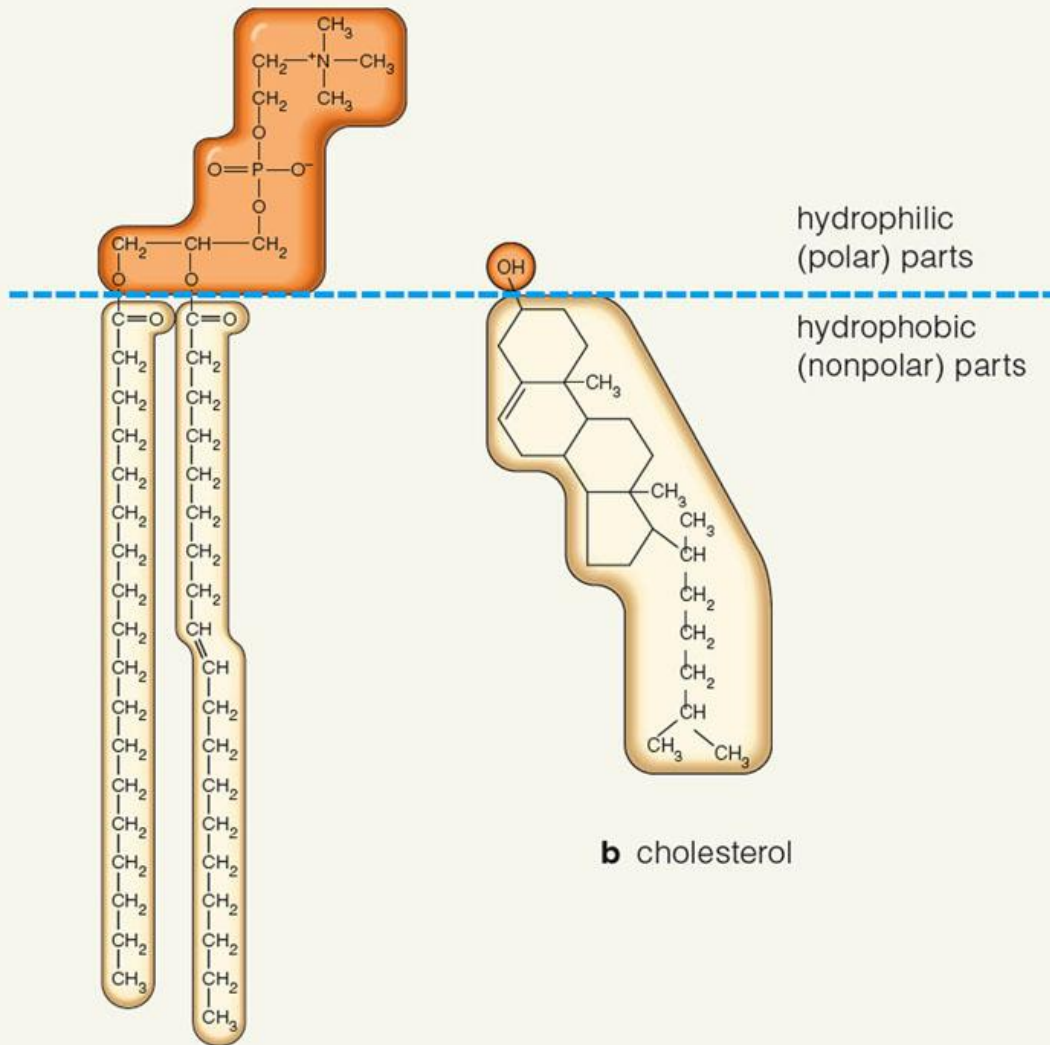


Cell Membrane Organization Detail



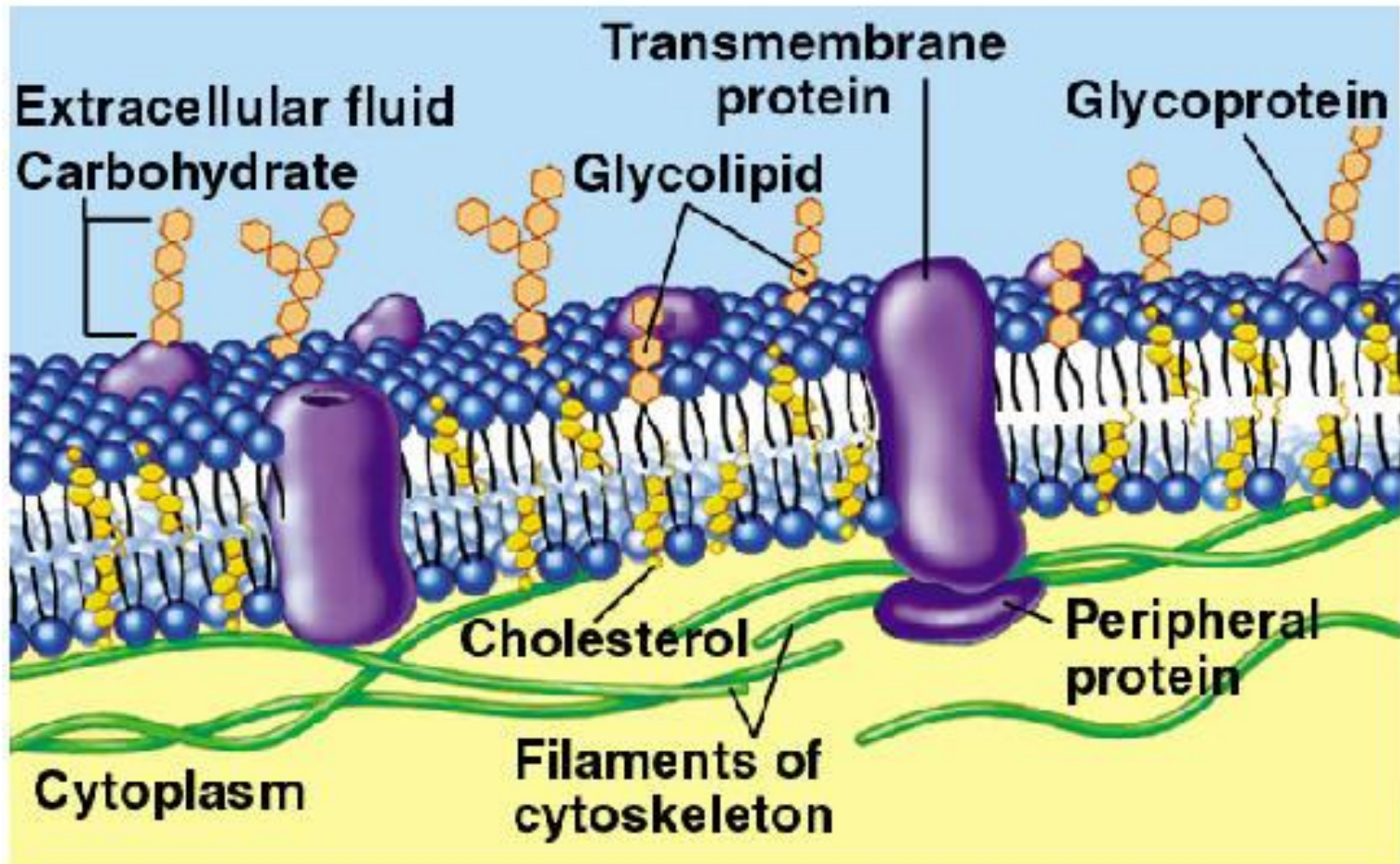
- Unsaturated fatty acid tails are bent and fit together loosely (more fluidity).
- Saturated fatty acid tails fit together compactly.

Plasma Membrane

Phospholipid molecules in the plasma membrane have two parts

- Hydrophilic heads interact with water molecules to provide passage
- Hydrophobic tails interact with each other, forming a barrier to hydrophilic molecules
- The matched pairs thus allow regulation of liquid and solids into and out of the individual cell
- Cholesterol - Stabilizes the membrane by providing rigidity
- Channel and Carrier Proteins: Selective transport of ions and polar molecules across the membrane.
- Glycoproteins (Proteins combined with carbohydrates) on cell surface.

Fluid Mosaic Model



The Cell Membrane Fluid Mosaic Model

- 1972 (singer and Nicolson)
- A fluid mosaic describes the organization of cell membranes as flexible, not solid and fixed
- Phospholipids drift and move like a fluid
- The bilayer is a mosaic mixture of phospholipids, steroids, proteins, and other molecules
- So, the cell membrane is not solid/static/fixed but rather elastic and adaptable to changing needs

Fluid mosaic model

- Phospholipid bilayer
 - Lateral movement
 - transverse movement

Detail of Membrane Protein Functions

Table 5.1 Common Types of Membrane Proteins

Category	Function	Examples
Passive transporters	Allow ions or small molecules to cross a membrane to the side where they are less concentrated. Open or gated channels.	Porins; glucose transporter
