Pakistan School
Kingdom of Bahrain

Ch.4. CELLS & TISSUES

- TOPIC. **CELL ORGANELLES**

Pages. (62,63,63,65,66)

Recollect the definition of

- **CELL ORGANELLES**.

- Organelles are membrane bounded small structures within cells that perform specific functions. There are about a dozen organelles commonly found in eukaryotic cells.
- **Examples**, Nucleus,Ribosomes,Mitochondria,**Plastids,ER, GolgiApparatus,Lysosomes,Centrioles,Vacuo**les.

OBJECTIVES OF THE LESSON

At the end of this students will be able to

- Describe structure and functions of some cell organelles.

&

- Differentiate between prokaryotic and eukaryotic cells.

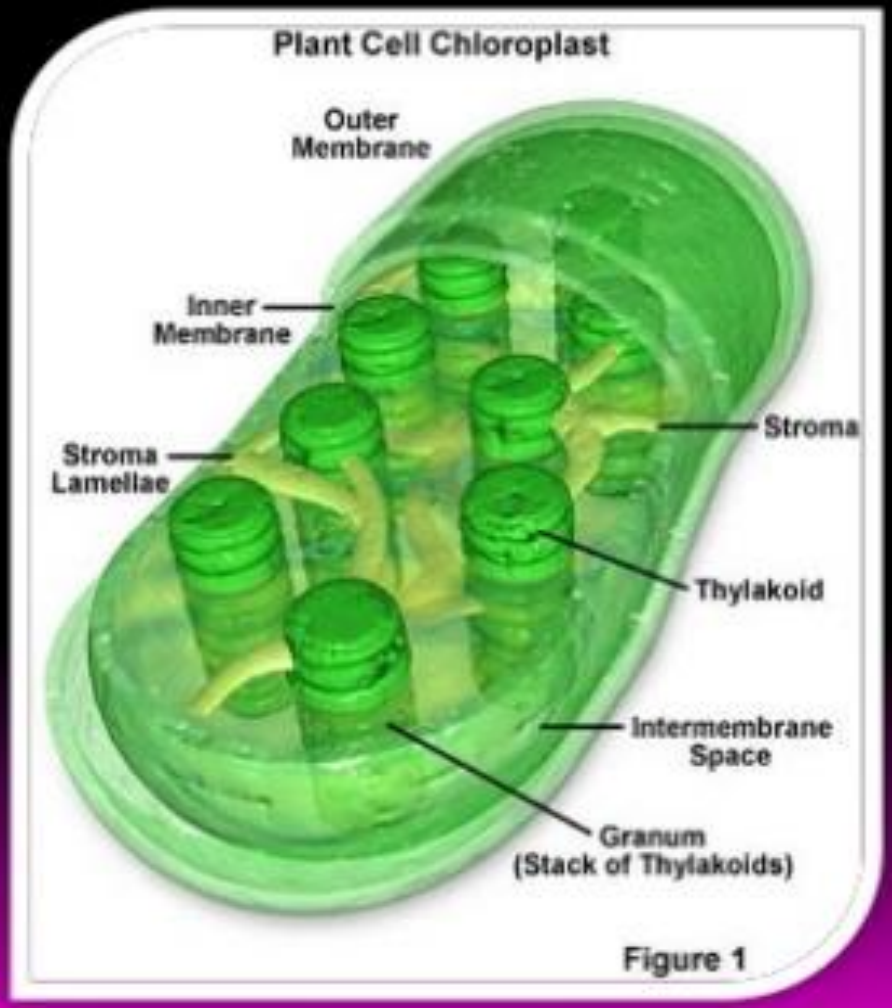
PLASTIDS

- Plastids are membrane bound organelles that only occur in the cells of plants. They are of three types.
- **Types** of Plastids.

