



**SNS COLLEGE OF ALLIED HEALTH SCIENCES**  
SNS Kalvi Nagar, Coimbatore - 35  
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**DEPARTMENT : PHYSICIAN ASSISTANT**

**COURSE NAME : NEUROLOGY**

**UNIT : NERVOUS SYSTEM**

**TOPIC : CELL MEMBRANE - PHYSIOCHEMICAL  
PROPERTIES**



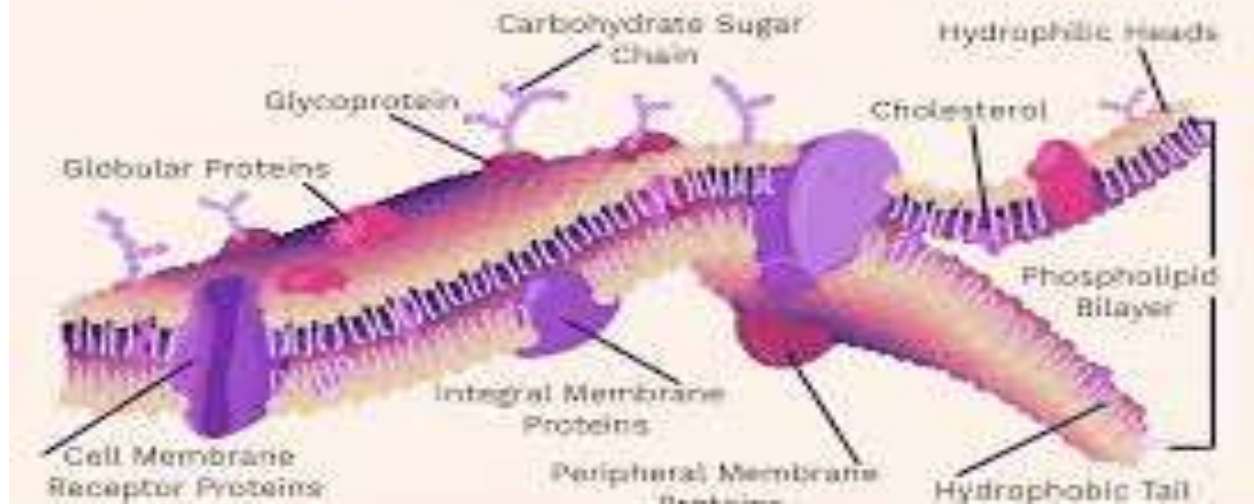
## CELL MEMBRANE



- The cell membrane, also referred to as the plasma membrane, is a fundamental structure that surrounds the cytoplasm of all living cells.
- It serves as a barrier between the internal environment of the cell and its external surroundings, controlling the passage of substances in and out of the cell.

