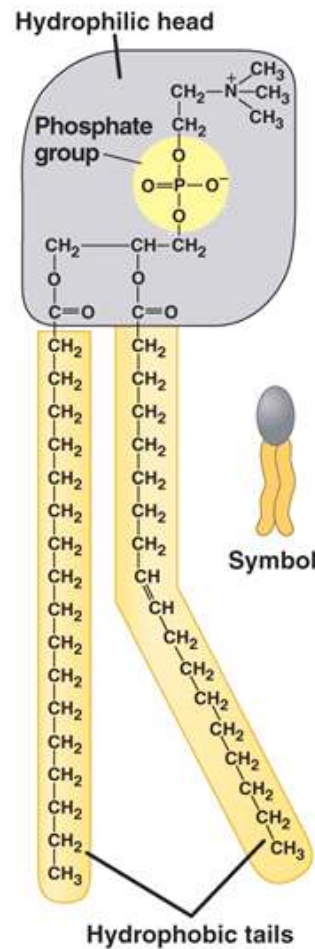
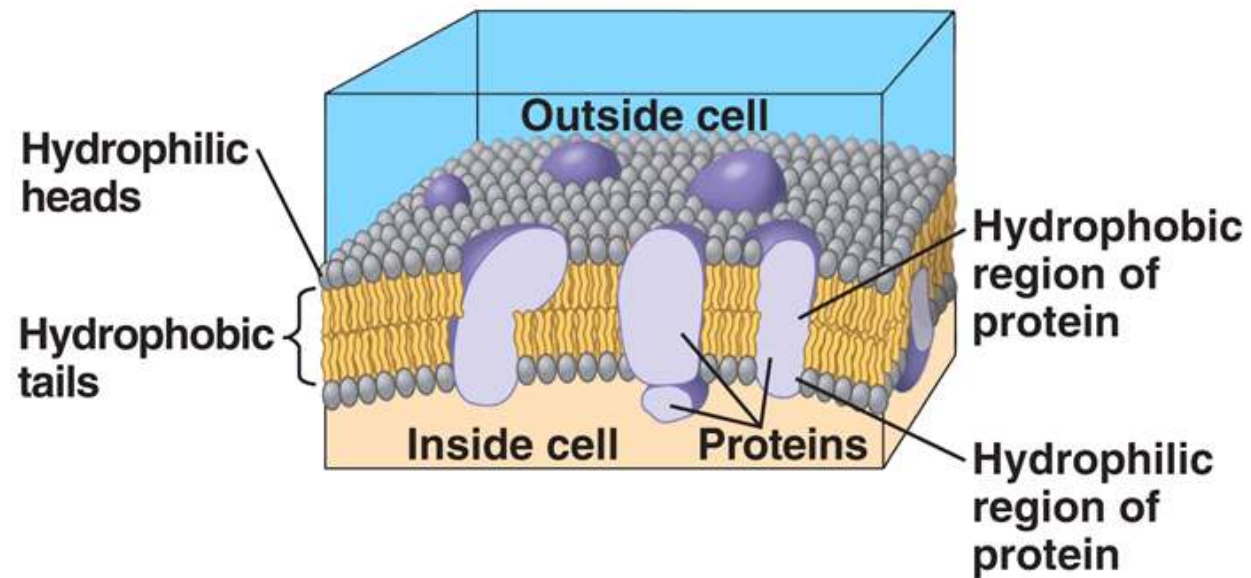


