Onion DNA Extraction

Introduction:
DNA is a nucleic acid located in the cell's nucleus. It is found making up the genetic material and is bound to several types of proteins. The nuclear and the cell membranes are a tough protective barrier, made of lipids and proteins, which need to be eliminated in order to release the DNA. It is very important that the directions be followed carefully to ensure good results.

Procedure:

1. Into one of the cups add 1 spoonful of detergent.
2. Add 2 pinches of table salt.
3. Add 25 ml of distilled water to make a final volume of 30 ml or about.
4. Dissolve the salt and detergent by stirring slowly to avoid foaming.
5. Using the plastic spoon, add a the blended onion to the solution from steps 1-3 and stir until it is a homogenous solution.
6. Place a filter (Cheese cloth) inside the second 5 oz plastic cup. Fold the filter's edge around the cup so that the filter does not touch the bottom of the cup.
7. Filter the mixture by pouring it into the filter and letting the solution drain for several minutes until there is approximately 5 ml (covers the bottom of the cup) of filtrate to test.
8. Obtain a test tube of cold alcohol. For best results, the alcohol should be as cold as possible. (Note: this alcohol is highly TOXIC).
9. Fill the plastic pipette with onion solution to the 1 ml mark.
10. Add onion solution from the pipette to the cold alcohol.
11. Let the solution sit for 2 to 3 minutes without disturbing it. It is important not to shake the test tube.
12. You can watch the white DNA precipitate out into the alcohol layer. DNA has the appearance of white, stringy mucus.

Questions for Discussion

1. What was the purpose of the detergent used in the beginning step?
2. What is the purpose of the salt in the procedure?
3. What protects the DNA?
4. What precipitates the DNA?
5. What was the purpose for blending the onion?
6. Why was onion used?
7. If Bacterial cells were being used, could the same process be used to extract the DNA?