



**Medical
Biology**

Biology: is a science that studies living things & provides an understanding of life.

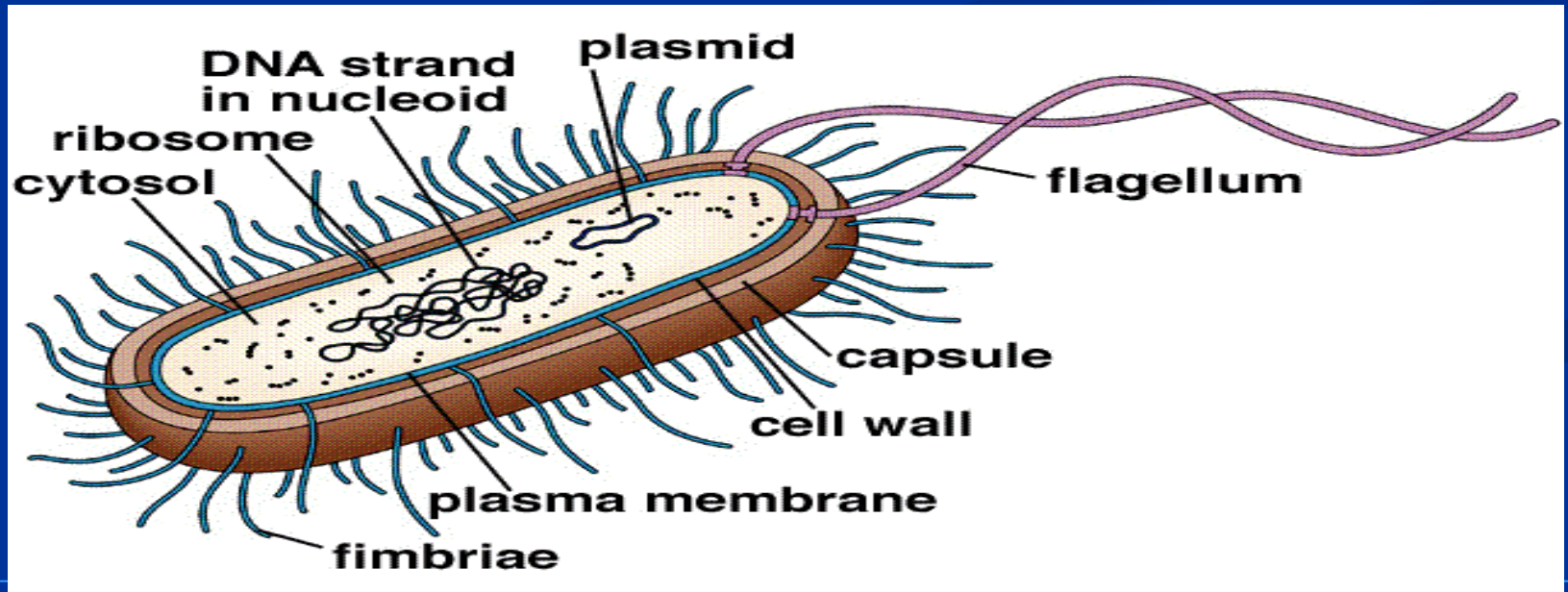
Cell biology: is a specialized branch of biology which deals with the study of structure and function of cell organelles.

Cytology: is the science that deals with studies of the cell.

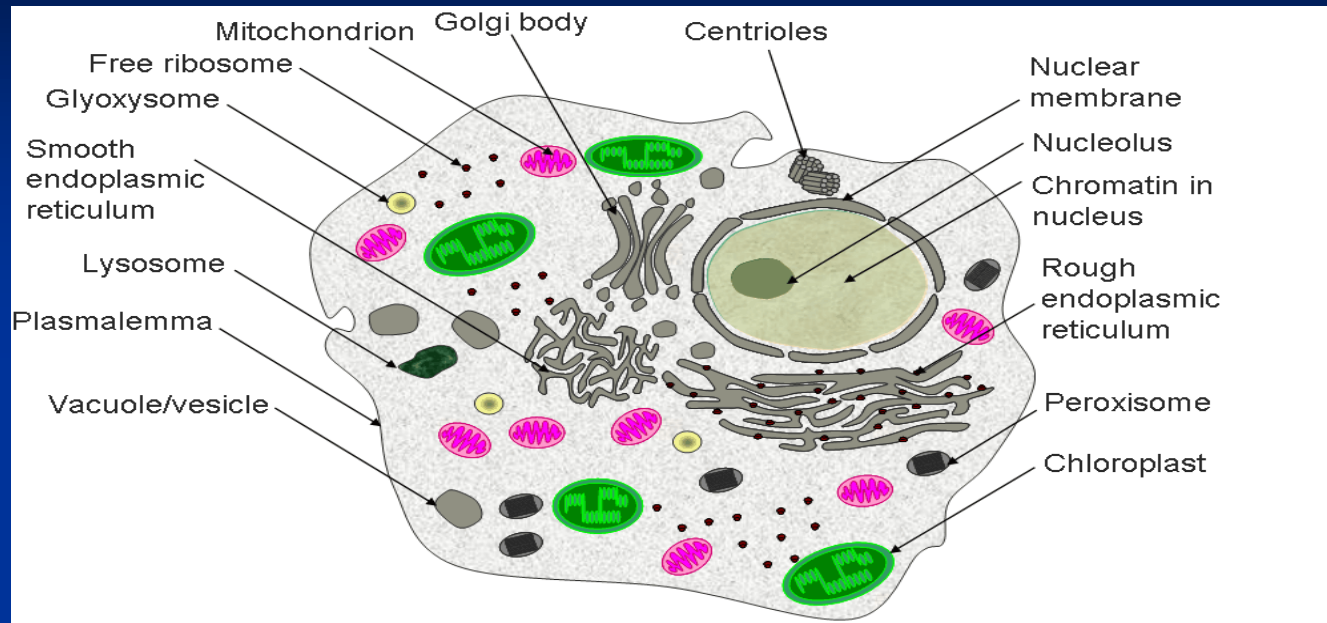
Cells: are the structural units of all living organisms.

