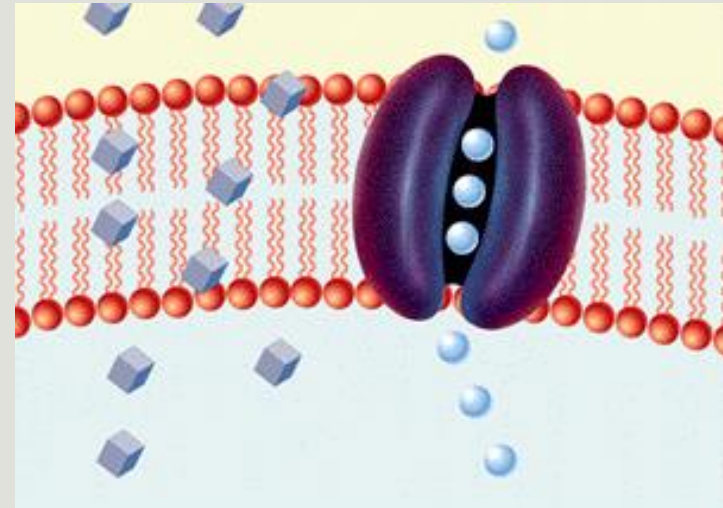
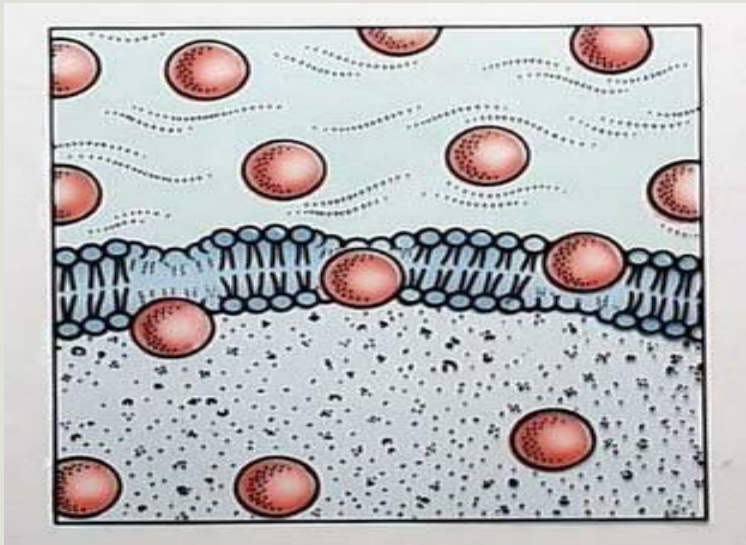
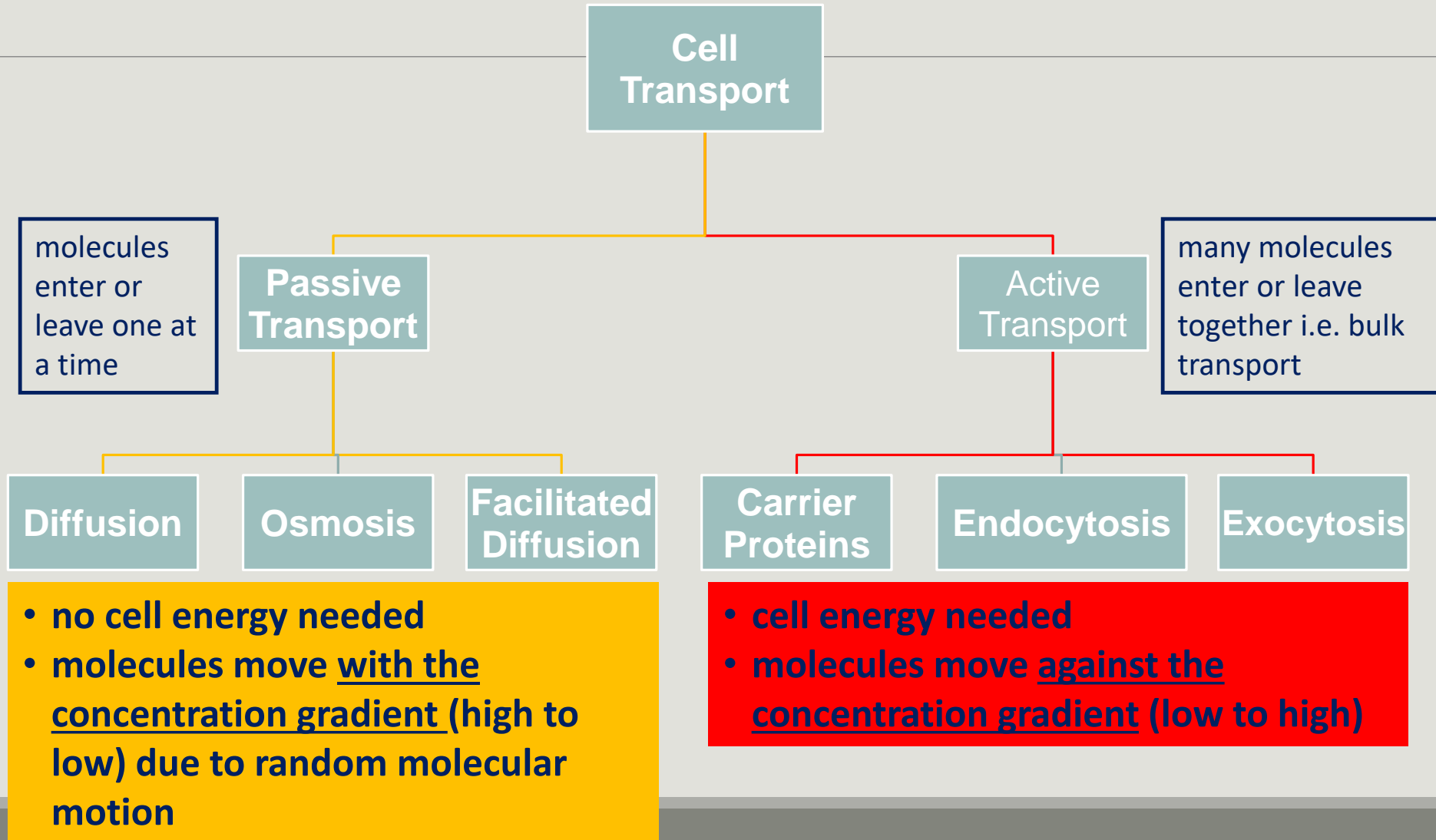


