

# CHROMOSOMES

# Definition

- Chromosomes are the genetic material present in all cells. They are present in the nucleus of a eukaryotic cell. They are a thread-like structure.
- Each chromosome of a [eukaryotic cell](#) contains DNA and associated proteins, known as histone proteins. They are responsible for the hereditary traits and passed from parents to offspring from one generation to another. DNA codes for specific proteins and are responsible for variations in a species and among various organisms. Scientists have given this name chromosomes as they are stained using specific dyes, chroma means colour and soma means body.

## Properties of chromosome

Humans have 23 pairs of chromosomes. This unique structure of the chromosome keeps DNA tightly packed with histone proteins to fit inside the cell and it also helps in giving more stability to it. For instance, the unwound DNA of a single cell will measure 6 feet, with this, one can understand the need for packaging inside the nucleus of each cell.

Cells must continuously repair, grow and regenerate to replace the old cells. Cell division is important for the growth and development of an organism. We can see chromosomes clearly during cell division. Chromosomes ensure that DNA is divided equally between the daughter cells during cell division. Even a small irregularity in the process may lead to various diseases and deformities. Uncontrolled [cell division](#) results in tumour cells and causes cancer. Chromosomal aberration like changes in structure or number can cause genetic disorders, e.g. Down's syndrome, Turner's syndrome, etc. Defective chromosomes may even lead to a certain type of leukaemia in humans.

# Function of Chromosomes

As the genetic material passes from parents to child, the chromosomes are responsible for containing the instructions that make the offspring unique while still carrying traits from the parent. In most organisms, one chromosome is inherited from the mother and the other is inherited from the father; to ensure that offspring carry traits from both parents. It's crucial that certain cells, like reproductive cells, have the correct number of chromosomes in order to function properly.

The structure of chromosomes helps ensure the DNA remains tightly wrapped around the proteins; otherwise, DNA molecules would be too large for the inside of the cells.

Organisms grow by undergoing cell division to produce new cells and replace older, wornout cells. During this cell division, DNA must remain intact and keep its even distribution throughout the cells. Chromosomes are important to this process to ensure the DNA is accurately replicated.