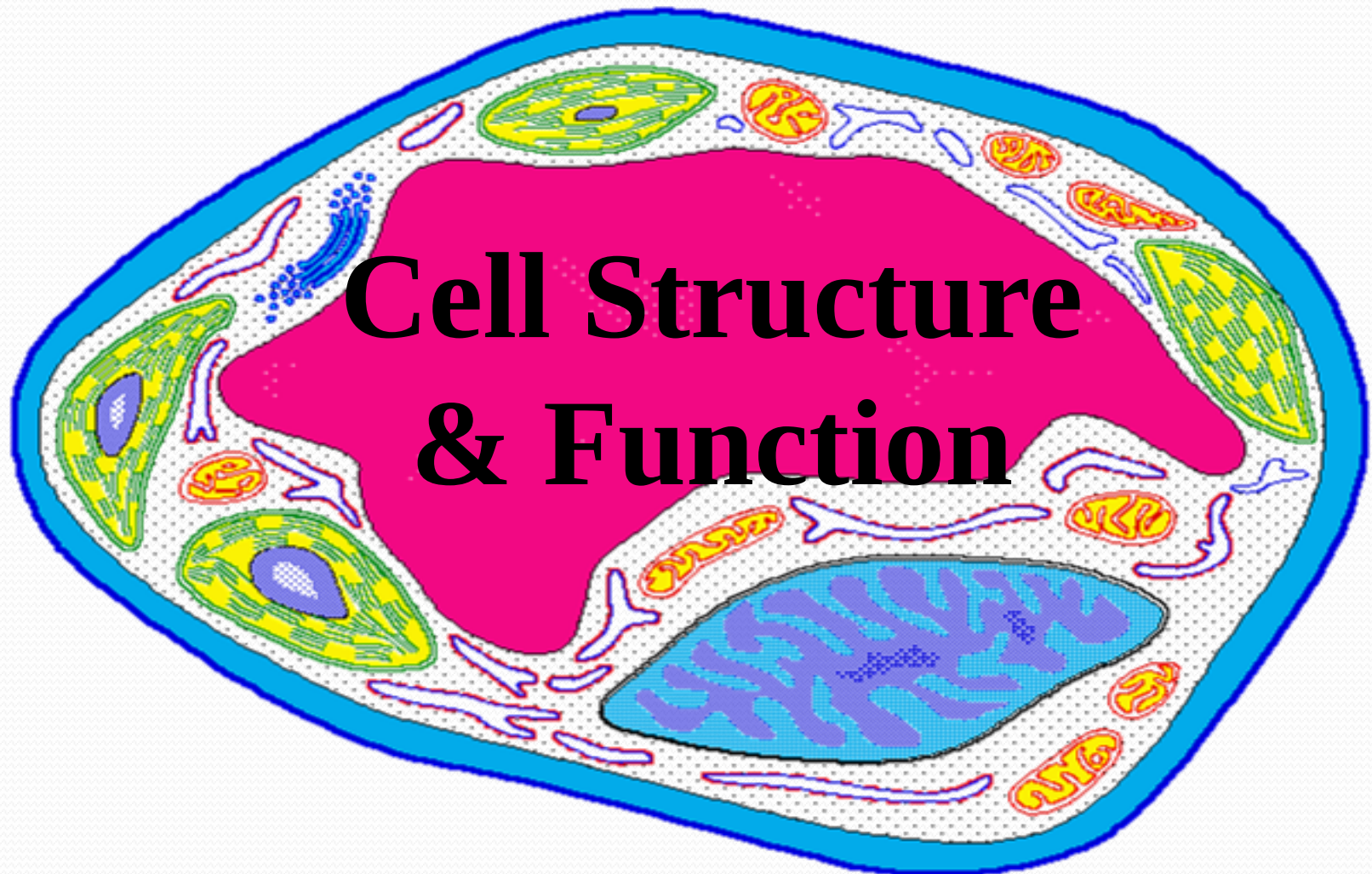


Lec(5)



Mitochondria

- ❖ Powerhouse” of the cell.
- ❖ Found in all eukaryotic cells, vary in shape and number.
- ❖ Shape and size dependent on what the cell’s function (spherical, oval, elongated and organized).
- ❖ The number of mitochondria varies from one cell type to another.
- ❖ Contain their own copies of DNA and RNA (Maternal DNA)

Structure of mitochondria

- ❖ A mitochondria is enclosed by a double membrane envelope composed of lipid and protein.
- ❖ The outer membrane is smooth, it is more permeable to small molecules, contains some enzymes but is poorer in proteins.
- ❖ Inner membrane is highly folded – called **cristae** – increasing the surface area on which the ATP reactions can take place.
- ❖ Matrix – large internal space.
- ❖ Intermembrane space – between the membranes

Functions of mitochondria:

- ❖ Site of cellular respiration
- ❖ Converts energy stored in food (breaking down fats & carbohydrates) into energy the cell needs – ATP.
- ❖ Sugar + Oxygen  Carbon dioxide + Water + ATP
ATP = Adenosine triphosphate,
- ❖ Controls level of water and other materials in cell
- ❖ Recycles and decomposes proteins, fats, and carbohydrates.
- ❖ Apoptosis-programmed cell death.

