

Lesson 8 -CELL -STRUCTURE&FUNCTION

MODULE 2- HAND OUT

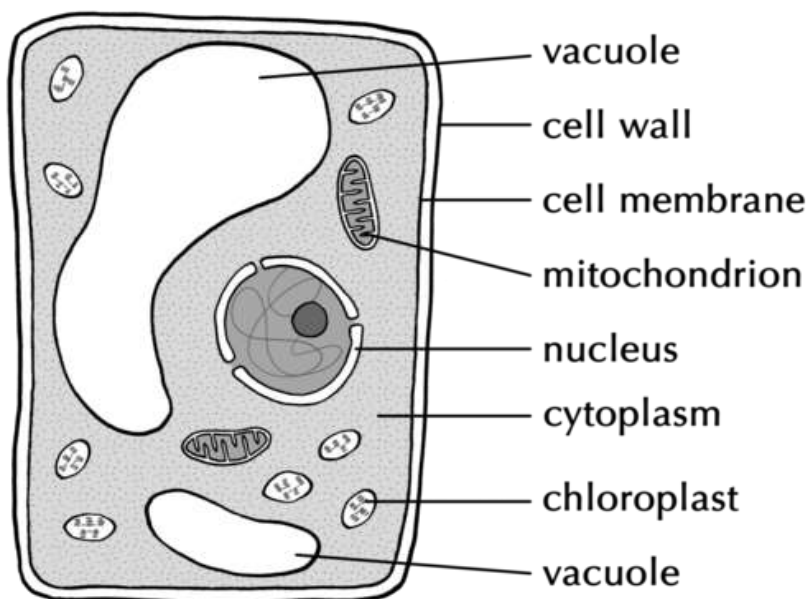
Topic:- Structure of a cell

Basic components of a cell are:

- Cell membrane
- Nucleus
- Cytoplasm

Components of cytoplasm is called cell organelles.They are :

Mitochondria **Golgi bodies** **Ribosomes** **Plastids**
Vacuole **Lysosome** **Endoplasmic reticulum**



PARTS OF THE CELL

1. CELL MEMBRANE

- ❖ Also known as plasma membrane
- ❖ It is the outer limiting membrane
- ❖ It encloses cytoplasm and nucleus
- ❖ It separates cells from one another and also from the surrounding medium
- ❖ It is porous and allows the movement of substances both inward and outward
- ❖ It is selectively permeable that can allow certain substances but does not allow other substances to pass through it

- ❖ It gives shape to the cell

CELL WALL

- Plant cell has another thick covering outer to cell membrane called cell wall
- It provides shape and rigidity to the cell
- It provides protection against variations in temperature, high wind speed, atmospheric moisture
- NB: Plant cell wall is made up of cellulose

Fungal cell wall is made up of chitin

2.NUCLEUS – the brain of the cell

- Nucleus is a spherical structure located in the centre of the cell
- It is separated from the cytoplasm by a membrane called nuclear membrane
- Nuclear membrane is porous and allows the movement of material between the cytoplasm and inside of the nucleus
- The matrix of the nucleus is called nucleoplasm
- Dense spherical body seen inside the nucleus is called nucleolus
- It contains thread like structures called chromosomes
- Chromosomes carry genes.

Gene is the unit of inheritance. It is the functional unit of chromosome made up of DNA. It helps in inheritance of hereditary characters from parents to the offspring.

- **Resemblance of offspring to parents is due to the transmission of genes**

Functions of Nucleus:

- * It acts as control centre of the activities of the cell
- * It helps in inheritance of characters

There are mainly two types of cells on the basis of presence or absence of nucleus and complexity of cellular organization. They are

a) Prokaryotic cell

b) Eukaryotic cell

<p style="text-align: center;">PROKARYOTIC CELL (Pro = Primitive; karyon = nucleus)</p>	<p style="text-align: center;">EUKARYOTIC CELL (Eu = true; karyon = nucleus)</p>
<p>The cells having nuclear material without nuclear membrane is called Prokaryotic cell.</p>	<p>The cells having well organized nucleus with a nuclear membrane are known as Eukaryotic cell.</p>
<p>Organisms with these type of cells are called Prokaryotes</p>	<p>Organisms with these type of cells are called Eukaryotes</p>
<p>Eg: Bacteria, Blue green algae</p>	<p>Eg: Plants, animals, fungi</p>

3.CYTOPLASM

- It is the jelly like substance present between the cell membrane and nucleus
- Components present in the cytoplasm are called cell organelles
- Major cell organelles are mitochondria, ribosomes ,golgi bodies, lysosomes, endoplasmic reticulum, plastids,vacuoles etc.

MITOCHONDRIA

- It is a double membraned structure found in cytoplasm
- It is the site of cellular respiration.Energy in the form of ATP is stored in it.

Thus it is called as *power house of the cell*

ENDOPLASMIC RETICULUM(ER)

*It is a well-developed network of tubules present throughout the cell

*It is of two types

- a) Smooth endoplasmic reticulum (SER) - Without ribosomes
- b) Rough endoplasmic reticulum (RER) -Ribosomes are attached to it

Function- It gives support to the cell

It serves as channels for transport of proteins

RIBOSOMES

*They are tiny spherical particles found either attached to ER or freely in cytoplasm

*They help in protein synthesis. Hence they are called *protein factories of cells*

GOLGI BODIES

- They are the series of flat membraneous structure
- Arranged one above the other in parallel rows
- It helps in secretion ,packaging, and transport of substances

LYSOSOMES

- They are tiny spherical bag like structure found in large numbers in cytoplasm
- They help in intra cellular digestion
- They digest worn out organelles and food particles and can digest the cell during damaged state. Hence they are called *suicide bags*

PLASTIDS

- Double membraned structure found scattered in the cytoplasm of plant cell
- They are of different colours
- Green coloured plastids are called Chloroplast. It provide green colour to the leaves
- Chloroplast contain a green pigment called Chlorophyll
- *Chlorophyll in the chloroplast of leaves is essential for photosynthesis*

VACUOLE

- They are the structures without any definite shape and size
- It may be small or large
- It provides rigidity and turgidity to plant cell

PROTOPLASM

- The entire content of a living cell is known as protoplasm
- It includes the cytoplasm and the nucleus
- Protoplasm is called living substance of the cell

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