PASSIVE TRANSPORT ACROSS A MEMBRANE



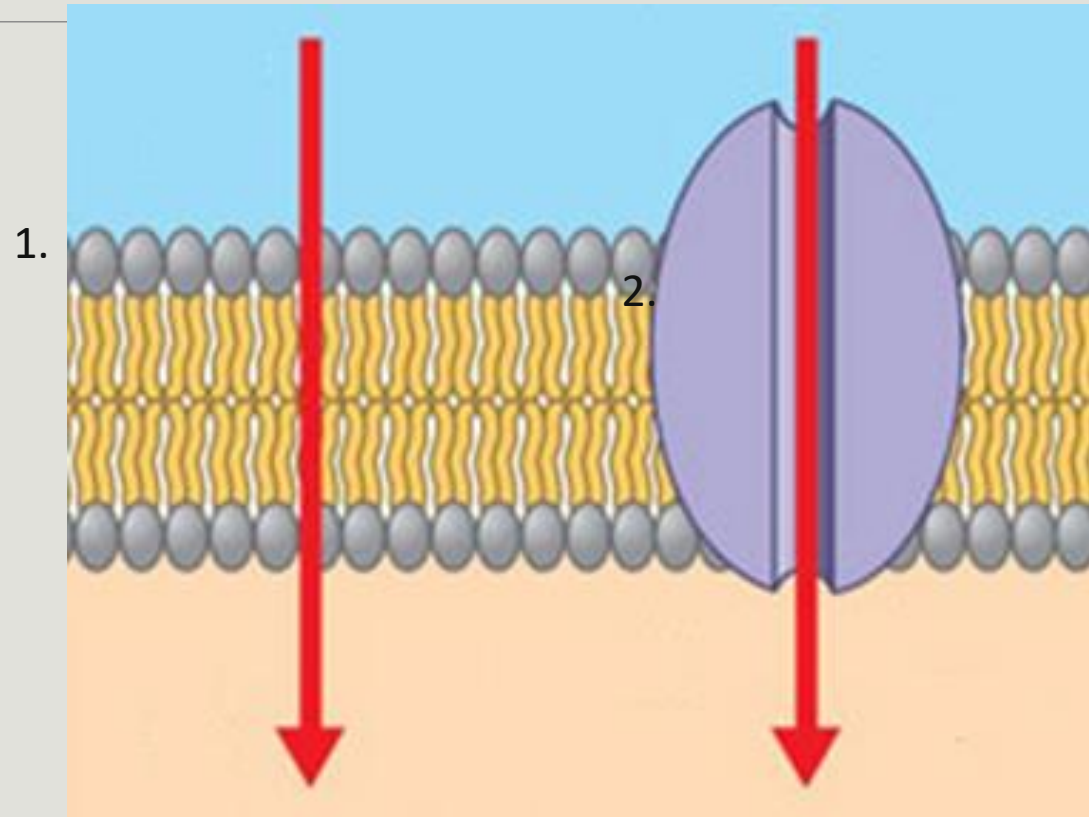
Overview of Passive & Active Transport



The Cell Membrane

There are two important parts of the cell membrane that should be mentioned when talking about transport.

1. phospholipids
2. proteins



Types of Passive Transport

There are three types of passive transport:

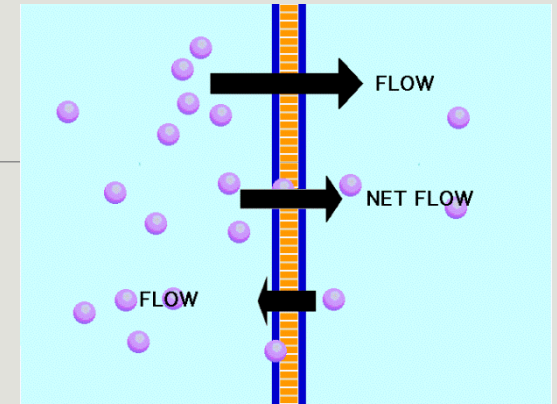
1. Diffusion
2. Osmosis
3. Facilitated Diffusion

Passive Transport

1. Diffusion:

even spreading of molecules from an area of high concentration to an area of lower concentration