Structure of the Cell Membrane



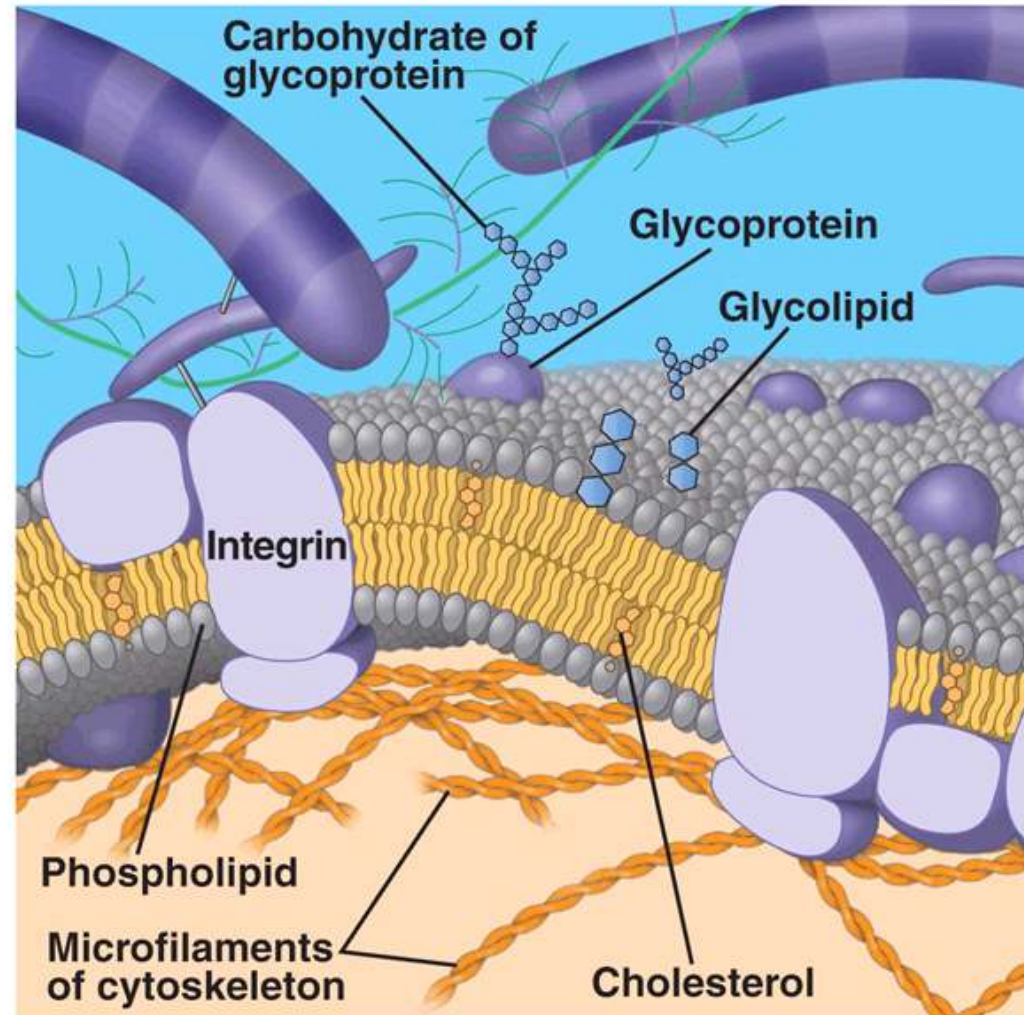
A Phospholipid molecule

A phospholipid bilayer



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Other types of macromolecules are embedded in the P.L.B.



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Functions of Macromolecules of the Plasma Membrane:

Phospholipids: main component of membranes, creates a hydrophobic layer within two hydrophilic layers, results in "selective permeability" of membrane, provides anchoring capabilities for both polar and nonpolar molecules

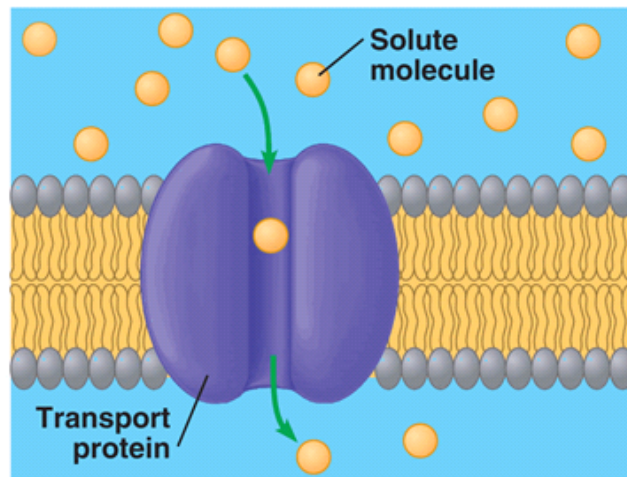
Proteins: allow for cell recognition (glycoproteins), transport of materials through membrane (channel proteins), support of membrane (integrins), control of reactions (enzymes), and receiving of molecular signals (receptor proteins)

Cholesterol: provides firmness to hydrophobic region of membrane

Diffusion is the tendency of particles to spread out from areas of HIGH concentration to areas of LOW concentration

