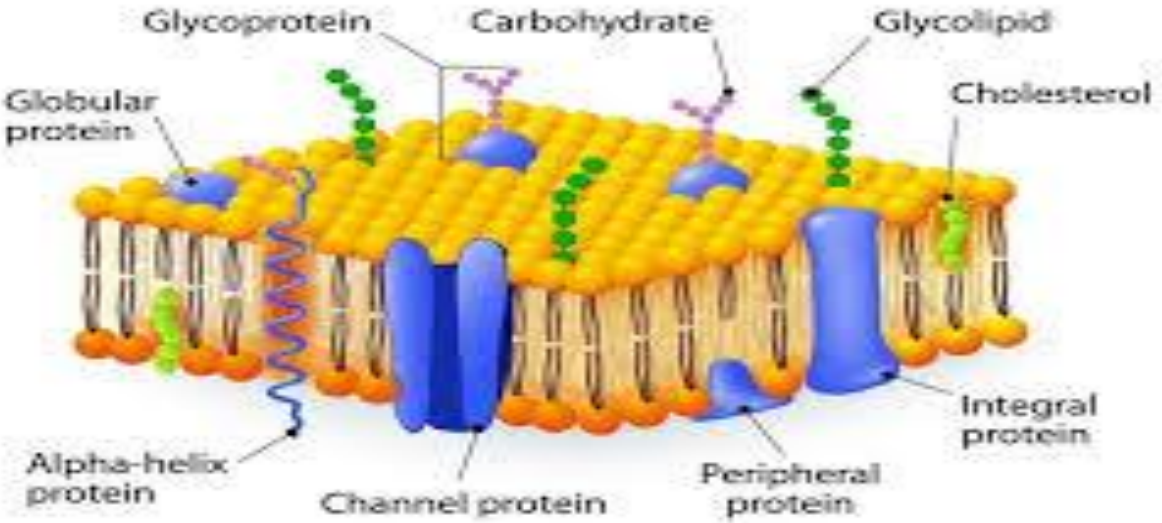
Functions of Cell Membrane

CELL MEMBRANE



Cell Membrane Functions

- The plasma membrane of a cell has two main roles:
- It is a physical barrier.
- The cell membrane gives the cell its structure and regulates the materials that enter and leave the cell.

- cell membrane only allows certain molecules to enter or exit.

- Oxygen, which cells need in order to carry out metabolic functions such as cellular respiration ,

- and carbon dioxide, a byproduct of these functions, can easily enter and exit through the membrane.

- Water can also freely cross the membrane, although it does so at a slower rate. However, highly charged molecules, like ions, cannot directly pass through, nor can large macromolecules like carbohydrates or amino acids.

- Instead, these molecules must pass through proteins that are embedded in the membrane. In this way, the cell can control the rate of diffusion of these substances.

- Another way the cell membrane can bring molecules inside it is through endocytosis. This includes Phagocytosis (“cell eating”) and pinocytosis (“cell drinking”).

- During these processes, the cell membrane forms a depression and surrounds the particle that it is engulfing. It then “pinches off” to form a small sphere of membrane called a vesicle that contains the molecule and transports it to wherever it will be used in the cell.

- During exocytosis, vesicles come to the surface of the cell membrane, merge with it, and release their contents to the outside of the cell.

- Exocytosis removes the cell's waste products– parts of molecules that are not used by the cell.

- Vesicles are also created from the cell membrane when endocytosis is not occurring, and are used to transport molecules to different areas within the cell.
- Cells can also get rid of molecules through exocytosis, which is the opposite of endocytosis.

- The cell membrane also plays a role in cell signaling and communication.

- Receptor proteins on the cell membrane can bind to molecules of substances produced by other areas of the body, such as hormones.

- When a molecule binds to its target receptor on the membrane, it initiates a signal transduction pathway inside the cell that transmits the signal to the appropriate molecules.

- Then, the cell can perform the action specified by the signal molecule, such as making or stopping production of a certain protein.