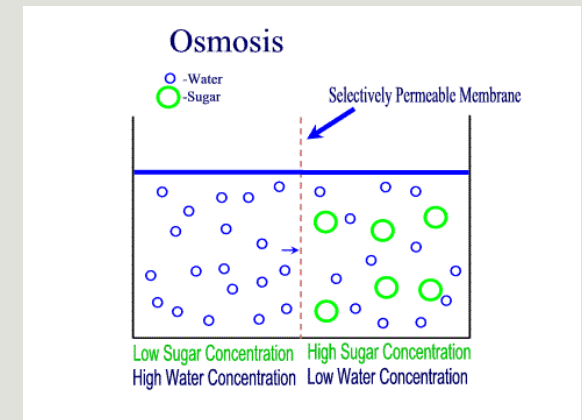
move with the concentration gradient



2. Osmosis:

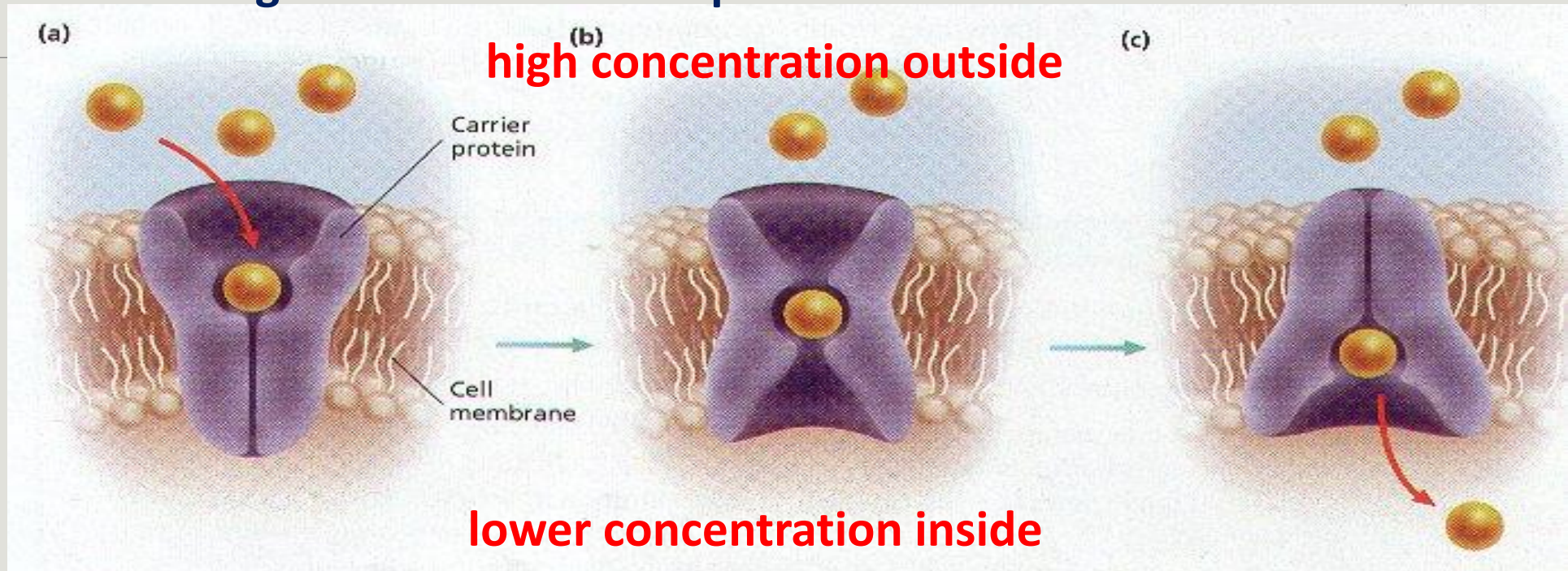
diffusion of water molecules across a selectively permeable membrane

move with the concentration gradient



3. Facilitated Diffusion

- used for molecules that are too big to pass directly through cell membrane or protein channel



