

Evidence for evolution

Student Worksheet



Did you know that all dog breeds originated from the same ancestor? The ancestor of modern dogs was probably a wolf-like type of dog.



Wolf-like ancestor



Yorkshire terrier



Golden retriever



Cocker spaniel



Poodle

Most modern dog breeds, like the four shown above, have been created by humans. But how were the breeds created? Consider this scenario:

The first primitive dogs were probably wolf-like animals that hung around human settlements to find food scraps. But where there are human settlements, there are often also rats. At some point, humans in these settlements probably noticed that some dogs were very skilled at catching rats.

1. Which characteristics might these rat-catching dogs have had, in your opinion?

Quick or Slow

Aggressive or Docile

Large or Small



The humans in the settlements might have taken special care of these rat-catchers. They might even have bred rat-catching female dogs with rat-catching male dogs.

2. If the rat-catching dogs had the characteristics (speed, size, and temper) that you checked off above, what would the consequences for their offspring be? *Check off the correct statement(s)*

The offspring would probably inherit those same characteristics

The offspring would probably be good rat-catchers

Humans might have taken extra care of the offspring because of their usefulness

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Imagine what would happen if humans kept breeding rat-catchers with rat-catchers, generation after generation. The end result would be a small, quick, aggressive type of dog, not because humans wanted a small, quick, aggressive dog, but because they wanted a good rat-catcher, and those are the characteristics of a good rat-catcher.



There are several examples of such rat-catchers today! Most terriers were actually originally bred as rat-catchers, and if you've ever known a terrier, you'll know that they are indeed small, quick, and aggressive.

The process of crossing animals with certain characteristics with other animals with those same characteristics is called **selection**. When humans control the process, it is called **artificial selection**.

The process of selection happens in nature, too. In this case, it is called **natural selection**.

3. What's the difference between artificial selection and natural selection? Below, you'll find two scenarios. Indicate which one is natural selection, and which one describes artificial selection.



- Artificial selection
- Natural selection

The individuals that are allowed to breed are chosen by humans. These individuals have the characteristics that humans are interested in. This process produces animals that express some characteristics, such as a stubby snout, very strongly.

The individuals that are best suited for survival are the ones that most likely will live long enough to reach reproductive age. This means that they are the ones that get to breed, and their characteristics (being good survivors) are inherited by their offspring.



- Artificial selection
- Natural selection

4. Natural selection is a process that creates animals that are increasingly well adapted to their environment and thus are good survivors. On the other hand, artificial selection produces animals that... *Check off the correct statement(s)*

- Express a certain characteristic that humans prefer.
- Are not necessarily better survivors in the wild than their ancestors.
- Would probably not exist without human intervention.

Now, let's look at some animals that have evolved through natural selection! Go to the next page...