DNA is a building block of life. DNA provides instructions for important biological functions, like reproduction or how our skin repairs itself after a cut. Understanding how DNA functions helps humans cure diseases and save lives.

DNA performs 3 functions essential for maintaining life:

1) DNA Replication: replicating itself

2) Protein Synthesis: playing an instructional role in the manufacture of proteins

3) Evolving: mutations occur during replication, and advantageous ones can be kept

The key to understanding function was shape and structure. Watson and Crick first discovered the correct structure for DNA in 1953. Dr. Rosalind Franklin and Dr. Maurice Wilkins played pivotal roles in the discovery. Read more of the dramatic story of the discovery of DNA.

DNA looks like a twisted ladder, whose strucutre is referred to as a double-helix. The twisted ladder is actually an enwined pair. It helps to imagine splitting the ladder down the center so that you are left with two strands.

Each rung of DNA's double-helix is made up of a pair of nitrogenous bases. These bases are paired according to a strict rule:

adenine pairs with thymine (A–T)
guanine pairs with cytosine (G–C)

DNA's structure allows for a splitting or unwinding of the double-helix to occur in both DNA replication and protein synthesis.

Protein synthesis is of particular interest: during the process, sequences of DNA are transcribed and transported by RNA to the site of protein synthesis. DNA's role in this process show it is responsible for providing instructions for biological functions, where specific sequences of a DNA strand amount to a specific set of instructions.

Currently, humans are learning to manipulate and inject their own sequences into DNA. Genetic engineering or gene therapy provides new tools in human's fight against disease.