Active transporters	Pump ions or molecules through membranes to the side where they are more concentrated. Require energy input, as from ATP.	Calcium pump; serotonin transporter
Receptors	Initiate change in a cell's activity by responding to an outside signal (e.g., by binding to a signaling molecule).	Insulin receptor; B cell receptor
Cell adhesion molecules	Help cells stick to one another and to extracellular matrix.	Integrins; cadherins
Recognition proteins	Identify cells as self (belonging to one's own body or tissue)	Histocompatibility molecules
Enzymes	Speed reactions without being altered by them.	Diverse hydrolases

Variations On The Fluid Mosaic Model

- Differences in membrane composition
 - Different kinds and numbers of carbohydrates are attached to membrane proteins
 - Different kinds of phospholipids may be present
- Differences in fluidity
 - Some proteins are attached to the cytoskeleton; others just drift around
 - Archaeans have more rigid membranes than either bacteria or eukaryotes

Adaptations

- Increase in unsaturated fatty acids at lower temperatures and increase in saturated fatty acids at higher temperatures helps maintain the fluidity of the membranes.
- More cholesterol in warm blooded animals.
- Less cholesterol in cold blooded animals.

<https://2.bp.blogspot.com/-JQTLegyMhA/UEstB9TqGuI/AAAAAAAAAWs/vCTrqISBwR8/s640/Pink+Paint+Shades+C.JPG>

				
Soft Serenade	Pink Beauty	Rosette	Azalea	Watermelon
				
Damask	Ethereal Rose	Moss Rose	Rose Quartz	Geranium Pink
				
Terra Rose	River Rouge	Berry Red	Poppy	Cherry Rose
				
Swan Lake	Rose Reflection	Lady Pink	Cotton Candy	Pink Haze
				
Slipper Pink	Clear Pink	Pristine Petal	Sweetheart Rose	Pink Spray
				
Chiffon Rose	Seashell Pink	Calamine	Pink Hermosa	Bashful