

Partner Names:

DNA Extraction from Fruit

For this experiment you and a partner will perform two procedures, as outlined below:

- A <u>Control Procedure</u> is a method for extracting DNA that has been used many times for extracting DNA from strawberries.
- An **Experimental Procedure** is a method that you will perform that should be almost exactly like the Control Procedure, except that you will **<u>change</u>** one detail. You can choose to change any **single** detail that appeals to you. You could:
 - Alter the amount or type of an ingredient in the digestion, such as:
 - Use half the soap as in the control procedure
 - Use a different kind of salt, but the same amount
 - Use a different kind of fruit
 - Use water that is at a different temperature
 - Eliminate an ingredient completely
 - Change something else (check with instructor, first)

Read through the Control Procedure on the next page before proceeding.

Determine which detail of the Control Procedure you will change in the Experimental Procedure.

Write down the experimental variable that you've chosen:

As you and your partner proceed to run the experiment, think about the following:

- Follow the instructions to the best of your ability.
- Change <u>ONLY ONE THING</u> between your Control and Experimental Procedures.
- <u>WRITE DOWN</u> any observations that you or your partner makes.
- <u>WRITE DOWN</u> anything that you do that is different than, or in addition to, the instructions as they are written.
- Remember, the goal of this experiment is not to get more DNA, but to allow you to test your own ideas in the lab and see what happens.



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Fruit Digestion: Control Procedure

1. Obtain strawberry and a resealable plastic bag. Label the plastic bag with your name and the word 'Control'.



2. Place strawberry in the bag. Close the bag after releasing excess air and carefully mash fruit.



Note any particular technique you use to mash the fruit, and record your observations. What do you see?

3. Add 50ml warm (42°C) water to the bag.



3. Add 5ml diluted hand soap to the bag.





4. Add 5ml meat tenderizer solution to the bag.



5. Add 5ml sodium chloride (NaCl) salt solution to the bag.



6. Push excess air out of the bag and close the bag. Proceed to the Ethanol Precipitation procedure.



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Fruit Digestion: Experimental Procedure

Check the boxes for each step below, indicating which steps will stay the **same**, and which **one** step you will **change**. <u>Write</u> the change next to the step where you are making the change.



Push extra air out of the bag and close the bag. Proceed to the Ethanol Precipitation procedure on the next page.

If you have decided to change a different variable, please ______ note it here.



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Ethanol Precipitation of DNA: Procedure for Control & Experimental Samples

1. Obtain a scissors, gauze, two 250ml beakers, and two tape labels.



2. With a marker, write Control or Experimental onto the labels, along with your initials. Affix the labels to the beakers.



3. Place two pieces of gauze as a filter atop each labelled beaker.

5.



4. Using a scissors, carefully cut the corner of each bag, draining the contents into the appropriate filtered beaker. Make sure to hold on to the gauze or it will fall into your beaker.





- 6. When both the Control and Experimental digests are filtered, let an instructor know you are ready to proceed.
- 7. Following the instructors demonstration, gently pour 40ml ice-cold alcohol to form an alcohol layer on top the digests in both beakers.
- 8. Observe the beaker. DNA should rise into the alcohol layer, appearing bubbly and thick relative to the alcohol layer.



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Results:

- 1. Using colored pencils, draw out what you see in each of the beakers. Use the following terms to label each of your drawings:
 - Alcohol Layer
 - Fruit Layer
 - DNA

Control

Experimental



- Describe below the difference in the <u>amount</u> of DNA that you see in your Experimental Sample compared to your Control Sample.
- Make a list of all of the differences that you observed between your Control and Experimental <u>procedures</u>. This should include the change that you selected, plus any other differences you observed.

<u>Analysis:</u>

- Based on the <u>results</u> of your experiment, describe how your chosen experimental variable affected your result.
- Based on the results, what do you propose doing next?