

CLASS 9
CHAPTER 5- FUNDAMENTAL
UNIT OF LIFE

PLASMA MEMBRANE

- This is the outermost covering of the cell that separates the contents of the cell from its external environment.
- The plasma membrane allows or permits the entry and exit of some materials in and out of the cell.
- It also prevents movement of some other materials.
- The cell membrane, therefore, is called a selectively permeable membrane.



CELL WALL

- Plant cells, in addition to the plasma membrane, have another rigid outer covering called the cell wall.
- The cell wall lies outside the plasma membrane.
- The plant cell wall is mainly composed of cellulose.
- Cellulose is a complex substance and provides structural strength to plants.

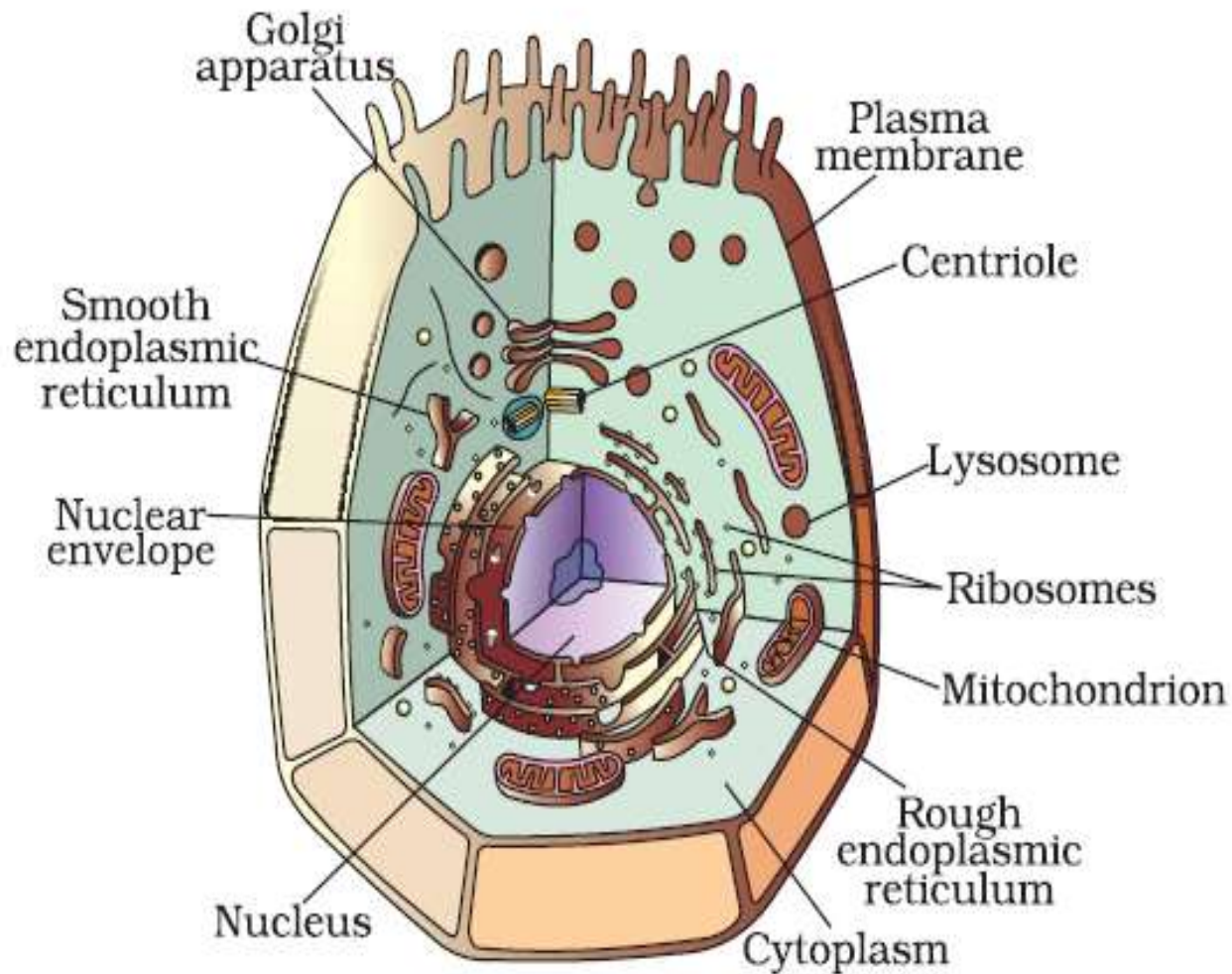


NUCLEUS

