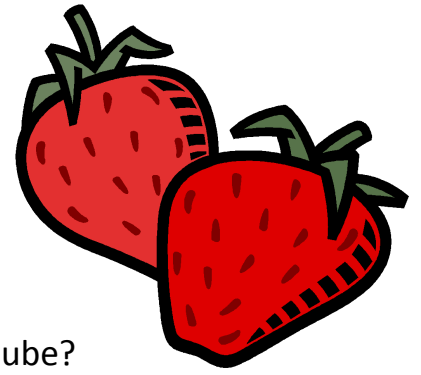


Berry Full of DNA

Exploring properties of Strawberry DNA



Question: What properties of DNA can be observed in a test tube?

Lab Overview: In this investigation you will break open strawberry cells, prepare a filtered extract containing strawberry DNA and separate out molecules of DNA in a test tube.

Background: The native wild or wood strawberry, *Fragaria vesca*, has only two sets of chromosomes (diploid), but the grocery store strawberry, *Fragaria ananassa*, has eight sets of chromosomes (octoploidy) and will supply an abundance of DNA. So, commercial strawberries make an excellent subject for collecting DNA.

Another reason strawberries work so well is that they are soft and easy to smash. Also, ripe strawberries produce enzymes (pectinases and cellulases) which help in breaking down the cell walls making it easier to extract the DNA.

First, you are going to break open the cells of a fresh strawberry by crushing it. Second, you will use a lysis buffer to break down the cellular and nuclear membranes to separate the DNA from the other cell parts. Third, you will filter the solid material out with a piece of cheesecloth and collect the liquid containing the DNA. Finally, you precipitate the DNA from the solution using cold ethanol.

After completing this lab, you will have a sample of pure strawberry DNA and you will never again look at a strawberry in the same way.

Materials: Plastic freezer bag
Strawberry
10 mL detergent solution
Funnel
Beaker
Inoculating loop

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Test tube and test tube rack
Ice-cold ethanol

Procedure:

1. Place one strawberry in a plastic freezer bag. Press the air out of the bag and deal with the bag carefully. Gently mash the bagged strawberry with your fist for 2 minutes
2. Measure 10 mL of detergent solution and add it to the bag of mashed strawberries. Press the air out carefully and seal the bag again.
3. Mash the bagged strawberry again for 1 minute.
4. Obtain a funnel and beaker to filter your bagged strawberry solution.
5. Pour the liquid strawberry solution into the filter/beaker set-up and let the extract drip into the beaker.
6. When most of the liquid has filtered through, remove the funnel. Discard any mashed strawberry pulp into the trash can. Rinse out the funnel and return it to the lab table.
7. Pour the liquid extract from the beaker into a test tube. Fill the test tube only about $\frac{1}{4}$ full.
8. Slowly drizzle cold ethanol along the side of the test tube, until the test tube is about **half full** of liquid. The ethanol should form a separate layer on top of the filtered extract.
9. Dip the inoculating loop into the tube where the strawberry extract and ethanol layers come into contact with each other and pull out some DNA.

10. On your answer sheet, draw your test tube and the contents in the space provided.

Label the following in your drawing: Strawberry extract

Ethanol

DNA

