



At Home Science! Strawberry Study

This science experiment can be done using simple household items. Students will extract DNA from strawberries using household items.

Watch How [HERE](#)

What You'll Need:

- 2 Plastic resealable sandwich bags
- 1 Cup (clear is best)
- Scissors
- Tape
- Butter knife
- Toothpicks
- Coffee filters or paper towels (a metal strainer works too)
- 3-4 Strawberries
- Rubbing alcohol (70% or higher)
- 1 teaspoon salt
- 1 tablespoon dish soap
- $\frac{1}{3}$ cup water

Strawberry DNA Extraction

1. Place the rubbing alcohol in the freezer to chill.
2. Using a butter knife remove the green stems from the strawberries.
3. Place the strawberries into a plastic resealable bag and zip shut, removing as much air as possible. Use your hands to squish the strawberries inside of the bag.
4. Once the strawberries are thoroughly mushy, re-open the ziplock bag. Add dish soap, salt, and water to the bag. Close the bag again, removing as much air as possible. Shake and gently knead the bag to mix.
5. Cut the corner off of another ziplock baggie and place the open corner into the cup to create a funnel. Line the ziplock bag funnel with a coffee filter. (If using a paper towel, use scissors to cut the towel into triangles and then overlap the pieces in the funnel so that the hole is covered.) Make sure the tip of the plastic bag funnel hangs above the bottom of the cup.

6. Slowly and carefully pour the strawberry liquid into the filter to be funneled into the cup. The chunky strawberry parts should be caught in the filter while the pink strawberry juice drips to the bottom of the cup.
7. Lift the plastic bag funnel, filter, and chunky strawberry when all of the liquid has dripped into the cup. Set aside the cup of strawberry juice and throw away the funnel and strawberry chunks.
8. Remove the alcohol from the freezer. Carefully pour a layer of alcohol into the cup of strawberry juice, being careful not to mix the two liquids. Pour until the clear alcohol layer is as thick as the pink strawberry juice layer.
9. Look for white strands appearing in the clear alcohol layer. This stringy precipitate is actually strawberry DNA. Use a toothpick to collect the DNA strands by swirling the tool around the alcohol layer.

Digging Deeper

Strawberry DNA vs. Human DNA

Why does this DNA lab work so well with strawberries? Cultivated strawberries that we buy in the store are octoploid, meaning they have EIGHT sets of chromosomes. As a comparison, humans have two sets of chromosomes. To extract your own DNA, you can repeat the experiment and use your saliva instead of the strawberries. How much DNA were you able to isolate and remove from your own DNA compared to the strawberry DNA? Does the DNA from strawberries look different from human DNA? Research online to discover which plants have the most DNA and which animals have the most DNA.

All in the Family Taste Test

Strawberries are in the Rosacea family, more commonly known as the rose family. Other plants in this family include apples, peaches, pears, almonds, cherries and blackberries. Taste test different fruits from plants in the rose family. Do they have any features in common? What are their differences? Are there any other fruits or vegetables in the rose family? Do an online search to find flowers for plants in the rose family. Can you give reasonings for why these different fruits are classified in the same family? What other plant families do you regularly eat?

Berries and Whipped Cream

Enjoy your berries with whipped cream using this simple recipe that also gives you a workout.

You will need:

- a clean jar with lid
 - 1 cup heavy cream
 - 1 tablespoon sugar
 - 1 teaspoon vanilla flavoring or extract
1. Place the lid on the clean jar and place in the freezer to cool for 10-15 minutes.
 2. Once jar is sufficiently cold, remove it from the freezer and take off the lid. To the jar, add the heavy cream, sugar and vanilla flavoring.

3. Return the lid to the jar and secure tightly. Shake the jar vigorously for five minutes. Count how many times you can shake the jar or come up with interesting ways to keep the jar moving.
4. Once cream starts coating the sides of the jar, it is ready to use. Open the jar, and enjoy with strawberries or other fresh fruit.

Note: if you shake too long your fresh whipped cream will turn into butter!

Additional Resources

[Overview of Efforts to Create More Flavorful Strawberries](#)

[Why Tomatoes aren't Fruits and Strawberries aren't Berries](#)

[Popular Foods that Look Different Today](#)

[The Little Mouse, The Red Ripe Strawberry, And the Big Hungry Bear | Preschool Read Aloud Book](#)

[The Very Berry Counting Book](#)

[First Woman and the Strawberry](#)

Georgia Standards of Excellence Covered

S5L2. Obtain, evaluate, and communicate information showing that some characteristics of organisms are inherited and other characteristics are acquired.

S5L3. Obtain, evaluate, and communicate information to compare and contrast the parts of plant and animal cells.

S7L3. Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to determine the traits of their offspring.

a. Construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.

c. Ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding.

(Clarification statement: The element specifically addresses artificial selection and the ways in which it is fundamentally different from natural selection.)

SB2. Obtain, evaluate, and communicate information to analyze how genetic information is expressed in cells.