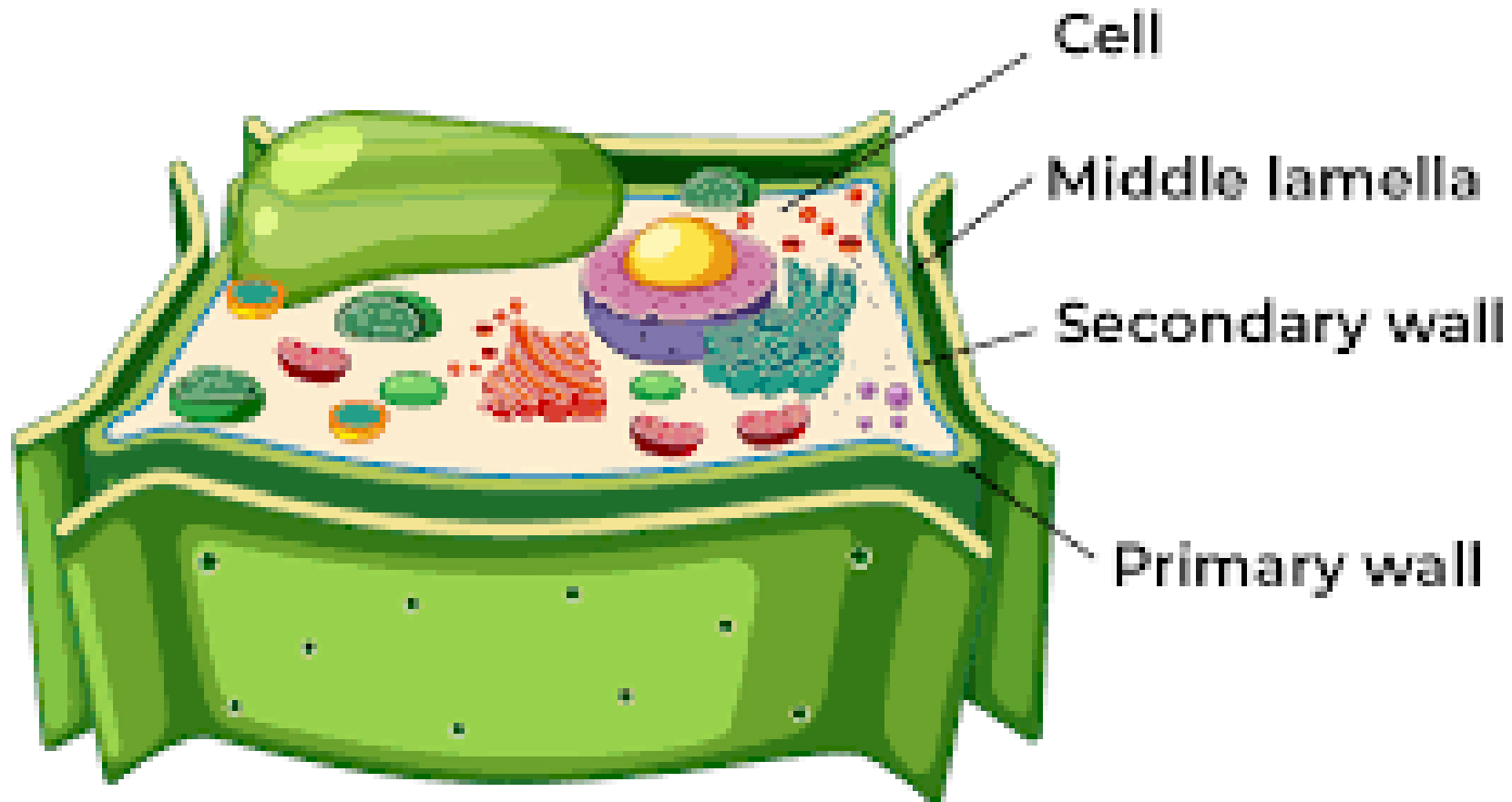


CELL WALL



What is Cell?

