

Apple Anatomy

Standards of Learning

Science: 5.1, 5.5

Objective

Students will:

- Create microscope slides and analyze them using a microscope. They will sketch their observations.

Materials

- very thin slices of apple and another fruit or vegetable
- water droppers
- microscope slides
- cover slips
- microscopes

Background Knowledge

There are numerous parts that can be found in a plant cell, which is what your students will be observing when looking through their microscope. The cell membrane forms a barrier between the inside of the apple and the outside. The cell membrane allows waste to exit the cell. The cell wall is used to provide structural support and control the amount of water entering the cell. The golgi body stores and distributes lipids and proteins into the cell. Lysosomes are the garbage disposal of the cell by cleaning up the cell and watching what comes in and out. Cytoplasm distributes oxygen and food to the cell and supports all of the parts inside the cell. The nucleolus is where ribosomes are made. The vacuole stores water, nutrients, and other substances that cannot be used right away. Ribosomes are protein builders for the cell. Chloroplasts are the food producers of the cell. They contain chlorophyll, the green substance used for photosynthesis. The nucleus regulates all cell activity and is made up of genetic information that controls cell growth. The nuclear envelope surrounds the nucleus and is similar to the cell membrane. The smooth endoplasmic reticulum packages protein for distribution in the cell and releases calcium for the cell. Mitochondria are used to provide the cell with energy by changing sugar into energy through respiration. Hopefully, these are the kinds of things your students will notice when observing their apple and fruit pieces.

Apples, like all living things are made up of cells. A high resolution microscope will allow students to observe the apple's cells. However, you may also do this lesson with a lower resolution microscope.

Procedure

1. Review with students the parts of a plant cell.
2. Pass out lab supplies to students.
3. Have them first place a small, thin slice of apple on their slide. Next, use the water dropper to place a drop of water on the slide. Then, place the cover slip on top.
4. Repeat the process to make their second slide using a different fruit or vegetable.
5. Students should place the first slide with the apple on it under the microscope. They should sketch and record their observations. Do the same for the second slide that has the other piece of fruit.
6. Ask students to brainstorm similarities and differences between the 2 slides. Record their answers on the board in a chart format.

Extension

Have students evaluate the truth of the statement, "An apple a day keeps the doctor away," by researching the nutritional value of apples.

