



## ***Teacher's Guide***

### **How Dogs Became Man's Best Friend: Genetics & Domestication NATURE Science Education Series**

**Grade Levels:**  
5-12

**Subject Areas:**  
Sciences  
Life Sciences  
Biology  
Ecology  
World Geography & Cultures

**Synopsis:**

Trace the evolutionary leap from wolves to dogs along with live-action film footage of the interactions of dogs and people in a wide variety of world cultures. Compare the unique proposal that human-animal interaction caused the wolf to evolve itself into a dog with the more reasonable theory that garbage dumps that accompanied early human settlements attracted wolves to people. Examine a genetic experiment to domesticate foxes by selection for tameness, an experiment that resulted in observable evolutionary changes within 10 years and apply the outcome of this experiment to an understanding of the evolutionary leap that occurred from wolf to dog. Investigate the relationships of dogs and human beings throughout history as mythological beasts, guard dogs, pets, and working dogs. Analyze the anatomy of sled dogs as an example of adaptation by selection.

**Learning Objectives:** Students will:

- Describe the unique relationships between dogs and humans.
- Explain the relationship between behavior and evolution, using the evolution of the dog as an example.
- Explain how the experiment with foxes in Siberia illustrates that evolutionary leaps do occur.
- Explain the principles of selective breeding.
- Describe the conclusions about nature and evolution that can be drawn from this program.

**Vocabulary:**

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transformation, Mesolithic, niche, ecological, flight distance, genetic groups, proto-dog, carnassial teeth, molars, canines, scavenging, archaeological evidence, geneticist, temperament, tolerance, quantum leap, adrenalin, fight or flight, melanin, pigment, dopamine, noradrenalin, neurotransmitter, domino effect, accentuated, adversary

**Pre-Viewing Discussion:**

Why are dogs called “man’s best friend”?

How do dogs differ from wolves? How are they similar to wolves?

Is it possible that dogs evolved from wolves? What makes you think so? (or, What makes you think they did not?)

Are there any human activities that would be impossible without the use of dogs?

**Post-Viewing Discussion:**

What behavior pattern does geneticist Ray Coppinger associate with wolves that evolved into dogs? Why name does he give to this behavior? What name is given to a similar behavior in human beings?

Why does Coppinger call the evolution of wolf to dog an “evolutionary leap”? What genetic experiment described in the program also indicated the concept of an evolutionary leap? In this experiment, how was the animal domesticated?

How was the wolf’s anatomy changed as a result of the evolutionary process of wolf to dog?

How do sled dogs differ from wolves in anatomy and temperament?

When do sheep dogs illustrate wolf-like behavior? What behavioral characteristics separate them from wolves?

**Further Activities:**

Investigate the behavioral and genetic characteristics of the so-called wolfdog.

Find out how selective breeding is used to create designer dogs.

Further investigate the characteristics of sled dogs or sheep dogs that make them invaluable to their human masters.

Survey the roles played by working dogs in a variety of cultures. Analyze the behavioral and physical characteristics that make them ideal for the jobs they perform.

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