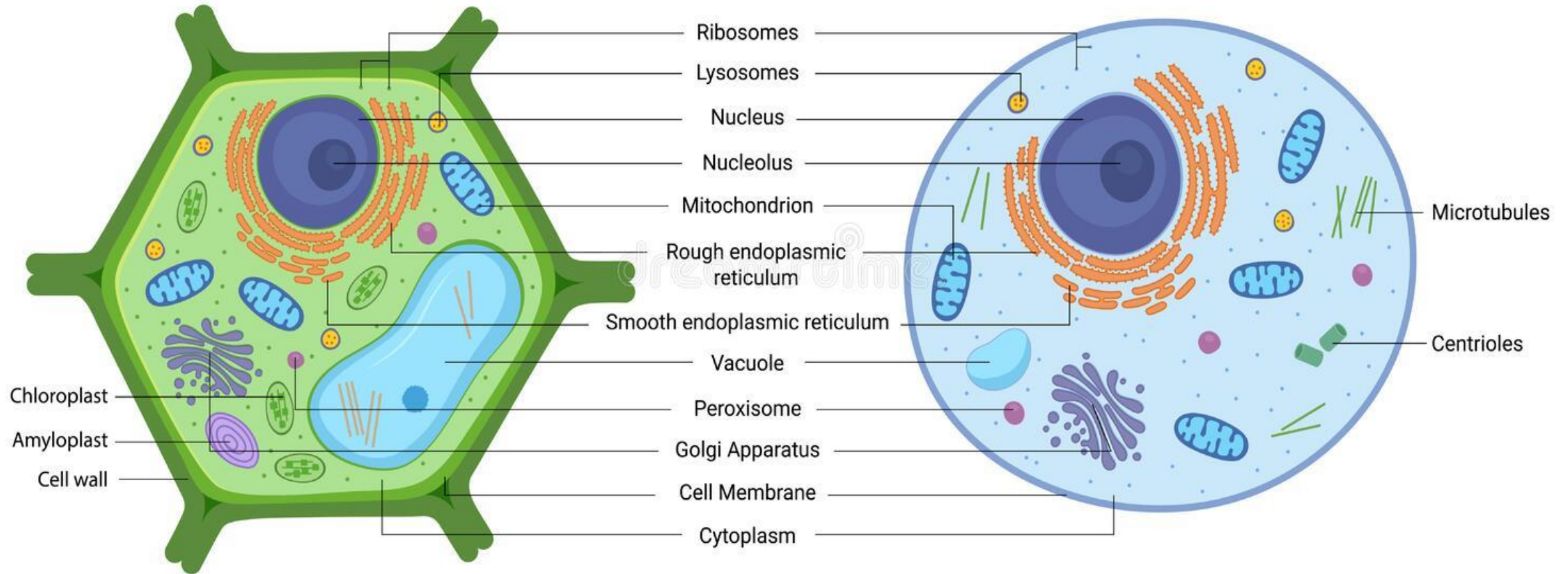
- ❖ The cell can be defined as the structural and functional unit of life.
- ❖ It is the smallest unit that can carry out all activities of life.
- ❖ Cells are building blocks of complex multicellular organisms.

STRUCTURE OF A GENERALIZED CELL

- ❖ A cell consists of the following basic components:
- ❖ 1. Plasma membrane, also a cell wall in plant cell.
- ❖ 2. Cytoplasm, containing cell organelles.
- ❖ 3. Nucleus, with nuclear or chromatin material.

PLANT CELL

ANIMAL CELL



Cell Wall of Bacteria

- ❖Composition: The cell wall is primarily made of peptidoglycan (a complex of sugars and amino acids).
- ❖Structure: The peptidoglycan forms a rigid layer that surrounds the cell membrane, providing structural support and protection.
- ❖Types: There are two main types of bacterial cell walls:
 - ❖Gram-positive: Thick peptidoglycan layer.
 - ❖Gram-negative: Thin peptidoglycan layer surrounded by an outer membrane.

