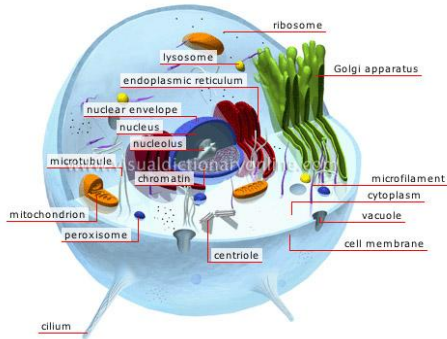


Structure and Function of the Cell Membrane

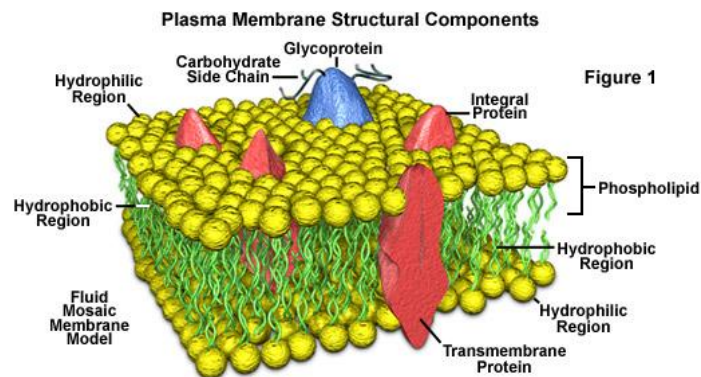
Observe the diagram below to identify possible functions of the cell membrane



Functions of the cell membrane:

- To separate the contents of the cell from its external environment
- To protect the cell by keeping harmful substances out and useful ones in
- To communicate with other cells and the external environment

While the cell membrane looks like a simple barrier surrounding the cell, it is actually quite complex.

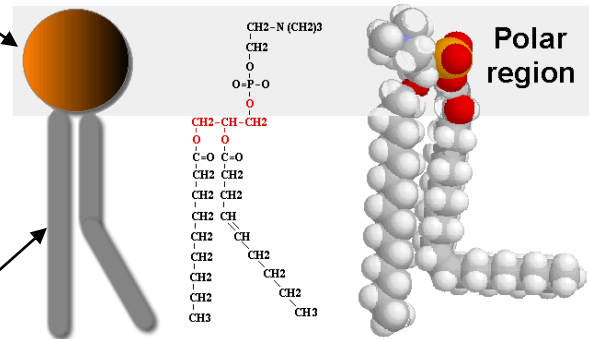


Phospholipid structure:

Hydrophilic head-(water-loving)

Phospholipids

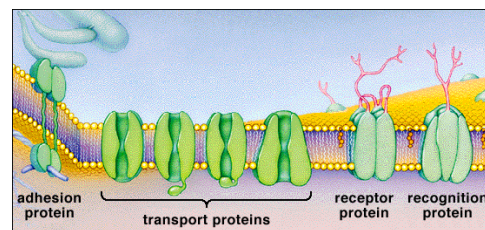
Hydrophobic tails-(water-fearing)



Phospholipid bilayer: two layers of phospholipids with the hydrophilic heads facing out to the environment and in toward the cytoplasm and the hydrophobic tails buried in-between.

Proteins: found embedded within the lipid bilayer (can move throughout membrane)

Protein Channels-



Allow substances to pass into and out of cell that cannot pass through the lipid bilayer

Carrier Proteins-

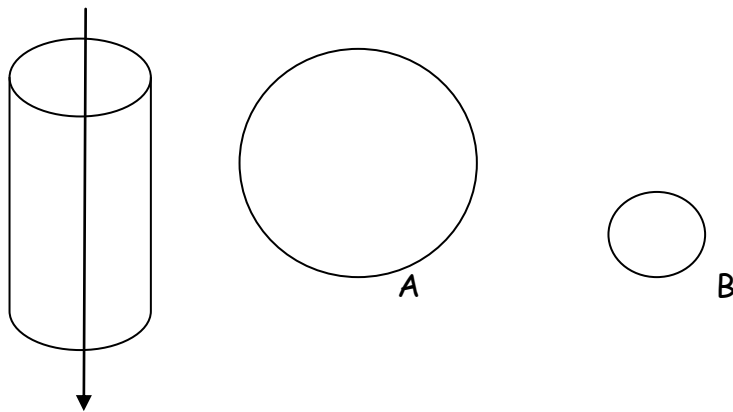
These proteins will actually move to transport molecules from inside or outside of the cell

Receptors- antennae-like structures that stick out off of surface of the cell (have specific shapes that only recognize certain substances)

*receptors help maintain homeostasis by only recognizing and allowing certain substances to enter, while keeping others out

Semipermeable (Selectively Permeable):

Observe the tube below and identify which objects would be able to pass through the tube and provide an explanation:



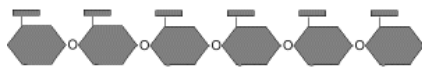
*molecule B is small enough so it can pass through the cylinder

The cell membrane behaves in a similar fashion to this tube. Only objects that are small enough to pass through can enter the cell across the lipid bilayer.

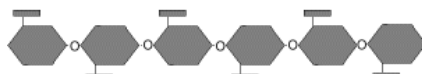
Applying Your Knowledge: Which of these substances is more likely to pass through the cell membrane? Explain. *glucose is the only one that could pass through

because it is small enough

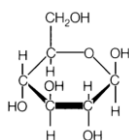
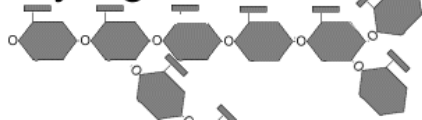
Starch



Cellulose



Glycogen



Glucose

Lipid Solubility and Permeability of Cell Membrane:

Substances like oxygen, water, carbon dioxide can diffuse through the lipid bilayer portion of the cell membrane as they are soluble (can be dissolved in) lipids.

Substances like glucose are not soluble in lipids and therefore can only enter the cell through a protein channel.