1. **Chloroplast**
2. **Chromoplasts**
3. **Leucoplasts**

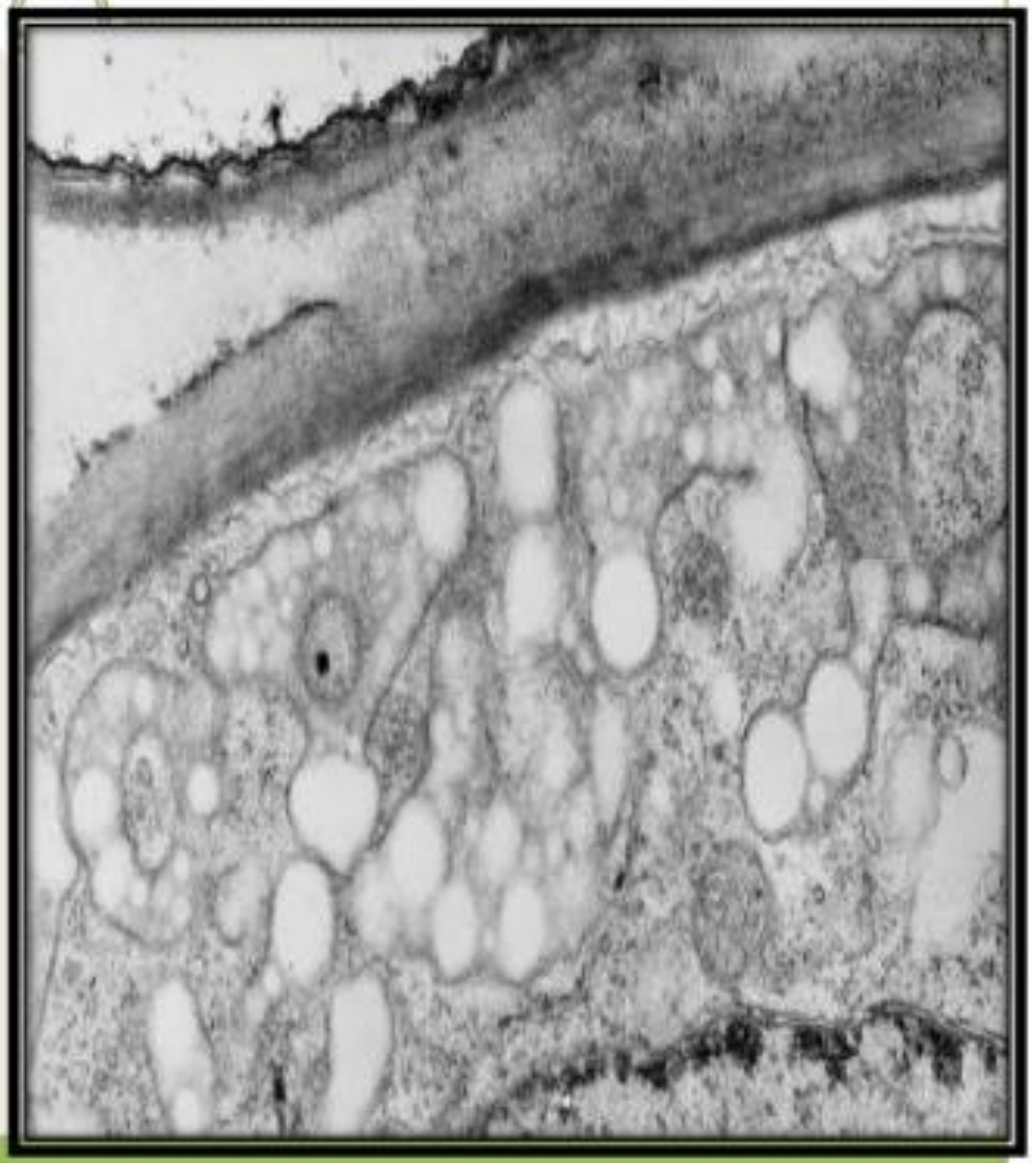
Chloroplast

- Usually found in plant cells
- Contains green chlorophyll
- Where photosynthesis takes place

