

Endoplasmic Reticulum

- Endoplasmic Reticulum was discovered by Porter in 1945
- It is present in all eukaryotic except germinal cell and Mature mammalian Erythrocytes.
- It Scattered in whole cytoplasm.
- Absent in embryonic cell.

Ultrastructure :-

- Endoplasmic Reticulum is network of highly branched fine tubules.
- It one end is connected with nuclear membrane and one end is Plasma membrane.
- In E. microscope three forms of E.R. are found.

① Cisternae

② Vesicles

③ Tubules

① Cisternae :-

- It is elongated, unbranched tubular structure found in parallel rows.
- It is 40-45 micron thick.
- It is found in a group of 3 to 6.



Fig - Cisternae

(ii) Vesicle :-

- It is round form of 25-50 μ m
- It is well scattered in cytoplasm
- It is mainly found in protein forming cells.
- It is also found in



Fig:- Vesicle

(iii) Tubules :-

- It is highly branched found near the cell membrane.
- It is 50-100 micron in diameter
- It is smooth structure because ribosome is absent.
- It is mainly found in cells associated with synthesis of cholesterol, glycerides, hormones



Fig:- Tubules:

Types of ER:-

On the basis of presence and absence of ribosome ER is of two types

(i) Smooth ER

(ii) Rough ER

(I) SER :-

- In smooth endoplasmic reticulum ribosome is not found.
- Mainly +nt near the cell membrane
- Found in cell and related with synthesis of fat and steroids.
- Mainly form of tubules.

(II) RER :-

- In rough endoplasmic reticulum ribosome is found on the surface of ER.
- Mainly +nt near the nucleus
- Found in cells and related with synthesis of protein.
- Mainly form of cisternal

✓ Function of Endoplasmic Reticulum :-

- ✓ - ER acts as cytoskeleton and provide mechanical support to the cell.
- ✓ - It acts as cell circulatory system.
- ✓ - It helps in formation of Primary Lysosome
- ✗ - It helps in synthesis of nuclear envelop during telophase.
- ✓ - It helps in transfer of information from nucleus to various cell organelles.
- ✓ - It helps in lipid synthesis
- It helps in steroid hormone synthesis.
- It helps in ascorbic acid synthesis.

Cilia and Flagella

- Cilia & Flagella are hair-like outgrowths of the cell membrane.
- Cilia are small which work like oars ^{नावलेन (पैडर)} causing the movement of either cell or surrounding fluid.
- Flagella are long and responsible for cell movement.
- In E.M. Cilium & Flagellum covered by Plasma Membrane.
- Their ^(centre) core is called Axoneme.
- The axoneme has nine pairs of doublets Microtubules which is radially arranged and one pair centrally arranged.
- The central tubules are connected by bridge and enclosed by a central sheath.
- Each peripheral doublets have a radial spoke & connected the central sheath.
- There are nine radial spokes.
- Cilia shows 9+2 arrangement of microtubules whereas Flagella of bacteria ~~do not~~ show 9+0 arrangement.

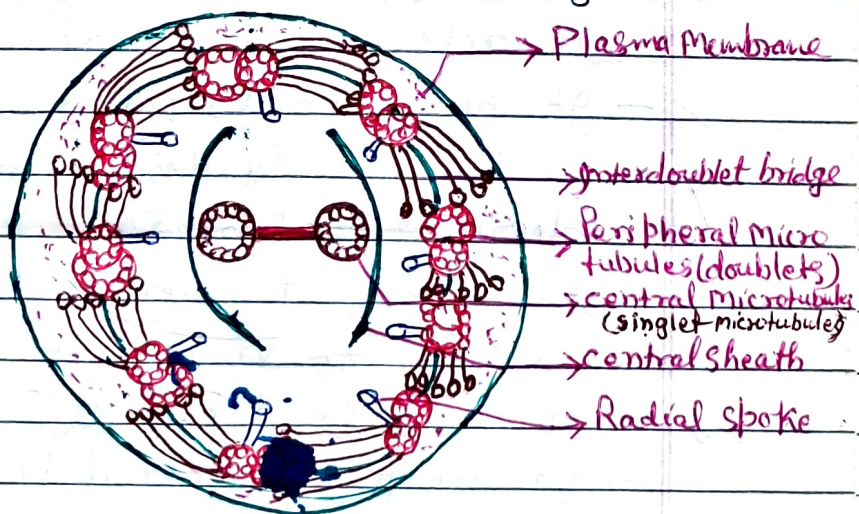


Fig:- Diagram showing internal structure of cilia & Flagella.