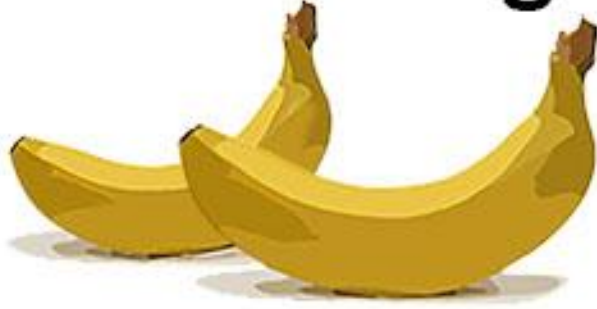


# Seeing Banana



## What does DNA stand for?

DNA stands for deoxyribonucleic acid.

DNA is a long molecule in the shape of a double helix - two spirals twisting around each other. These spirals are the backbone of the DNA, and are made up of sugars and phosphates. The spirals are connected by chemicals known as bases, which stretch between the spirals like the rungs of a ladder. DNA has four types of bases: adenine (A), thymine (T), guanine (G) and cytosine (C). A and T always join together, as do G and C.

## What does DNA do?

Our genes are made up of DNA, and DNA contains our unique genetic code. Like a recipe book or instructions for lego, DNA holds the instructions for making all our proteins, which do all the jobs in our bodies.

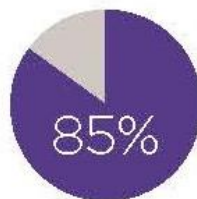
## Genes in common

You don't look much like a fly or a worm. But, believe it or not, you share genes with both of them and with every other living thing. Scientists study the genes in bacteria, zebrafish and other living things to learn more about humans.

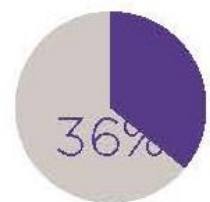
## How much DNA do you share with these living things?



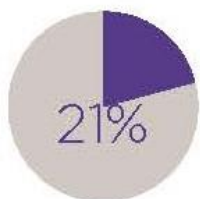
Chimpanzee



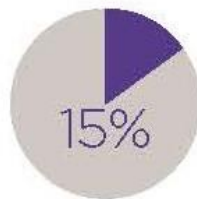
Zebrafish



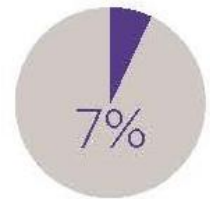
Fruit fly



Round Worm



Mustard grass



Bacteria

## Why do we use the dishwashing liquid?

The dishwashing liquid bursts open the cells of the strawberries, releasing the DNA.

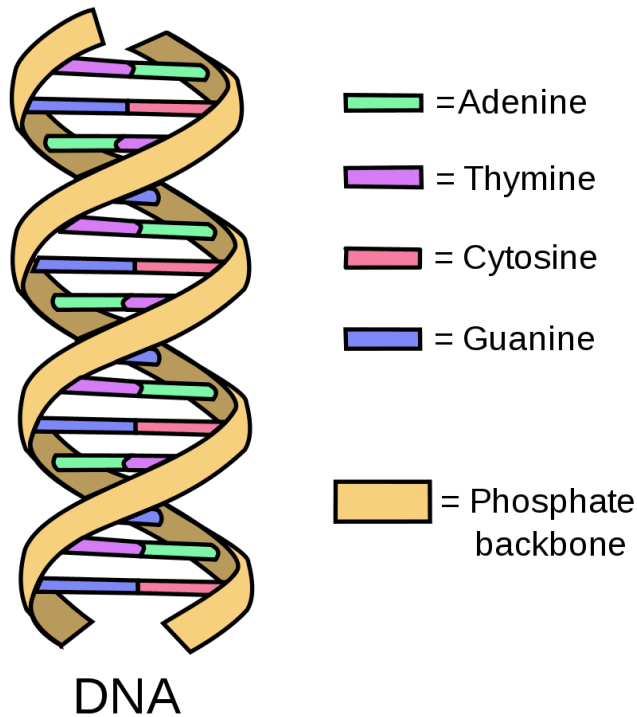
## Why do we use the salt?

It ensures that the proteins in the cell are kept separate from the DNA.

## What does the alcohol do?

When molecules are insoluble (unable to be dissolved), they clump together and become visible. DNA is not soluble in alcohol; therefore, it makes the DNA strands clump together and become visible to the naked eye.

## What does DNA look like?



### MATERIALS

- small resealable plastic bag
- small piece of ripe banana
- dishwashing liquid
- 250 mL beaker
- test tube rack
- cheesecloth
- graduated cylinders
- 0.9% NaCl solution
- ice-cold isopropanol
- large test tube
- glass stirring rod

### PROCEDURE

- 1.) With a partner, place about one quarter of a ripe banana in a small resealable plastic bag. Seal the bag and use your fingers to squish the banana until no chunks remain.
- 2.) Measure 10 mL of the sodium chloride solution into the bag and mix thoroughly by gently squeezing the bag.
- 3.) Measure 3 mL of dishwashing liquid and then add it to the bag. Mix gently and avoid creating bubbles.
- 4.) Lay a piece of cheesecloth over the beaker. One partner should hold the cheesecloth while the other partner pours the banana mixture onto the cloth, over the beaker.
- 5.) Let all liquid pass through the cloth. Wrap it around the remaining banana mixture and gently squeeze any remaining liquid into the beaker. Dispose of the banana residue in the garbage.
- 6.) Transfer 2 mL of the collected liquid into a test tube.
- 7.) Measure 8 mL of ice-cold isopropanol. Tilt the test tube and gently pour the isopropanol down the side so the isopropanol floats on the banana liquid.
- 8.) Let the solution sit for 2 to 3 min. You will see a white substance form between the layers. This is the DNA.
- 9.) Carefully insert the stirring rod and twirl the white precipitate around the rod. Remove it from the test tube.
- 10.) Dispose of all materials in the garbage.