Mitochondria Structural Features

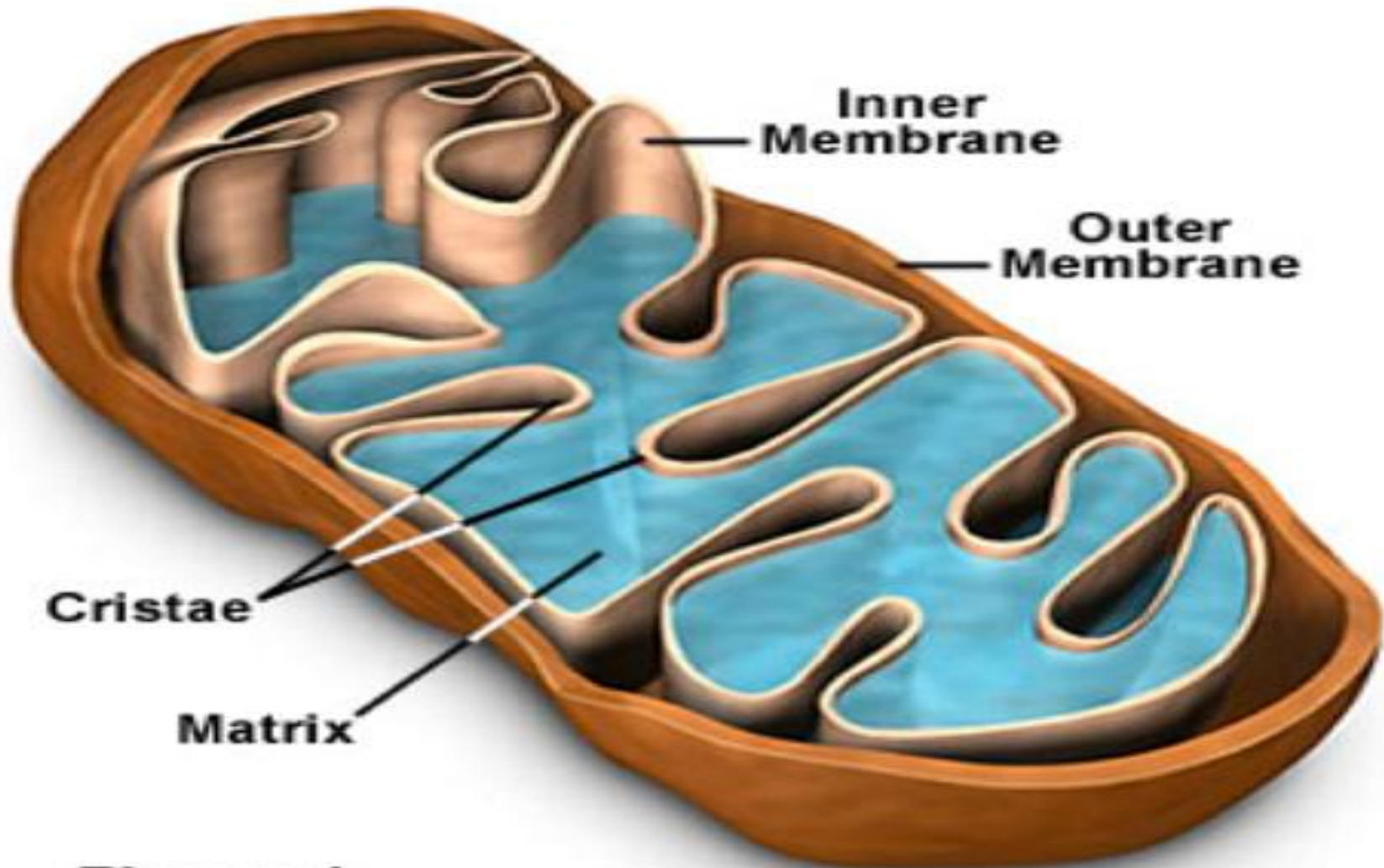
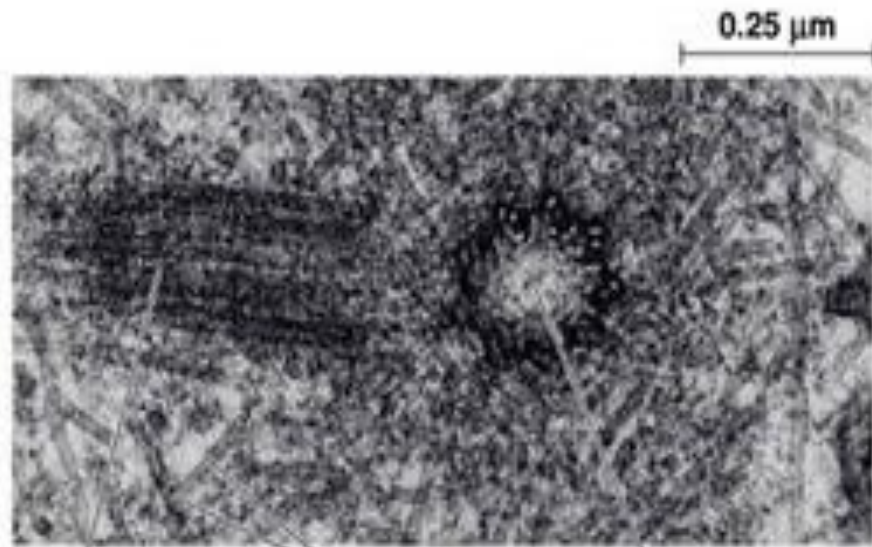


