

CLASS COPY – PLEASE DO NOT WRITE ON

DNA Extraction: Strawberry Lab

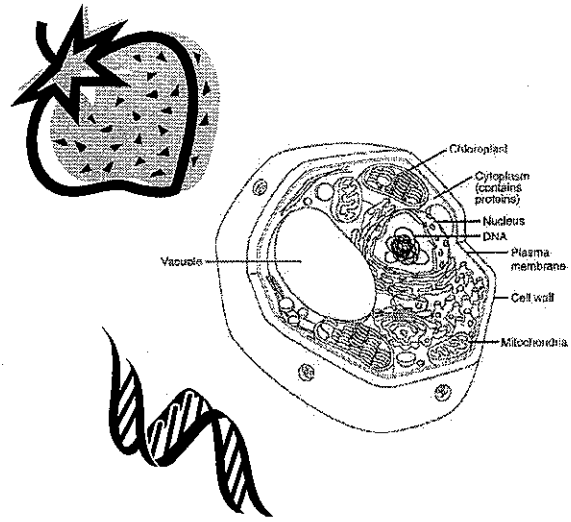
Background: The long, thick fibers of DNA store the information for the functioning of the chemistry of life. DNA is present in every cell of plants and animals. The DNA found in strawberry cells can be extracted using common, everyday materials. We will use an extraction buffer containing salt, to break up protein chains that bind around the nucleic acids, and dish soap to dissolve the lipid (fat) part of the strawberry cell wall and nuclear membrane. This extraction buffer will help provide us access to the DNA inside the cells.

Pre-lab questions:

1. What do you think the DNA will look like?
2. Where is DNA found?

Materials:

heavy duty ziploc bag
1 strawberry
10 mL DNA extraction buffer (soapy, salty water)
cut tip of bag
150mL beaker
toothpick
20 mL ethanol/rubbing alcohol(COLD)



Procedure:

1. Place one strawberry in a Ziploc bag.
2. Smash up the strawberry using your fist and fingers for 2 minutes. **Careful not to break the bag!!**
3. Add the provided 10mL of extraction buffer (salt and soap solution) to the bag.
4. Knead/mush the strawberry in the bag again for 1 minute, then cut the corner of the bag and squeeze the mush into the beaker.
5. Slowly pour 20 mL's of cold ethanol into the beaker. **Do not mix.** OBSERVE ☺
6. Dip the glass rod, or toothpick into the beaker where the strawberry extract and ethanol layers come into contact with each other. OBSERVE ☺
7. Examine the extractions under **high** power with a microscope and investigate (be sure to control lighting and coloring for best detail) Describe and make a **detailed sketch** of what you see.

Post-lab questions:

1. What did the DNA will look like?
2. Where was DNA found?

Conclusions and Analysis: Strawberry DNA Extraction Lab

1. It is important that you understand the steps in the extraction procedure and why each step was necessary. Each step in the procedure aided in isolating the DNA from other cellular materials. Match the procedure with its function:

PROCEDURE	FUNCTION
A. Mash strawberry with salty/soapy solution	___ separate components of the cell
B. Initial smashing and grinding of strawberry	___ break open the cells
C. Addition of ethanol to extract	___ break-up proteins and dissolve cell membranes

2. DNA Extraction Table

	AMOUNT ADDED OR OBTAINED	INITIAL COLOR	PURPOSE
BUFFER (soap-salt mixture)			
STRAWBERRY			
COLD ALCOHOL			
DNA			

3. What did the DNA look like? Relate what you know about the chemical structure of DNA to what you observed today.
4. Explain what happened in the final step when you added ethanol to your strawberry extract. (*Hint: DNA is soluble in water, but not in ethanol*)
5. A person cannot see a single cotton thread 100 feet away, but if you wound thousands of threads together into a rope, it would be visible much further away. Is this statement analogous to our DNA extraction? Explain.
6. Why is it important for scientists to be able to remove DNA from an organism? List two reasons.
7. Is there DNA in your food? _____ How do you know?