* Modified from: [23andMe Shows You How to Extract DNA from Strawberries](https://blog.23andme.com/education/how-to-extract-dna-from-strawberries/)
	+ By Thao Do, Ph.D., Manager of 23andMe’s Education and Academia Program
* <https://blog.23andme.com/education/how-to-extract-dna-from-strawberries/>
* Strawberry DNA Extraction Recipe
	+ Materials (will be provided)
		- 1 ziploc bag: quart size
		- 3 strawberries, can be frozen
		- ½ C water
		- 1 tsp table salt
		- 2 tsp dishwashing liquid (use clear for best results)
		- ½ C 70% or higher rubbing alcohol (Isopropyl, can use ethanol)
		- 1 coffee filter or paper towel
		- 1 toothpick
		- 1 clear cup or test tube

Protocol: After demo, work in groups of 2. Make sure everyone is TOUCHING this, squishing, mixing, etc. .

**As you go through the steps in the demonstration, ask “What is this step for?”**

*Safety Caution:* Be careful when handling the rubbing alcohol and make sure it doesn’t get into your eyes or mouth.

1. Pull off green leaves on the strawberries
2. Put 3 strawberries into the resealable plastic bag, push the air out of the bag, seal it, and gently smash the strawberries for a few minutes.
3. In a cup, mix ½ cup of water, 1 tsp salt, and 2 tsp dishwashing liquid.
4. Add 2 tsp oaf this liquid into the bag with the strawberry.

*Tip:* You don’t have to accurately measure these liquids. Approximations will work just fine here.

1. Reseal the bag and gently mix the smashed strawberry with the salt and dishwashing liquid solution for a few more minutes
2. Put a coffee filter or paper towel over an empty cup or test tube
3. Pour the strawberry solution over a coffee filter or a paper towel to filter out any big strawberry pieces. Let the strawberry mixture filter into an empty clear cup or test tube.
4. Tilt the empty clear cup or test tube and gently pour the rubbing alcohol so the alcohol forms a layer on top of the strawberry liquid.

*Tip:* Some recipes call for chilling the rubbing alcohol in the fridge or freezer before the experiment. In our experiences, this doesn’t make a noticeable difference. You can just use room-temperature rubbing alcohol.

1. Wait for a few minutes. You should see white clumps and strings forming at the middle layer between the strawberry solution and rubbing alcohol – this is the strawberries’ DNA.
2. Use the coffee stirrer or toothpick to swirl the DNA around and pull it up.