Cells are divided to 2 types:

1. The prokaryotic cell:



2. The eukaryotic cells:



Eukaryotic cell components:

1. cytoplasm.

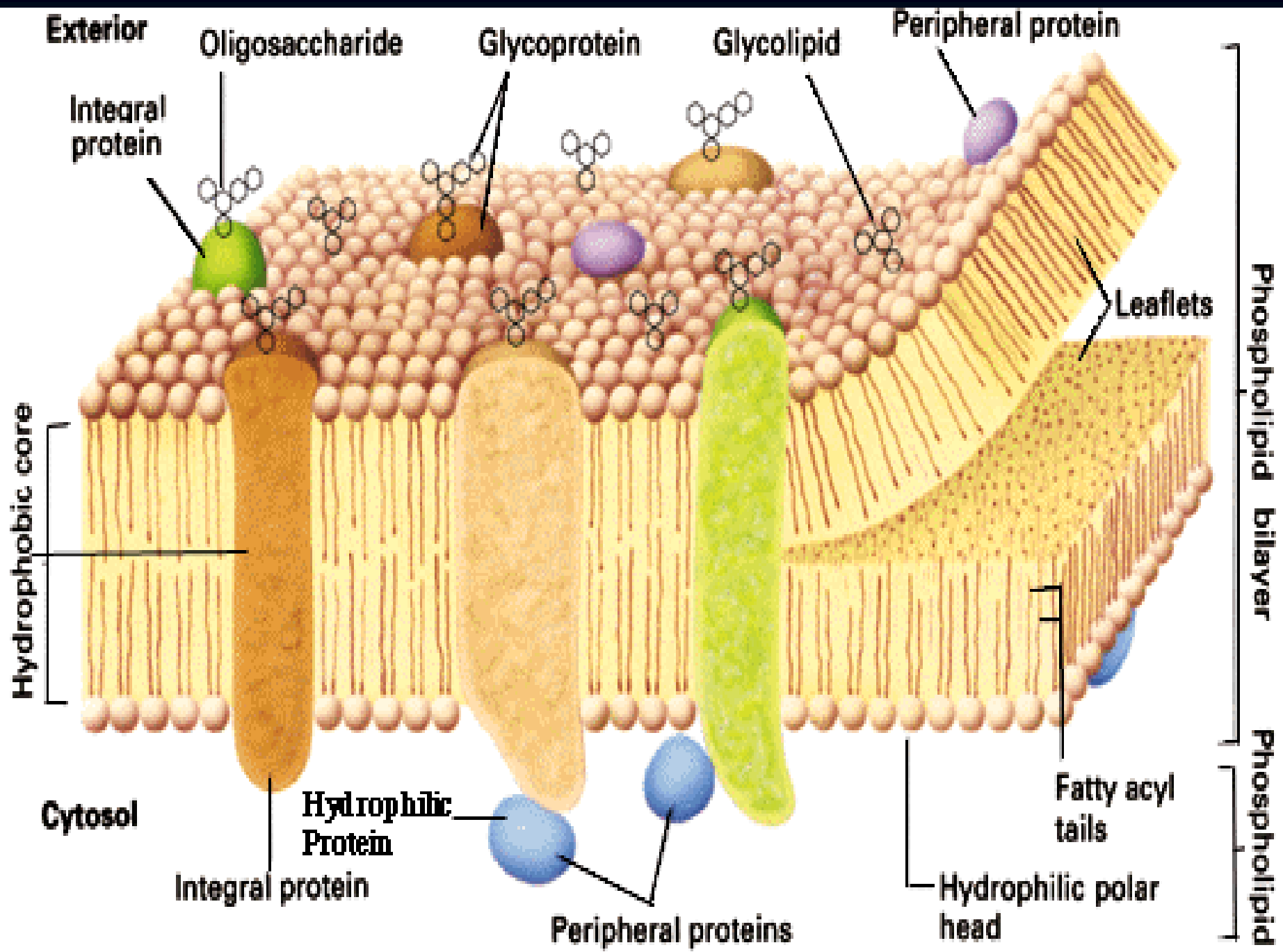
2. nucleus.