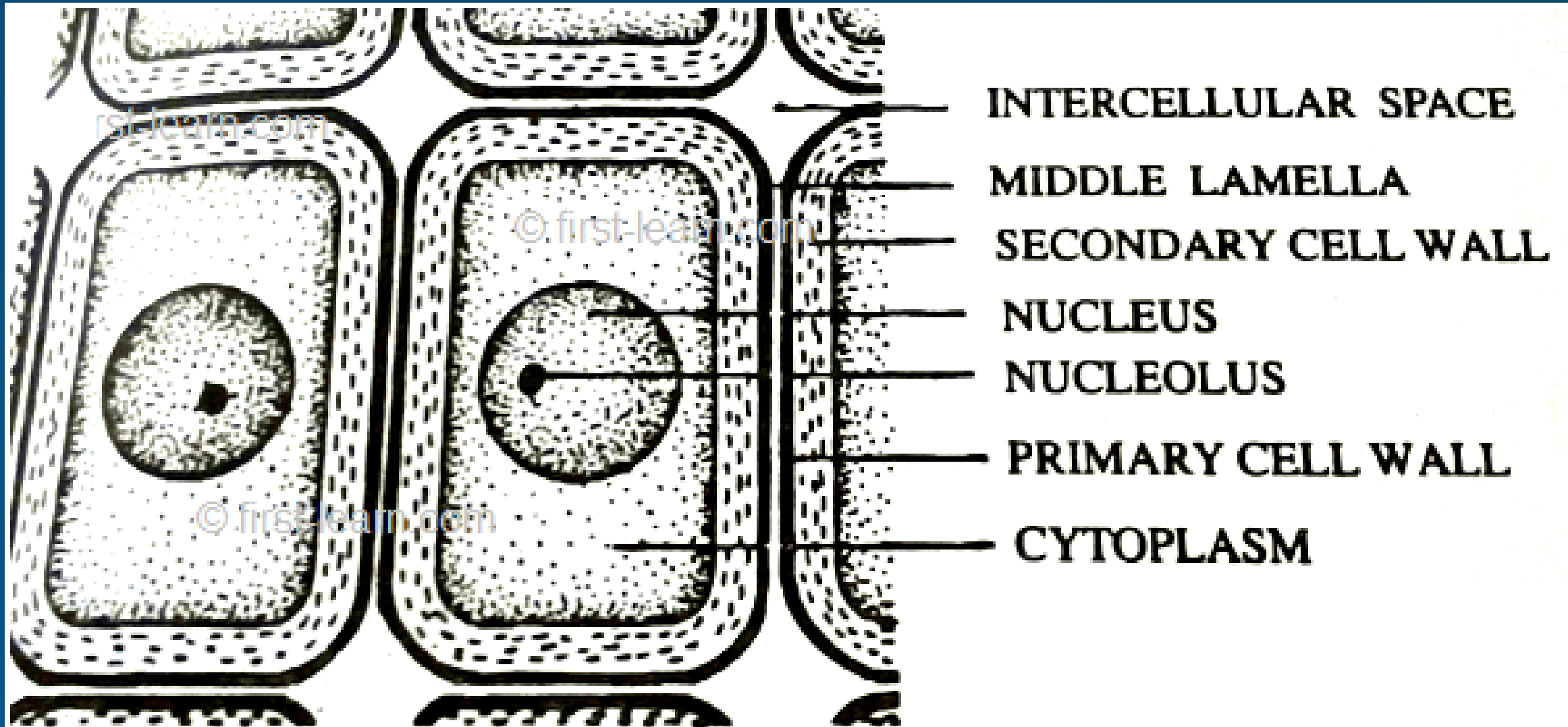
Cell Wall of Fungi

- ❖ **Composition:** The cell wall is mainly composed of chitin (a long-chain polymer of N-acetylglucosamine, a derivative of glucose).
- ❖ **Structure:** Chitin provides structural support and rigidity. The cell wall also contains other polysaccharides and proteins, which vary among different fungal species.
- ❖ **Function:** The cell wall helps protect the fungal cell and maintains its shape.

