



Strawberry DNA Extraction Lab

Materials Needed:

- 1 Ziploc Plastic Sandwich Bag
- 2-3 Strawberries (Can be Fresh or Frozen)
- 1 Coffee Filter
- 2 Plastic Cups
- 1 Coffee Stirrer
- 91% Rubbing Alcohol (Must be Chilled)
- 10 mL Beaker (Optional: Can use a cup and do a rough measurement)
- 1 1.5 mL Microcentrifuge Tube (Optional)

DNA Extraction Liquid:

- 2 tsp Liquid Dish Soap
- 1 tsp Salt
- ½ cup Water

Lab Instructions:

1. Remove the green leaves and put the strawberries into a Ziploc plastic bag.
2. Gently smash the strawberries with your fingers for 1 minute.
3. In one cup, mix together 2 tsp of liquid dish soap, 1 tsp of salt, and ½ cup of water. This will be your DNA extraction liquid. **Do not crush the strawberries too much as this will cause the DNA to shear/degrade.**
4. Pour 10 mL of the DNA extraction liquid into the Ziploc bag with the smashed strawberries.
5. Reseal the bag and gently smash for 1 minute. **Avoid making too many soap bubbles. Do not crush the strawberries too much as this will cause the DNA to shear/degrade.**
6. Place the coffee filter inside the unused plastic cup.



What's Happening?

- Crushing the strawberries breaks open many of the strawberry cells, releasing the nuclei where the DNA is.
- The soap in the detergent in the extraction liquid breaks down the fatty membranes of the cells, breaks open the nuclear membrane, and releases the DNA into solution.
- The salt makes the DNA molecules stick together, and separate from the proteins that are also released from the cells.

Lab Instructions:

7. Open the Ziploc bag and pour the strawberry liquid into the coffee filter. Use the coffee stirrer to gently work the strawberries through the coffee filter.
8. Twist the coffee filter just above the liquid and gently squeeze the remaining liquid into the cup.
9. Slowly and gently pour a small amount of rubbing alcohol down the side of the cup with the strawberry liquid. **Do NOT mix or stir.**

What's Happening?

- The coffee filter retains strawberry cell debris.
- The strawberry DNA is dissolved in the DNA extraction liquid, which will pass through the coffee filter into the cup.

Lab Instructions:

10. Watch for a white cloudy substance (DNA) to develop in the top layer. You have just isolated the DNA from the rest of the material contained in the strawberry cells.
11. Tilt the cup and gently pick up the DNA using a coffee stirrer and place it in the microcentrifuge tube.



What are you seeing?!

- The DNA collects between the layer of alcohol on top and the strawberry extract underneath!
- DNA is insoluble in alcohol, so it precipitates. What you see is the precipitation of strawberry DNA!!!
- This contains the code for all of the proteins required by the strawberry throughout its life.