

Activity: Collect Your Own DNA!

Background

Every cell in your body contains DNA. It is easy (and painless) to collect cells from the inside of your cheek by swishing water around in your mouth.

Cells contain water, proteins, and Nucleic Acids (DNA and RNA) contained in a membrane made of lipids (fat). In the following activity, when you add soap to your cheek cells, it breaks the membranes open and the contents of the cell, including the DNA, spill out. The salt changes the ionic concentration of the water and makes it easier for the DNA and RNA to separate. DNA will not dissolve in alcohol, so when you add alcohol to the solution the DNA collects where the two layers meet.

Time frame

10-15 minutes

Objectives

Students will

- collect and observe their own DNA
- understand that DNA can be extracted from any cell in their body that contains a nucleus

Materials

Four small drinking cups

Table salt

Dish soap

Rubbing alcohol (the 70% solution you find at the drug store will work just fine)

Tap water

Procedure

- Before starting, place the container of rubbing alcohol in the freezer and allow it to chill for at least one hour.
- In the first cup, mix a half glass of water with 1 tablespoon of table salt.
- In the second cup, mix 3 Tablespoons of water and 1 tablespoon of liquid dish soap.
- Take one teaspoon of the salt-water solution from the first cup and swirl it in your mouth for 30 seconds.
- After 30 seconds, spit the salt water and whatever contents are moving around in your mouth into the third cup.
- Collect 1 teaspoon of the spit that is in cup number three, and transfer this to the fourth cup. Pour any extra spit down the drain.
- Add 1 teaspoon of the soap solution to the spit in cup number three, and mix by gently swirling the cup for one minute.

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- After mixing, add three tablespoons of rubbing alcohol to the cup of spit and soap. Try to gently pour the alcohol down the side of the glass so that it floats up on top of the spit and soap without mixing.
- Wait about one minute, and you will see a cloud of bubbles hanging at the bottom of the layer of alcohol. Those bubbles are attached to your DNA!