**Fill in the blank the missing words.**

(You can find all the words below).

Deoxyribonucleic acid or \_\_\_\_\_\_\_\_ is a molecule that contains the instructions an organism needs to develop, live and reproduce. These instructions are found inside every cell, and are passed down from parents to their children.

**DNA structure.**

DNA is made up of molecules called nucleotides. Each nucleotide contains a phosphate group, a sugar group and a nitrogen base. The four types of nitrogen bases are adenine (A), thymine (T), \_\_\_\_\_\_\_\_\_\_\_\_\_and cytosine (C). The order of these bases is what determines DNA's instructions, or genetic code. Similar to the way the order of letters in the alphabet can be used to form a word, the order of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in a DNA sequence forms [genes](http://www.livescience.com/10486-genes-instruction-manuals-life.html), which in the language of the cell, tells cells how to make proteins. Another type of nucleic acid, ribonucleic acid, or, \_\_\_\_\_\_\_\_\_\_\_\_\_\_transmits genetic information from DNA into proteins.

The entire human genome contains about3 billion bases and about 20,000 genes.

Nucleotides are attached together to form two long \_\_\_\_\_\_\_\_\_\_\_that spiral to create a structure called the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. If you think of the [double helix](http://www.livescience.com/10142-lost-letters-reveal-twists-discovery-double-helix.html) structure as a ladder, the phosphate and sugar molecules would be the sides, while the bases would be the rungs. The bases on one strand pair with the bases on another strand: adenine pairs with\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and guanine pairs with\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

DNA molecules are so long, in fact, that they can't fit into cells without the right packaging. To fit inside cells, DNA is coiled tightly to form structures we call [chromosomes](http://www.livescience.com/27248-chromosomes.html). Each chromosome contains a single DNA molecule. Humans have 23 pairs of chromosomes, which are found inside the cell's nucleus.

**DNA discovery.**

DNA was first observed by a German biochemist named Frederich Miescher in 1869. But for many years, researchers did not realize the importance of this molecule. It was not until 1953 that James Watson, Francis Crick, Maurice Wilkins and Rosalind Franklin figured out the structure of DNA — a double helix — which they realized could carry biological information. Watson, Crick and Wilkins were \_\_\_\_\_\_\_\_\_\_\_\_\_the [Nobel Prize in Medicine](http://www.livescience.com/16342-nobel-prize-medicine-history-list.html) in 1962 "for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material."

awarded, DNA, double helix, guanine (G), strands, thymine, nitrogen bases, cytosine, RNA

**Glossary**

**strand**: chain or filament. The double helix is composed by two strands. The template strand is copied into mRNA. The coding strand is a “mRNA-like” strand.

**ladder**: that is used to climb onto somewere.

**rungs**: the rungs of the “DNA ladder” are composed by complementary paires of nitrogen bases.

**nucleotides**: the building blocks that compose DNA. One nucleotide is composed by the deoxirobose, a pentose sugar, the phosphate group and one of the four nitrogen bases, adenine, thymine, guanine, cytosine.

**pentose**: a sugar which has 5 carbon atoms. The difference between ribose and deoxyribose is the presence of the -OH in the 2’ position. DNA is a 2’ deoxy.

**bond**: an electrical force linking atoms

**hydrogen bond**: a chemical bond consisting of a hydrogen atom between two electronegative atoms with one side be a covalent bond. The Hydrogen bonds link together two complementary bases.

**complementary**: related to a bases pair wich have a complementary shape.