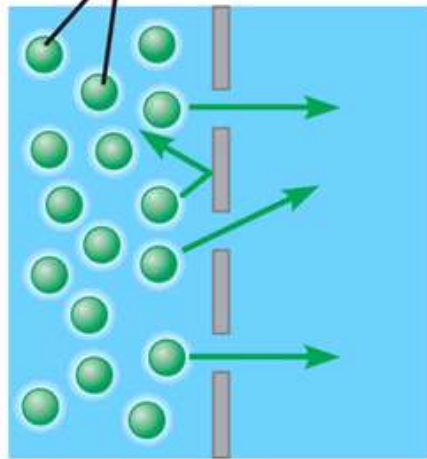
The ability of substances to diffuse through a membrane is limited by SIZE and POLARITY of the substance

- small and/or non-polar molecules like CO_2 and O_2 can easily pass through the membrane
- large and/or polar molecules, like glucose and water, require a channel protein to act as a passageway through the membrane



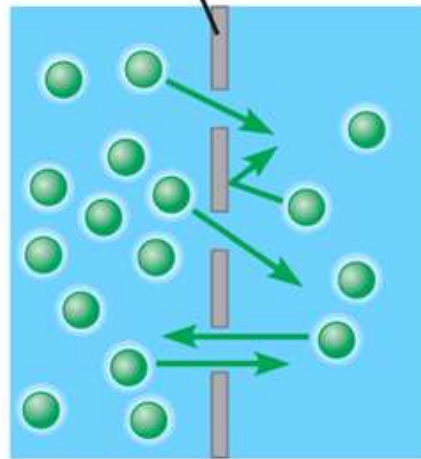
An example of "facilitated" diffusion

Molecules of dye

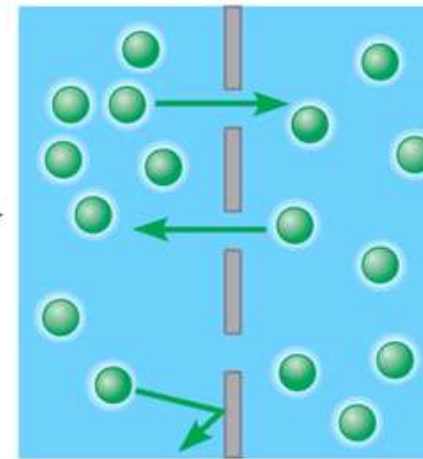


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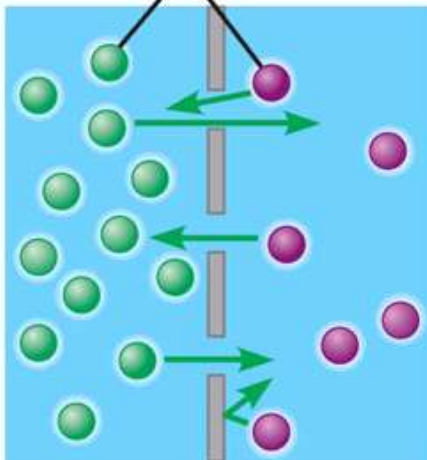
Membrane