Cell Wall of Plants

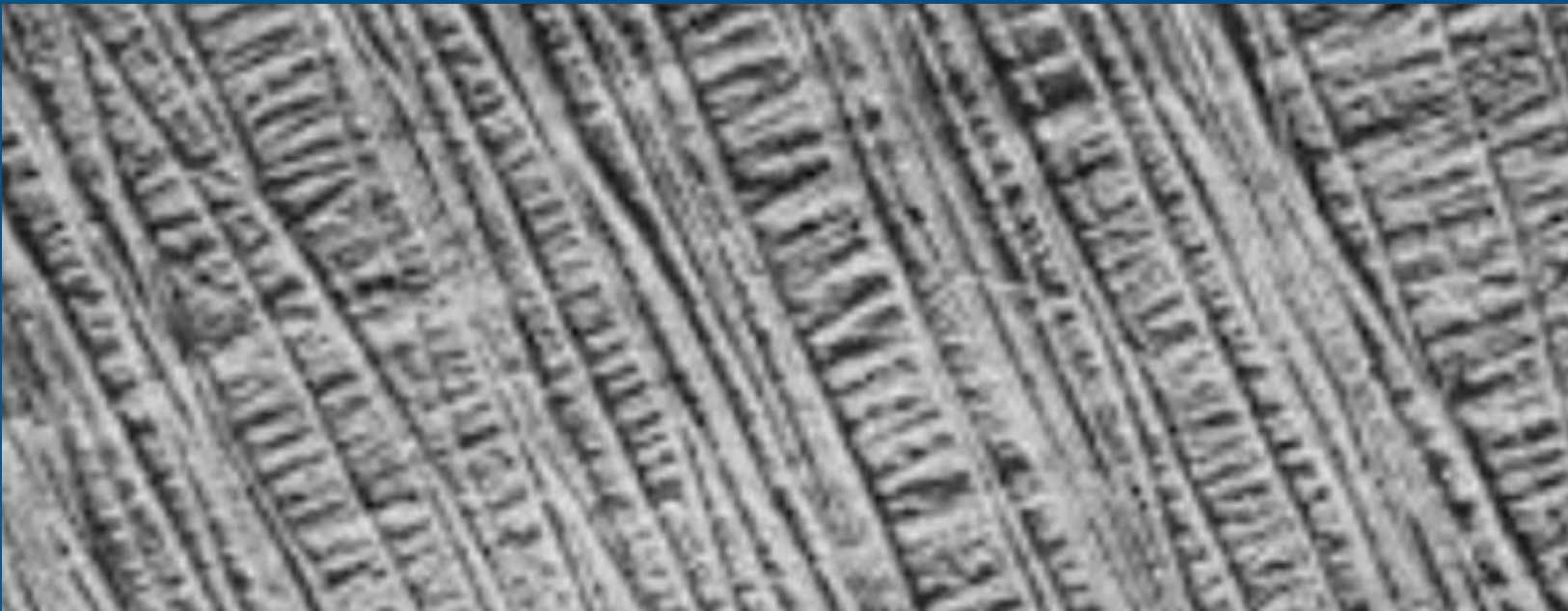
- ❖ The outer most boundary in most of the plant cells is cell wall. The cell wall of plant cell is different from that of prokaryotes, both in structure and chemical composition. It is secreted by the protoplasm of the cell. Its thickness varies in different cells of the plant.
- ❖ It is composed of three main layers: primary wall, secondary wall and the middle lamella.
- ❖ The **middle lamella** is first to be formed in between the primary walls of the neighbouring cells.
- ❖ The **primary wall** is composed of cellulose and some deposition of pectin and hemicelluloses. Cellulose molecules are arranged in a criss cross arrangement. The primary wall is a true wall and develops in newly growing cells.

