic, the much later establishment of housecat population during the Roman Period and the rapid increase of fully-domesticated cat populations in the late medieval settlement centres. Additionally in the project we aim to identify phenotypic features related to domestication, (aesthetic, such as body size and colour coat; behavioral, such as reduction of aggression, or physiological adaptation to digest anthropogenic food like milk and starch). The very important information about introgression between European wildcat and the domestic cat in the last 5,000 years will be obtained. In the time when the first cats with mitochondrial DNA of the Near Eastern wildcat appeared in Europe the native species European wildcat was present. We will estimate changes in the level of admixture between these two species through the past and did it increase with the expansion of the domestic cats. To achieve the best and most comprehensive results, in this project we use the most advanced techniques of paleogenetics as a main method complementing the archaeozoology. The time frame of the past events in the cat history will be established using stratigraphy and radiocarbon dating.