Mrs. Hinrichs

Science 10S

DNA Extraction: Strawberry

Name: _____

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 the 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 cell.

Pre-Lab Questions:

1. What do you think the DNA will look like? (1 mark)

2. Do you think you will get a lot of DNA or a little bit of DNA, or somewhere in the middle. WHY? (2 marks)

3. Where is DNA found? (1 mark)

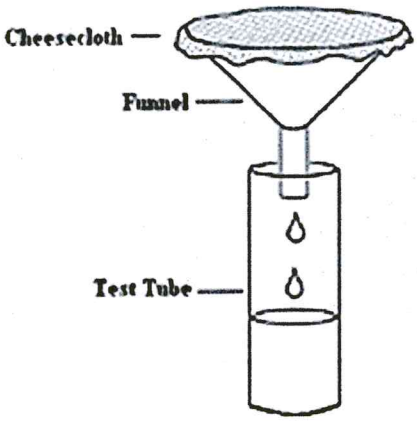
4. Do all living organisms have DNA? If so, why do you think that is? (2 marks)

Materials:

- Ziplock bag
- 1 strawberry
- 10mL of DNA extraction buffer
- Cheesecloth/coffee filter
- Funnel
- 50mL vile / test tube
- Glass rod / inoculating loop
- 20mL cold ethanol
- Graduated cylinder

Procedure:

1. Place the strawberry in a ziplock bag
2. Smash/grind up the strawberry using your fingers until it is very mushy. DO not break the bag. (at least 2 minutes)
3. Measure out 10mL of the prepared buffer solution and pour it into your zip lock bag that contains the strawberry.
4. Kneed/mush the strawberry in the bag again for 2 minutes
5. Have your partner assemble the filtration apparatus shown on the right.
6. Pour the strawberry slurry into the filtration apparatus and let it drip directly into your test tube.
7. Very slowly and carefully pour 10mL of cold ethanol into the tube. Do this by tilting the strawberry slurry slightly and pouring the ethanol down the side of the tube. You DO NOT want them to mix. OBSERVE
8. Let sit for 2-4 minutes. OBSERVE
9. Dip the loop or glass rod into the tube where the strawberry extract and ethanol layers come into contact with each other. OBSERVE



Analysis

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. (4 marks)

A. Filter strawberry slurry through cheesecloth	_____ To separate DNA from solution
B. Mush Strawberry with salty/soapy solution	_____ Separate components of the cell
C. Initial smashing and grinding of strawberry	_____ Break open the cells
D. Addition of ethanol to filtered extract	_____ Break up proteins and dissolve cell membrane.

2. What did the DNA look like? Draw a proper labelled diagram below of the DNA and other components in your test tube at the end. Make sure to label everything with proper diagram procedures. (5 marks)

3. Explain what happened in the final step when you added ethanol to your strawberry extract. (Hint: DNA will dissolve in water but not in ethanol) (2 marks)

4. DNA is normally invisible to the naked eye. Why are we able to see it so clearly in this experiment? (2 marks)

5. Why do you think it is important that scientists be able to remove DNA from an organism? List 2 reasons in detail. (4 marks)

6. Is their DNA in your food? How do you know?

7. What was the purpose of this lab? (3-4 sentences) (3 marks)

8. What are some possible sources of error that could have/did occur during this lab? List at least 2. (2 marks)