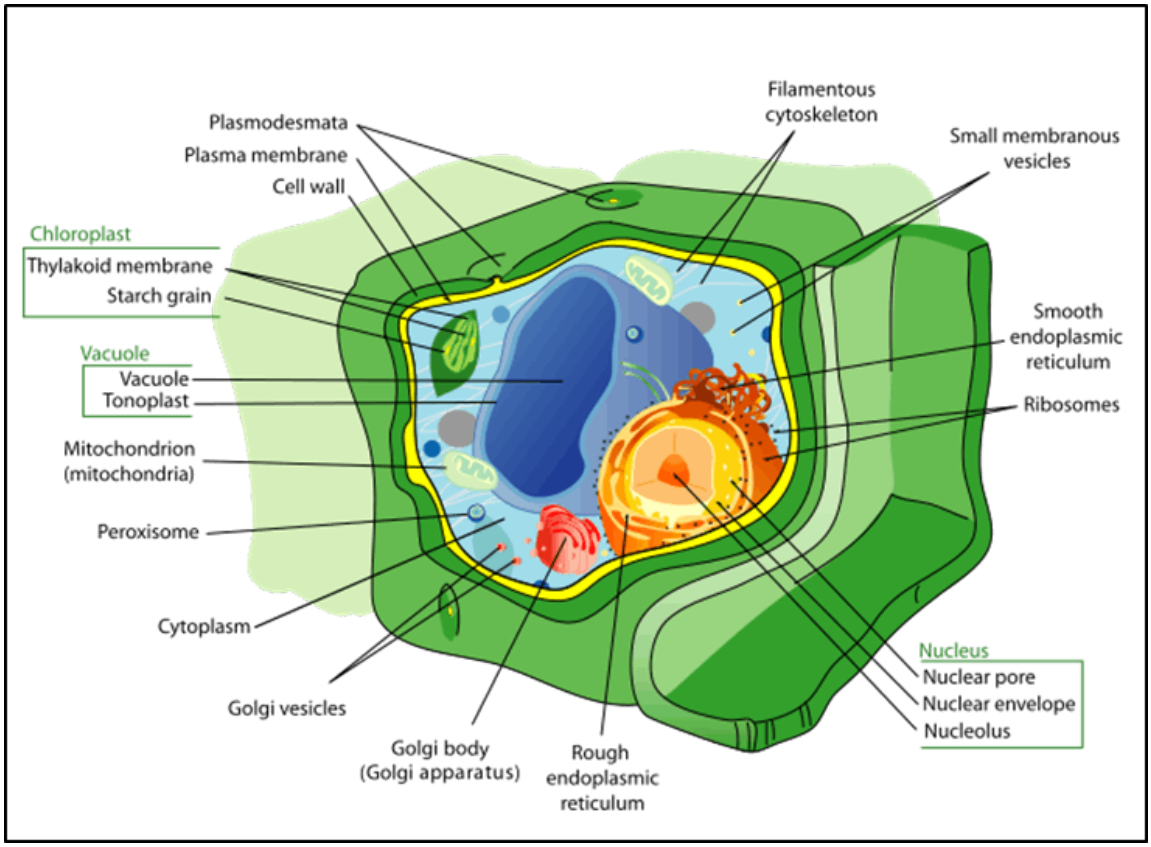
Plant Cell and Animal Cell: Introduction to Plant Cells, Characteristics of Plant Cells

Introduction to Plant Cells

- Plant cells are made up of millions of cells.
- These are eukaryotic cells present in green plants.
- A plant cell has a square or rectangular shape.
- Plants have the role of producers in an ecosystem.
- There is a large central vacuole occupying much of the volume making the cell larger.
- The vacuole stores waste material in a plant cell.
- Distinctive features include:
  - Primary cell walls containing cellulose
  - Hemicelluloses and pectin
  - The presence of plastids