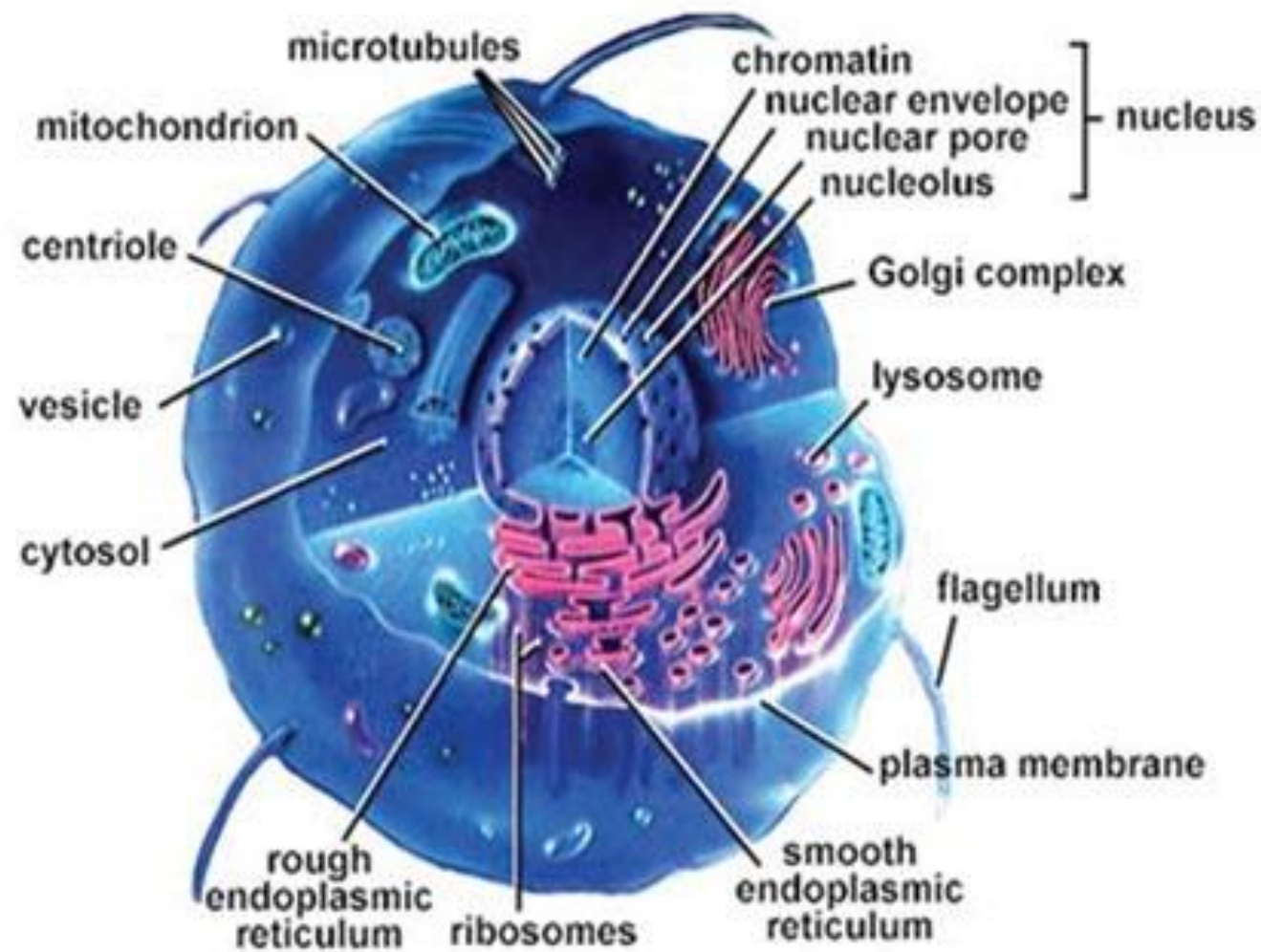
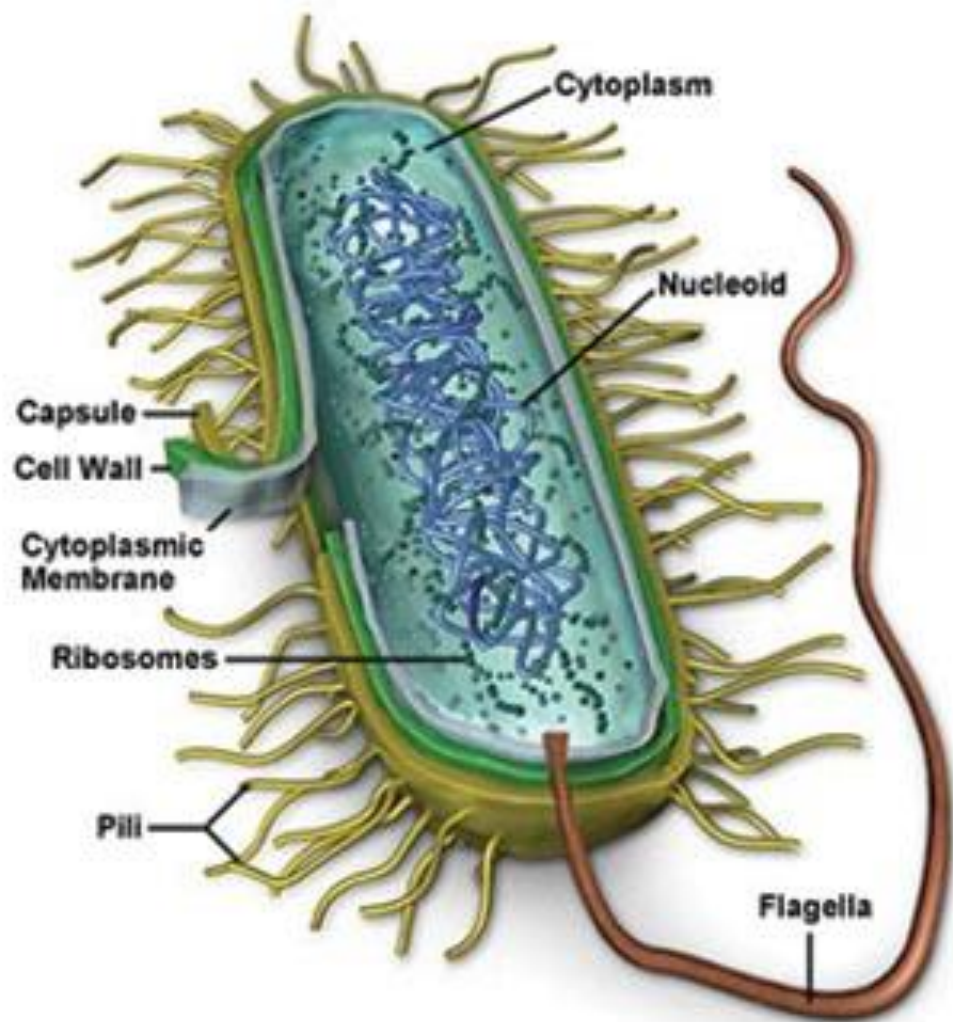
Cell Wall of Plants



Cell Wall of Plants

- ❖ The **secondary wall** is formed on its inner surface and is comparatively thick and rigid. Chemically it is composed of inorganic salts, silica, waxes, cutin, lignin etc. Prokaryotic cell wall lacks cellulose; its strengthening material is peptidoglycan or murein. Fungal cell wall contains chitin.
- ❖ **Functions of Cell Wall:**
- ❖ Cell wall is very important. It provides a definite shape to the cell and keeps it rigid. It does not act as a barrier to the materials passing through it.





Prokaryotes

VS

Eukaryotes

THE END