

Name: _____ Period: ____ Date: _____ Score: ____ /20

Artificial Selection

Objectives

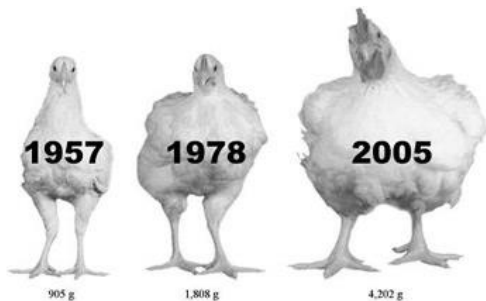
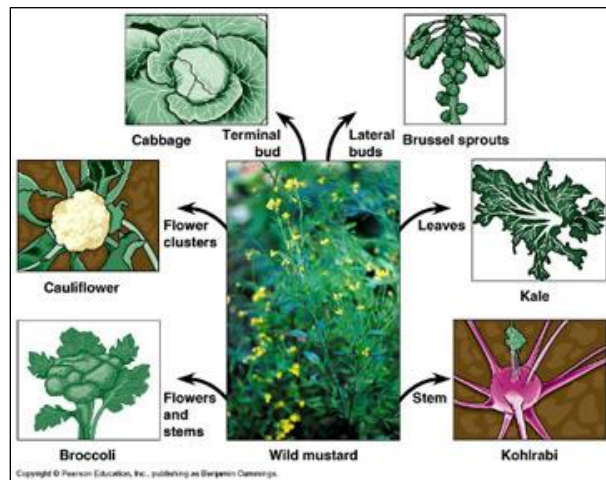
1. The students will: Define selective breeding with 100% accuracy.
2. The students will: List a minimum of three advantages and three disadvantages of selective breeding.
3. The students will: Differentiate between natural selective and selective breeding by providing a minimum of two supporting statements

Procedure

Read the following selection on artificial selection/selective breeding and answer the following questions.

Artificial Selection is a process which manipulates the genome of an organism in order to produce desired traits. In the past, this was achieved by selective breeding. **Selective breeding** can be described this way: an animal or plant would be born with a desired trait, and a farmer would breed this animal or plant to produce more organisms with that trait. Selective breeding is why we have such a huge variety in breeds of dogs. Selective breeding is also why we have cabbage, kale, broccoli, cauliflower, and Brussels sprouts.

As shown in this image, each of these plants is a variation or cultivar of wild mustard ('*Brassica oleracea*'). Each plant was bred for many generations for specific features; cauliflower and broccoli were bred for their ability to produce flowering heads. The features seen in each plant were the results of naturally-occurring genetic differences found in the genome.



The chickens we buy in the grocery store are nearly four times the size of the chickens available in the 1950s, shown in the image here.

This growth spurt is the result of selective breeding of a particular strain of chickens and improved nutrition. The strain of chicken, which was discovered in the 1950s, naturally had the ability to grow faster and larger than other chickens as a result of a mutation in its genome. While modern practices of feeding animals growth hormones and antibiotics are controversial, they do not modify the organism's genetics and are not considered genetic manipulation.

Artificial selection in plants and animals is not seen as being as controversial, as it is with humans. Genetic selection in humans raises ethical questions, such as who gets to live and who is asked for permission to make certain selections.

Human genetic selection (screening procedures) are done on embryos that have not yet been implanted or on a fetus in the first or second trimester of pregnancy. Fetuses are often screened for the presence of genetic diseases, such as Down's Syndrome, Sickle Cell Anemia, Cystic Fibrosis, and Tay-Sachs disease, especially in cases where the mother is at risk.

Questions

1. Define selective breeding/Artificial Selection.
2. Complete the chart, listing a minimum of three advantages and three disadvantages of artificial selection, based off of what we have discussed in class, previous knowledge and what you read above:

Artificial Selection/Selective Breeding	
Advantages	Disadvantages
1.	1.
2.	2.
3.	3.

3. What is the difference between natural and artificial selection? Be detailed and use a minimum of two supporting statements. (4pts)

4. How does the process of artificial selection directly impact your life? Provide two examples. What are your personal views on artificial selection? (4pts)