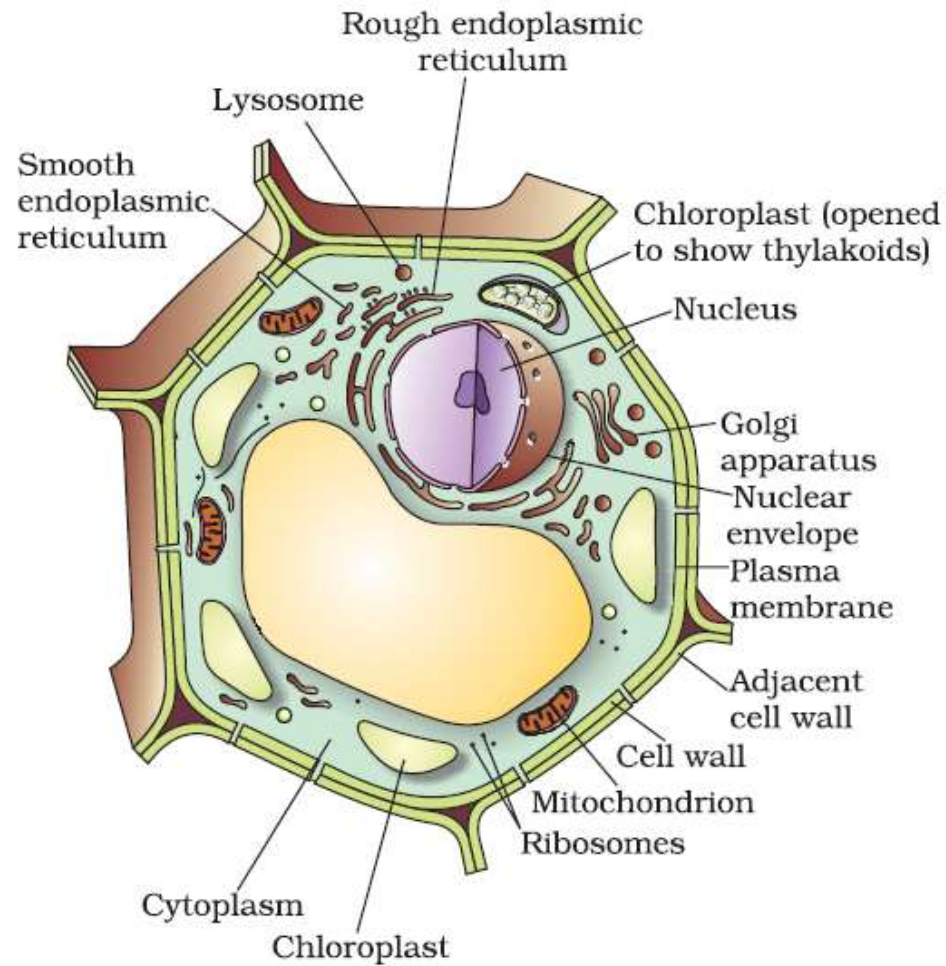
- The nucleus has a double layered covering called nuclear membrane.
- The nucleus contains chromosomes, which are visible as rod-shaped structures only when the cell is about to divide.
- Chromosomes contain information for inheritance of features from parents to next generation in the form of DNA (Deoxyribo Nucleic Acid) molecules.
- Chromosomes are composed of DNA and protein.



ANIMAL CELL



ANIMAL CELL



Types of organisms

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graph TD; A[Types of organisms] --> B[On the basis of presence/absence of nuclear membrane]; B --> C[Prokaryotic]; B --> D[Eukaryotic];
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On the basis of
presence/absence
of nuclear
membrane

