

## Chapter 7

- Like all biological membranes, the plasma membrane exhibits **selective permeability**; that is, it allows some substances to cross it more easily than others.

### 7.1 - Cellular membranes are fluid mosaics of lipids and proteins

- Lipids and proteins are the major components of membranes, although carbohydrates are also important.

- A phospholipid is an **amphipathic** molecule, meaning it has both hydrophilic regions and a hydrophobic region.

- In the **fluid mosaic model**, the membrane is a fluid structure with a "mosaic" of various proteins embedded in or attached to a double layer (bilayer) of phospholipids.

- Membranes with different functions differ in structure and chemical composition.

- Unlike proteins dissolved in the cytosol, membrane proteins are not very soluble in water because they are amphipathic.

- There are 2 major populations of membrane proteins: **integral proteins** and **peripheral proteins**.

- **Integral proteins** penetrate the hydrophobic interior of the lipid bilayer.

- **Peripheral proteins** are not embedded in the lipid bilayer at all; they are appendages loosely bound to the surface of the membrane, often to exposed parts of integral proteins.

- 4 major functions performed by proteins of the plasma membrane: transport, enzymatic activity, signal transduction, cell-cell recognition, intercellular joining, its attachment to the cytoskeleton and extracellular matrix (ECM).

- **Glycolipid** - a lipid with one or more covalently attached carbohydrates.

- **Glycoprotein** - a protein with one or more covalently attached carbohydrates.

### 7.2 - Membrane structure results in selective permeability

- Cell membranes are permeable to specific ions and a variety of polar molecules.

- Many hydrophilic substances can avoid contact with the lipid bilayer by passing through **transport proteins** that span the membrane.

- Some transport proteins, called **channel proteins**, function by having a hydrophilic channel that contains molecules or atoms; ions use as a tunnel through the membrane.