a) molecule bounces into a specific carrier protein

b) carrier protein binds molecule

c) carrier changes shape & flips over, bringing molecule into cell

d) carrier protein resumes its shape

Passive Transport – How do molecules get inside the cell?

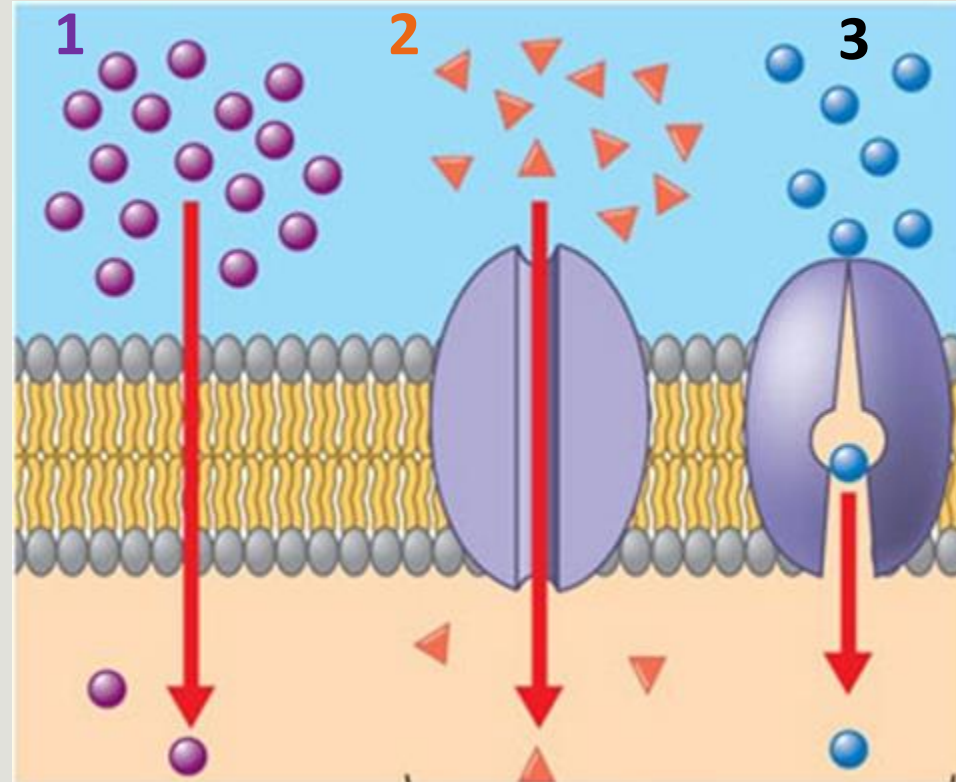
higher concentration outside of the cell

