

Animal Pedigrees—A Canine Family Tree

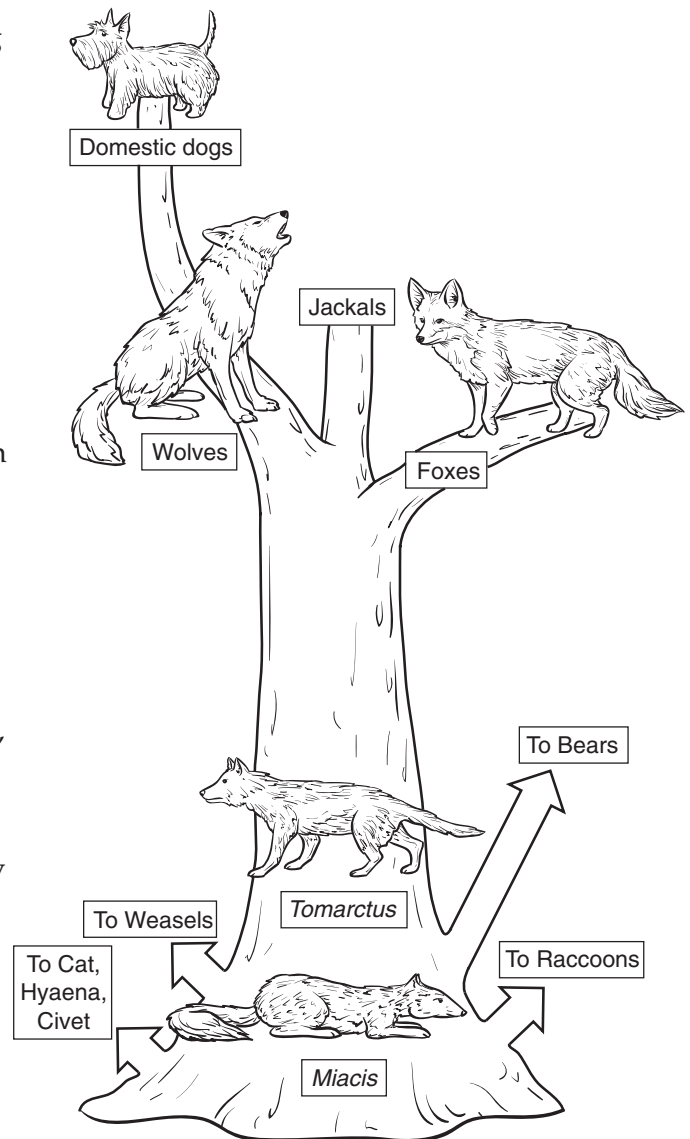
Where did the dog come from? If you look at the hypothetical family tree shown here, you can see that the canine group began evolving about 30 million years ago from a tiny tree-climbing animal, *Miacis*.

The dog appears to be the first animal domesticated by humans. DNA evidence indicates that dogs were initially domesticated from wolves about 100,000 years ago. Tribes used dogs for help with hunting, for protection at night, and for companionship.

After dogs were domesticated, they were selectively bred for particular characteristics. Just as other domesticated animals have been bred, dogs were bred so that they had the characteristics most desired by humans. In different parts of the world, the choice of desirable characteristics varied, resulting in the diversity we see today.

As dogs continued to live as human companions, many new breeds were developed for specific tasks, such as hunting, guarding, working, and companionship.

The basic principles of dog breeding are those that apply to any animal. Breeding pairs are selected for the desirable genes they will pass on. Some characteristics involve single-gene inheritance. However, many characteristics, such as coat color, depend on more than one gene. A cross between two heterozygous parents can produce a puppy with blue eyes even though both parents have brown eyes. In German Shepherds, the alleles for white fur and dark eyes are recessive. Two black or two tan parent dogs can still produce a white puppy.



Evaluation Answer the following questions on a separate sheet of paper.

1. When were dogs first domesticated?
2. If a homozygous German Shepherd with dark eyes is bred with a heterozygous German Shepherd with light eyes, is it possible to have puppies with dark eyes? Explain your answer.