Equilibrium

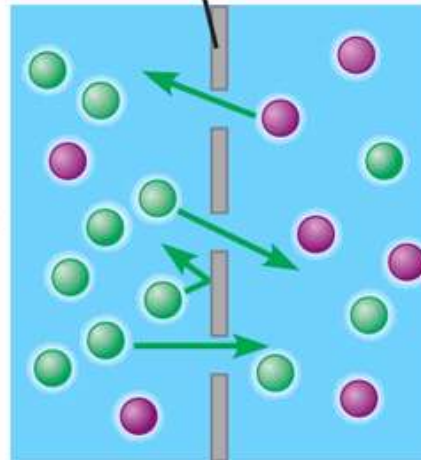


Two different substances

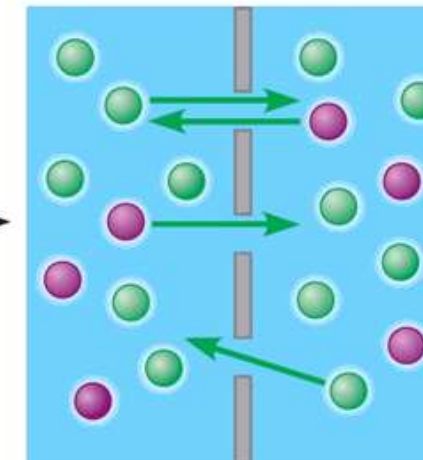


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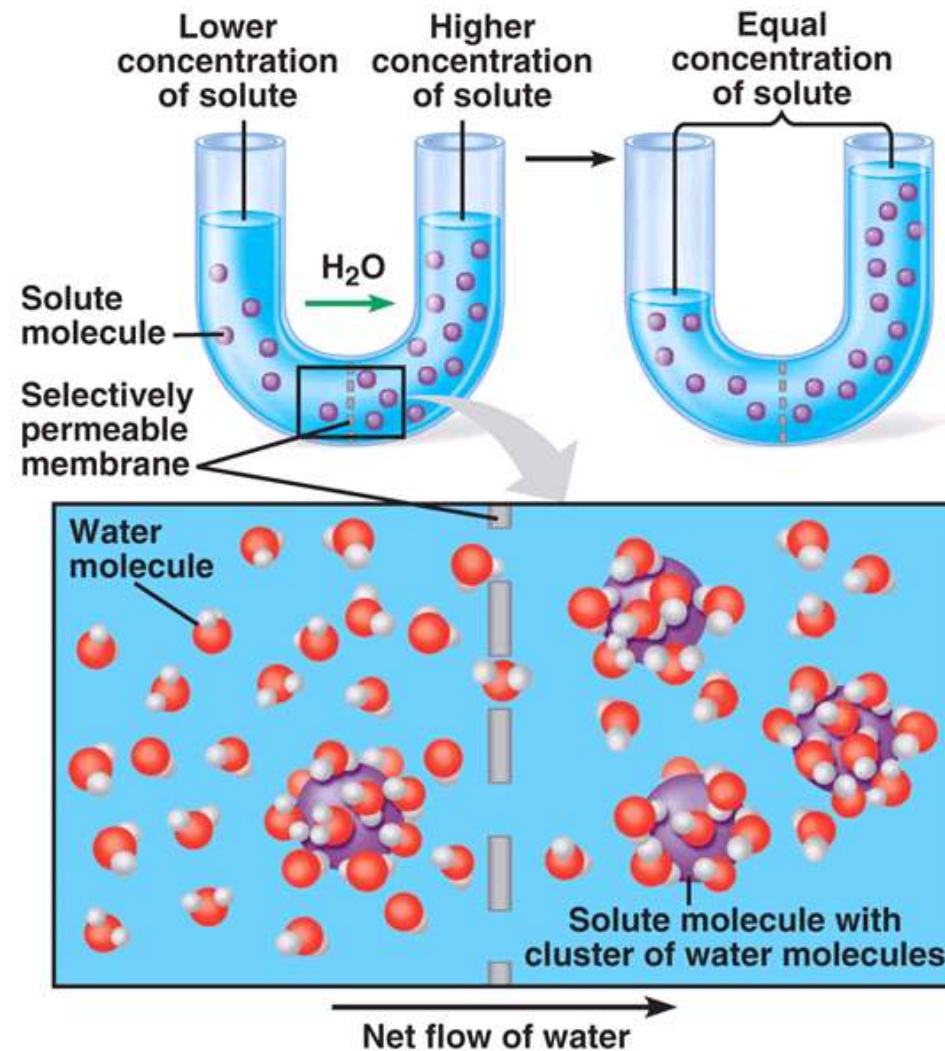
Membrane



