

Name: _____ Date: _____ Period: _____

BERRY FULL OF DNA

Background

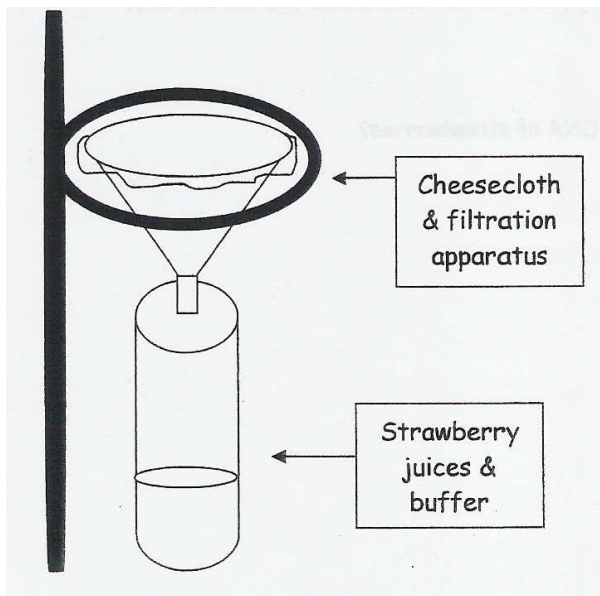
One of the reasons strawberries work so well for this experiment is that they are soft and easy to smash. Also, ripe strawberries are producing chemicals which are already breaking down the cell walls. Most interestingly, strawberries have ENORMOUS genomes. They are octoploid, which means they have eight of each type of chromosome (instead of two like people).

In this experiment, you will use a "buffer" that allows you to see the strawberry's DNA. There is soap in the "buffer" - which helps to dissolve cell membrane and organelle membranes. There is also salt in the "buffer" - which helps to keep the proteins in the extract layer so they do not come out with the DNA.

You will also use cold isopropyl alcohol in this experiment. DNA is not soluble (does not dissolve) in isopropyl alcohol. When molecules are soluble, they are spread out in the solution and are therefore not visible. When molecules are not soluble, they clump together and become visible. The colder the isopropyl alcohol, the less soluble the DNA will be.

Materials (per group)

2 Strawberries	91% Isopropyl Alcohol
Beaker of Buffer	Dropper
Ziploc Bag	10mL of Buffer Solution
Rubber Band	Funnel
Popsicle Stick	20cm x 10cm cheese cloth



Procedure

- 1.) Place 2 strawberries into the Ziploc bag.
- 2.) Use a graduated cylinder to measure 10mL of the buffer solution. Pour this into the Ziploc bag containing the strawberry.
- 3.) Seal the Ziploc bag.
- 4.) Mash the strawberry within the sealed Ziploc bag well with your hands until there are no lumps.
- 5.) Cover the top of the funnel with the cheese cloth.

- 6.) Place the rubber band around the funnel to secure the cheese cloth.
- 7.) Place the funnel with rubber band and cheese cloth on the graduated cylinder.
- 8.) Carefully pour the strawberry mixture onto the cheesecloth and catch the "juice" in the graduated cylinder.
- 9.) Once you have collected 5 - 10mL, pour the "juice" into a clean beaker.
- 10.) See me for 3mL of isopropyl alcohol.
- 11.) Let the mixture sit for 2 minutes. Observe what happens.
- 12.) Use the popsicle stick to gently pull out the DNA.

Clean Up

- 1). Take cheese cloth and put on the Ziploc bag with the popsicle stick. Throw it away.
- 2). Put all the tools back where they belong on the mat. I will replace the strawberries, cheese cloth and popsicle stick. EVERYTHING else should be there.
- 3). Take anything with DNA or strawberry juice and dump it out into the trashcan. You do not need to wash anything.
- 4). Get a paper towel and wipe up the desk and mat.

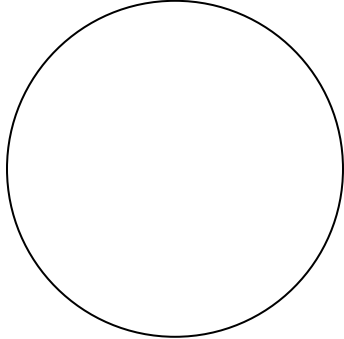
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Hypothesis

I hypothesize the DNA will look like . . .

Questions

1. Was your hypothesis correct? Why or why not?
2. What does the DNA look like?
3. What does the DNA look like under a microscope? Describe it in words and draw what you see.

4. List 2 reasons why a scientist might want to study the DNA of strawberries. (Hint: Use the background if you need it!)

5. How does the DNA of the strawberry differ from the DNA of a human? (Hint: Use the background if you need it!)

Directions: Each letter will have its own color. The pattern down the side alternates P, then D, then P, then D (whether it is labeled or not).

THE DOUBLE HELIX.

SIMPLIFIED STRUCTURE.
 UPRIGHTS/BACKBONE.
 DEOXYRIBOSE.
 PHOSPHATE.
 RUNGS/BASE PAIRS.
 ADENINE_A
 THYMINE_T
 CYTOSINE_C
 GUANINE_G
 HYDROGEN BOND_H

