Department of biology

GENERAL BOTANY

Lab1

Stage -1-

The Plant Cell Part 2

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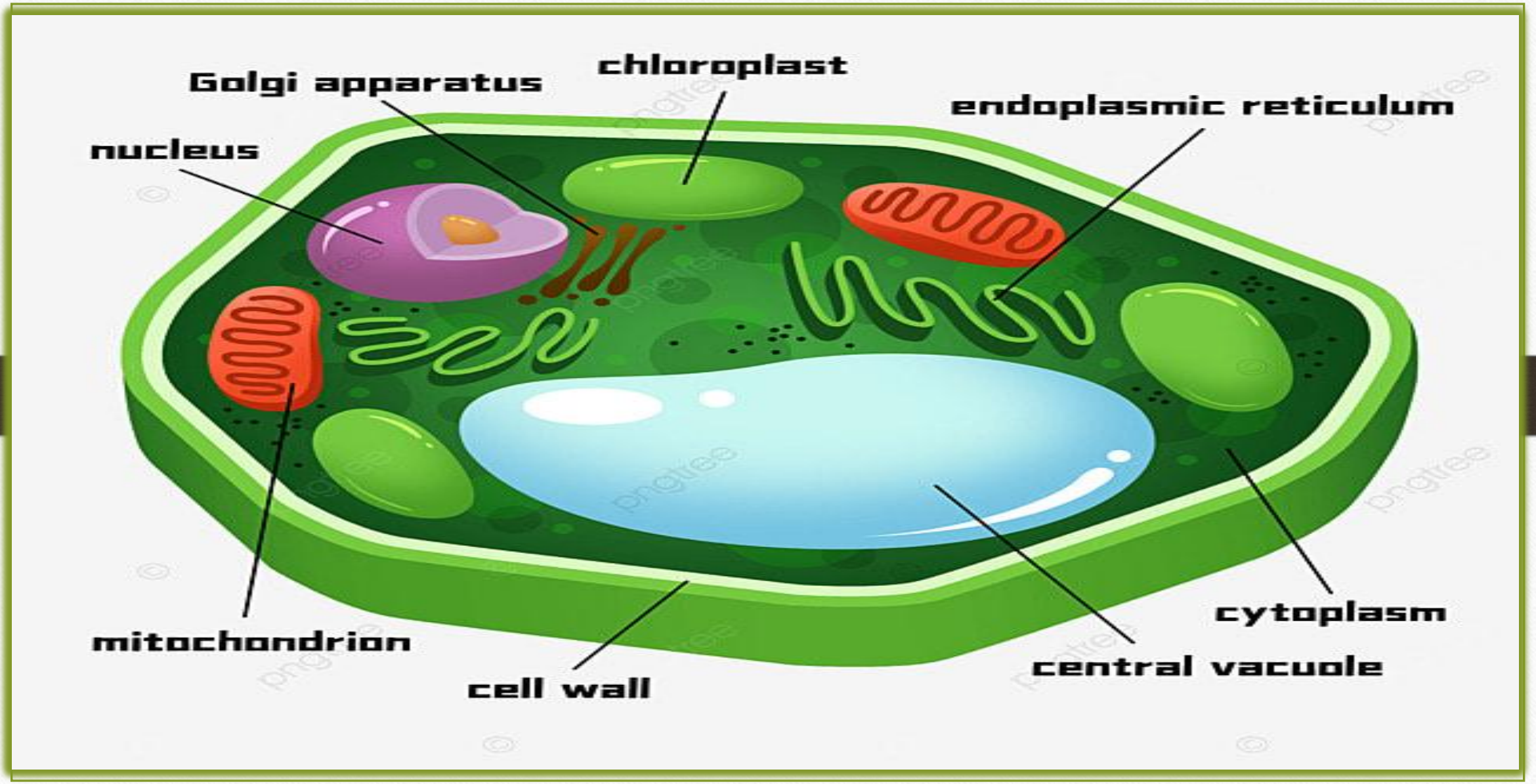
Plastids

They are membrane-bound organelles that have their own DNA. They are necessary to store starch, to carry out the process of photosynthesis. It is also used in the synthesis of many molecules which form the building blocks of the cell .


