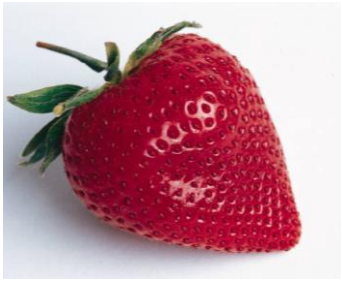
Strawberry DNA Extraction Lab

The purpose of DNA extraction is to visually observe DNA from a living organism. Strawberries are an ideal fruit to use because they are readily available. They are also **octoploid**, which means they contain eight copies of each chromosome.

Materials:

- 1 strawberry
- 1 heavy duty zipper seal bag
- 2 teaspoons of water
- 1 teaspoon of soap (dishwashing detergent)
- Salt
- 1 50mL beaker
- 1 funnel lined with cheesecloth
- 1 glass stirring rod or popsicle stick
- 1 syringe to dispense ethanol
- 20mL freezer cold ethanol



Procedure:

1. Place a strawberry into a zipper seal bag. Seal the bag, removing the air.
2. Begin to break down the strawberry by smashing it in the bag with fists and fingers for 2-3 minutes. Be careful to not break the bag.
3. Add two teaspoons of water to liquefy the strawberry pulp.
4. Add one teaspoon of soap. The soap acts to dissolve the **phospholipid bilayer** of the cellular membrane and of the cell's organelles.
5. Add one pinch of salt to the bag. The salt acts to break up the protein chains around the nucleic acids, thus allowing for the DNA extraction.
6. Mix by kneading the mixture in the bag again for 1-2 minutes.
7. Assemble the filtration system. Line the funnel with cheesecloth and then place the funnel into the beaker (as shown).

8. Slowly pour the strawberry mixture out of the bag and into the filtration system, allowing the filtered liquid to collect in the bottom of the beaker.
9. Remove the funnel and cheesecloth.
10. While slowly stirring the strawberry mixture, slowly dispense the 20mL of ethanol down the inside wall of the beaker using the syringe. **The ethanol must be freezer cold!** DNA is not soluble in cold ethanol; thus, it comes out of solution and can be extracted.
11. Slowly stir to collect DNA (the slimy substance) on the end of the stirring rod.