

Cell Organelles - Nucleus

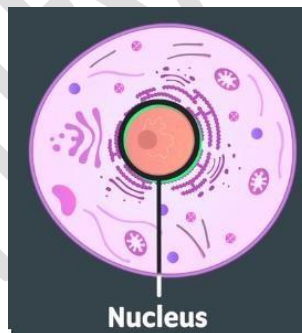
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In the previous segment of the chapter 'Cell - The Fundamental Unit of Life', we learnt about the process of **Osmosis**. In this segment, let us get ourselves introduced to the cell organelle, Nucleus.

What is the Nucleus?

- The controlling unit of the cell is called the **Nucleus**.
- It is located at the centre of the cell and governs the functions of other organelles.
- It has its own membrane which separates the inner contents of the cell from the rest of the cytoplasm.
- The membrane has pores to allow entry and exit of substances across it.
- The nucleus has its own jelly-like fluid called the **Nucleoplasm** which is slightly different from the rest of the cytoplasm.



How does the nucleus regulate the activities of other organelles?

The nucleus contains the genetic material which is responsible for the transmission of characters from one generation to the next. The genetic materials are codes for specific proteins which perform various functions in the cell.

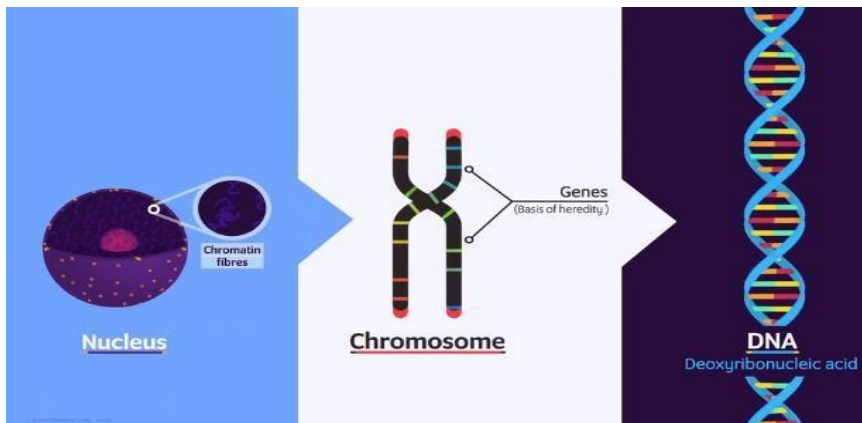
For example, passing information, communication, building structures, and many other activities are carried out by specific proteins.

Thus, the nucleus helps in regulating the various functions of the other cell organelles.

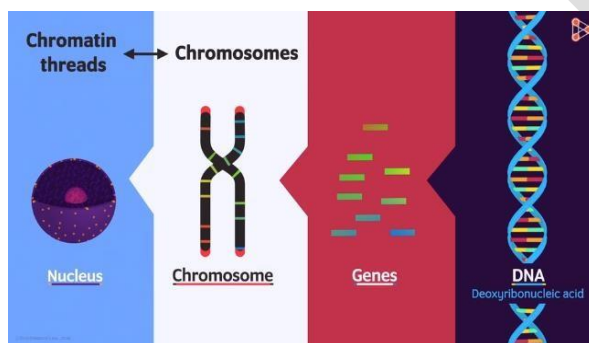
What are Genes and DNA?

- In the nucleus, there are tangled thread-like structures called the **Chromatin fibres** which enclose the genetic material within them.

- When the cell has to divide, these long threads coil themselves to form a compact structure called the **Chromosome**. So, chromosomes and chromatin are the same things.



- The chromosomes are made up of smaller functional segments called **Genes** which form the basis of heredity in all organisms.
- The similarities and variations that organisms have with their parents are because of genes.
- Genes are made up of the molecules of **Deoxyribonucleic acid (DNA)**.



Summary

Nucleus	<ul style="list-style-type: none"> The controlling unit of the cell is called the Nucleus. It is located at the centre of the cell and governs the functions of other organelles. The nucleus has its own jelly-like fluid called the Nucleoplasm.
Genes and DNA	<ul style="list-style-type: none"> The chromosomes are made up of smaller important segments and functional units called Genes. Genes are made up of molecules of Deoxyribonucleic acid (DNA).

What's next?

In our next segment of Class 09 Science, we will get introduced to **The endoplasmic reticulum**.