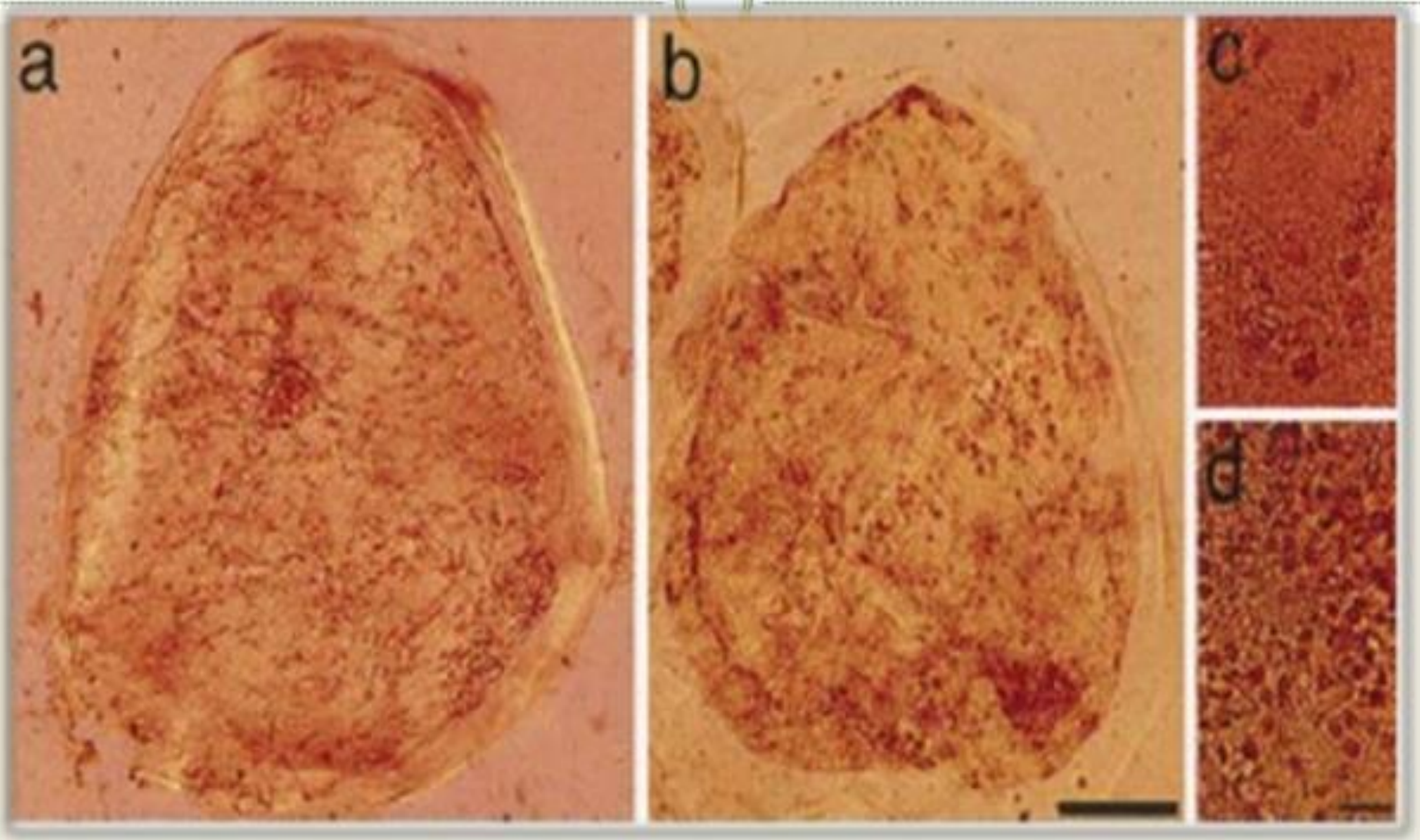


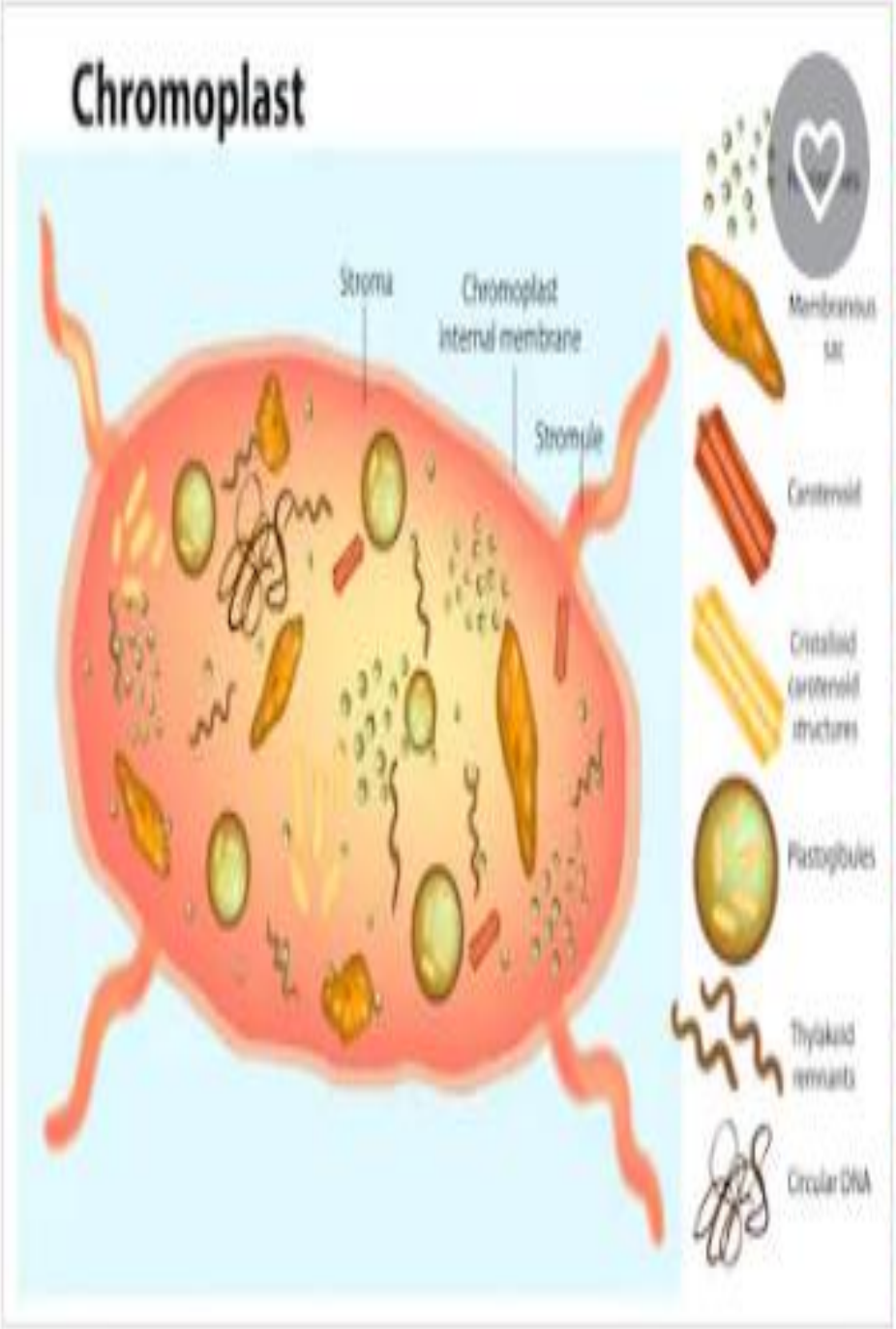
Chromoplast

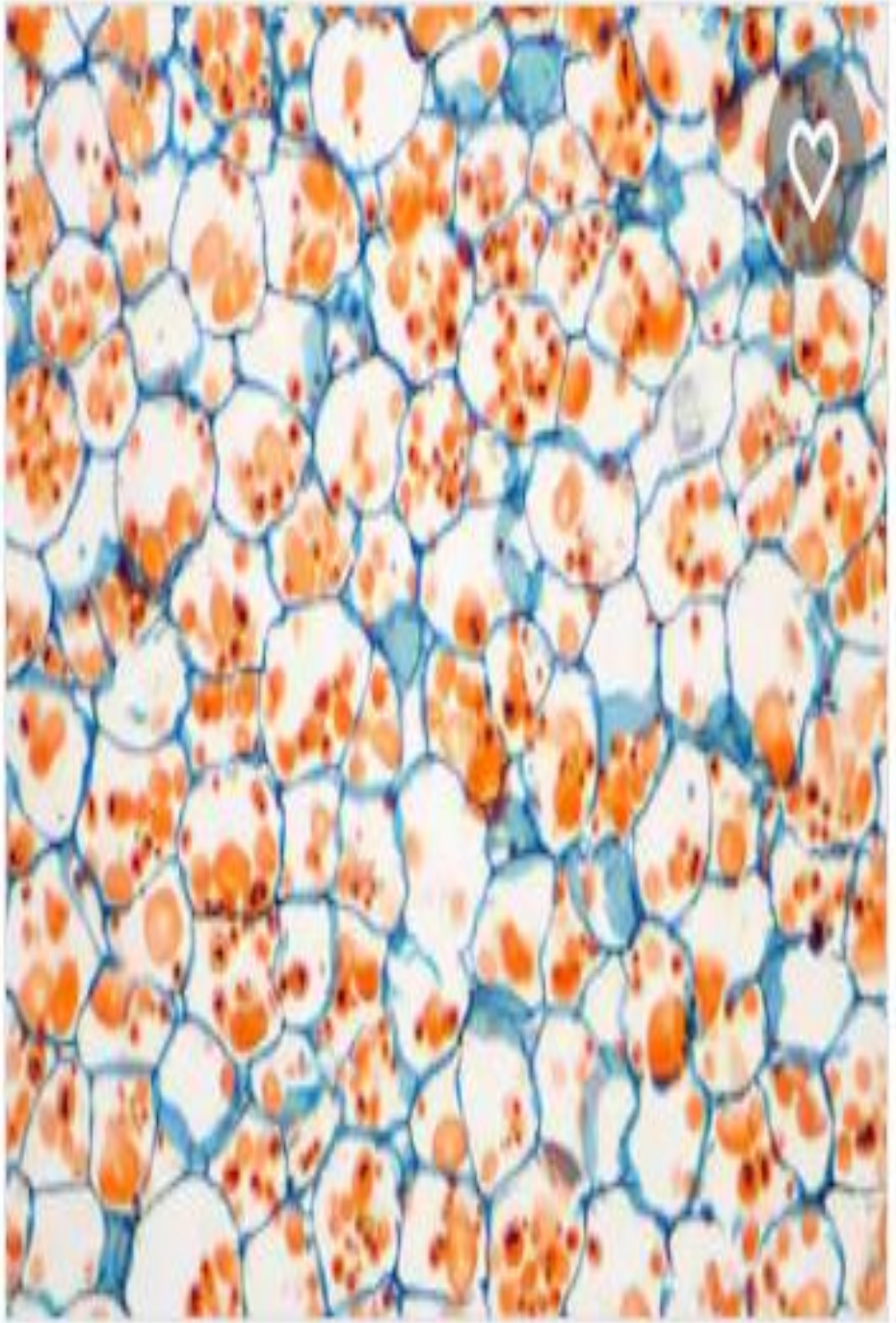
- Colored pigments are found like:
  - Anthocyanins
  - Carotenoids