Cytoplasm

- **matrix (cytosol)**
- **Organelles, cytoskeleton**
- **deposits of carbohydrates, lipids & pigments.**
- **The outermost component of the cell, separating the cytoplasm from its extracellular environment, is the plasma membrane (plasmalemma).**

Plasma membrane/Structure & function

- plasma membrane protects a cell.
- regulates what goes into & out of the cell.
- cell junctions.
- lipid- soluble molecules entered cells more rapidly.
- lipids are a component of the plasma membrane.
- all cell membranes share a common structural organization, **bilayers of phospholipids with associated proteins.**
- **The fluid- mosaic model of membrane structure.**



□ Membrane lipids: Phospholipids, glycolipids, cholesterol.

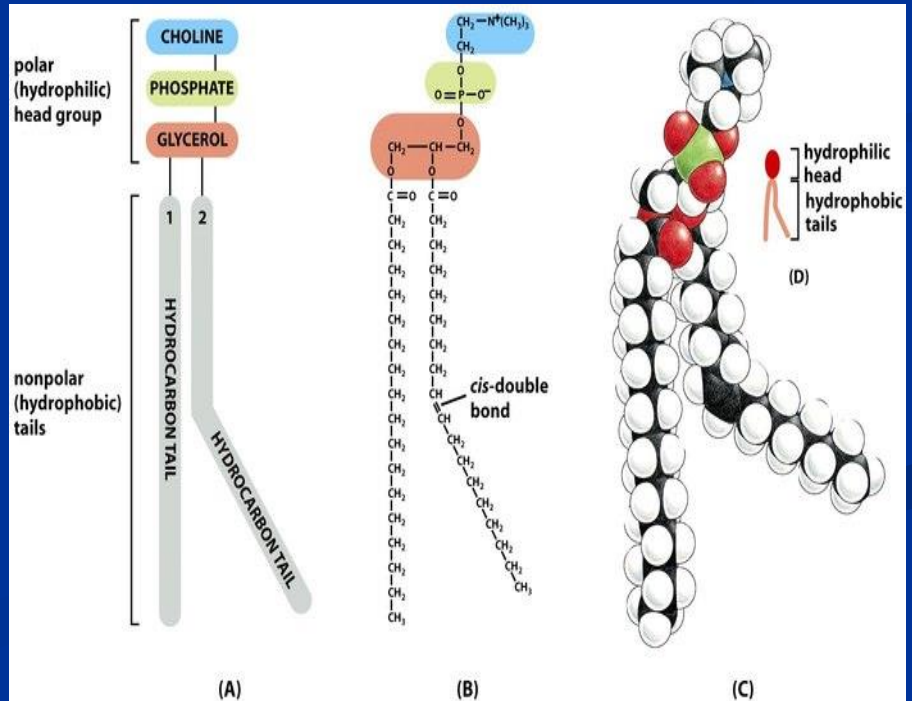
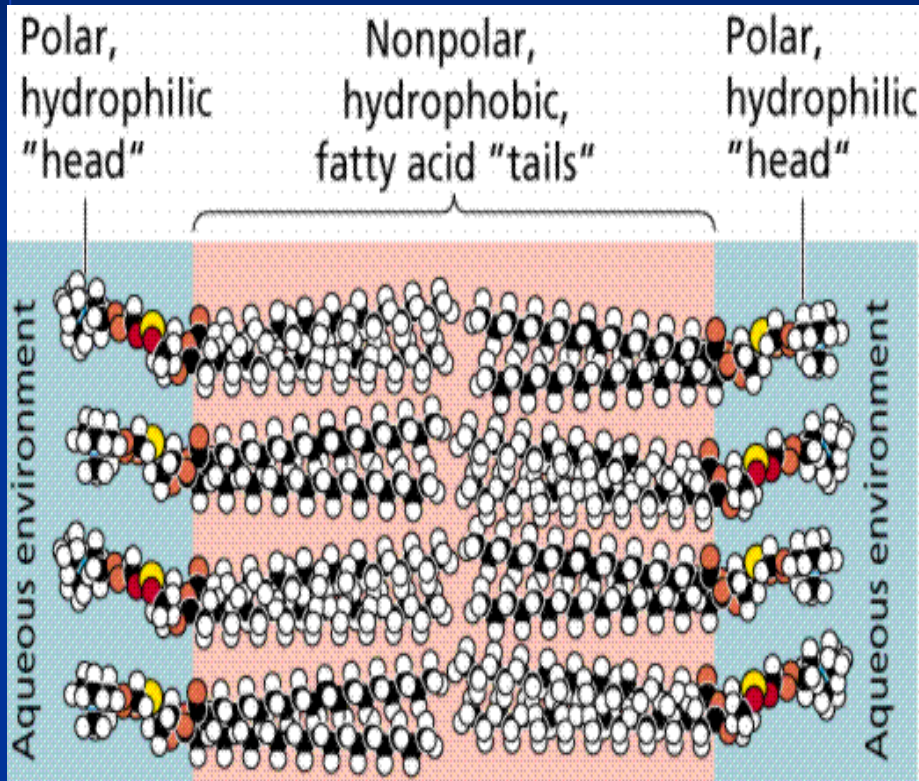
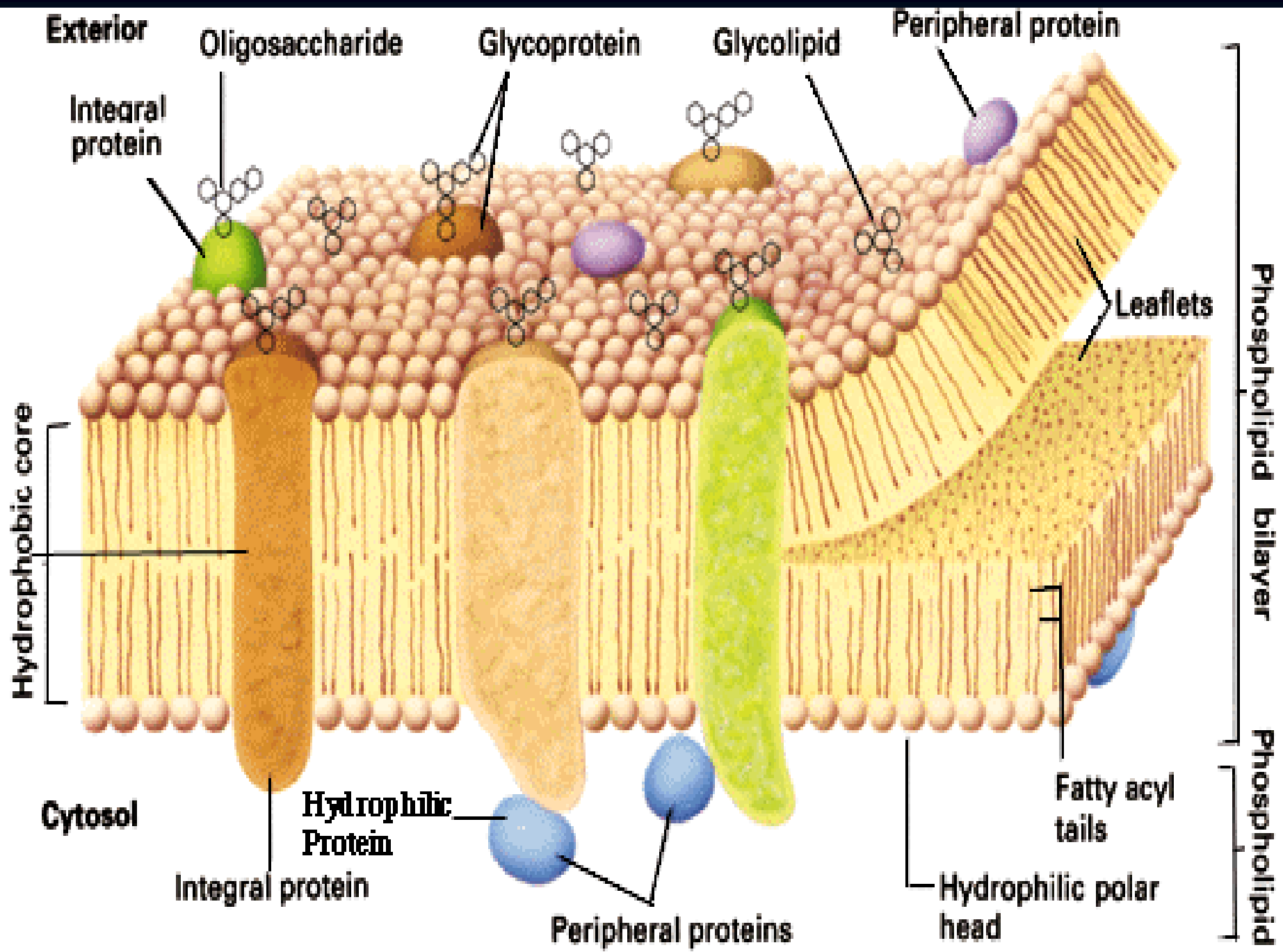
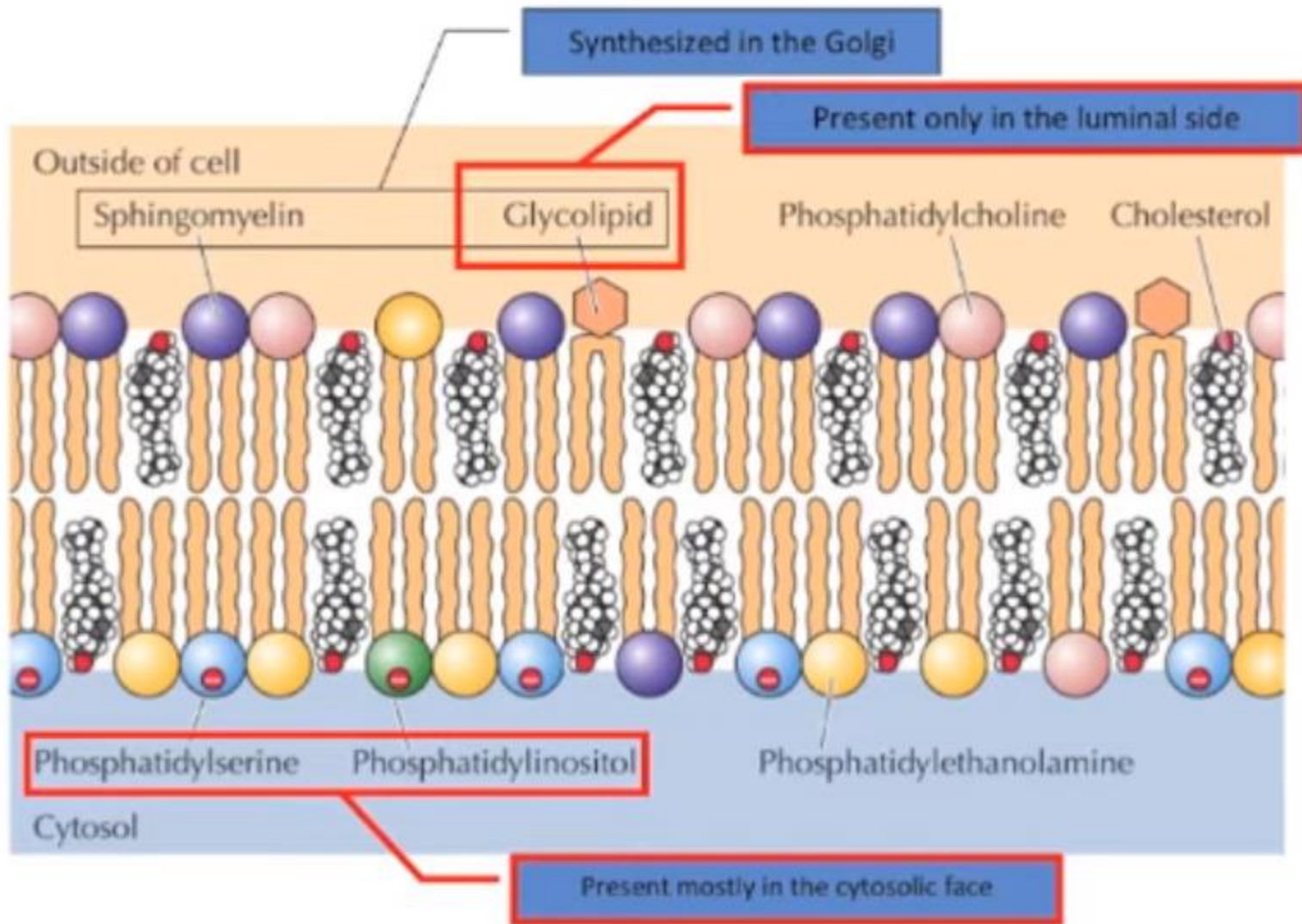


