

## Candy Dish Selection

Adapted from Carol Tang [http://www.ucmp.berkeley.edu/education/lessons/candy\\_dish.html](http://www.ucmp.berkeley.edu/education/lessons/candy_dish.html)

**Overview:** This activity is a demonstration of natural selection. Students select candies from a bowl and have an opportunity to think about what traits brought about the “survival” of some candies. There are two parts. The first involves the students selecting candy, and the second involves discussion and application of concepts. There is time in between the two (while the candy gets passed around) which could be used for lecture or video.

**Background:** This activity provides a model for natural selection. It is, of course, artificial both in the sense that the selecting is done by people and that the “organisms” being selected are nonliving entities with no genetics and no ability to reproduce. For more background information on natural selection see: [http://evolution.berkeley.edu/evolibrary/article/evo\\_25](http://evolution.berkeley.edu/evolibrary/article/evo_25).

### Standards Addressed

NCSCOS: 3.05 Examine the development of the theory of evolution by natural selection.

NSES: Unifying concepts - Evolution and equilibrium

21<sup>st</sup> Century Skills: Learning and Innovation skills - critical thinking and problem solving

### Lesson Concepts:

- Adaptations often persist in a population because they are in some way advantageous.
- Adaptations are preserved in a population by natural selection.
- Depending on environmental conditions, inherited characteristics may be advantageous, neutral, or detrimental.
- Natural selection acts on individuals and populations in a nonrandom way.

Grade Span: 9–12

Time: 30 minutes

Grouping: Whole class

### Materials:

- Variety of candies—has to include popular ones and unpopular ones (try black licorice). You should have at least two candies per person plus plenty of unpopular ones. Possibly include candies with different colors, sizes, brand names, etc. (avoid candies with nuts for kids who are allergic).
- Large dish
- Student hand out

### Advance Preparation:

- Prepare a list of the candies and their initial abundance in the candy dish

Vocabulary: variation, selection (both artificial and natural), traits, population, environmental conditions, inherited characteristics, advantageous, neutral, detrimental, random

Procedure:

1. Make the candy dish accessible in advance so students can pick candies over a period of time, or the dish can be passed around the room a couple times. You can avoid commenting about it at all, or you can make very innocent remarks about providing a treat for the students.
2. After more than half of the candy has been removed, gather the class together. Start the discussion by pointing out that there is often great variation among individuals of animal species. For example, students can look around the room and list the characteristics that vary among humans. Then, ask the students why variation is significant. (One reason variation is important is that variation allows for differential survival of individuals.)
3. Tell students the numbers of each type of candy that was in the bowl (that you counted before class). List on board and have students fill in the numbers on their worksheet.
4. Show them the candy bowl and the remaining candies. Count what candies remain and list them on the board. Have students fill in the numbers on their worksheet.
5. Now ask them to list the traits of the candy they *selected* from the candy dish. (examples include: chocolate flavor, large size, favorite brand, etc). These are the traits that led to the removal of certain candies.
6. Ask them to make another list of the traits of the candies that were *not selected* (examples: bad flavor, small size). These are the traits that allowed the candies to survive being passed around the room.
7. Now ask them to answer the quick write response question at the end of their handout. "In your own words, explain what we did, what happened and what it means." They should include something like this: The fact that there were different candies with different traits resulted in some candies being eaten and others surviving. This is what natural selection does with individuals in a population. Each individual has unique traits; some traits will help an individual survive and some traits do not.

Student handout references:

evolution.berkeley.edu (most images and definitions)

<http://bourazani.gr/images/AACD0623.jpg> (population image)

Adaptation for English language learners (ELLs):

This activity was initially designed to be more discussion-based between the teacher and students. If ELLs are unfamiliar with the vocabulary they could have trouble following the discussion. To alleviate this, a vocabulary list was included in the student worksheet. Complicated terms come with a visual example in addition to the definition, to aid in comprehension. In addition, instead of writing the number of candy (before and after) and the traits selected and not selected for on the board, a graphic organizer was added to help students work through the concepts themselves, and give them organization to do so. Finally, a quick-write response was added to the end to give ELLs practice writing about the science they have learned.