Chromoplast

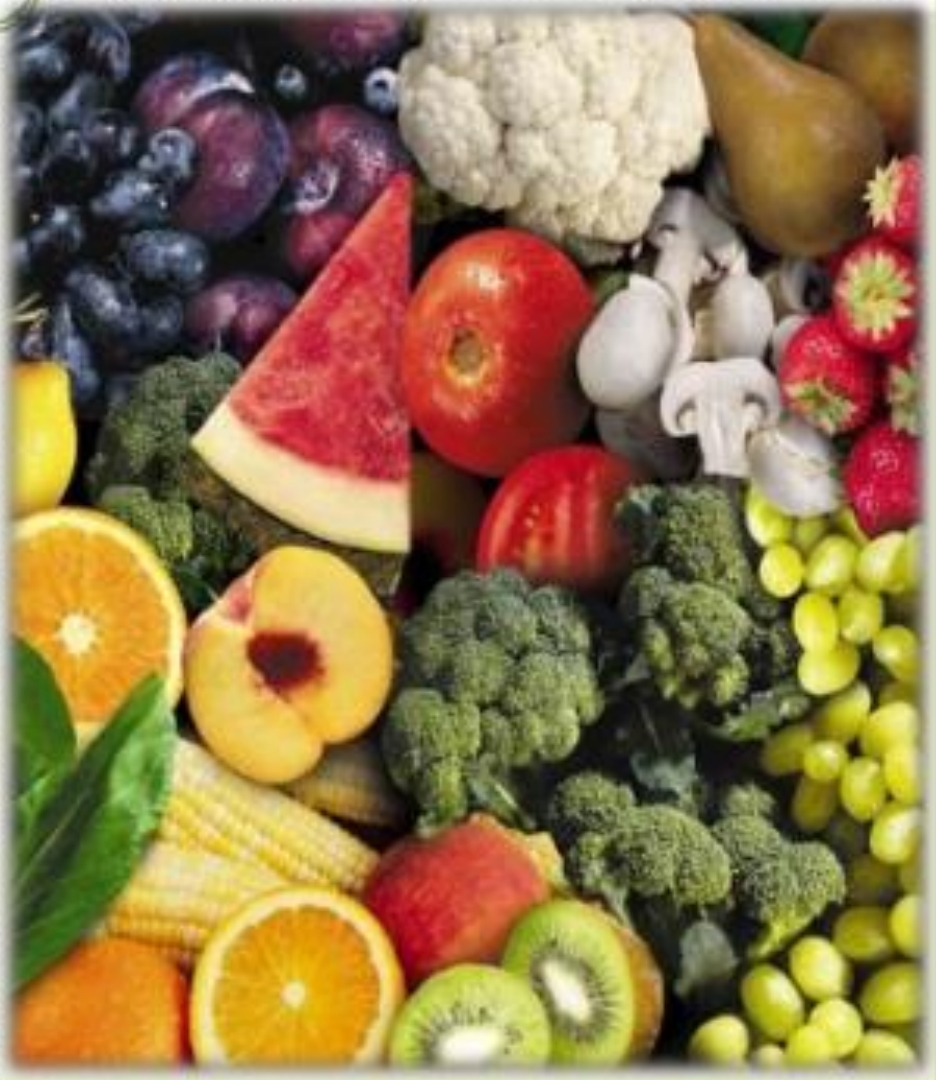



Chromoplast
Stroma
Chromoplast internal membrane
Stromule
Membranous fat
Carotenoid
Crystalloid carotenoid structures
Plastoglobules
Thylakoid remnants
Circular DNA



Carotenoids

- Yellow and Orange pigments.



Anthocyanins

- The pigments may have potential as food colorants.

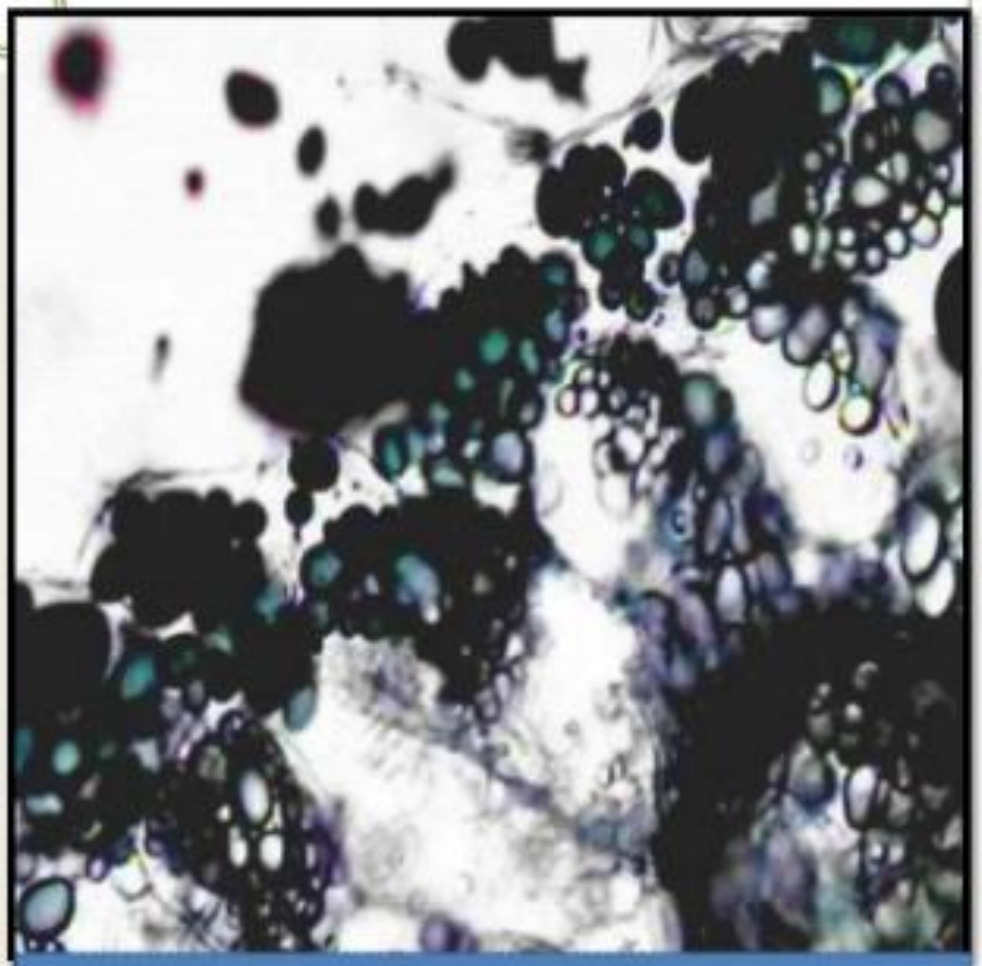
Leucoplasts

- Leuko means white.
- Where starch, oils, proteins and lipids are stored.

