

# ISOLATING STRAWBERRY DNA



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Healthy fruit  
snack?



OR...



# LABORATORY EXPERIMENT?

DNA (Deoxyribonucleic Acid) is found within the cells of all organisms. In order to “see” DNA, we need to separate it from other cellular molecules, like lipids and proteins.

**\*DNA Extraction Buffer:** Enough for 100 strawberries  
100 ml (3/8 cup) liquid dishwashing soap  
0.30 gm (a pinch) of meat tenderizer (contains enzyme papain)  
15 gm (2 teaspoons) salt  
900 ml (3 3/4 cup) water

### Materials per person:

10 ml DNA Extraction Buffer\*  
1 Strawberry  
1 Plastic Bag  
1 Funnel  
1 Test Tube Rack

1 Test Tube  
Cheesecloth  
Wooden Stick  
5 ml Cold Ethanol  
1 Microfuge Tube

1) Place one strawberry in a plastic bag and seal tightly, pressing out extra air. Mash the strawberry for 1 minute.



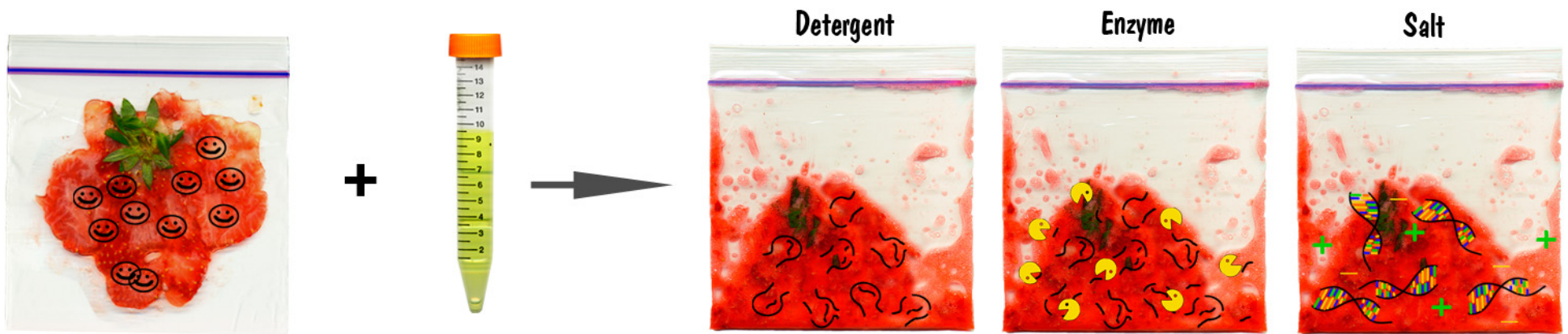
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2) Add 10ml of DNA Extraction Buffer to the bag, seal, and mash the strawberry/buffer mixture for 1 minute.



- \*What does detergent do? Detergents (like dishwashing soap) break up lipid layers of the cellular and nuclear membranes.
- \*What do enzymes do? Papain (an enzyme from papayas!) breaks down proteins. We use it here to break apart cellular proteins.
- \*What does salt do? DNA is negatively charged. Salt helps neutralize the charge.

3) Filter the liquid through a cheesecloth-lined funnel into a collection tube. Collect about 4 mls.



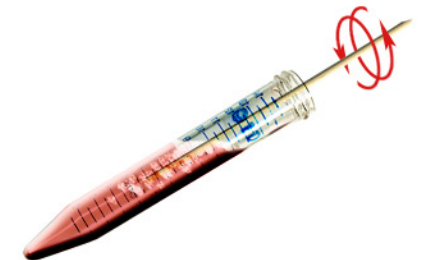
4) Slowly add 5 ml of cold ethanol to the liquid along the side of the tube, and cap tightly

\*What does ethanol do? It causes the DNA to precipitate out of solution.



Be sure the cap is on securely!

5) Use a wooden stick to collect some of the DNA by spinning the stick back and forth.



Does it look like you imagined it would? Why or why not?



7) Place the DNA in a microfuge tube.

8) Pour excess liquid in the sink, discard the cheesecloth and tube. Clean up your area and wash your hands.

This protocol also works on kiwis and bananas!!