

Unit Overview

Unit Length

Approximately 15
forty-minute sessions

Objectives

The students will:

- Read an interview with a horse breeder.
- Identify and record the known traits of a horse's family tree.
- Play a game and collect data regarding outcomes.
- Create an imaginary plant using the genetic concepts of dominant and recessive.
- Compare similarities and differences in traits.
- Create visual representations of data.
- Develop an advertisement for an imaginary produce item.
- Read biographies and gather key information.
- Become familiar with the history of tomato production.
- Practice oral presentation skills.

Brief Description

The students participate in a variety of lessons that examine the basic principles of heredity, as well as learn some specifics about genetics and how they are incorporated into today's agricultural industry. After reading an interview with a horse breeder, students will understand that certain traits are carried from one generation to the next. The *Rock, Paper, Scissors* activity helps students understand that some traits are dominant and others are recessive. Students are then asked to create a new produce item by combining existing traits with desirable traits. By reading biographies of scientists who have contributed to the study of genetics and biotechnology, students gain a better understanding of the history of genetic research. Finally, using tomatoes as an example, students learn how technological advances have affected tomato production.

Curriculum Content Standards for California Public Schools

A concerted effort to improve student achievement in all academic areas has impacted education throughout California. The California Foundation for Agriculture in the Classroom provides educators with numerous resource materials and lessons that can be used to teach and reinforce the Curriculum Content Standards for California Public Schools. The lessons encourage students to think for themselves, ask questions, and learn problem-solving skills while learning the specific content needed to better understand the world in which they live.

This unit, *Where'd You Get Those Genes?*, includes lessons that can be used to teach or reinforce many of the educational content standards covered in grades five through seven. It can be used as a self-contained unit, each lesson can be incorporated into the curriculum at appropriate times, or can provide technical information in the areas of genetics and agriculture.

The specific subject matter content standards covered in the lessons are listed on the sidebars of each lesson. A matrix chart showing how the entire unit is aligned with the Curriculum Content Standards for California Public Schools can be found on pages 69-77.

Unit Overview

Key Vocabulary

agriculture
biography
biotechnology
Burbank, Luther
Carver, George Washington
cell
chromosome
co-dominant
comparison
cross breed
deoxyribonucleic acid (DNA)
dominant
equestrian
express
family tree
Fox, Sally
gene
genetic code
genetic engineering
genetics
heredity
interview
McClintock, Barbara
Mendel, Gregor
natural selection
outcome
paint horse
produce
quarterhorse
recessive
selective breeding
technology
trait
variation

Evaluation

This unit incorporates numerous activities and questions that can be used as evaluation tools, many of which can be included in student portfolios. Embedded assessment includes oral and written responses to open-ended questions, drawing, group presentations, and other knowledge-application projects. Other evaluation factors may include active participation in class discussions and general knowledge of the subject matter.

Visual Display Ideas

- Display the student-designed diagrams of *Junior's Family Tree*.
- Display items obtained from the American Quarterhorse Association. See page 63 for ordering information.
- Have students bring in their favorite novels about horses. Display the books.
- Display the plant models developed in *Rock, Paper, Scissors*.
- In the classroom library, display the advertisements made in *Peanut Butter Broccoli*.
- Create a collage of products made from tomatoes and the technologies used in today's tomato industry.
- Make a collage or free-standing display of products changed through biotechnology.

