

DNA Extraction

(Ages K-12)

~30 mins

Background: DNA is the hereditary material of all cells. It's what makes you, you. Today you'll be able to actually extract the DNA from yourself using your saliva.

Materials: For this experiment you will need: measurements can be approximated

- Saliva
- Dish soap
- Table salt
- Pineapple juice (or meat tenderizer, or cleaning solution for contact lenses)
- Isopropyl
- Toothpick

Steps:

- 1) Spit into the cup until it's a quarter full of your saliva. (If you're having trouble salivating, imagine you're sucking a lemon-flavored candy.) The saliva is laden with cells, shed from your cheeks and mouth lining, which are full of DNA.
- 2) Add a few drops of dish soap. This will break open the cells, a process called "lysing."
- 3) Add a tiny splash of pineapple juice. This will clean up some of the proteins that have spilled out of your cells alongside your DNA.
- 4) Add a pinch of salt. This causes the DNA to start clumping together.
- 5) Swirl the shot glass to mix the ingredients.
- 6) Gently fill the rest of the shot glass with the rubbing alcohol, which should sit in a layer on top of the mixture. To prevent it from mixing too much, you can add the alcohol gradually with a drinking straw: Put the straw into the alcohol, cap it with your finger, hold the straw right over the liquid in the shot glass, and release.
- 7) Use a toothpick to spool up the cloudy, snot-like material that has formed in the glass. This is your DNA—a gross result of some cool science.

[Video instruction](#)

How does it work: DNA can be found in all cells! Using our mixture of soap and salt we can make the cells that are storing the DNA explode. Once the cells burst, all their DNA is available for collection. We use the ethanol to collect the DNA since ethanol and DNA do not mix. At the end of the experiment, you'll see a whitish goo which is DNA. (The salt makes the DNA more hydrophobic and the salt will attract the DNA due to its positive charge - making that jumbled mess.)

Material links

[Dish soap](#)

Salt (camp may have this, we can ask)

[Pineapple juice](#)

[Isopropyl](#) - this may actually be harder to come by in these times, again we can ask camp

[Plastic cups](#)

[Toothpick](#)

[Plastic squeeze bottle](#) (for the dish soap and pineapple juice)

[Sealing plastic bag](#) (for the salt)