

DNA Extraction at Home

DNA is the genetic material that resides in all living cells. Using a few household items, we can extract the DNA from inside the cells and see it with our naked eyes!

Materials

- Frozen banana
- Table salt
- Baking soda
- Bottled water
- Liquid dishwashing detergent (ex. Sunlight)
- Coffee filter (#2 or #6)
- Glass container or beaker
- Tape
- Cold 95% ethanol (available in first aid aisle at pharmacy, place in fridge to cool)
- Straw or spoon
- Wooden stir stick

Preparation

- Make buffer solution:
 - 1.5 g table salt & 5.0 g baking soda
 - bottled or distilled water to 120 mL
- Add 5 mL of detergent to buffer solution and stir **gently** (do not want bubbles or foam)

Procedure

1. Grind the frozen banana inside a plastic bag. You can use your hands to start and then roll a pen or pencil over the banana.
2. Add 10 mL of buffer solution and grind for at least **5 minutes** with all of your weight and strength.
3. If the mixture is too thick, add more buffer solution.
4. Place a coffee filter in the beaker. Tape the edges down to the outside of the beaker.
5. Add the banana mixture to the coffee filter and let the solution drip into the beaker. If you want to speed up the process, squeeze the banana inside the filter gently to release the liquid.
6. When all of the liquid is in the beaker, pour 2 volumes of **cold alcohol** down the length of a **straw** or back of a **spoon** into the beaker (2 volumes of alcohol = twice the amount of banana liquid). **Do this step very slowly.** The alcohol needs to form a layer on top of the banana liquid.
7. Let the beaker sit and the DNA should precipitate. It will resemble white mucous at the interface between the alcohol and banana liquid.
8. You can use the **wooden stir stick** to remove the DNA from the beaker.

Other easy DNA extraction procedures can be found at:
learn.genetics.utah.edu/units/activities/extraction/
www.accessexcellence.org/AE/AEC/CC/DNA_extractions.html
nature.ca/genome/05/051/0511/0511_m204_e.cfm
ology.amnh.org/genetics/stufftodo/blender.html