



HUMAN BIOLOGY LABORATORY

1ST . STAGE, 2022 - 2023

Lab. 2

By:
Dr. Nibrass Taher Alabdali



HUMAN BIOLOGY

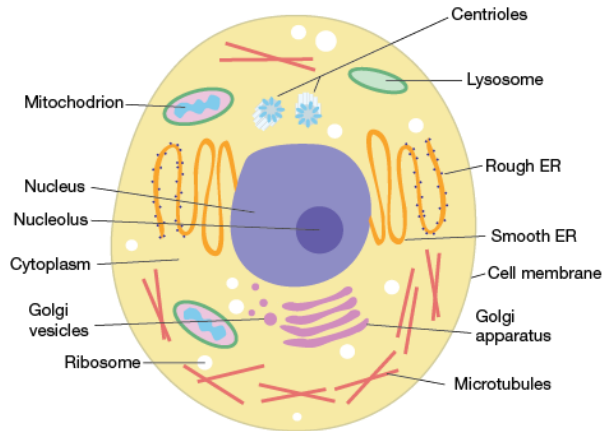
- ❖ **The cell:** is the basic structural, functional, and biological unit of all known organisms.
- ❖ It's the smallest unit of life. Cells are often called the "building blocks of life".
- ❖ **Robbert Hook** was the first scientist who used the term cells in the field of biology.
- **Cell size:** Big cells that can be seen by naked eyes, such as bird's eggs.
- Typical diameter of animal cells (10-20 μm) (seen by optical microscope).
- viruses whose size is about 100-300 \AA (seen by electron microscope).



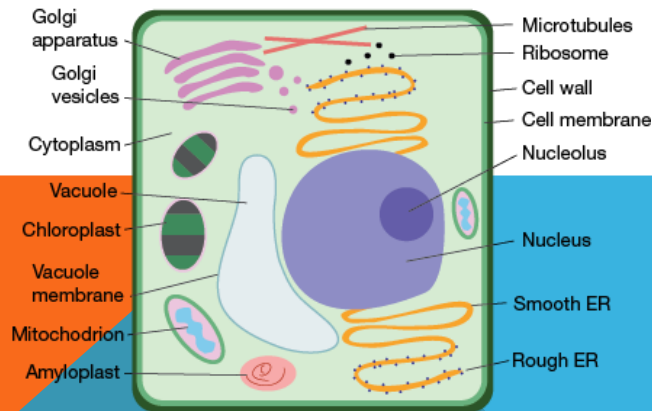
THE CELL TYPES

Eukaryotic

- Which contain a nucleus
- Either single-celled or multicellular.



