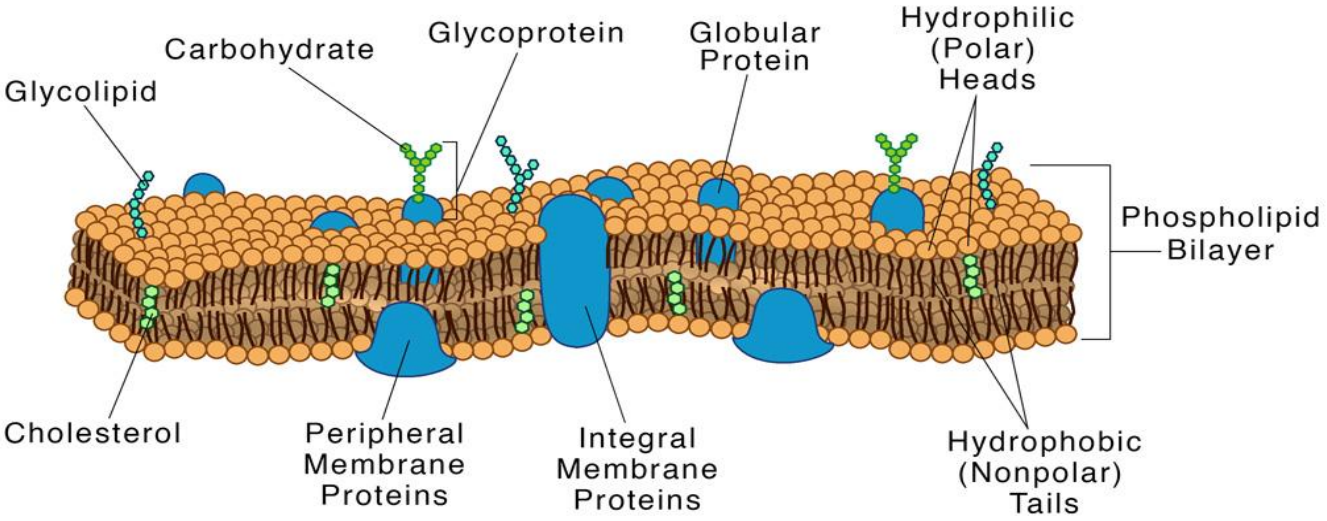
# Cell membrane

# Cell Membrane

**Extracellular side (outside the cell)**




**Cytoplasmic side (inside the cell)**

Structure of cell membrane

Protein-lipid-protein model by Davson and Danielle

- Foundational concept, proposing that cell membranes consist of a lipid bilayer sandwiched between two layers of protein.
- The lipid bilayer, primarily composed of phospholipids, forms the core of the membrane, creating a barrier to the passage of many substances.

Fluid - mosaic model by Singer and Nicholson

- The model describes plasma membrane structure as a mosaic of components which includes proteins, cholesterol, phospholipids, and carbohydratesdes.
- Lipid bilayer is generally considered a fluid structure; proteins and carbohydrates are considered as mosaic.

Components of cell membrane:

1. Phospholipid bilayer:

- two important parts of a phospholipid: the head and the two tails.
- head is a phosphate molecule that is attracted to water (hydrophilic).
- two tails are made up of fatty acids (chains of carbon atoms) repel water (hydrophobic).

2. Cholesterol:

- Cholesterol is a type of steroid which is helpful in regulating molecules entering and exiting the cell.

3. Proteins:

- two different types: integral protein and peripheral proteins.

Integral proteins are embedded in phospholipid bilayer and stick out on either end.

- helpful for transporting larger molecules, like glucose, across the cell membrane.
- have regions, called “polar” and “nonpolar” regions.

Peripheral proteins, which don’t extend across the membrane.

The movement of the mosaic of molecules makes it impossible to form a completely impenetrable barrier(semi-permeability).

Types of molecules pass through cell membrane:

- Small, nonpolar molecules (e.g. oxygen and carbon dioxide):Through diffusion
- Small, polar molecules (e.g. water): via osmosis
- Large, nonpolar molecules (e.g. carbon rings): Diffusion
- Large, polar molecules (e.g. simple sugar - glucose): Active transport
- Ions (e.g. Na): Diffusion or active transport.

Function:

- Movement of substances
- Acts as protective layer