



HARVEST OF THE MONTH

May: Strawberries

Nutrition News—

Just 8 strawberries provides you with 150% of your daily recommended amount of vitamin C. Vitamin C helps your body fight off infections and can help increase the absorption of iron from foods.

Strawberries are the first fruit to ripen each spring.



Did you know?

The strawberry we know today is a cross between two native American species—one from Chile and one from Virginia. The two met by accident—in faraway France!





STRAWBERRY DNA EXTRACTION

Standards of Learning:

Science LS.1, LS.2, LS.3, LS.13

Objectives:

Students will be able to—

- Follow a process and extract DNA from living tissue.

Materials:

- strawberries
- Water
- Salt
- Blender
- Coffee filter
- Detergent
- Test Tube
- Rubbing Alcohol
- Wooden Stick



Background Knowledge:

In this activity, students will model a process that scientists use to extract DNA strands. Deoxyribonucleic acid (DNA) is a long molecule that contains the genetic instructions used in the development and functioning of all known living organisms and some viruses. Yes, DNA is in all your food! The main role of DNA molecules is the long-term storage of information. DNA is often compared to a set of blueprints, a recipe, or a code because it contains the instructions needed to construct other components of cells, such as proteins and RNA molecules.

In this lab, students will extract strands of DNA from the nuclei of strawberry cells. Mashing the strawberries will break the cells' walls, exposing the inner membranes. The DNA extracting solution will disrupt the cell and nuclear membranes. Filtering the mixture gets rid of all the strawberry cell parts that are bigger than DNA. Finally, the alcohol causes the DNA to precipitate and come out of the solution. Participating in the extraction of DNA will help familiarize students with one aspect of the work biotechnologists do.

In terms of careers, a plant scientist or genetic engineer may use biotechnology as a tool; these scientists may also employ biotechnologists. Biotechnologists have diverse and interesting careers. Biotechnologists can be hired to help develop new medicines and medical treatment options, assist in waste treatment or environmental remediation, or develop new characteristics in livestock and plants for agricultural use. Biotechnologists work in many different sectors, including hospitals and research facilities, private food or animal production companies, pharmaceutical companies, government agencies, and food processing plants. They come from backgrounds in science and engineering or a combination of several educational groups including chemistry, biochemistry, microbiology, life sciences, and pharmacy sciences.

Procedure:

1. Place the following ingredients into a blender:
 - 100 ml or ½ cup of strawberries
 - 200 ml or 1 cup of water
 - 1 gram or 1/8 tsp salt
2. Blend on high for 15 seconds
3. Strain the mixture through a sieve to remove the unblended material.
4. Add 20 ml or 2 TBSP of detergent. Swirl to mix. Let sit for 5-10 minutes.
5. Fill a test tube about 1/3 full with the mixture.
6. Add a pinch of enzymes (Meat tenderizer) to each test tube and stir carefully.
7. Tilt the test tube and slowly pour an equal amount of alcohol down the side of the tube so that it lies on top of the mixture.
8. Stringy DNA should appear at the boundary between the mixture and the alcohol.
9. Use a wooden stick or a hook to gently move the mixture up into the alcohol so that more DNA will precipitate out; you can also let the tube sit for 30 minutes or more.
10. You can keep the DNA indefinitely in a sealed container with alcohol or dry it on paper.