Leucoplast
[EM = Electron Micrograph]

Leucoplasts

- Colorless plastids present in non-photosynthesizing plant tissue.



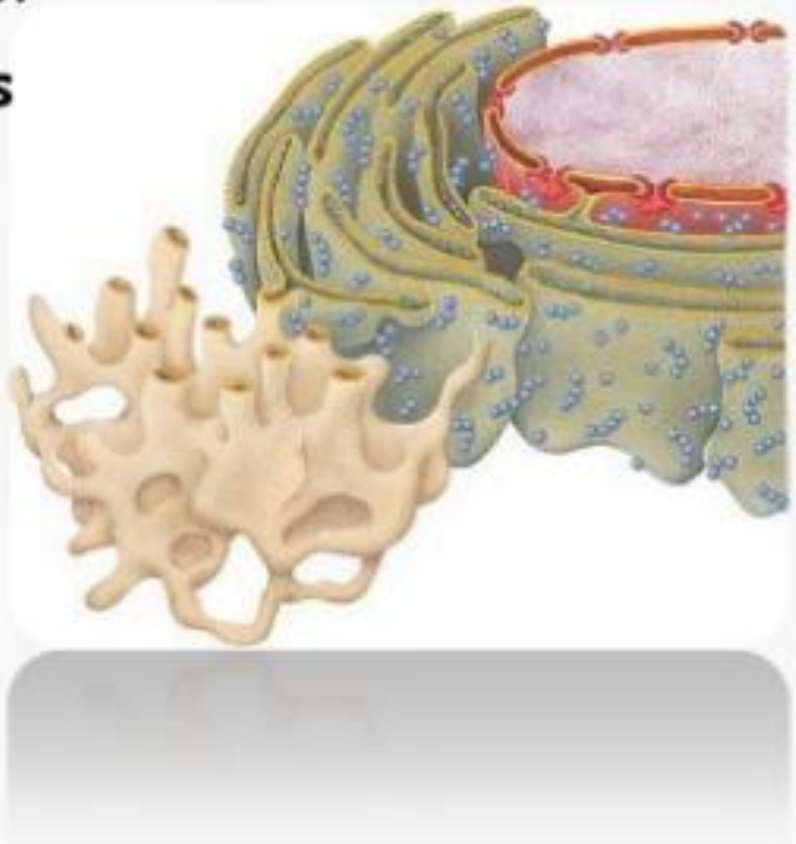
Potato cells with stained starch grains in leucoplasts.

Leucoplasts

- Serves as storage depots for energy rich starch as in potato tubes.

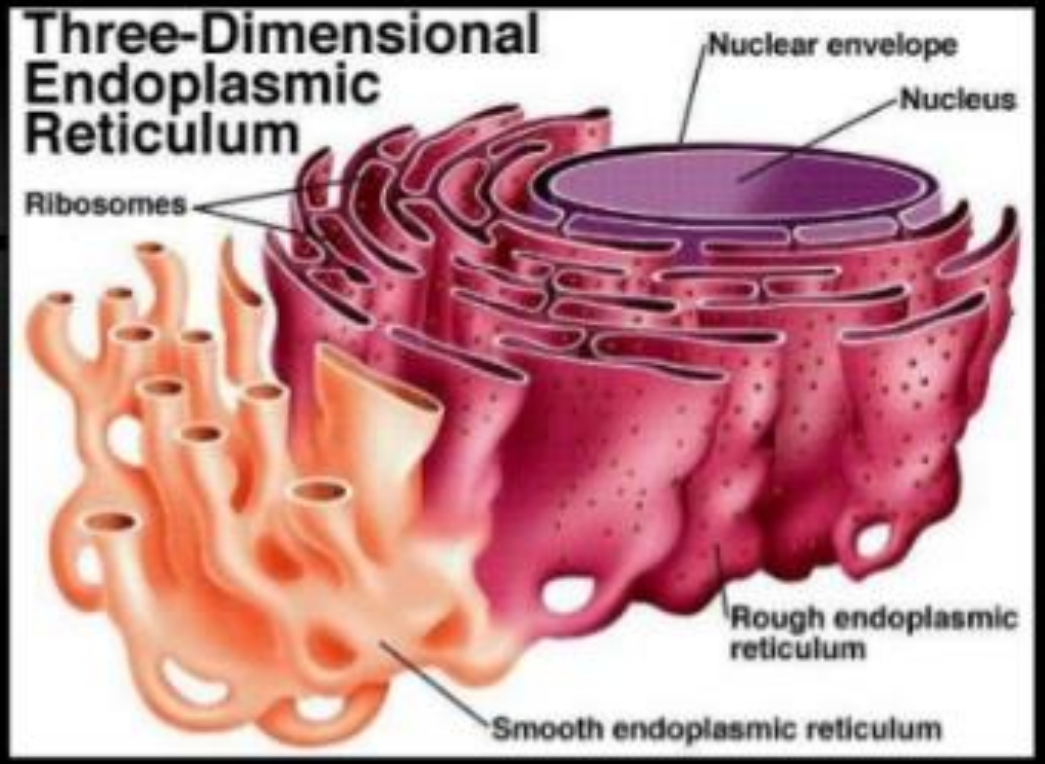
Endoplasmic Reticulum

- A network of membranes in the form of flattened sacs or tubules
- Two types
  - -Rough ER
  - -Smooth ER



Smooth Endoplasmic Reticulum

- Transports materials throughout the cell.
- Produces lipids and hormones



Rough Endoplasmic Reticulum

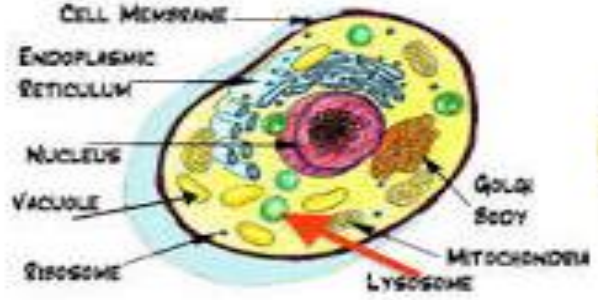
- Covered with ribosomes.
- Produces proteins.
- Transports materials throughout the cell.