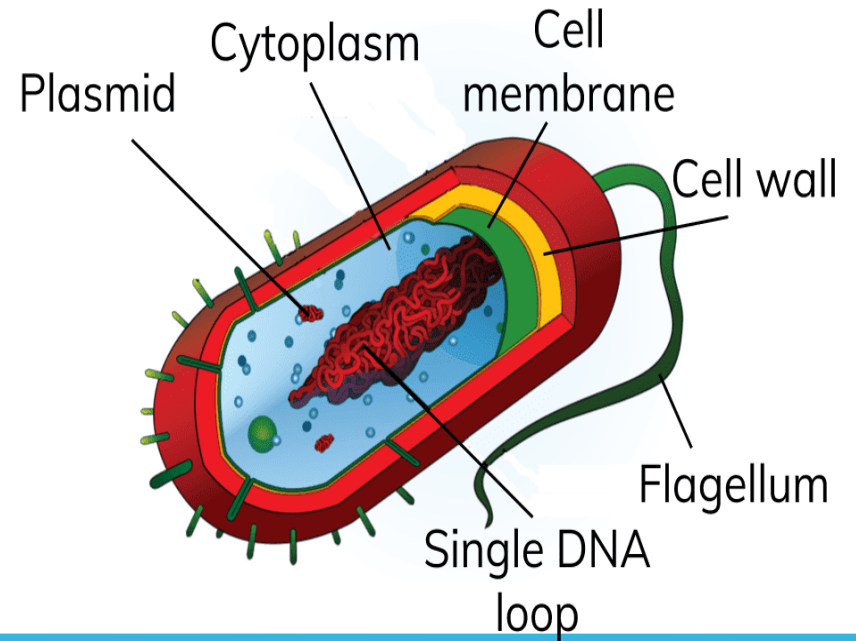
Animal Cell



Plant Cell

Prokaryotic

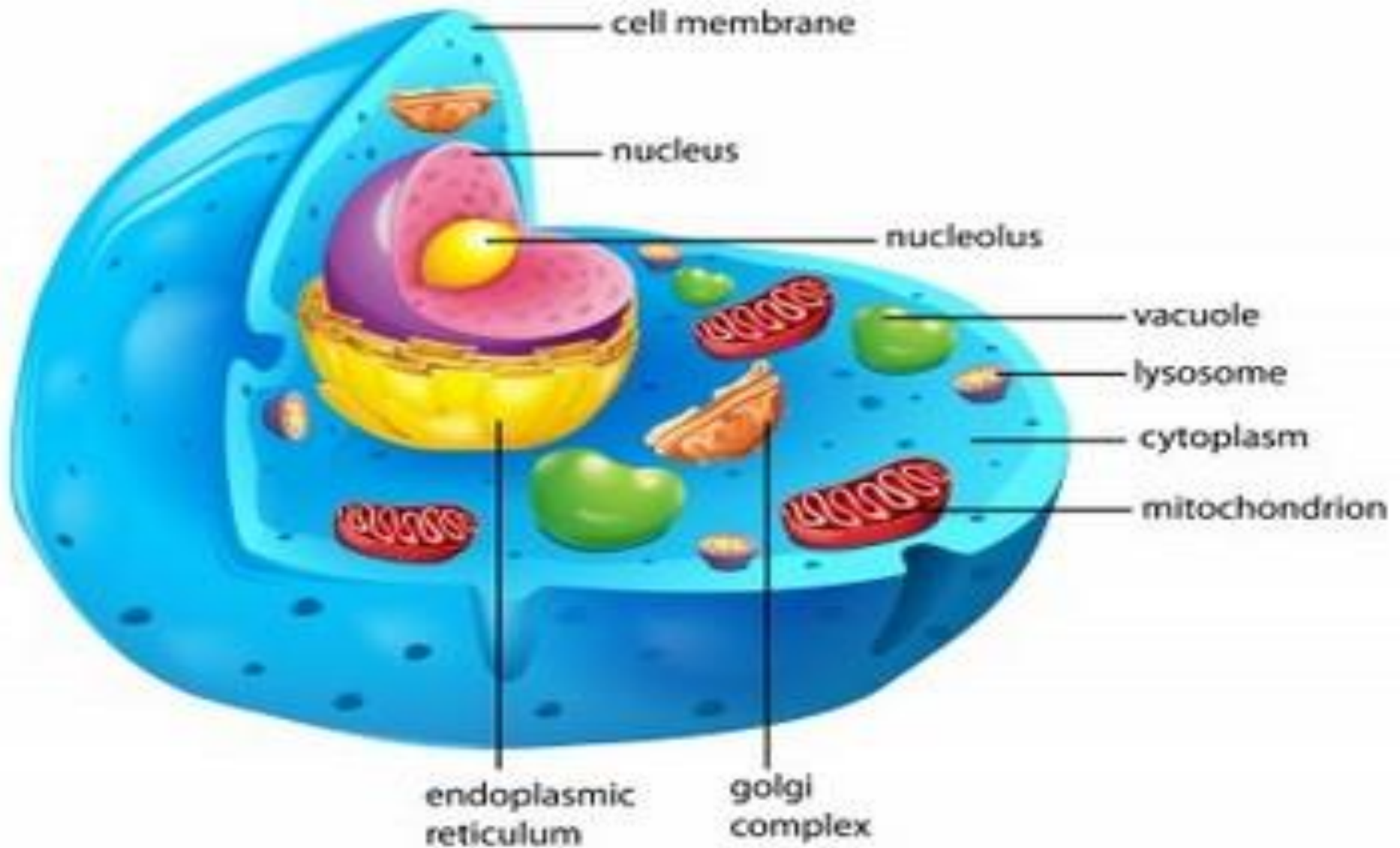
- Which don't have a nucleus
- Single-celled organisms

