

Source: <http://www.ducksters.com/science/biology/dna.php>

DNA is an essential molecule for life. It acts like a recipe holding the instructions telling our bodies how to develop and function.

What does DNA stand for? DNA is short for deoxyribonucleic acid.

What is DNA made of? DNA is a long thin molecule made up of something called nucleotides.

There are four different types of nucleotides: adenine, thymine, cytosine, and guanine.

They are usually represented by their first letter:

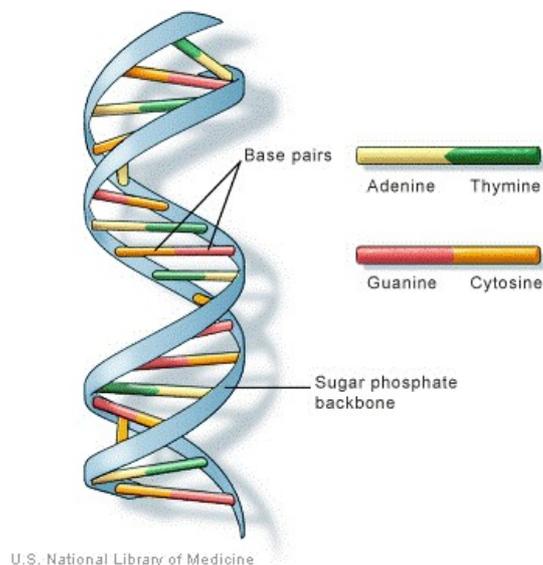
A- adenine

T- thymine

C - cytosine

G - guanine

Holding the nucleotides together is a backbone made of phosphate and deoxyribose. The nucleotides are sometimes referred to as "bases".



Different Cells in the Body Our bodies have around 210 different types of cells. Each cell does a different job to help our body to function. There are blood cells, bone cells, and cells that make our muscles.

How do cells know what to do?

Cells get their instructions on what to do from DNA. DNA acts sort of like a computer program. The cell is the computer or the hardware and the DNA is the program or code.

The DNA Code

The DNA code is held by the different letters of the nucleotides. As the cell "reads" the instructions on the DNA the different letters represent instructions. Every three letters makes up a word called a codon.

A string of codons may look like this: ATC TGA GGAAAT GAC CAG

Even though there are only four different letters, DNA molecules are thousands of letters long. This allows for billions and billions of different combinations.

Genes

Within each string of DNA are sets of instructions called genes. A gene tells a cell how to make a specific protein. Proteins are used by the cell to perform certain functions, to grow, and to survive.

Shape of the DNA Molecule

Although DNA looks like very thin long strings under a microscope, it turns out that DNA has a specific shape. This shape is called a double helix. On the outside of the double helix is the backbone which holds the DNA together. There are two sets of backbones that twist together. Between the backbones are the nucleotides represented by the letters A, T, C, and G.

A different nucleotide connects to each backbone and then connects to another nucleotide in the center. Only certain sets of nucleotides can fit together. You can think of them like puzzle pieces:

A only connects with T and G only connects with C.

Interesting Facts about DNA

About 99.9 percent of the DNA of every person on the planet is exactly the same. It's that 0.1 percent that is different that makes us all unique.

The double helix structure of DNA was discovered by Dr. James Watson and Francis Crick in 1953.

If you unraveled all the DNA molecules in your body and placed them end to end, it would stretch to the Sun and back several times.

DNA is organized into structures called chromosomes within the cell. DNA was first isolated and identified by Swiss biologist Friedrich Meischer in 1869.