

DNA shows Japanese wolf closest relative of domestic dogs

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Stuffed specimen of Honshu wolf (Japanese Wolf, *Canis hodophilax*). Exhibit in the National Museum of Nature and Science, Tokyo, Japan. Credit: Momotarou2012/Wikimedia Commons, CC BY-SA 3.0

A team of researchers affiliated with several entities in Japan has found evidence that the Japanese wolf is the closest known relative of domestic dogs. The team has published a paper describing their genetic analysis of the extinct wolf and its relationship with modern dogs.

The Japanese [wolf](#) is a subspecies of the gray wolf and once lived on many of the islands of what is now Japan. The [species](#) was declared extinct in 1905 after hunters and landowners killed them off, but many tissue and bone samples were preserved. In this new effort, the researchers extracted DNA from tissue in bone samples from several museums in Japan.

By comparing the DNA of the Japanese wolf with the DNA of other [wolves](#) and [dogs](#) and species such as foxes, the researchers found that it resides on a unique evolutionary branch of wolves—one that arose sometime between 20,000 and 40,000 years ago. They also noted that some of those ancient wolves evolved into Japanese wolves and others evolved into dogs.

Prior research has shown that modern domestic dogs evolved from a type of gray wolf that does not exist today. This new work suggests that scientists are getting closer to learning more about that unique wolf. The new DNA evidence suggests that it lived in East Asia (not the Middle East or Europe as has been widely suggested) and its wolf line migrated later to Japan. It is still unclear, however, what happened to the line that evolved into dogs. The DNA also showed that there was some interbreeding between the wolf line and the dog line. A prior study has shown that approximately 2% of the DNA from a sled dog that died 10,000 years ago was from the Japanese wolf. The researchers suggest such interbreeding appears to have occurred prior to the Japanese wolf making its way to Japan; thus, it does not appear likely that dogs made their way there until much later. They also note that New Guinea singing dogs and dingoes have the highest amount of Japanese wolf DNA of any

modern species, suggesting the wolf migrated great distances.

More information: Jun Gojobori et al, The Japanese wolf is most closely related to modern dogs and its ancestral genome has been widely inherited by dogs throughout East Eurasia, *bioRxiv* (2021). [DOI: 10.1101/2021.10.10.463851](https://doi.org/10.1101/2021.10.10.463851)

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