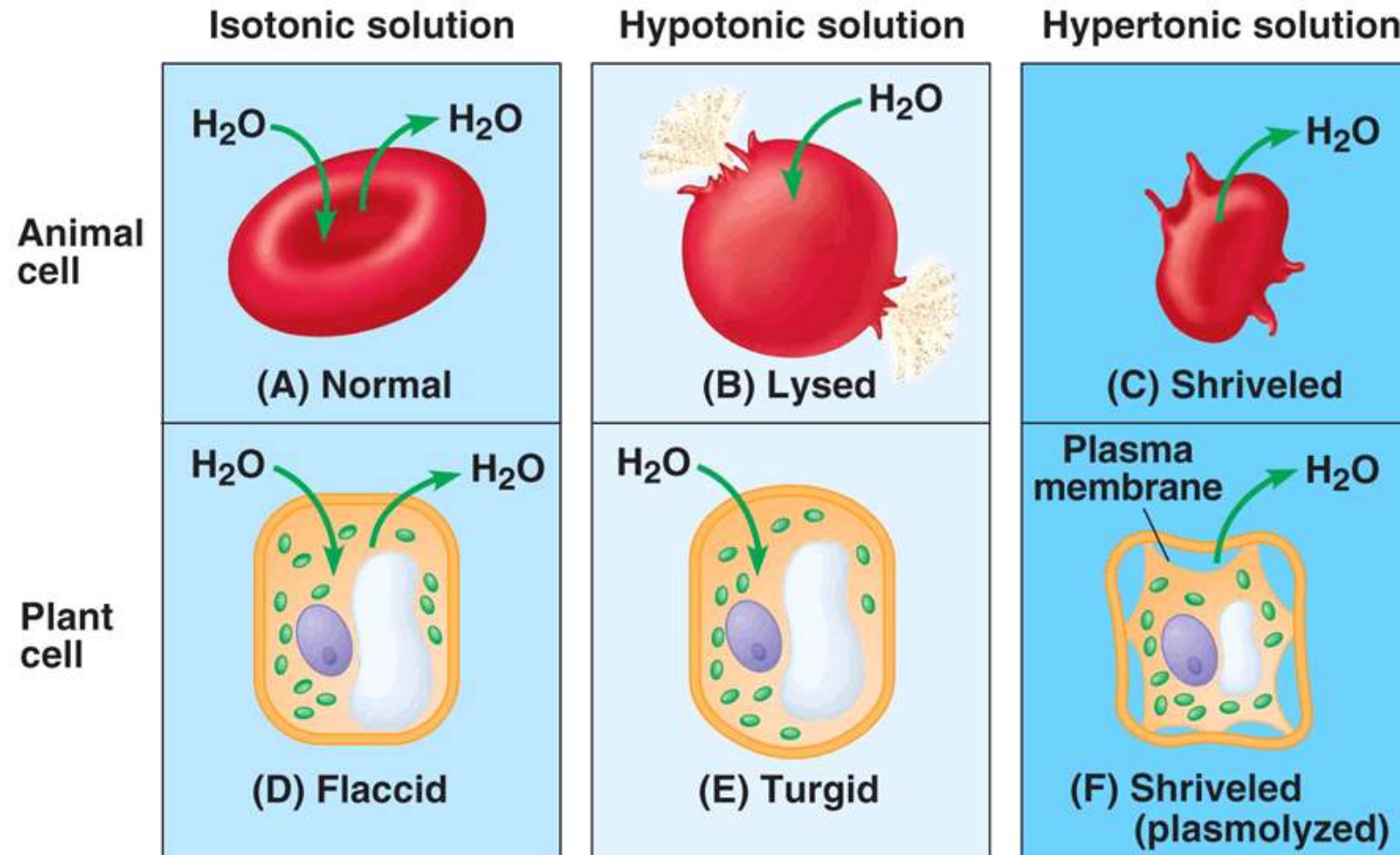
Equilibrium



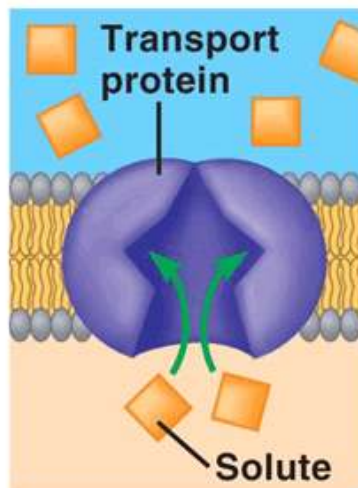
Osmosis: the diffusion of water across a selectively permeable membrane in response to a concentration gradient



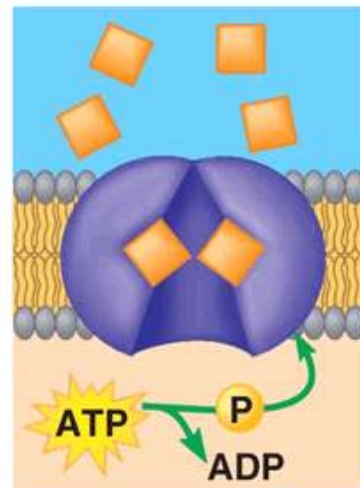
Osmotic Conditions Can Affect Cells



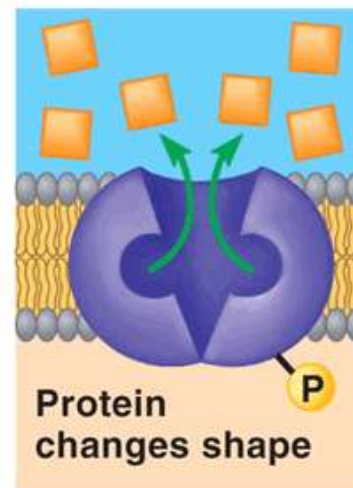
Active Transport moves substances AGAINST a concentration gradient and REQUIRES ENERGY!