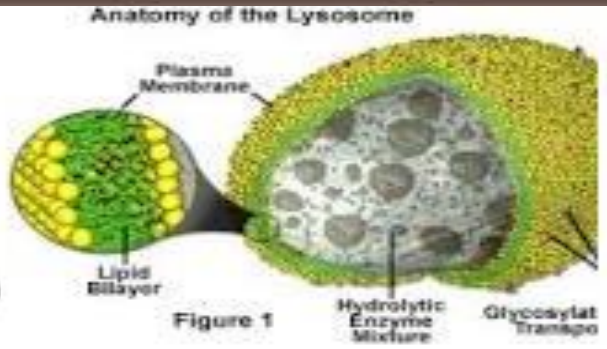
Golgi Complex

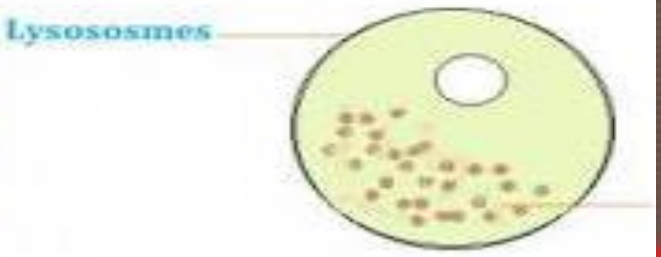
- ✓ It consists of 3 to 20 cisternae, *small*, flattened membranous sacs.
- ✓ Most cells have several Golgi complexes
- ✓ Golgi complexes are more extensive in cells that secrete proteins
- ✓ Modifies, sorts, packages, & transports proteins received from the rough ER

Lysosomes

- **Lysosomes** – special vesicles that store and transport powerful digestive enzymes and other reactive substances within a cell
  - Double membrane protects cell from being digested
  - Break down
    - Food particles
    - Unneeded proteins, carbohydrates, etc..
    - Disease-causing microorganisms

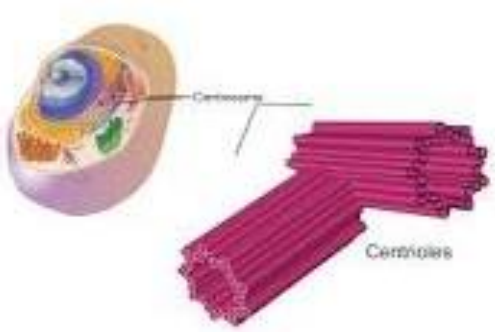


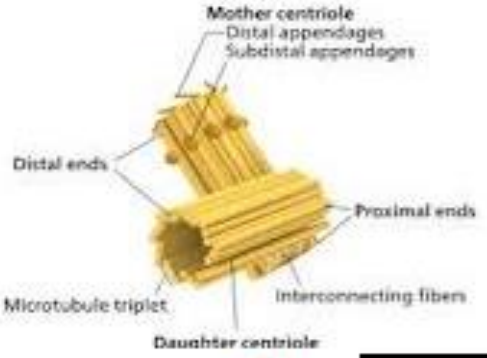


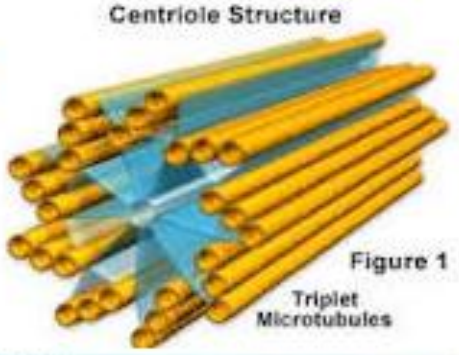


Centrioles

- Found in eukaryotic cells
- Come in pairs
- Made from short microtubules
- Assist the cell with cell division