1. directly through phospholipid bilayer

- ex. • O_2
- CO_2 • H_2O
- diffusion and osmosis

2. protein channels

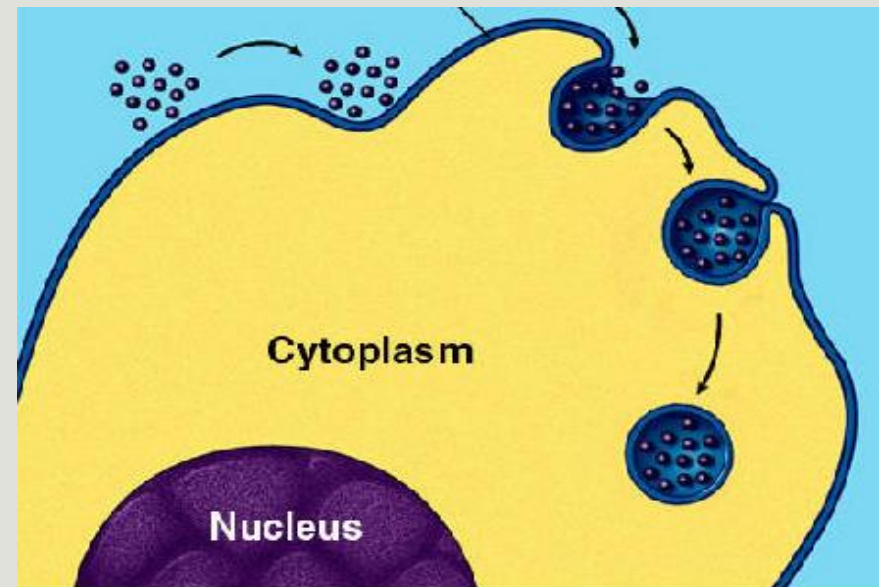
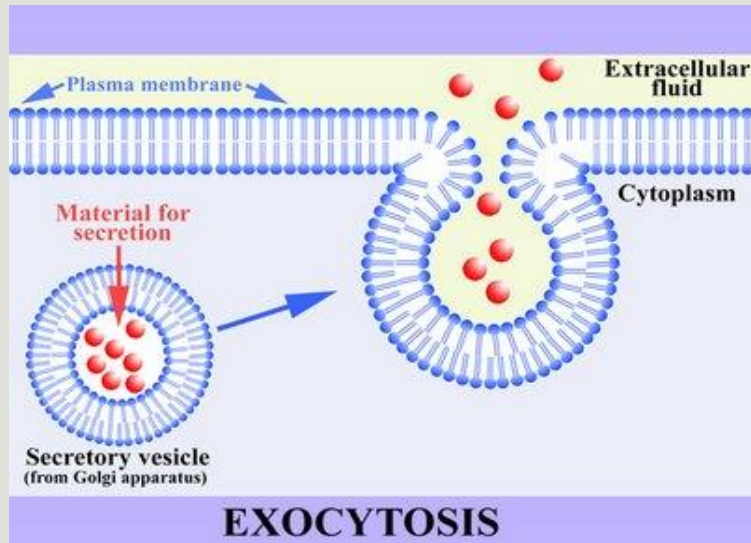
- charged ions & water
- ex. Na^+ , Ca^{2+} , K^+ , Cl^-
- diffusion and osmosis