Figure 1

Centrosome/Centrioles

- ❖ Centrosome is an organelle usually containing two cylindrical structures.
- ❖ The centrosome is located in the cytoplasm usually close to the nucleus.
- ❖ Centrioles are made up of nine tube any tube made up of three triplet microtubules.
- ❖ **Function:** Helps the cell division by production spindle fiber.

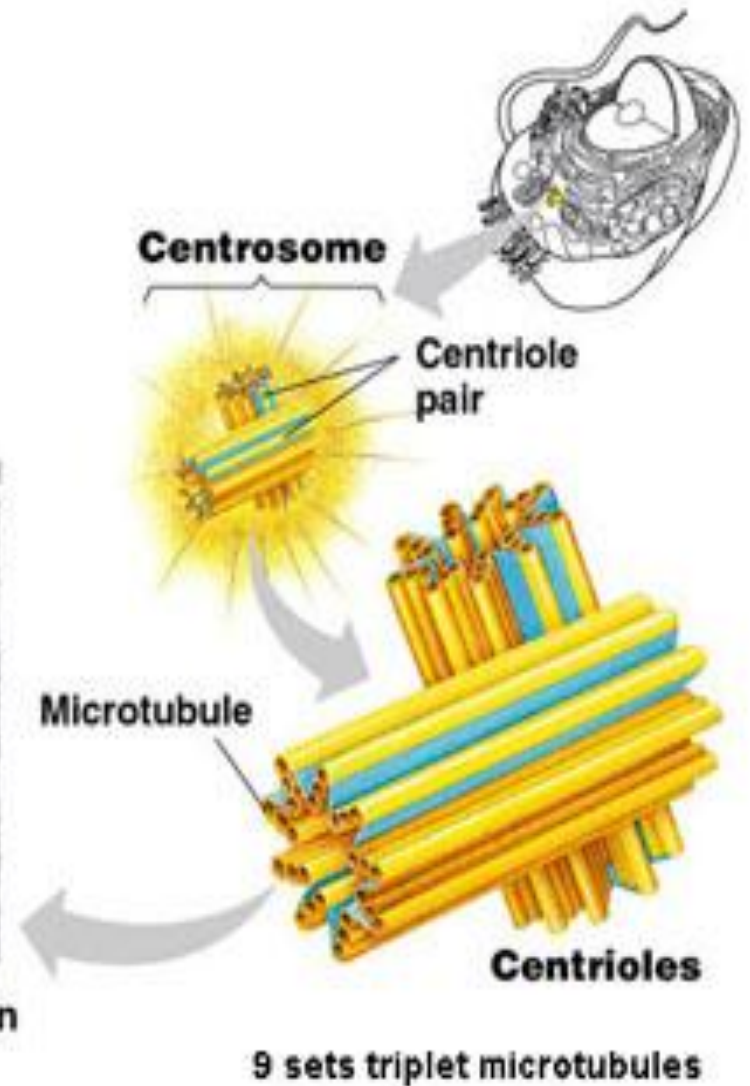


Longitudinal section of centriole

Microtubules

Cross section of centriole

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Centrosome

Centriole pair

Microtubule

Centrioles

9 sets triplet microtubules

Cytoskeleton

Cytoskeleton network, of protein filaments and tubules in the cytoplasm of many living cells.

Function:

1. It provides shape and support to the cell.
2. It helps in the formation of vacuoles.
3. It holds different cell organelles in place.