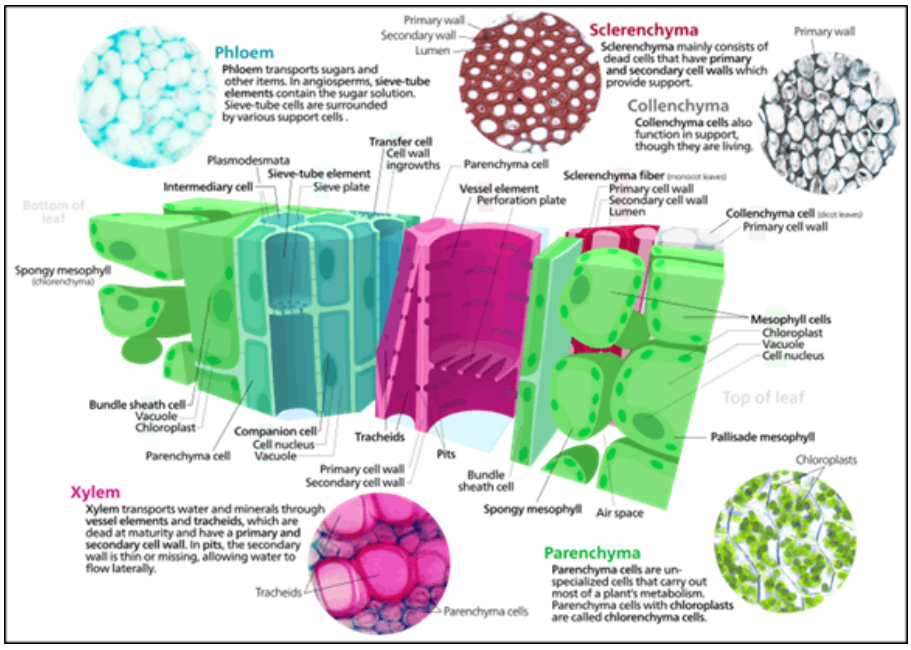


Characteristics of Plant Cells

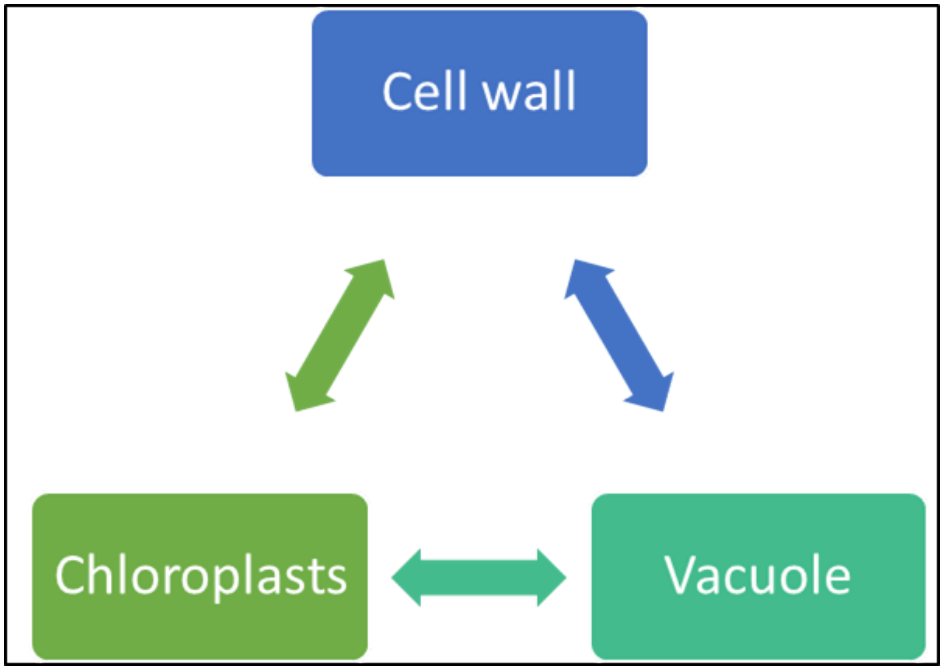
- These cells are constructed outside the cell membrane and composed of cellulose, hemicelluloses, and pectin.
- They contain plastids. Chloroplasts contain the green colored pigment called the chlorophyll.
- There is a large central vacuole present in many types of plants cells.
- Plasmodesmata, which are a specialized cell-to-cell communication pathway, occur in the form of pores in the primary cell wall.
- Cell division in land plants and a few groups of algae takes place by construction of a phragmoplast.

Types of Plant Cells and Tissues

- Parenchyma
- Collenchyma
- Sclerenchyma
- Xylem
- Phloem
- Epidermis



Other Important Structures in Plant Cells



Cell Wall

- It is a hard layer present outside the cell membrane.
- It also contains cellulose to provide strength to the plant.

Vacuole

- This space inside the cell is used for storing substances.
- The cell can keep its shape.

