

## Fast Facts about Human Genetics

- DNA stands for Deoxy-ribo-Nucleic Acid.
- On February 28, 1953, Francis Crick and James Watson figured out the structure of deoxyribonucleic acid (DNA). That structure, a 'double helix', can "unzip" (separate into two long strands) to make copies of itself. This discovery confirmed suspicions that DNA carried an organism's hereditary information.
- DNA molecules are linked, one after another, like pearls on a very long string.
- DNA molecules are the "software" that direct cellular activity and determine everything about an organism - from what it looks like to how long it is likely to live. Genes are pieces of this DNA, and are the fundamental units of heredity.
- The complete human genome consists of approximately 3 billion DNA molecules.
- On average, each chromosome has about 65 million DNA molecules.
- A gene is a stretch of DNA molecules (ranging in length from thousands to tens of thousands of DNA molecules, in some cases they may be even larger).
- Between genes, along the length of a chromosome, there may be long stretches of DNA, which have no known function.
- A chromosome contains about 1000 genes.
- Humans have approximately 30,000 different genes spread out over the 46 chromosomes.
- Humans get one complete set of genes from each parent.
- In April 2003, the National Human Genome Research Institute (NHGRI) celebrates the completion of the human genome sequence and the 50th anniversary of the description of the DNA double helix.
- The nucleus, or control centre, of a cell, is where the DNA is coiled up into chromosomes. With the exception of reproductive cells, every cell has 46 chromosomes. Twenty-two pairs of the chromosomes are similar in terms of size, shape and genetic content. The twenty-third pair determines the sex of the individual, and is composed of either two x chromosomes (female) or an x and a y chromosome (male).
- DNA molecules are incredibly long. If all of the DNA from all of your cells was stretched out into a single thread, it would extend to the moon and back about one million times!