

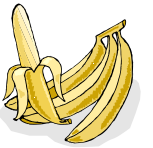
BANANA DNA



What do you have in common with an octopus, flamingo, and banana? It may seem like this is a crazy question, but the simple answer is: You are all living! That means you all have **DNA**!



DNA stands for deoxyribonucleic acid. It is the genetic material that is found in humans, along with every other living or once living organism. Scientists are able to extract DNA from living and once living organisms...like bananas!

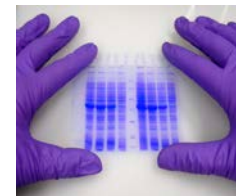


DNA stores information in the form of a code. The code is made up of **four** different chemical bases: adenine (A), guanine (G), cytosine (C) and thymine (T).

The four bases team up with each other to form base pairs, where they also attach to other sugar and phosphate molecules. When all those things are connected, they make a **nucleotide**. Nucleotides are arranged in two long spiral strands that form a double **helix**. This looks something like a curvy **ladder**.

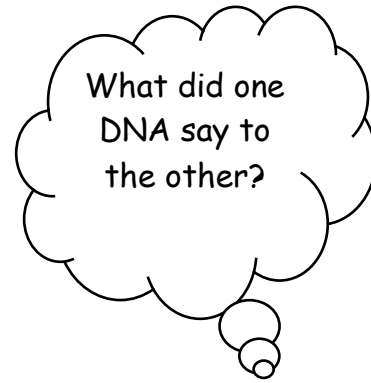


One important thing to know about DNA is that it can **replicate** and make copies of itself. This is needed so that when our cells divide and multiply as we grow, the new cells have an exact copy of the old information that makes up who we are! The DNA in our genes is what determines a lot of our characteristics, like height and hair and eye color. Every single human has unique genes, except for **identical** twins.



DNA Trivia

- Every living or once living organism has DNA.
- Identical twins share 100% of their DNA, siblings 50% and parents-child 50%.
- Humans have 46 chromosomes and at least 30,000 genes.
- Humans and chimpanzees share 98% of their DNA.
- If you unwrap all the DNA you have in all your cells, you could reach the moon 6000 times!



Farm Facts

- DNA is used to determine the pedigree for livestock or pets.
- Genetically modified crops have DNA from another organism inserted to give the crops properties like pest resistance.
- The average American consumes 28 pounds of bananas per year.
- India is the number one banana producer in the world.
- Bananas are the fourth largest crop worldwide.

Joke Answer

Do these genes make me look fat?



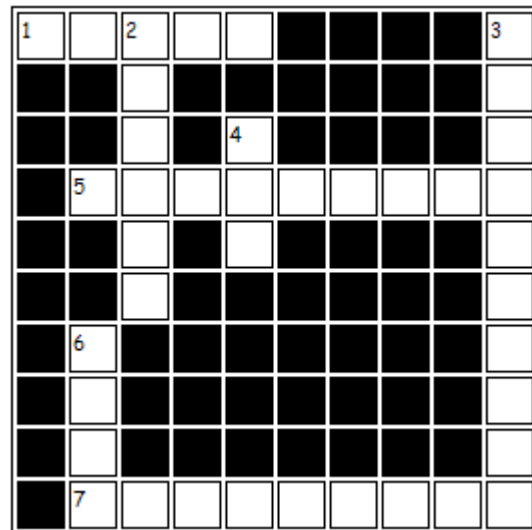
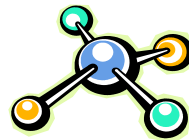
What did you learn?

1. What does DNA stand for?

2. What are the four different chemical bases that make up DNA?

3. What are some characteristics that DNA help determine in humans?

Discover DNA!



Across

- The two long spiral strands form a double _____.
- Everyone has unique genes except for _____ twins.
- DNA can _____ or make copies of itself.

Down

- A double helix looks like a spiral _____.
- A base pair + a sugar molecule + a phosphate molecule make a _____.
- Every living thing has _____.
- There are _____ chemical bases that make up DNA.

Build Your Own Model!

What's a better way to learn about DNA than to build it yourself?
(Not to mention you can eat it later too!)

Materials needed:

- Red and black licorice sticks
- Colored marshmallows or gummy bears
- Toothpicks
- Needle
- String
- Scissors



Steps:

- Assign the colored marshmallows or gummy bears to represent the four nucleotide bases: adenine, cytosine, guanine and thymine (a different color for each one).
- Assign the colored licorice pieces to be either the sugar molecule or the phosphate molecule.
- Cut the licorice into 1 in. pieces
- String half of the licorice pieces together lengthwise, alternating every other black and red using the needle and string.
- Do the same thing with the other half of licorice so you have two strands that are the same length.
- Connect two different colored marshmallows or gummy bears using the toothpicks.
- Connect the toothpicks with the candy to either the red licorice pieces only or the black ones only, so that the candy is between the two strands.
- Holding the ends of the licorice sticks, twist the structure slightly.