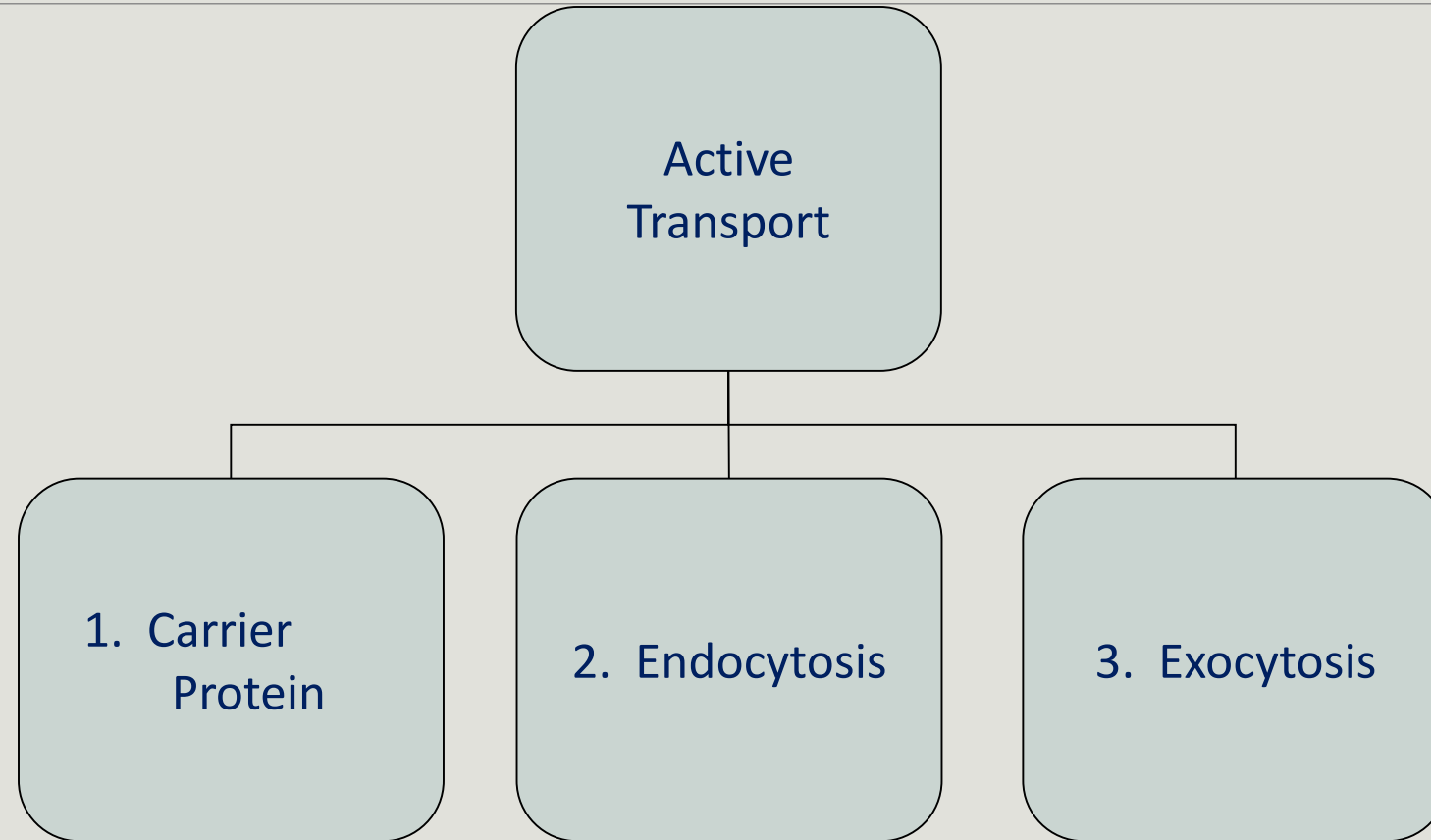
3. carrier protein

- facilitated diffusion
- larger molecules
- ex. glucose, amino acids

ACTIVE TRANSPORT ACROSS A MEMBRANE



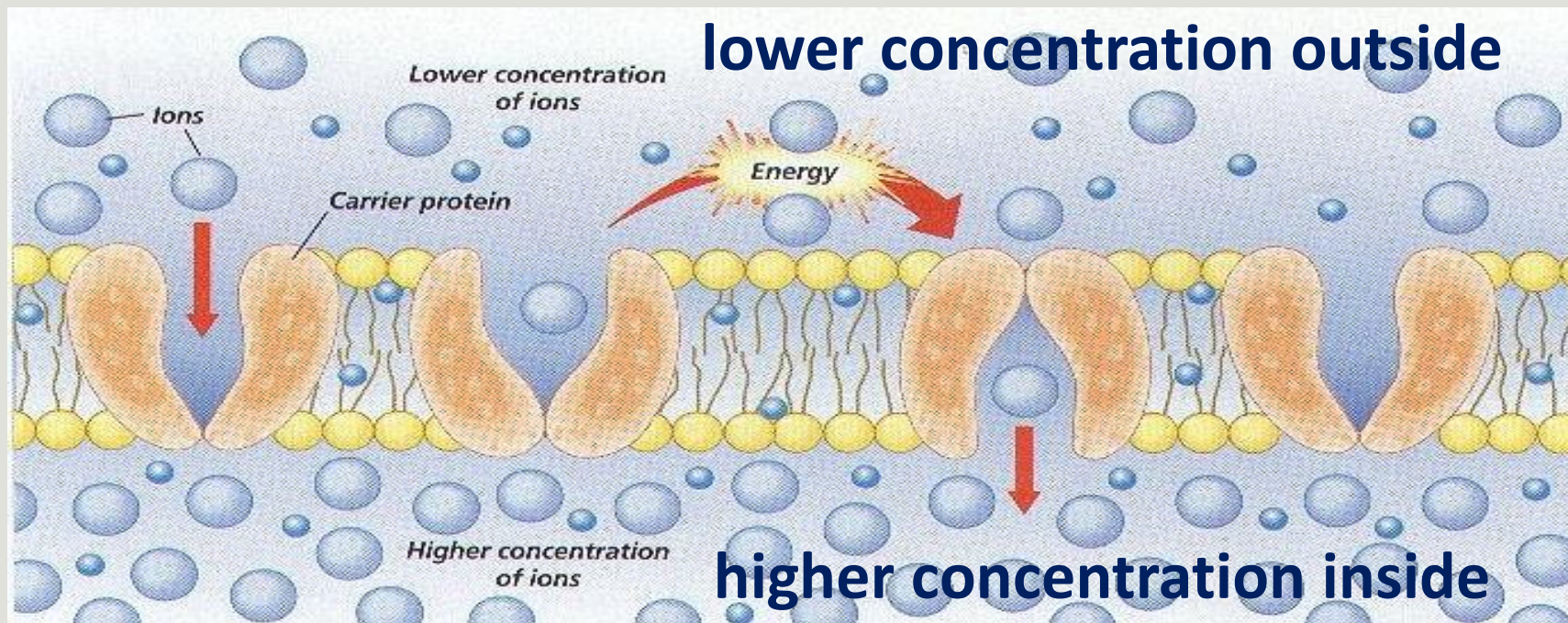
Overview of Active Transport



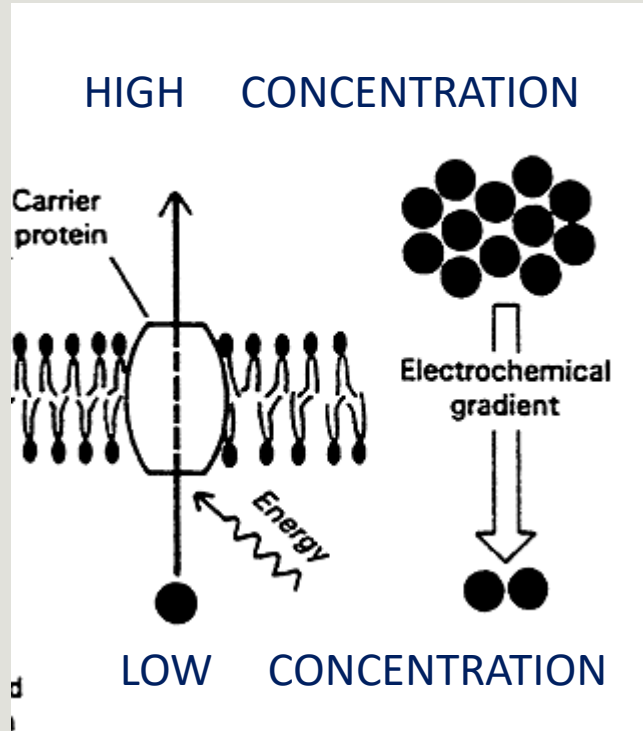
Active Transport - Single Molecules

1. Carrier Protein:

