

Extracting DNA



Equipment Required

- Cup to mix in
- Sealable container to mix solution in
- Isopropyl or ethyl alcohol (should be at least 70% - rubbing alcohol should work)
- Sodium chloride (salt)
- Liquid dish soap/hand soap
- Optional: banana

What to do

1. Mix two teaspoons of salt with approximately 50 ml of distilled water. Stir until completely dissolved.
2. Without swallowing, drink a mouthful of the solution from the paper cup and swish it back and forth for at least 30 seconds, occasionally scraping your teeth along the inside of your cheeks as you do. It's best to do this with a clean mouth, i.e. not right after lunch.
3. Then spit your mouthwash into your sealable container. If your container has a small opening, you might want to spit into your cup and carefully pour it into the container.
4. Carefully add 1 ml (~quarter teaspoon) of liquid soap.
5. Gently add 5 ml (~a teaspoon) of your alcohol to your mixture by tilting the container at a 45 degree angle and slowly pouring the alcohol down the side. You should have a layer of alcohol on top of the solution instead of being mixed in (although this will be hard to tell).
6. Seal your container and very slowly turn your container upside down and then right side up a few times. You should not see any bubbles formed. This will mix the solution without disturbing any of the DNA.
7. Wait for a few minutes and you will start to see a milky white thread and it should rise to the top of you solution. This is your DNA!

You can also do this experiment by extracting banana DNA by mixing a teaspoon of mashed banana to your salt water mixture at step 2 instead of rinsing your mouth.

How it works

DNA (deoxyribonucleic acid) is a molecule found in all living cells (animals and plants) which contains the blueprint for the living organism to grow, survive and reproduce. When you rinsed your mouth with the salt water, you created a neutral solution for some of the cheek cells at the side of your mouth to mix with. The soap broke down the outer layer of the cells which then released the DNA. Alcohol and DNA cannot mix so the DNA started to clump together and separated from the mixture.

Video

Here is a video of someone doing the experiment with slightly different measurements.

<https://www.youtube.com/watch?v=HWxM6XYgRBU>