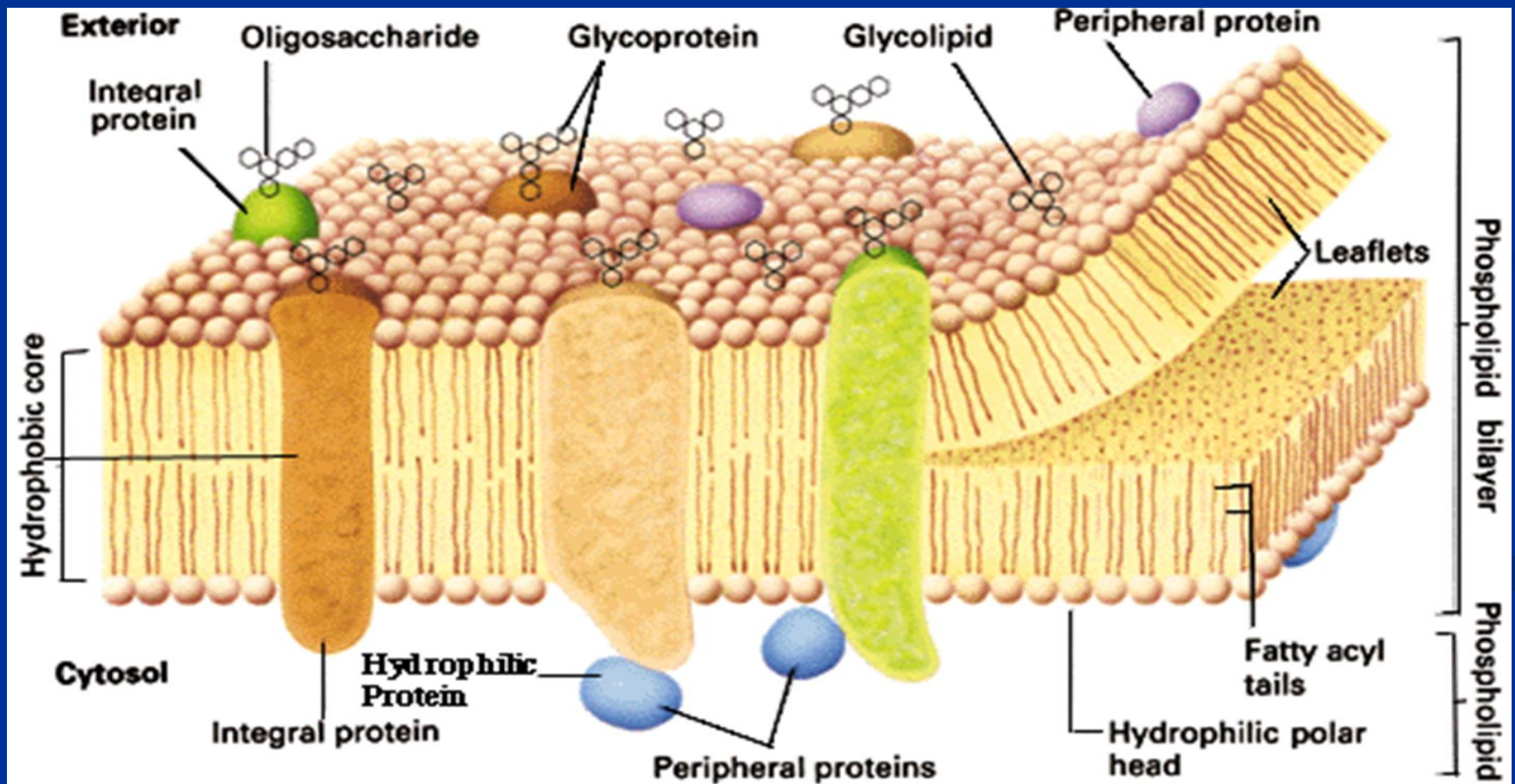
Figure 10-2 Molecular Biology of the Cell 5/e (© Garland Science 2008)

