

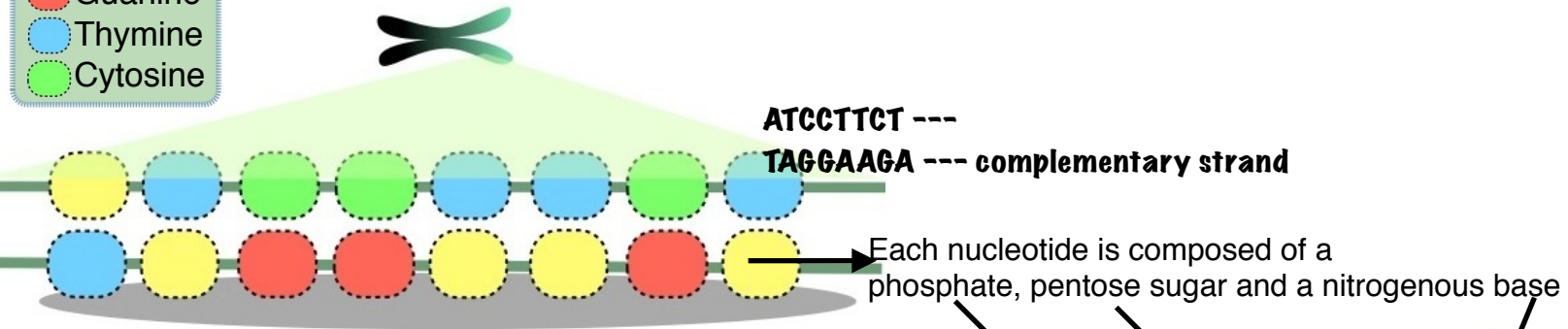
DNA

"the blueprint of life"

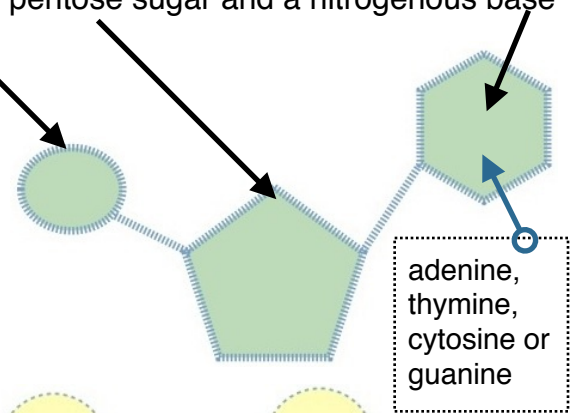
So, what is DNA? It's a large molecule found in every cell of your body. It's made of building blocks called **nucleotides** (**adenine**, **guanine**, **thymine** and **cytosine**). The order (or sequence) of these nucleotides codes for the different proteins that make up your body. In humans this sequence is about 3 billion nucleotides (or base pairs) long and every cell contains the entire sequence (or **genome**).

DNA is bundled in structures called **chromosomes** found in the **nucleus** of every **cell**.

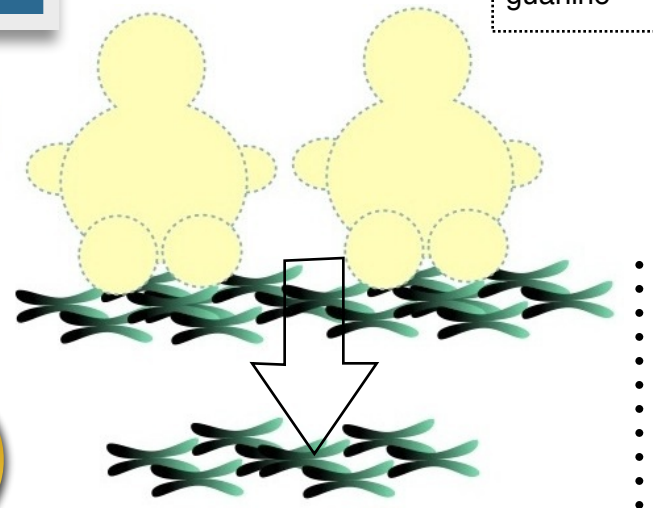
- Adenine
- Guanine
- Thymine
- Cytosine



DNA is composed of 2 strands that run in opposite directions (anti-parallel) with nucleotides holding the strands together by hydrogen bonds. Adenine (A) always pairs with Thymine (T) with 2 H-bonds and Cytosine (C) always pairs with Guanine (G) with 3 H-bonds. Because of this pairing you can always figure out the sequence of the opposite (**complementary**) strand by knowing the sequence of only one strand. These strands bend into a shape described as a **double helix**.



Each chromosome is divided into different regions called **genes** which are each **transcribed** into RNA which is then **translated** into different proteins. Sometimes people have a version (**allele**) with a different sequence (a **mutation**) which can cause a disease such as cystic fibrosis, Huntington disease or muscular dystrophy.



All living organisms from bacteria, to cats, to humans, use DNA to store all of their hereditary information.

You have 46 chromosomes of DNA in each cell. 23 are from your father and 23 from your mother. This gives you 2 copies of each gene.



DNA stands for deoxyribonucleic acid