

# DNA



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museum

*DNA is the single most important molecule in living cells and contains all the information that determines who you are and what you look like. DNA is often described as the blueprint of an organism. It enables your various cells to develop and work together to form your body and controls characteristics such as eye colour.*

## **Let's start with you!**

You are made up of billions of cells. Inside the nucleus of each of your cells is your own unique set of 46 chromosomes. These chromosomes hold, in a compact coil, an incredibly long molecule of DNA, which stands for deoxyribonucleic acid – you can see why they chose an abbreviation!

DNA stores all the coded information that determines what you look like and how your body functions, and how this information is passed on to the next generation.

Sections of DNA that contain complete messages are known as genes. Genes can be thought of as 'words' along the DNA 'sentences', with about 100,000 of these 'words' in each cell.

While the DNA molecule is very long, if you stretched one out, it would be two metres long, it is surprisingly simple. DNA looks like a long twisted ladder. This shape is called a double helix. The sides of the ladder are a linked chain of alternating sugar and phosphate molecules. The rungs come off the sugar molecules and are known as bases. There are four bases – adenine (A), thymine (T), guanine (G), and cytosine (C). Each rung is made of two bases linked together. Because of their chemical composition, A will link only with T and G will link only with C. All DNA is made up of these same sugar and phosphate molecules and the same four bases. Whether DNA is in your cells, the cells of a cactus, the cells of a worm or in a bacterium it is made of the same chemicals and has the same structure!

## **Cell**

A cell is the unit that controls the structure and function of an organism. Each cell contains the entire genome – all the genetic information needed to build a human, a cactus, or a bacterium. Most cells are microscopic.

## **Nucleus**

At the centre of each cell is the nucleus. The nucleus is the control centre of the cell and contains the chromosomes.

## **Chromosomes**

Chromosomes look like threads and contain DNA.

## **Genes**

Each gene is a section of a strand of DNA that holds the recipe for making a specific molecule, usually a protein.