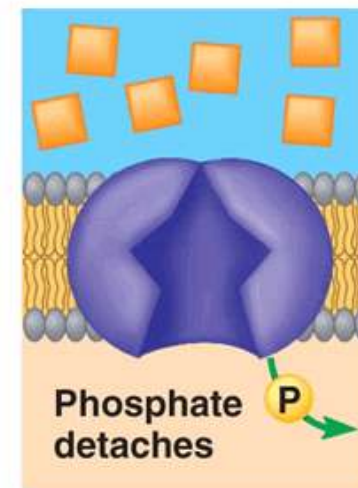
1 Solute binding



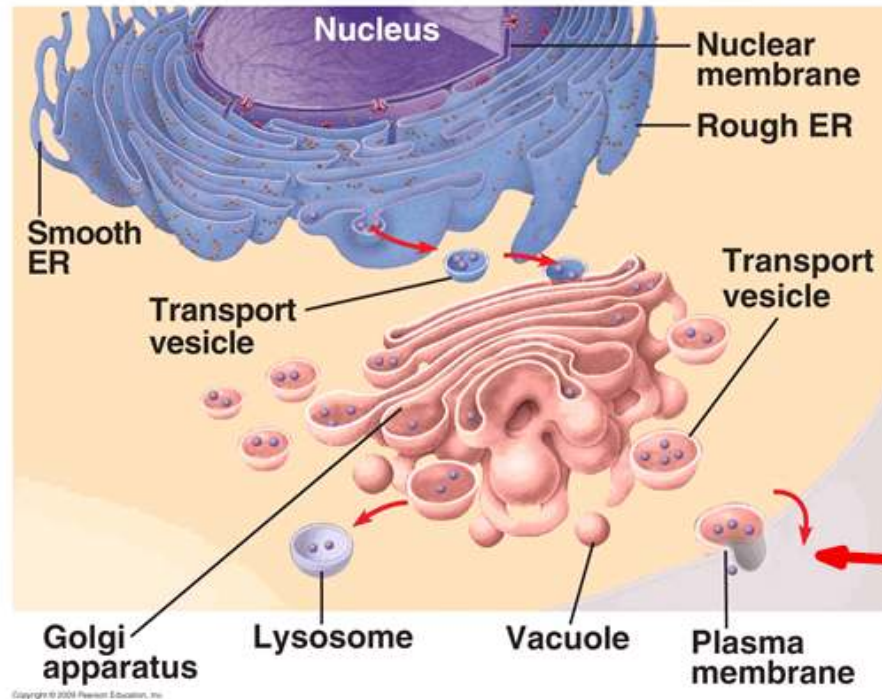
2 Phosphorylation



3 Transport



4 Protein reversion



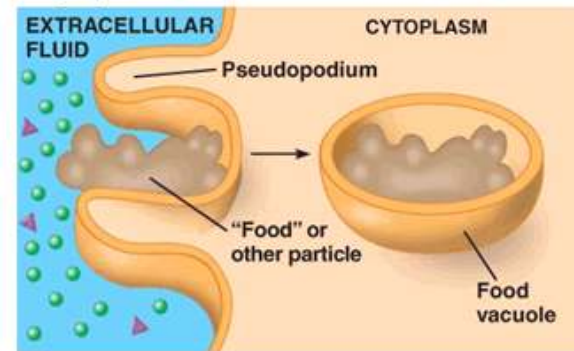
Exocytosis:

Expulsion of cellular product or materials via membrane vesicles

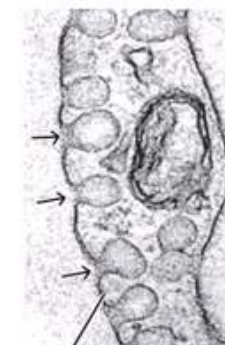
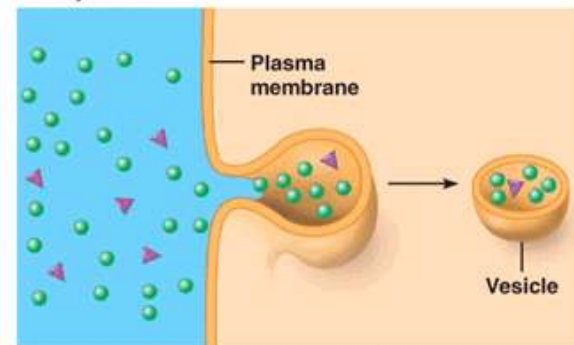
Endocytosis:

Uptake of materials into the cell using membrane vesicles

Phagocytosis



Pinocytosis



Receptor-mediated endocytosis