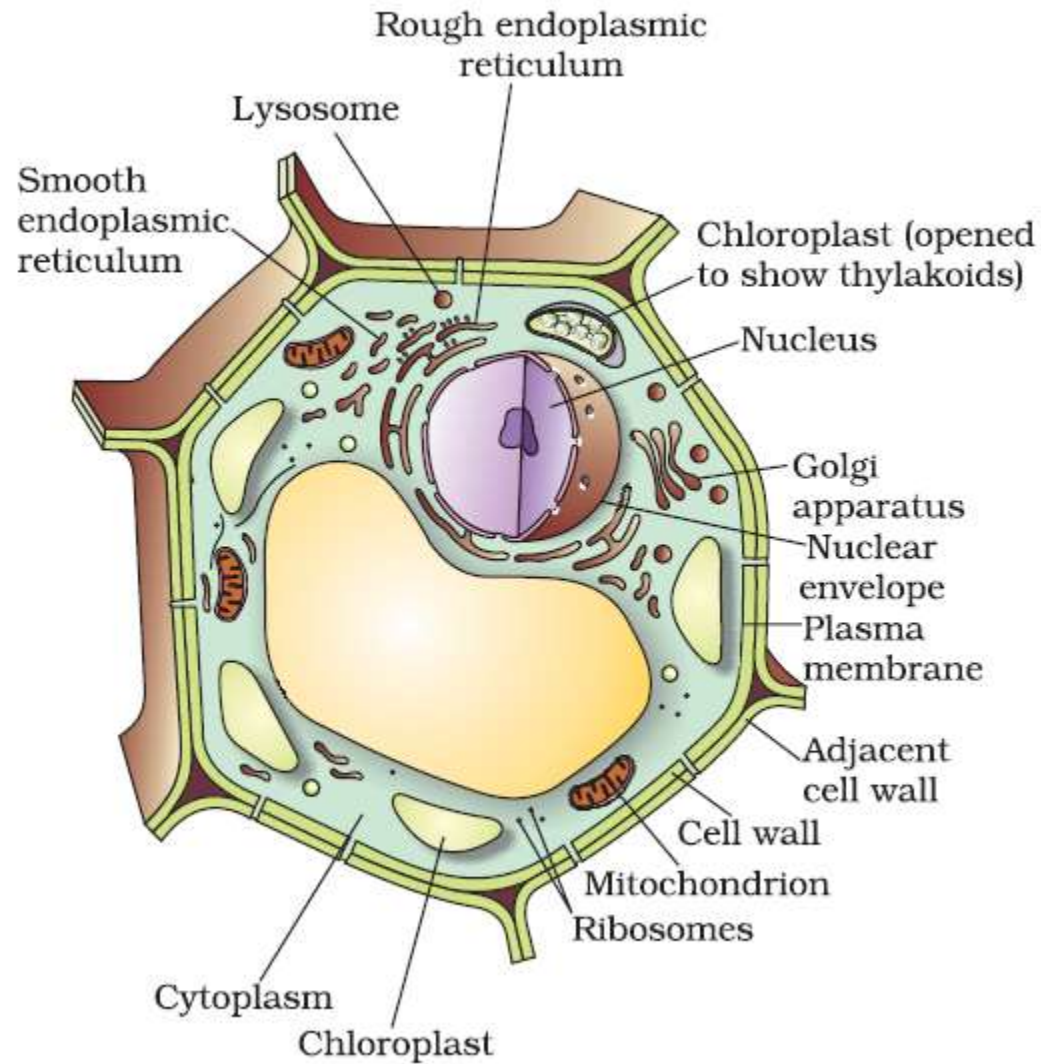
Prokaryotic

Eukaryotic

CYTOPLASM

- It also contains many specialised cell organelles.
- Each of these organelles performs a specific function for the cell.





ENDOPLASMIC RETICULUM

- The endoplasmic reticulum (ER) is a large network of membrane-bound tubes and sheets.
- There are two types of ER– rough endoplasmic reticulum (RER) and smooth endoplasmic reticulum (SER).
- The SER helps in the manufacture of fat molecules, or lipids, important for cell function.
- Some of these proteins and lipids help in building the cell membrane. This process is known as membrane biogenesis.



GOLGI BODY

- The Golgi apparatus, first described by Camillo Golgi, consists of a system of membrane-bound vesicles arranged approximately parallel to each other in stacks called cisterns.
- Its functions include the storage, modification and packaging of products in vesicles. In some cases, complex sugars may be made from simple sugars in the Golgi apparatus.
- The Golgi apparatus is also involved in the formation of lysosomes



LYSOSOMES

- Lysosomes are a kind of waste disposal system of the cell.
- Lysosomes help to keep the cell clean by digesting any foreign material as well as worn-out cell organelles



MITOCHONDRIA

- Mitochondria are known as the power houses of the cell.
- The energy required for various chemical activities needed for life is released by mitochondria in the form of ATP (Adenosine triphosphate) molecules.
- ATP is known as the energy currency of the cell. The body uses energy stored in ATP for making new chemical compounds and for mechanical work.
- Mitochondria have two membrane coverings instead of just one.
- The outer membrane is very porous while the inner membrane is deeply folded. These folds create a large surface area for ATP-generating chemical reactions.



PLASTID

- Plastids are present only in plant cells.
- There are two types of plastids – chromoplasts (coloured plastids) and leucoplasts (white or colourless plastids).
- Plastids containing the pigment chlorophyll are known as chloroplasts. Chloroplasts are important for photosynthesis in plants.



VACUOLE

- Vacuoles are storage sacs for solid or liquid contents.
- Vacuoles are small sized in animal cells while plant cells have very large vacuoles.
- The central vacuole of some plant cells may occupy 50-90% of the cell volume.



THANK YOU

