



# Genetic Variation and Observation

## Virtual Classroom Extension

### **Grade Levels**

Grade 8

### **Objectives**

These activities are designed to start your at-home students in recognizing themselves as scientists and in thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. Feel free to adapt the lessons provided to better suit your students' abilities. Take these ideas, make them your own, and your students will have a greater chance of success.

### **Background Information**

This activity can be used with your at-home students after viewing the François Langur Facebook Live stream from 4/6/2020. This activity is designed to have your at-home students sharpen their observational skills and apply these skills to the concept of genetic variation.

### **How can you tell different animals of the same species apart?**

### **Procedures**

1. Begin by telling your at-home students that they will be investigating the differences between individual animals of the same species due to genetic variation.
2. Have them brainstorm possible ways to distinguish among multiple animals of the same species. They do not need to be limited to any type of animal. (Answers may include: height, weight, horn shape, tone, markings/patterns, ear shape, etc.)
3. Together, visit the Zoo's Online Resource Library at [resourcelibrary.clemetzoo.com](http://resourcelibrary.clemetzoo.com) and search for photos that show multiple animals of the same species.
4. Practice observing the different animals in each group and try to find distinguishing characteristics of each individual.
5. Share the following information with your at-home students:
  - Just like what was shown in the live stream video at the François langur exhibit, biologists use specific observational techniques to help identify individual animals. Biologists observe animals in both zoos and in the wild and record their observations.
  - Genetic variation is created through heredity, or the passing of characteristics or traits from parents to their offspring. This variation of genes may begin as two

siblings having different physical appearances and end with two very distinguishable subspecies. For example, all tigers are the same species, but five subspecies of tigers exist in different parts of Asia and look very different from each other.

6. Using the Zoo's Online Resource Library or other popular websites, at-home students should be tasked with finding a video to observe. The video should be at least three to five minutes in length, and include multiple animals of the same species. Recommended searches include looking for videos specific to the type of animal they would like to observe.
7. When at-home students have selected their videos, it is important to remind them that they will be looking for signs of genetic variation between each animal. The ultimate goal should be to have a list of distinguishing features that will help them to identify each animal in the video as an individual.
8. After viewing videos and making lists, ask them what the pros and cons could be for scientists to use this method of observation? Different sampling methods all have strong and weak points. Ask how this type of observation could be potentially beneficial in both a zoo and the wild.
9. To extend further into the concepts of heredity and genetic variation, ask: Why is it important to be able to identify individual animals while recording behavior? Why is it important for zoos to keep track of heredity of their animals? After allowing them to come up with their own ideas, share the following information with them:
  - Heredity and genetic variation are important to record in both a zoo and in the wild. Heredity in a zoo population, for example, allows us to make sure we are creating a genetically diverse population of animals in zoos. Why would this be important?
  - Genetic variation among individuals not only allows animal care staff to identify the animals in their care, but it could also aid in providing better care for their animals. Each animal may have a different personality, and some individual animals may require different types of care. Being able to identify them allows animal care staff to provide the best care possible.
10. To close this activity, have your at-home students answer one or more of the following questions: What did you learn about heredity today? What did you learn about genetic variation? How can the methods you used today be beneficial to biologist studying animal behavior?

### **Standards**

<b>Ohio Academic Content Standards</b>
Grade 8 Life Science Topic: Species and Reproduction
The characteristics of an organism are a result of inherited traits received from parent(s).