Golgi apparatus
chloroplast
endoplasmic reticulum
nucleus
mitochondrion
cell wall
central vacuole
cytoplasm

Type of Plastids

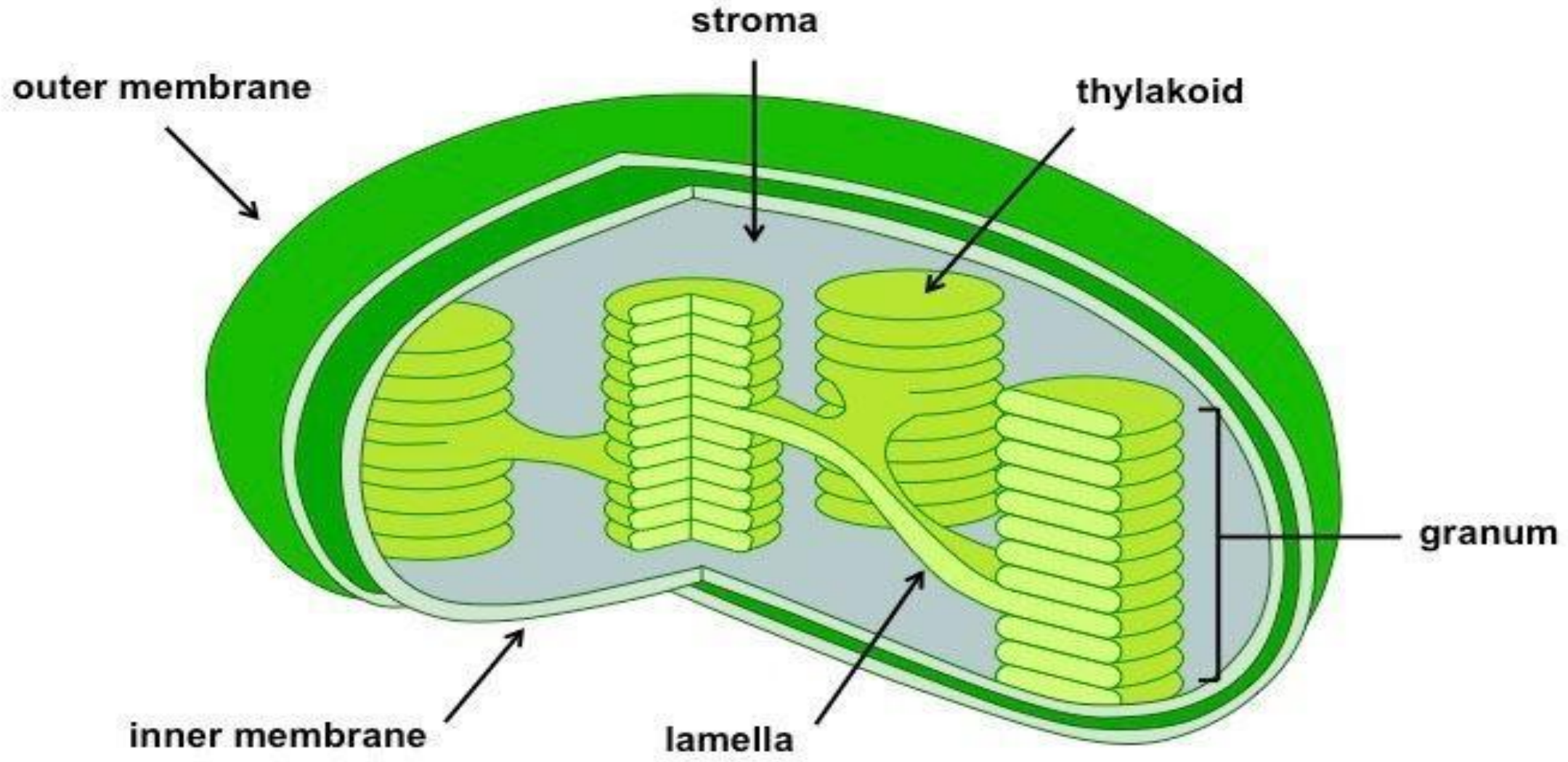
1- Leucoplasts

They are found in non-photosynthetic tissues of plants. They are used for the storage of protein, lipid, and starch.

Type of Plastids

2- Chloroplasts

It is an elongated organelle enclosed by phospholipid membrane. The chloroplast is shaped like a disc and the stroma is the fluid within the chloroplast that comprises a circular DNA. Each chloroplast contains a green coloured pigment called chlorophyll required for the process of photosynthesis. The chlorophyll absorbs light energy from the sun and uses it to transform carbon dioxide and water into glucose.


stroma
outer membrane
thylakoid
granum
inner membrane
lamella

Type of Plastids

3- Chromoplasts

They are heterogeneous, coloured plastid which is responsible for pigment synthesis and for storage in photosynthetic eukaryotic organisms. Chromoplasts have red, orange and yellow coloured pigments which provide colour to all ripe fruits and flowers.

Central Vacuole

It occupies around 30% of the cell's volume in a mature plant cell. Tonoplast is a membrane that surrounds central vacuole. The vital function of central vacuole apart from storage is to sustain turgid pressure against the cell wall. The central vacuole consists of cell sap. It is a mixture of salts, enzymes, and other substances.

Golgi Apparatus

They are found in all eukaryotic cells which are involved in distributing synthesized macromolecules to various parts of the cell.

Ribosomes

They are the smallest membrane-bound organelles which comprise RNA and protein. They are the sites for protein synthesis, hence, also referred to as the protein factories of the cell.

Mitochondria

They are the double-membraned organelles found in the cytoplasm of all eukaryotic cells. They provide energy by breaking down carbohydrate and sugar molecules, hence they are also referred to as the "Powerhouse of the cell."

Lysosome