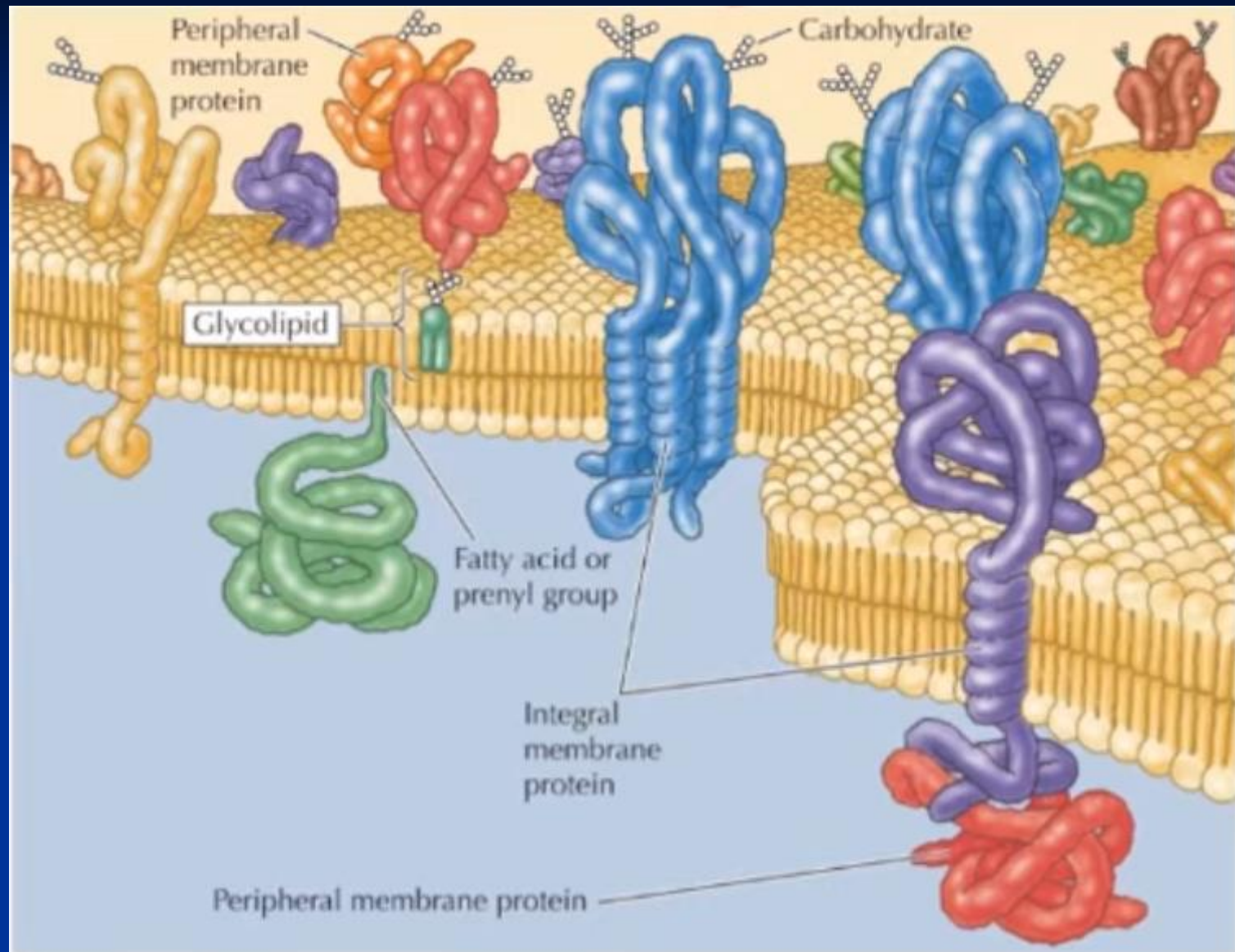




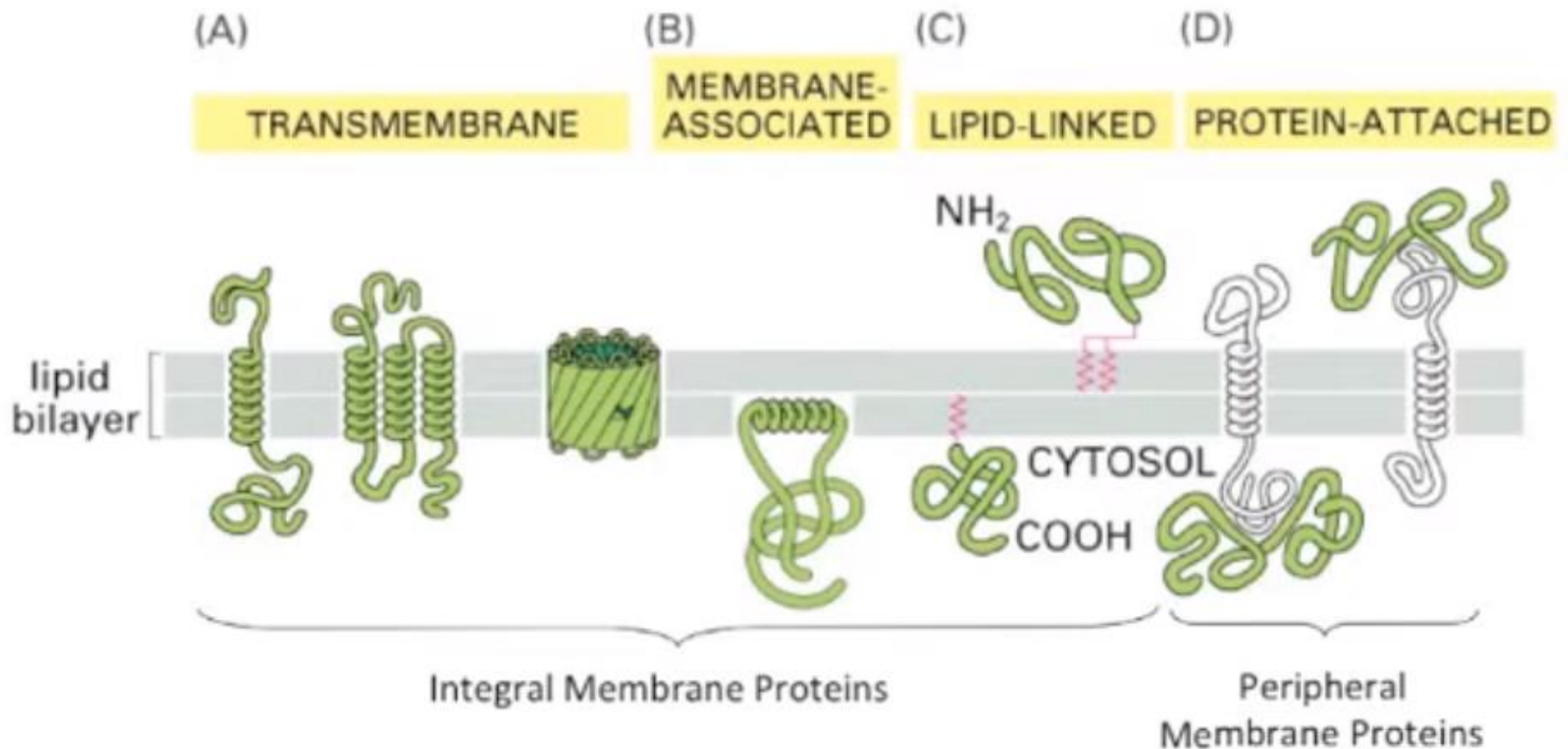
The Lipid Bilayer is a Two-dimensional Fluid: The aqueous environment inside and outside a cell prevents membrane lipids from escaping from the bilayer, but nothing stops these molecules from moving about and changing places with one another within the plane of the bilayer. The membrane therefore