

# DNA Extraction Activity Participant Lab sheet

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Item Being Tested: \_\_\_\_\_

## Introduction

Microbes have deoxyribonucleic acid (DNA) and so do you! DNA is the genetic information that guides the development and functioning of all living things. Many aspects of genetic research require the extraction and isolation of DNA from cells of various organisms. In this lab, you will use household materials to extract DNA from a piece of a fruit or vegetable.

## Materials

For each participant in group:

Copy of Lab sheet	Plastic spoon
Coffee filter	Toothpick
Bathroom cup (5oz)	Quart sized sealable plastic bag
1 cup of warm water	Small test tubes with lids
Piece of the selected item being tested	Plastic pipette

## Materials

For whole group:

Bottle of clear liquid dish detergent	Bottle of 91% rubbing alcohol (kept in the freezer)
Container of salt	Funnel
8 oz cup full of ice and water	Measuring spoon set
Hand lens	

## Procedure

1. Acquire the selected fruit or vegetable from your instructor.
2. Make sure your group has the materials listed above.
3. Break your fruit or vegetable into pieces and place it in the plastic zip bag.
4. CAREFULLY grind up the item using your hands and fists until the mixture is free of any lumps. It should have the consistency of baby food.

## DNA Extraction Activity Participant Lab sheet Continued

\*\*Make sure you are being careful not to break the bag during this process. The purpose of mashing the fruit/vegetable is to rupture the cell membranes and to release the molecules contained within the cell and within its organelles.

5. Measure 2 tablespoons of detergent into the bag.
6. Measure  $\frac{1}{2}$  teaspoon of salt into the bag.
7. Close the bag carefully.
8. Mix the detergent and salt into the fruit and vegetable mixture to make sure it is thoroughly spread throughout the mixture.
9. Measure  $\frac{1}{2}$  cup of warm water into the plastic zip bag. Close the bag carefully again. Mix the water thoroughly with the other contents.
10. Allow the mixture to sit for 5-10 minutes to allow the contents to fully combine.
11. Place the coffee filter inside of the funnel and place the funnel over the top of the bathroom cup.
12. Carefully pour the mixture from the bag into the funnel. The coffee filter will allow only the liquid portion to go into the cup.
13. Using your fingers, carefully mash the mixture caught by the filter to make sure all the liquid drips into the cup.
14. Remove the funnel and dispose of the coffee filter.
15. Carefully place the filtered solution into the test tube until it is  $\frac{1}{3}$  full.
16. Place the cap on the test tube and cool the mixture in the water/ice bath for 5 minutes.
17. Remove the test tube from the ice bath. Carefully remove the top.
18. Using the pipette, slowly add the COLD alcohol to the test tube, filling it  $\frac{3}{4}$  of the way full.  
\*\*\*Hold the test tube at an angle when adding the alcohol.
19. Bubbles should start forming and you should see the DNA precipitate (float) out of the solution near the top (it will appear as a clear goopy substance).
20. Observe the DNA using a hand lens.
21. Draw what you observe in the Reflections part of this sheet. Compare your results to other participants' results. Look at similarities and differences between the DNA strands.
22. The DNA may be transferred to a screw-cap test tube and stored at 40°C for future use in later experiments. If keeping the DNA as a souvenir, place it in a transparent, sealable container with 70-91% ethyl alcohol.
23. Clean up your work area and return all materials to their proper locations and complete the Reflections/Follow-up section of your lab sheet.

### NOTES: