

**Title:** Archaeogenetical study of domestic dogs in East Asia

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### **Abstract**

Dogs are thought to have evolved from wolves, and are the only animal domesticated by hunter-gatherers before Neolithic period, establishing a close relationship with humans. The worldwide spread of dogs followed that of humans, and the close partnership of humans and dogs was likely originally based on human needs for hunting companions or as a guard against predators. Although several places have been proposed for the origins of domestic dogs, such as Europe, Middle East, and East Asia and based on mitochondrial DNA (mtDNA) diversity and nuclear genome data, the dog's origin still needs to be fully understood.

My research aims to gain insights that would contribute to revealing the origin and early stages of dog evolution by genomic analysis of ancient DNA (aDNA) preserved in dog remains. I am targeting ancient dogs in East Asia, with a focus on Japan, using a bioarchaeological approach (aDNA analysis) to explore the relationship between ancient humans and dogs. Over the years, there have been a considerable number of aDNA studies conducted on dog remains. Researchers have analyzed the DNA of ancient dogs from different archaeological sites ranging across different periods and geographic regions including, Europe, the Near East, Siberia, and North America, whereas ancient East Asian dogs have not been extensively studied so far.

**Dogs in Japan:** Archaeological evidence indicates that dogs appeared in Japan at least 9,300 years ago during the Jomon period. The Jomon period dogs (Jomon dogs) retained the morphological characteristics of ancient domestic dogs throughout the Jomon period, possibly due to their geographical isolation from continental dogs. Hence, they are expected also to retain the genetic characteristics of the ancient domestic dogs.

**Sample:** With this perspective, I started my research with five dog remains excavated from three archaeological sites of the Jomon period (Odake Shell Mound, 6,750–5,530 cal BP; Mukaidai Shell Mound, 5,500–4,400 cal BP), including one of the oldest dogs in Japan (Kamikuroiwa Rock Shelter, 7,400–7,200 cal BP), along with seven later period dogs from a single site (Suwada site, late-8th-century).