behaves as a two-dimensional fluid, which is crucial for membrane function. ■

Membrane proteins: integral membrane proteins, peripheral membrane proteins.



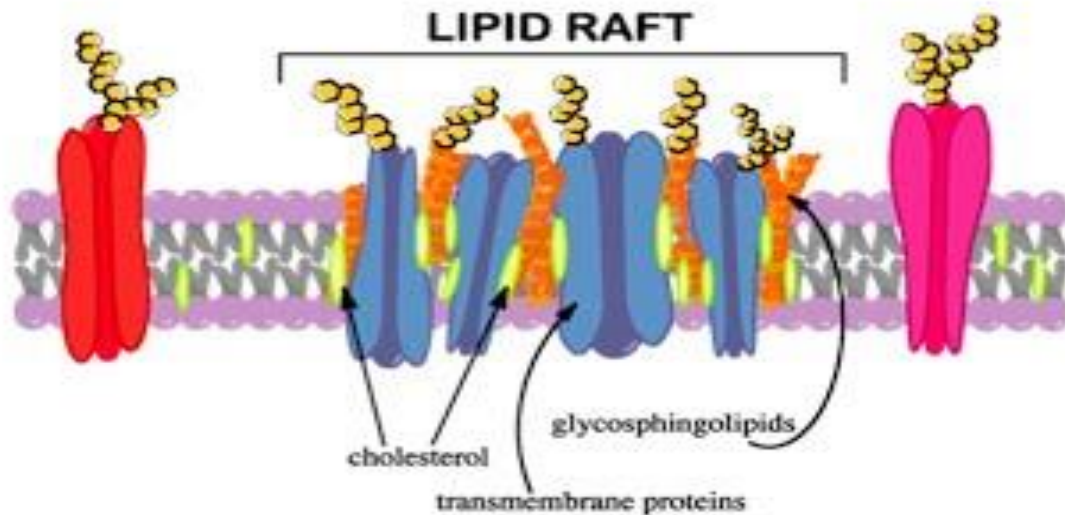


Membrane Proteins bind to the PM in different ways



- ❖ carbohydrate chains: **fingerprints** of the cell.
- ❖ envelops the outer surface of the plasma membrane.
- ❖ Lipid raft.