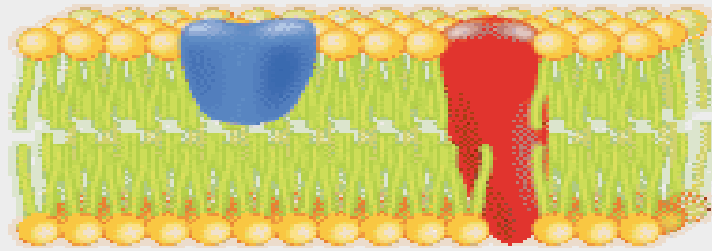


Characteristics	Eukaryotic	Prokaryotic
Nucleus	Present (membrane bound)	Absent (nucleoid region)
Cell size	Large	Small
DNA replication	Highly regulated with selective organs & sequences	Replicates entire genome at once
Organism type	Usually multicellular	Unicellular
Chromosomes	More than 1	One long single loop of DNA & plasmids
Ribosomes	Large	Small
Organelles	Present	Absent
Cell wall	Simple: present in plants and fungi	Complex: present in all prokaryotic
Plasma membrane	Present	present
Cytoplasm	Present	Present
Growth	Slower	faster

Structure of cell

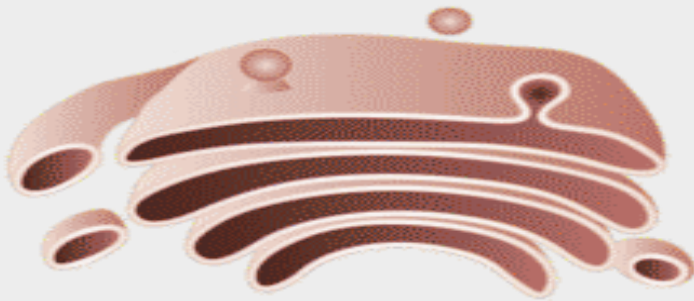
Anatomy of an Animal Cell





Cell membrane

Cell membrane



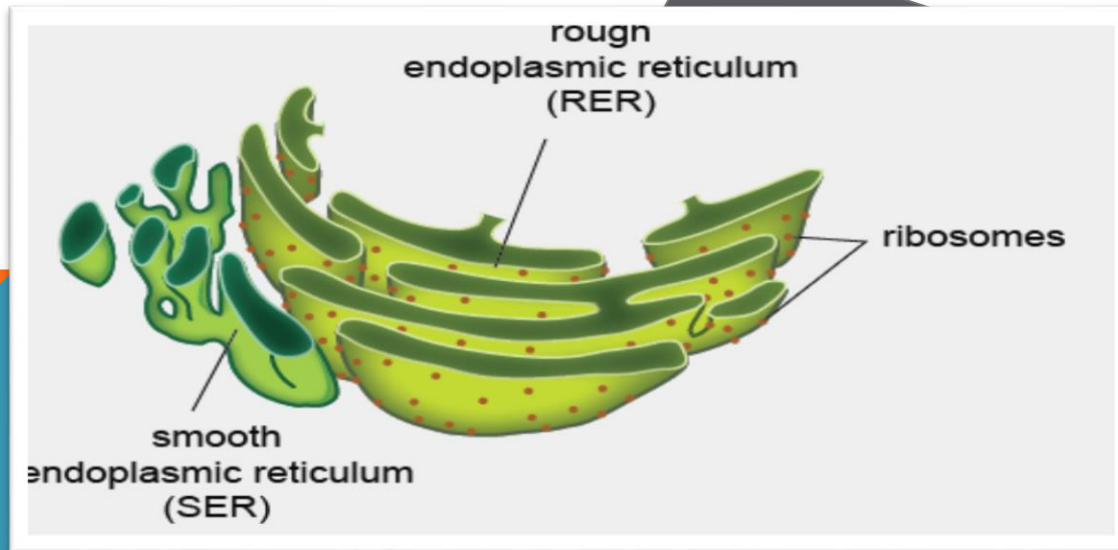
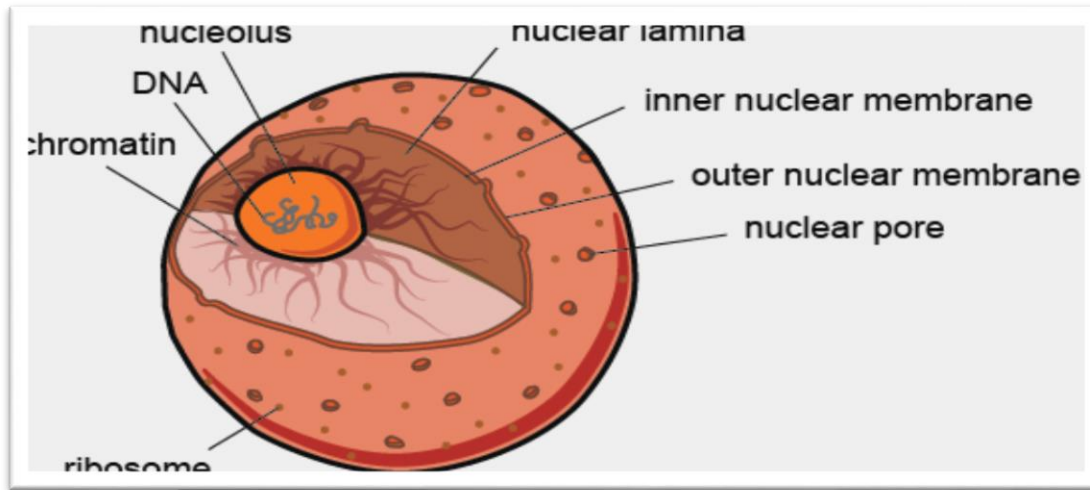
Golgi apparatus

Golgi apparatus



Mitochondrion

Mitochondrion



Structure of cell

1. Nucleus:

- a) *Nuclear envelope*: membrane enclosing the nucleus
- b) *Chromatin*: DNA + associated proteins.
- c) *Nucleolus*: condensed region where ribosomes are formed

2. Endoplasmic reticulum:

- a) *Rough (RER)*: network or membranous of inter connected tubules (cisternae) contain ribosomes which release transfer vesicles (protein); rRNA
- b) *Smooth*: network or membranous of interconnected flattened tubules which lacks ribosomes and is involved in the synthesis and storage of lipids. detoxifying a number of organic chemicals converting them to safer water-soluble products.

3. Golgi apparatus: is responsible for transporting, modifying, and packaging proteins and lipids into vesicles for delivery to targeted destinations

4. **Mitochondria (Powerhouse of the cell):** produces adenosine triphosphate (ATP), the main energy molecule used by the cell.
5. **Cytoplasm:** is a gelatinous liquid that fill the inside of a cell. it composed of water, salts & various organic molecules .
6. **Lysosome:** is a membrane bound cell organelle that contains digestive enzymes. They break down excess or worn out cell parts. Apoptosis.
7. **Plasma membrane (cell membrane):** is a membrane found in all cells that separates the interior of cell from the outside environment.
 - It consists of a lipid bilayer that is semipermeable.
 - The plasma membrane regulates the transport of materials entering and exiting the cell.

THANK YOU