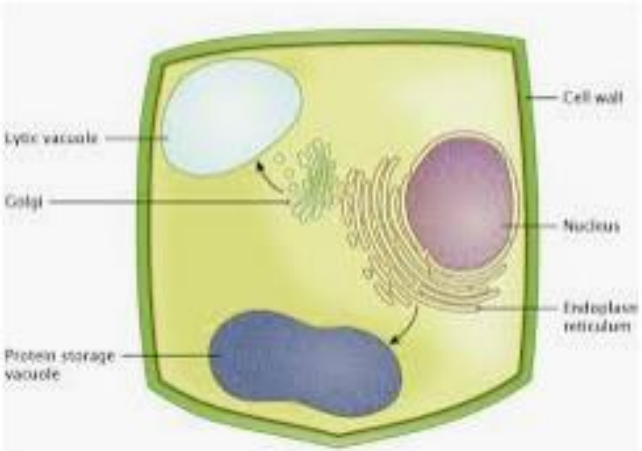


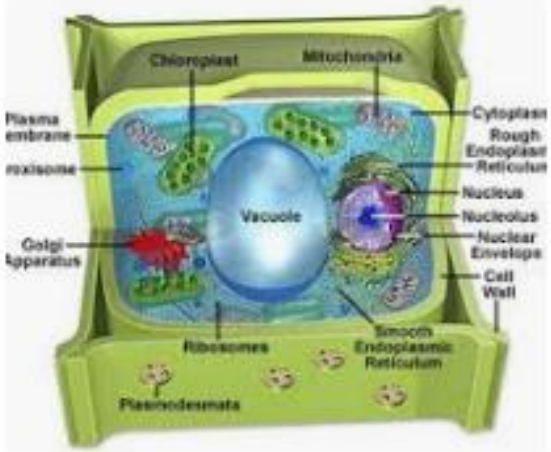


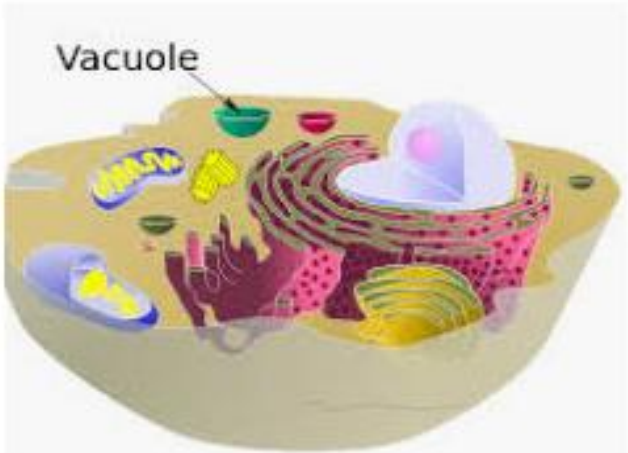


Vacuoles

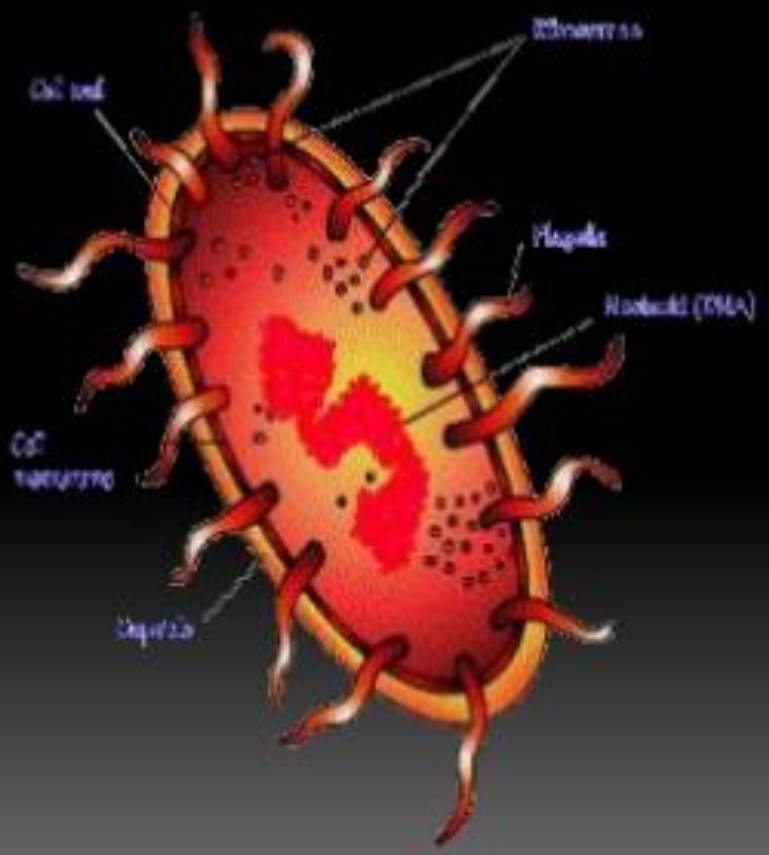
- Large membranous storage sacs found mainly in plants.
  - Stores water, nutrients, waste products and pigments
    - Give certain plants bright colors (beets, carrots, flowers)

