Teacher Guide

I created this lesson because I felt that students needed a stronger connection to the unit of evolution. We talk a lot about Darwin's finches and examples of bacterial evolution, but not about our own species, *Homo sapiens.* Secondly, I wanted to dispel the myth that humans are direct descendants of chimps/monkeys. Finally, students often believe that humans are so well adapted to our environments because we can get the traits we need or want. These are all reasons for developing this lesson.

I also believe that the unit on evolution should be closely linked to the units on DNA, protein synthesis, mutations and genetics. There are some amazing examples of recent human adaptations to environment and the discussion of these is a great way to link these topics together.

Here are some suggestions for the activities:

1. **Map analysis**

The goal of this activity is to have students figure out the correlation between environment and traits. We want them to come away with an appreciation that environment really does impact survival, and thus the traits that are displayed in that population. The end of the activity asks students to identify the prevalence of lactose tolerance in their area. I hope that students will become personally connected to the material, especially early on in the lesson.

2. **Modeling Natural Selection Activity**

This activity is a very simple way of modeling natural selection. I have always loved this activity and the students enjoy it as well. Students get into groups- 2 are predators, with the pasta or beans as the prey, and they try to "eat" 40 as quickly as possible. The remaining 20 are the survivors. The students then count the colors of the survivors and do a calculation to see what the population would look like in the future.

There are many variations if you want or need to adjust it. I have written the activity to use tricolored rotini (or any type of pasta) on a grassy surface. You will notice in the video that we have thrown the tricolored pasta on a tiled floor. If it is raining, I have also purchased highly colored fabric swatches at a fabric store and had students complete the simulation inside. Finally, if you live in a desert or area with lots of dirt and little grass, you could use tricolored beans to complete the simulation.

3. **A simulation of survival: High Altitude and Blood Oxygen Content**

This activity connects gene variation, alleles, to survival. The class is split into populations in different environments- one at sea level and the other at high altitude. The alleles are determined by coin flipping- to reinforce that the process is random. The goal is for students to link genotype to environment, can you survival or not.

4. **A discussion about the future of human evolution**

The students are asked to discuss the following questions:
What do you think human evolution will look like in the future?
What sorts of selective pressures will continue to affect our own patterns of survival and reproduction?
It is time for the students to take what they have learned from this BLOSSOMS lesson and think about the future path of human evolution. You might want to prompt them to think about some issues- pathogens, general disease, population growth, global warming, etc. I hope this can be a great, open-ended discussion in your classroom.