

DNA

- Is a code, set of rules and symbols used to carry out information. DNA material determines the inherited characteristics of all living things.
- Many scientist all over the world contributed to the discovery of DNA.

Unraveling DNA

- The structure is a twisted ladder shape: double helix. The steps are the base pairs, the rails are the backbone (sugar & phosphate).
- A base, sugar and phosphate make a building block of DNA known as a nucleotide. These repeating units join to form a DNA molecule.
- There are 4 different nucleotides in DNA, identified by their bases:
 - Adenine (A) ----- Thymine (T)
 - Cytosine (C)-----Guanine (G)

The order of these letters is the language that tells a cell how to build an organism and it carries the information. The code is read in one direction.

The bases A, T, C, and G form the code. The code stores information about which proteins the cells should build. The types of proteins your body makes help determine your traits.

Replication

- Cell is able to make copies of DNA molecule through **replication**.
- During replication, two strands of DNA separate and the bases on each side are used as the pattern for a new strand.
- Mutations: can occur during replication. Changes in the number, type or order of the bases due to random errors.
 - Deletion
 - Insertion
 - Substitution

Cells can make proteins to fix errors in DNA, but if its not corrected it becomes part of the genetic code resulting in genetic disorder.

Protein Factory

- Amino Acids are special organic molecules used by living organisms to make proteins.
- Proteins are long chains of amino acids and provide the functions to help us survive.
- Protein Synthesis cell makes protein instruction on how to make proteins inside DNA.
- Some of the information in DNA is copied to a separate molecule called RNA. Then the copy used used to build the proteins. Not all instructions are used all the time.
- When a cell needs a set of instructions for making a protein, first RNA makes a copy and this is **transcription**.
- The process of making proteins from RNA is **translation**