Extracting DNA from Strawberries

Goal: Extract the DNA from a strawberry using dish soap and alcohol.

Materials -

- Resealable plastic bag
- Strawberries (one per bag, unless they're very small, in which case use more than one)
- 2 tsp dish detergent
- ½ cup of water
- 1 tsp salt
- 2 plastic cups
- A coffee filter
- ½ of **cold** rubbing alcohol
- A coffee stirrer

Procedure -

1. Remove the stems from your strawberries and place them into the plastic bag
2. Seal the bag shut and gently mash the strawberries for 2 minutes (you want to completely crush the strawberries).[1]
3. In one plastic up, mix together your detergent, salt, and water (this is your DNA extraction liquid
4. After the two minutes, open your strawberry bag and add 2 teaspoons of the DNA extraction liquid[2]
5. Reseal your bag and smash gently for another minute (try to avoid making too many soap bubbles).
6. In your other plastic cup, place your coffee filter at the top.
7. Open the strawberry bag and pour into the coffee filter. Make sure to get a majority of the liquid out of your filter.[3]
8. Now that you have your strained strawberry liquid in your cup, dispose of the coffee filter with the remaining strawberry chunks

[1] This starts to break open the cells and release the DNA
[2] This further breaks open the cells of the strawberry
[3] Be careful, you only want to capture the liquid in your plastic cup, so when straining your coffee filter, don't squeeze too aggressively.

9. Down the side of your cup, pour an amount of **cold** alcohol that matches the amount of strawberry liquid.[4]
10. Watch the cup and observe what happens. You can use the coffee stirrer to take out the DNA.

☆ Explanation: Adding the salt and detergent mixture to the strawberry helps to open up the strawberry cells, which releases the DNA. The use of salt allows the DNA to clump together so it's more visible. DNA is very tiny, so the clumping is just a bunch of DNA!

Here's an visual of the experiment (National Human Genome Research Institute): https://www.genome.gov/Pages/Education/Modules/StrawberryExtractionInstructions.pdf

[4] This isolates the DNA from the rest of the DNA in the cells of the strawberry.