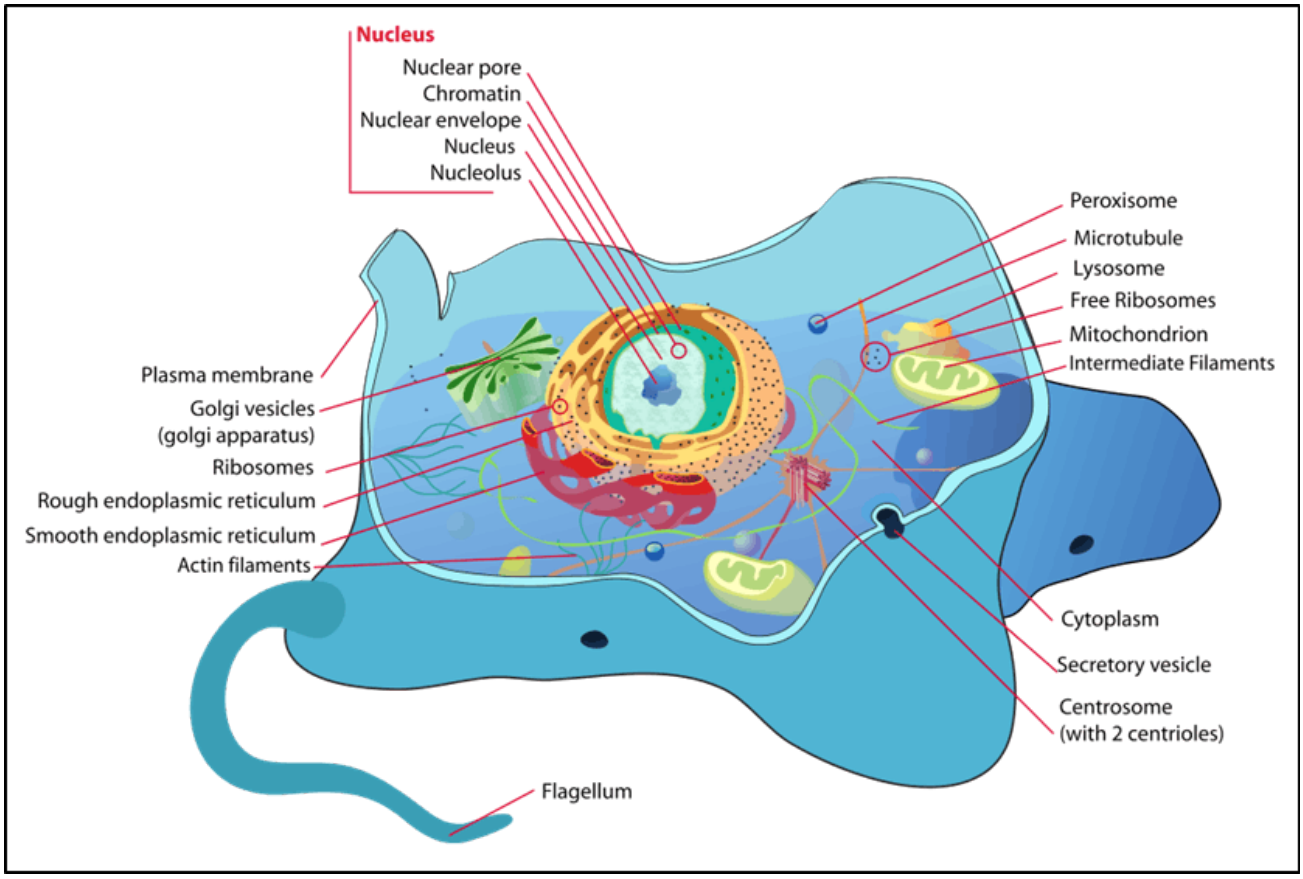
Chloroplasts

- These contain green pigment called chlorophyll.
- Chlorophyll's job in a plant is to absorb light usually sunlight.

Animal Cells

- In Animal cell, the shape of the cell is irregular or round.
- The cell wall is absent.
- The shape is irregular or round.

- The plasma or the Cell membrane is absent.
- Endoplasmic Reticulum is present.
- The nucleus lies in the center of the cell.
- Lysosomes and Chromosomes are present.
- Golgi apparatus and Cytoplasm are also present.
- It involves heterotrophic mode of nutrition.
- In most of the animal cells, cilia are present.



Four Key Parts of an Animal Cell

Nucleus

It contains genetic material (DNA) and controls the cell's activity.

Cytoplasm

It is a jelly like substance where the chemical reaction takes place.

Cell membrane

It is a flexible layer surrounding the cell and controls the substances that enter and exit.

Mitochondria

Energy is released from the food molecules.

FAQs

Q 1. What is the function of vacuoles in a plant cell?

Answer: The vacuole performs an important function of storing waste materials in the plant cell.

Q 2. What is the name of the cell organelle responsible for carrying out photosynthesis in plant cells?

Answer: Chloroplast carries out photosynthesis in a plant cell.

Q 3. How does plant and animal cell differ in their shape with one another?

Answer: A plant cell has a square or rectangular shape where animal cells have an irregular or round shape.

Q 4. List the names of two cell that are present in animal cells but absent in plant cells?

Answer:

The two cell organelles present in animal cells but absent in plant cells are:

i) Lysosomes

ii) Chromosomes