

- **Because of their walls, plant cells can withstand much greater changes in the surrounding medium than animal cells.**

## Cytoplasm

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- It is the jelly-like substance present between the **cell membrane** & the **nucleus**.
- The cytoplasm is the **fluid** content inside the plasma membrane.
- It also contains many specialized **cell organelles** (mitochondria, golgi bodies, ribosomes, etc).
- Each of these organelles performs a specific function for the cell.

## Nucleus

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- It is an important component of the living cell.
- It is generally spherical & located in the **centre of the cell**.
- It can be stained & seen easily with the help of a microscope.
- Nucleus is separated from the cytoplasm by a **double layered** membrane called the **nuclear membrane**.
- **The nucleus of the bacterial cell is not well organized like the cells of multicellular organisms. There is no nuclear membrane.**
- Nuclear membrane is also porous & allows the movement of materials between the cytoplasm & the inside of the nucleus (diffusion).
- With a microscope of higher magnification, we can see a smaller spherical body in the nucleus. It is called the **nucleolus**.
- Nucleus acts as **control centre** of the activities of the cell.
- The nucleus plays a central role in **cellular reproduction**, the process by which a single cell divides & forms two new cells.
- It also plays a crucial part, along with the environment, in determining the way the cell will

develop & what form it will exhibit at maturity, by directing the chemical activities of the cell.

## Protoplasm

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- **Protoplasm** includes the cytoplasm & the nucleus.
- **Protoplasm is called the living substance of the cell.**

## Chromosomes

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- Nucleus contains thread-like structures called **chromosomes**.
- Chromosomes contain **information for inheritance** of features from parents to next generation in the form of **DNA (Deoxyribo Nucleic Acid)**
- Chromosomes are composed of **DNA & Protein**.
- DNA molecules contain the **information necessary for constructing & organizing cells**.
- Functional segments of DNA are called **genes**.
- Gene is a **unit of inheritance** in living organisms.
- It controls the transfer of a hereditary characteristic from parents to offspring.
- **The chromosomes can be seen only when the cell divides.**

## Chromatin material

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- In a cell which is not dividing, this DNA is present as part of **chromatin material**.
- Chromatin material is visible as entangled mass of thread like structures. Whenever the cell is about to divide, the chromatin material gets **organised into chromosomes**.

## Nucleoid

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