

DNA Extraction from Human Epithelial (cheek) Cells using Gatorade® as a Mouthwash.

(Adapted from an amalgam of protocols---this is a quick way to spool DNA from human cells.)

Note: Students will get better results if they have lots of cells to slough. Remind students not to eat or chew gum before the lab. Using Gatorade instead of 8% NaCl also keeps the cells happy and lessens the complaints from students. ☺

Materials:

- 15 ml disposable screw top tubes (one per student)
- Gatorade (5 ml per student—aliquot in 15 ml tubes) or 8% NaCl solution
- disposable paper cups (one per student)
- 25% dishwashing detergent solution (use Dawn or Palmolive) or * lysis buffer
- 95% ethanol or 91% isopropyl alcohol- ice cold (5 ml aliquot per student)
- Glass stirring rod or small wooden stick for spooling DNA (one per student)
- Microcentrifuge tube for keeping DNA (one per student)

Procedure:

- 1) Vigorously swish 5 ml of Gatorade (or use 8% salt solution) around in mouth for 10-15 seconds, then spit it back into a cup and transfer back into tube.
- 2) Add 2 ml of a 25% dishwashing detergent to the test tube.
- 3) Cap tube and invert the tube 5 times.
- 4) Let tube sit for 2 minutes.
- 5) Hold tube at 45° angle and gently pour approximately 5 ml of ice cold 95% ethanol or 91% isopropyl alcohol down the inside of the tube. Let stand for 10 minutes.
- 6) You should see DNA at the alcohol/Gatorade interface.
- 7) Spool DNA around glass rod or stick. (If students want to keep their DNA, have them transfer it to a microcentrifuge tube.)

*Alternatively, you can make a DNA extraction lysis buffer that can be used for several different types of DNA extraction protocols.

DNA Extraction Lysis Buffer

50 g sodium dodecyl sulfate (SDS)
8.8 g sodium chloride, NaCl
4.4 g sodium citrate, Na₃C₆H₅O₇
0.3 g ethylene diamine tetraacetate (EDTA)

Add distilled water to make a final volume of 1 liter. The solution may need to be heated slightly to completely dissolve the components. Store at room temperature indefinitely.