

See Your DNA

NOVA Activity | Cracking the Code of Life

DNA contains the instructions for making you. How you look, what blood type you have, even your tendency to get some diseases. It is found inside the nucleus in just about every single cell of your body. In this activity, you'll break away the membrane around the cell and its nucleus so that you can see your very own DNA.

Procedure

- ① This procedure will collect some of the buccal cells that line the inside of your mouth. These cells are continuously being sloughed off by your cheeks. Swill 2 teaspoons (10 ml) 0.9 percent salt water in your mouth for 30 seconds. This amount of swishing will actually become quite laborious—hang in there!
- ② Spit the water into your cup. Pour this into a large test tube containing 1 teaspoon (5 ml) 25 percent liquid detergent.
- ③ Cap tube and *gently* rock it on its side for 2–3 minutes. The detergent will break open the cell membrane to release the DNA into the soap solution. Do not be too vigorous while mixing! DNA is a very long molecule. Physical abuse can break it into smaller fragments, a process known as shearing.
- ④ Open and slightly tilt the tube and pour 1 teaspoon (5 ml) fluid ounces of the chilled 95 percent ethanol down the side of the tube so that it forms a layer on the top of your soapy solution.
- ⑤ Allow tube to stand for 1 minute.
- ⑥ Place a thin acrylic or glass rod into the tube.
- ⑦ Stir or twirl the rod in one direction to wind the DNA strands onto the rod. Be careful to minimize mixing of the ethanol and soapy layers. If too much shearing has occurred, the DNA fragments may be too short to wind up, and they may form clumps instead. You can try to scrape these out with the rod.
- ⑧ After you have wrapped as much DNA onto the rod as you can, remove the rod and scrape/shake the DNA into a small tube containing the rest of the 95 percent ethanol. Your DNA should stay solid in this solution.