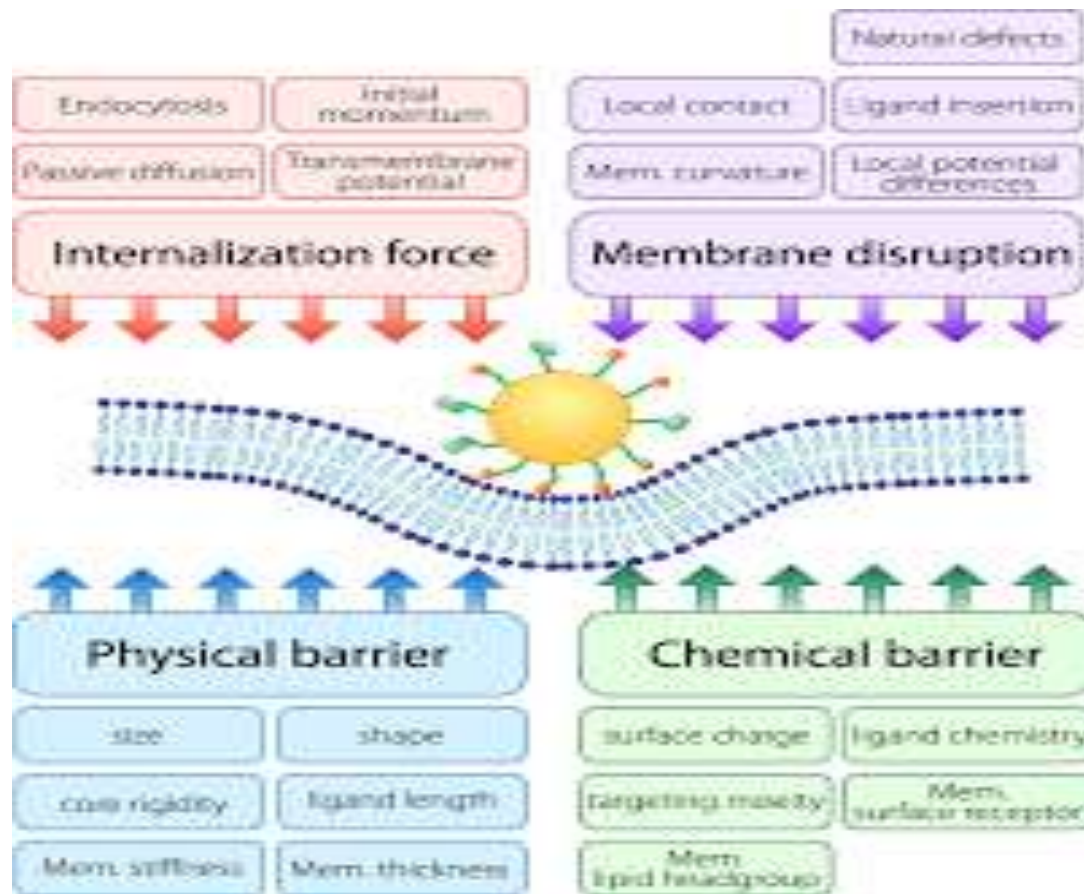


## Cell Membrane Structure





- Composed primarily of lipids, proteins, and carbohydrates, the cell membrane plays pivotal roles in cellular communication, signaling, and maintaining cellular homeostasis.





# PHYSIOCHEMICAL PROPERTIES OF CELL MEMBRANE



## Lipid Bilayer Composition:

- The cell membrane primarily consists of a lipid bilayer composed of phospholipids, cholesterol, and glycolipids.
- Phospholipids are amphipathic molecules with hydrophilic phosphate heads and hydrophobic fatty acid tails, arranging themselves in a bilayer structure due to hydrophobic interactions.



## Fluid Mosaic Model:

- The fluid mosaic model describes the dynamic nature of the cell membrane, portraying it as a mosaic of lipids and proteins.
- Proteins are interspersed throughout the lipid bilayer, floating and moving laterally within the membrane.



## **Selective Permeability:**

- The cell membrane exhibits selective permeability, allowing certain substances to pass through while restricting the movement of others.
- Small, non-polar molecules such as oxygen and carbon dioxide can diffuse freely across the lipid bilayer.
- Larger or charged molecules typically require specific transport proteins for facilitated diffusion or active transport.





## Membrane Proteins:

- Integral membrane proteins span the lipid bilayer, with hydrophobic regions interacting with the lipid tails.
- Peripheral membrane proteins are located on the inner or outer surface of the membrane and are often attached to integral proteins or the lipid bilayer via electrostatic interactions.



## Hydrophobic Interior:

- The interior of the lipid bilayer is hydrophobic, creating a barrier to the passage of water-soluble molecules.
- This hydrophobic environment is crucial for the integrity and stability of the membrane structure.



## Cholesterol Content:

- Cholesterol molecules are interspersed within the lipid bilayer, modulating membrane fluidity and stability.
- Cholesterol helps maintain proper membrane structure and function, especially under varying environmental conditions.



## Asymmetry:

- The lipid composition of the cell membrane exhibits asymmetry, with different lipid species distributed unevenly between the inner and outer leaflets of the bilayer.
- This lipid asymmetry is crucial for various cellular processes, including cell signaling and membrane trafficking.



# ASSESSMENT



- What is Cell Membrane ?
- What is Cholesterol content ?