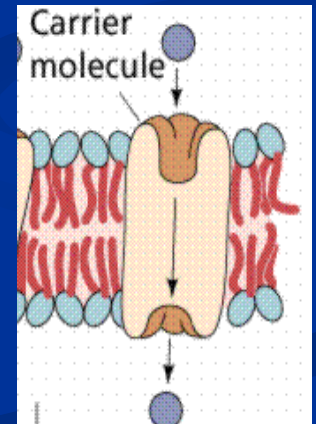
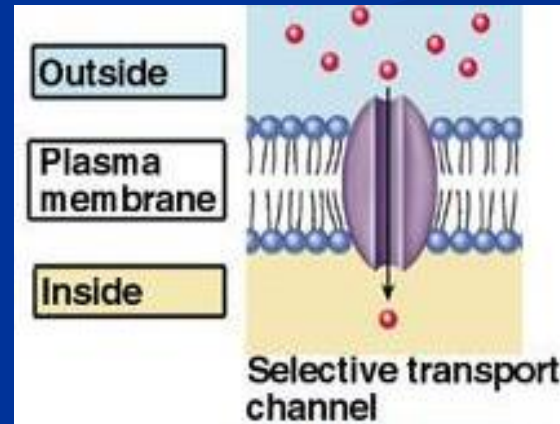
LIPID RAFTS



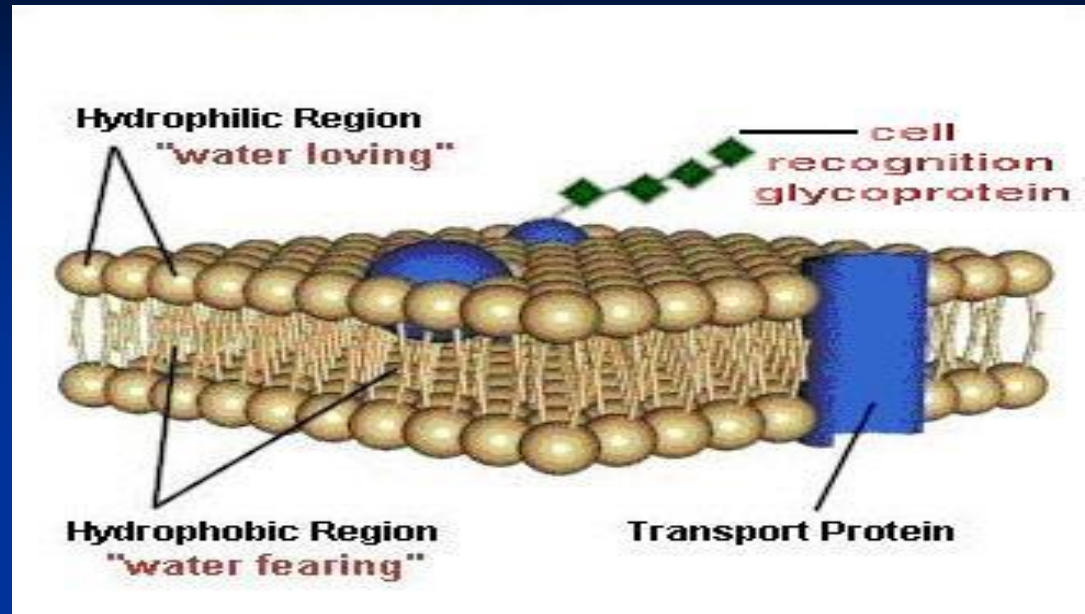
Membrane protein diversity:

1. channel protein

2. carrier protein

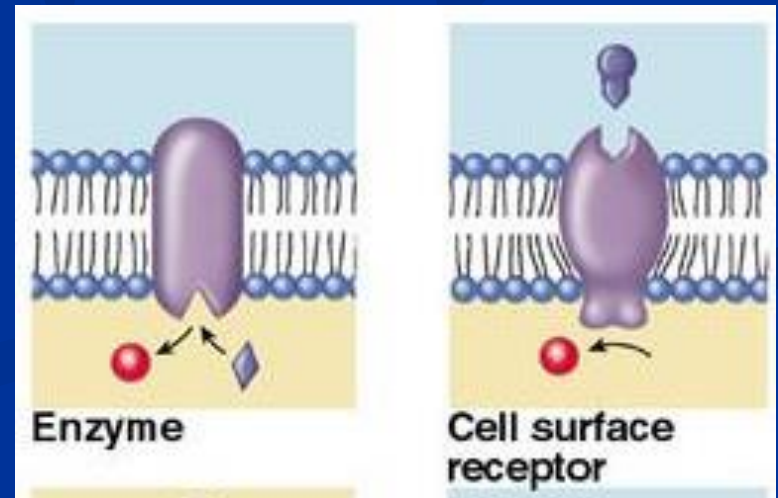


3. cell recognition protein



4. receptor protein

5. enzymatic protein



Thank you