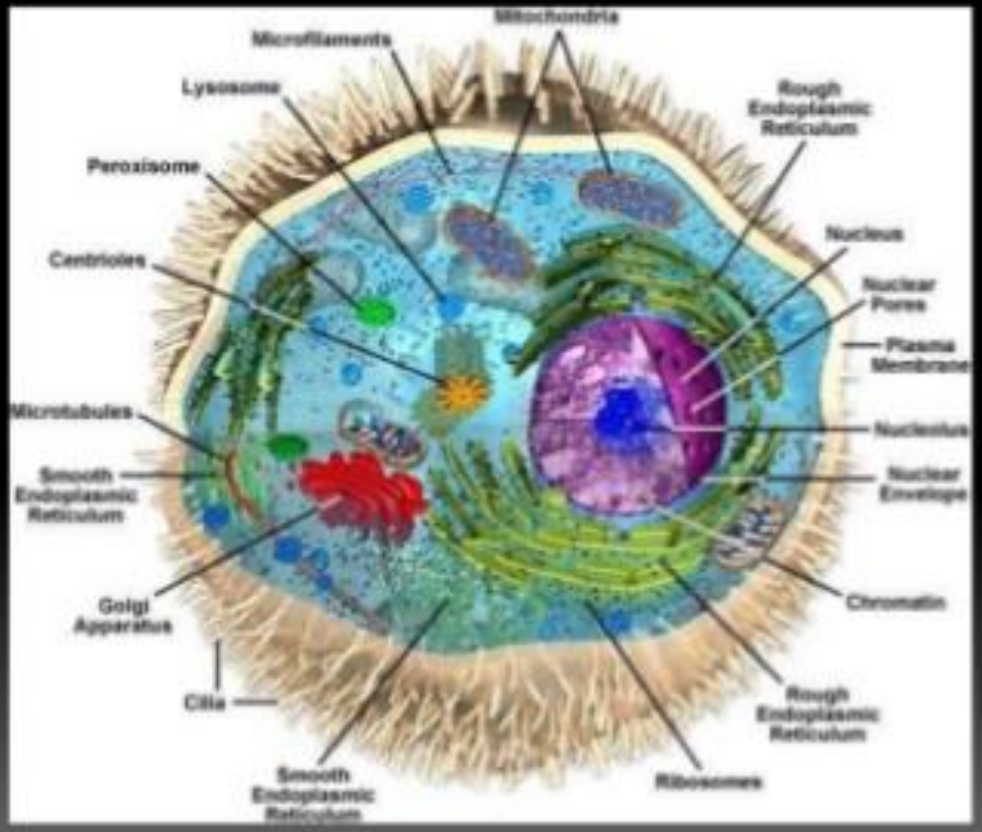






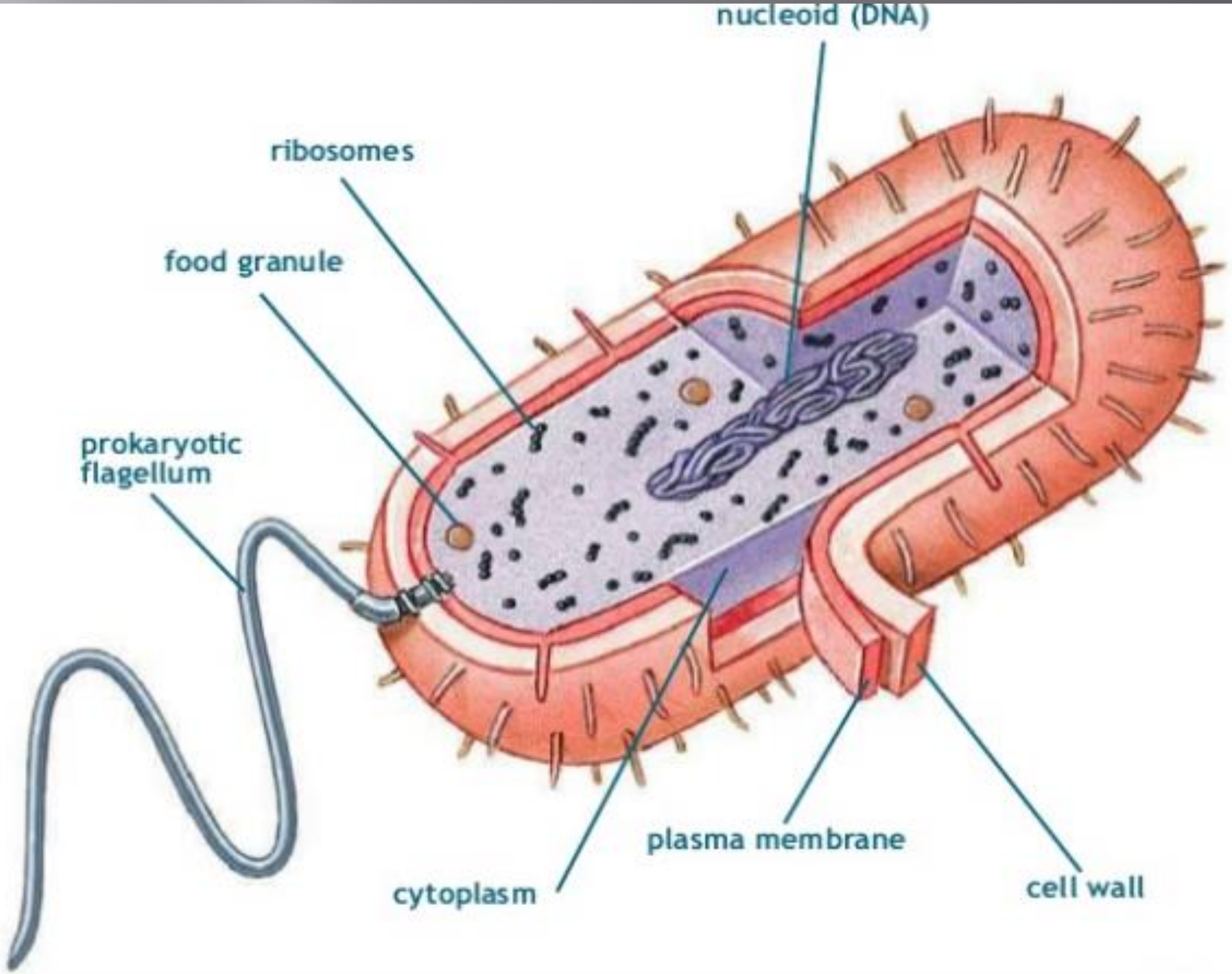
Prokaryotes and Eukaryotes





PROKARYOTIC

- They are the simplest form of life.
- No nucleus.
- Do not have structures surrounded by membranes (organelles)
- Few internal structures
- They are **unicellular**_(One-celled organisms).
- Example: Bacteria

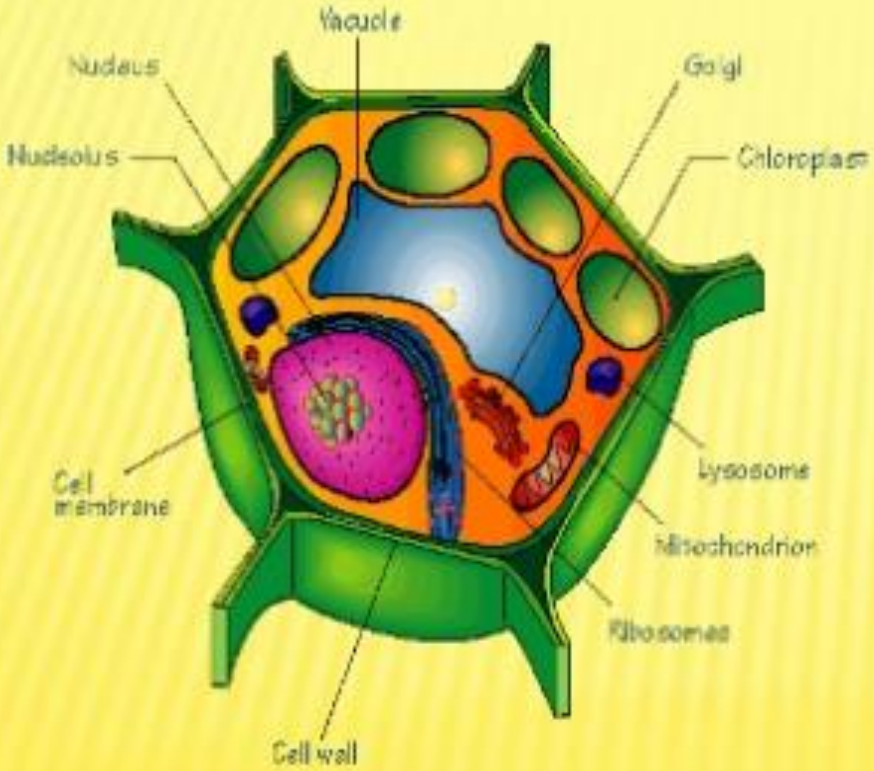

nucleoid (DNA)
ribosomes
food granule
prokaryotic flagellum
cytoplasm
plasma membrane
cell wall

Eukaryotic

- are the most complex form of life.
- They have nucleus
- Contain *organelles* surrounded by membranes
- **They are multicellular** organisms (composed of many cells).
- Most living organisms
- Examples: animals and plants.

EUKARYOTIC

Plant



Animal

Activity. 1.

- Give short answers of the following.

i. Differentiate between prokaryotes and eukaryotes.

ii. How many types of endoplasmic reticulum are there?

iii. What are plastids?

Activity.2.

- Fill in the blanks.
- Golgi apparatus was discovered by ----------
- The main function of RER is to prepare----------

- There is only ----------vacuole in plant cell.
- Two centrioles are collectively called----------

CLOSURE

- Today we have done the topic----------
- Bacteria is an example of----------
- There are ----------types of plastids.

HOME WORK

- Write down the function of the following.

- Vacuole, lysosomes, Centriole

- Describe the types of plastids with examples.

THE END!!!

- Thank you for your cooperation and attention!!
- Hope you learned some new, exciting things.