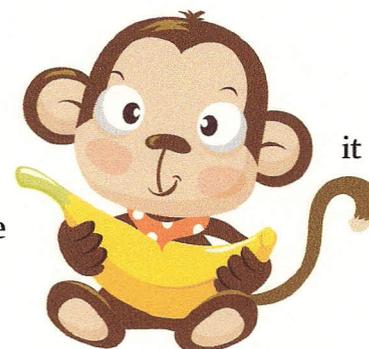


**Introduction:**

DNA molecules are long, slender molecules that carry the heritable information of organisms on to future generations. Due to their size, it is impossible to see a single DNA molecule with the naked eye. It would take about 300,000 DNA molecules side by side to make a bundle as thick as a human hair. When subjected to certain conditions, it is possible to collect "large" amounts of DNA to make it visible.

**Materials:**

sodium chloride	sodium bicarbonate	banana	
detergent	tap water	fork	funnel
50 ml and 100 ml beaker		filter	test tube
ice cold isopropanol		plastic loop	Wax Paper

**Procedure:**

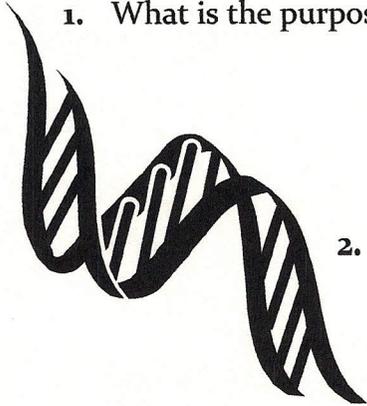
1. **Buffer Preparation:** Mix the following in a clean 100 ml beaker
  - a. 60 ml tap water
  - b. 0.75 g sodium chloride – 1/8 tsp.
  - c. 2.5 g sodium bicarbonate— 1/2 tsp.
  - d. 2.5 ml of detergent – 1/2 tsp.

Chill buffer in freezer or on ice for **15 minutes**.

2. **Extraction of DNA:**
  - a. **Smash banana** with fork until pureed on the wax paper.
  - b. Place a small amount of **pureed banana into a clean 50 ml beaker**.
  - c. Add **10 ml of chilled buffer solutions**. **Stir vigorously for at least 2 minutes**.
  - d. Fit the **filter paper in the funnel**. **Pour the banana/buffer mixture into the filter**. **Collect the liquid in a test tube**.
3. **Spooling of DNA:**
  - a. Gently (tilt tube and allow alcohol to dribble down the side) **add 10 ml of ice cold isopropanol** to the mixture in the test tube. Since the DNA/buffer solution is denser than the alcohol, the alcohol will float on top. The boundary between the two is called an **interface**.
  - b. **Insert the plastic loop into the test tube**. Carefully swirl the loop just below the interface. Wind (spool) the DNA that comes out of solution on to the loop.. These are not single DNA molecules, but thousands of molecules. After a minute of spooling, slowly remove the rod from the tube. The DNA, a clear, viscous, clotted mass will adhere to the rod.
  - c. Examine and touch the DNA on the loop. Describe the DNA in your observations.
  - d. Clean thy station. Or thy teacher will come...and she will be angry. :)

## Observations and Questions:

1. What is the purpose of chromosomal spooling?



2. What does the soap do to the cells?

3. What causes the DNA to precipitate and spool on the rod?

4. Describe the DNA collected during the spooling process.

5. Is this a single strand of DNA?

6. Read page 195 in your text. Summarize the structure of DNA.