Lysosomes are called as suicidal bags as they hold digestive enzymes in an enclosed membrane. They perform the function of cellular waste disposal by digesting worn-out organelles, food particles and foreign bodies in the cell .

What is plant tissue?

They are thin-walled cells found in abundance in plants and are characterized by their flexibility. They form the basis of most plant structures and are capable of performing a large number of functions, including storage, photosynthesis, gas exchange, and protection.

Plant Cell Types

- Cells of a matured and higher plant become specialized to perform certain vital functions that are essential for their survival. Few plant cells are involved in the transportation of nutrients and water, while others for storing food. The specialized plant cells include parenchyma cells, sclerenchyma cells, collenchyma cells, xylem cells, and phloem cells.

Collenchyma Cells

They are hard or rigid cells, which play a primary role in providing support to the plants when there is restraining growth in a plant due to lack of hardening agent in primary walls.

Sclerenchyma Cells

These cells are more rigid compared to collenchyma cells and this is because of the presence of a hardening agent. These cells are usually found in all plant roots and mainly involved in providing support to the plants.

Parenchyma Cells

Parenchyma cells play a significant role in all plants. They are the living cells of plants, which are involved in the production of leaves. They are also involved in the exchange of gases, production of food, storage of organic products and cell metabolism. These cells are typically more flexible than others because they are thinner.

Xylem Cells

Xylem cells are the transport cells in vascular plants. They help in the transport of water and minerals from the roots to the leaves and other parts of the plants.

Phloem Cells

Phloem cells are other transport cells in vascular plants. They transport food prepared by the leaves to different parts of the plants.


THANK
YOU