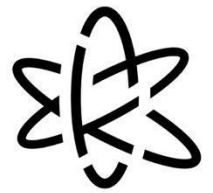




Eighth Grade Science

8th Grade Science: Activity 4

Artificial selection via Selective Breeding



How can we manipulate the desired traits in our family pet?

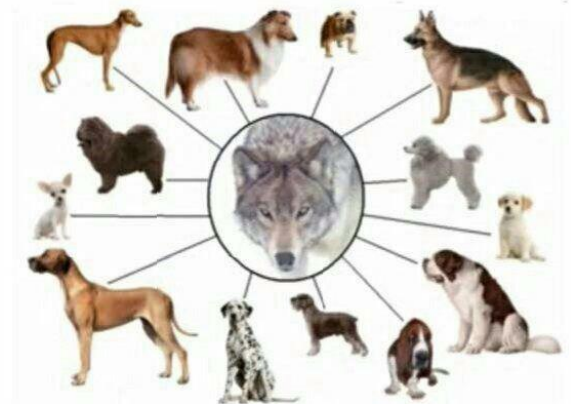
Directions: This handout goes with a KCS Teacher Video. If you have access to the video, watch the video while doing this activity. You can find the videos here <https://www.knoxschools.org/Page/21816>

How Can Organisms Be Produced with Desired Traits?

Due to advances in genetics, DNA evidence can show such things as family relationships or the ability to produce organisms with desirable traits. Selective breeding, cloning, and genetic engineering are three different methods for developing organisms with desirable traits.

The process of selecting organisms with desired traits to be parents of the next generation is called selective breeding.

Introduction: All breeds (or kinds) of domestic dogs are descended (come) from the wolf. Over many centuries, humans chose which animals would live and reproduce. They chose the animals for their specific desired traits. The result is the many breeds of dogs we have today.



Alaskan Malamute

In the case of dog breeds, humans have deliberately introduced variations (changes) by choosing phenotypes (physical display of the genotype) that favor human needs and eliminating less desirable traits. This is called artificial selection via selective breeding. Selective breeding can cause side effects that are harmful in the natural environment. For example, Bulldogs are bred and are noted for their large heads. In nature mothers would not be able to deliver their young without human assistance. The puppies' large heads would not fit through the mother's birth canal. From the Alaskan Malamute (one breed that is most genetically similar to that of a wolf), to the newly popular Goldendoodles, their unique traits are those that humans try to recreate for future generations.



Goldendoodle Puppies

Activity: Try your luck at Artificial Selection of the perfect dog breed! Click the link below or visit the web address if you are using a printed copy of this handout. Help the breeder fulfill the request of a customer for the desired traits requested in a dog. Good luck!

Artificial Selection Activity Link: <https://bit.ly/2WMhH9P>

Click “New Game” and use the arrow in the white textbox to get to each new instruction.

Use what you learned to answer the following questions:

1. What is artificial selection?

2. Why do humans use artificial selection?

3. What are traits that farmers might want to select for when breeding cows? How would this be helpful in agriculture?

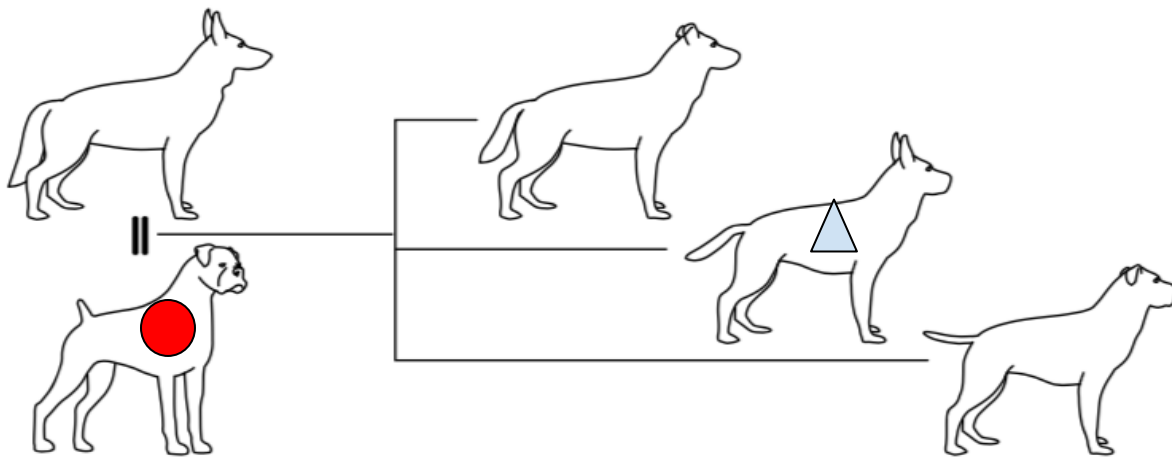
Reinforcement:





genetic engineering: the direct manipulation of DNA to change an organism's characteristics (phenotype) in a particular way

How would you compare selective breeding with that of genetic engineering?

In looking at your family pet, what similar traits do you see in your neighbor's dog, or that of its parents? _____



In looking at the pedigree, answer the following questions:

1. How is the second offspring (marked with a blue triangle ) similar to that of the second parent (marked with a red circle )?

2. How are they different?

The second offspring is/has _____, but the second parent is/has _____.

Whatever the desired traits of your pet that you find most interesting, they can be traced back to one of the most wildest animals on earth, the Wolf. Watch the transition unfold by clicking on the link below or visiting the web address if you are using a printed copy of this handout.

From Wild Wolves to Man's Best Friend Video Link:

<https://bit.ly/2xWK5NX>

In thinking about the Video, try to answer the following questions:

1. How did dogs help hunters and gatherers in early civilizations?

2. How is Natural Selection different from Artificial Selection?

3. Describe the uniqueness of the Pekingese dog.

