Cheeky genetics – collect your own DNA

Keywords: Genetics, DNA, extraction

Intro: Strands of DNA, present in the nucleus of every cell in the body, contains all the information needed to produce all the proteins in the human body. In this activity, these "blueprints for life" can be extracted from participant's cheek cells and visualised.

DNA extraction from cheek cells

Equipment

- 10ml 0.9% salt water solution
- Disposable paper/plastic cup
- Large clear test tube + stopper
- 5ml 25% weak detergent in water
- 10ml 95% ethanol, chilled on ice

Method

1. Swill 10ml of saltwater in the mouth for 30 seconds, then spit the solution out into a plastic cup.
2. Pour the solution from the cup into the large test tube containing 5ml of the detergent solution.
3. Cap the test tube and **gently** rock it on its side for 2-3 minutes.
4. Uncap the tube, tilt it and **carefully** pour 5ml of ethanol solution down the side of the test tube so it forms a layer on top of the swilled salt water and detergent solution.
5. Allow the tube to stand for 1 minute.
6. Using a thin glass/acrylic rod, move some of the ethanol layer into the lower detergent layer.
7. Rotate the rod so that the DNA threads collecting at the ethanol/detergent layer interface spools around the rod.

Results: White DNA filaments should form at the ethanol/detergent layer interface and spool around the rod. If the solution was rocked too hard, then the DNA will form clumps instead due to being sheared by the rocking.

Science: The white substance is DNA liberated from the nuclei of cheek cells from the interior of the cheeks. The detergent destroys the cells fatty membranes, and causes them to release their contents. The DNA precipitates at high ethanol concentrations, millions of DNA molecule strands gathering together to form the white substance.

See also: *Cracking the code of Life* by NOVA Online for teachers - http://www.pbs.org/wgbh/nova/teachers/activities/2809_genome.html