# *Comparing Apples and Onions*

***Utah Science - Heredity***

**Materials**
- one red apple and one red onion
- several varieties of apples for each group
- meter tapes – one for each group
- balance scales with gram weights – one for each group

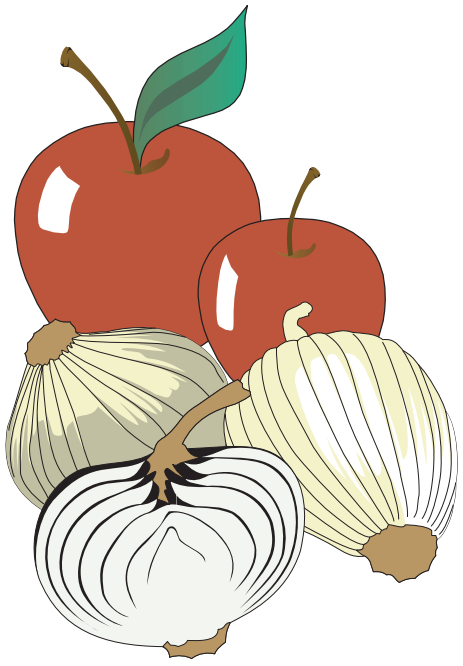
**Time:** 40 - 60 minutes

**Grade Level:** 5

**Science, Standard 5**
Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.

Objective 1
Using supporting evidence, show that traits are transferred from a parent organism to its offspring.

a. Compare the traits of similar species for physical abilities, instinctual behaviors, and specialized body structures that increase the survival of one species in a specific environment over another species (e.g., difference between the feet of snowshoe hare and cottontail rabbit, differences in leaves of plants growing at different altitudes, differences between the feathers of an owl and a hummingbird, differences in parental behavior among various fish).



**Background and Invitation to Learn**

This is the introductory activity for the standard on heredity. It focuses on what traits are observable in an organism.

1. Show students a red apple and a red onion. Ask: Which one would you like to eat in a pie? How can you tell the difference between the apple and the onion?
2. As a class, list the physical characteristics of the apple and the onion. Point out that many of these characteristics are heritable traits that can be used to tell apples from onions.
3. *Optional*: Show other types of fruits and vegetables that have both similar and different characteristics. Have students observe, record and discuss the similarities and differences.

**Procedures**

1. Divide the students into groups. Give each group several varieties of apples.
2. Have students record the physical characteristics (e.g., color, size, shape, smell, and special markings) of each variety of apples.
3. Have students predict each apple's weight in grams, and circumference in centimeters. *Teaching Tip:* When students make predictions, encourage them to use a known variable for comparison. For example, if you are using gram weights, have a student place 100 grams in one hand and an apple in the other. This way, the student has a known quantity against which to compare the apple's weight and a basis for making his/her prediction. As soon as one apple's mass is known, the apple can then become the next known quantity.
4. Have students measure the actual weight and circumference of each apple.
5. Have students make a prediction about how many seeds are in each apple.
6. Cut each apple open and make observations that might include: number of seeds, shape of the seeds, color of the inside flesh of the apple, and the thickness of the skin.
7. Cut each apple into small sections and allow students to taste the differences among the apples. Be sure to follow proper health and safety regulations for step 7 or, ask the cafeteria workers to slice the apples for the children.

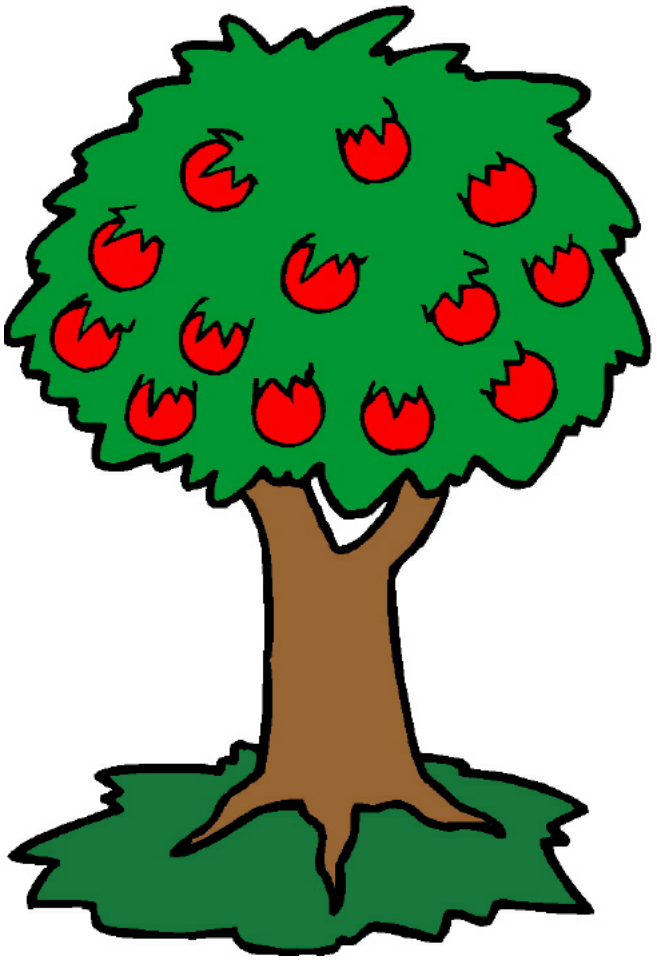
**Questions for Discussion and Investigation:**

- Which apple tastes best to you?
- Does one of the apples have a texture you prefer over the others?

**Additional Activities, What's Next?**

Many grocery stores have informational sheets on fruits and vegetables. Have students go to the grocery store with a parent or other adult and find out information about a particular fruit or vegetable from the manager of the Produce Department. For example: How many kinds of apples are carried by the grocery store? Which apples are best for cooking, eating or storing? Which apple has the shortest growing season, the longest growing season? Which apple sells the best? Which are the most expensive and why? Where do apples grow in Utah?

Graph the class data for the characteristics students observe as part of the Procedures, step 2.



*This lesson was created by Agriculture in the Classroom at Utah State University and is part of the Fifth Grade Science Teacher Resource Book (TRB3) http://www.usoe.org/curr/science/core/5th/TRB5/. The TRB3 was designed as a textbook for teaching science curriculum. This book covers all the objectives of each standard and benchmark. Students who comprehend the content in this lesson should do well on the End-of-Level (CRT) tests.*