

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 rubbed off by your cheeks. Swish 2 teaspoons (10 ml) salt water in your mouth for 1-2 minutes.

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) liquid detergent solution.

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 soapy 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 the cap and slightly tilt the tube and pour 1 teaspoon (5 ml) of the chilled 99 percent isopropyl alcohol down the side of the tube so that it forms a layer on the top of your soapy solution.

5. Recap and Allow tube to stand for 1 minute.

6. Remove cap and place a thin plastic toothpick 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 Your DNA will only stay solid in the alcohol solution. Mixing the layers will cause your DNA to dissolve and no longer be visible