same as facilitated diffusion, but cell energy used to move molecule across membrane against the concentration gradient (from low to high)



Active Transport



Steps:

1. Solute (i.e. amino acid, vitamin, glucose) binds to carrier protein.
2. Carrier protein uses energy (ATP) to flip over & releases solute molecule to other side of the membrane.
3. Carrier protein flips back to get another solute molecule.

Active Transport - Bulk Transport

2. Endocytosis (two types):

phagocytosis: (cell eating)

large particles, whole cells or solids enter the cell

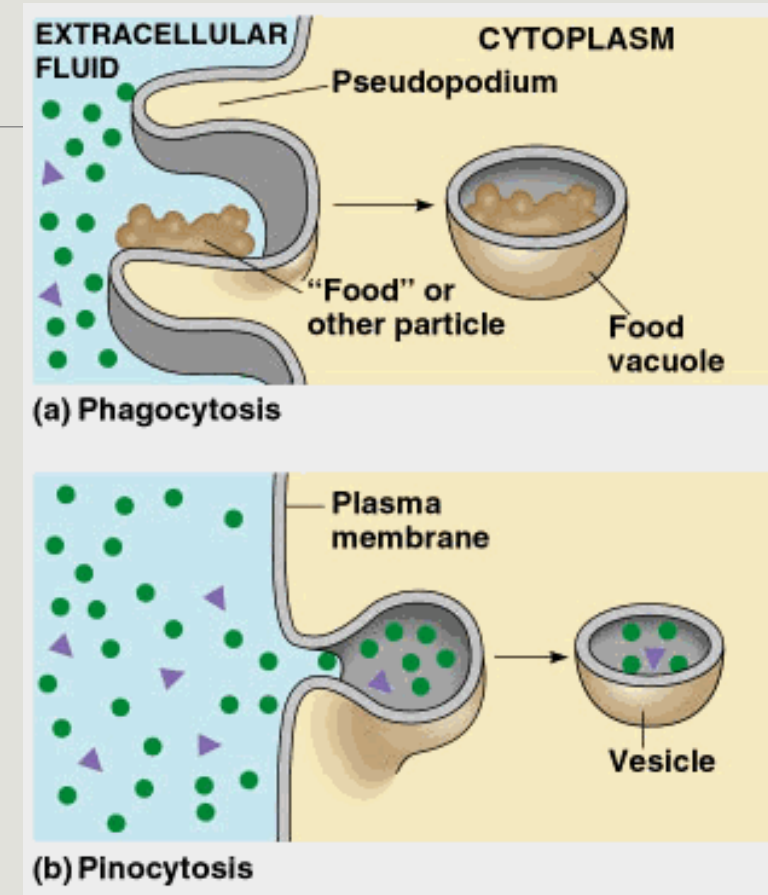
enter as a **food vacuole**

pinocytosis: (cell drinking)

bulk transport of dissolved solutes or fluids into the cell

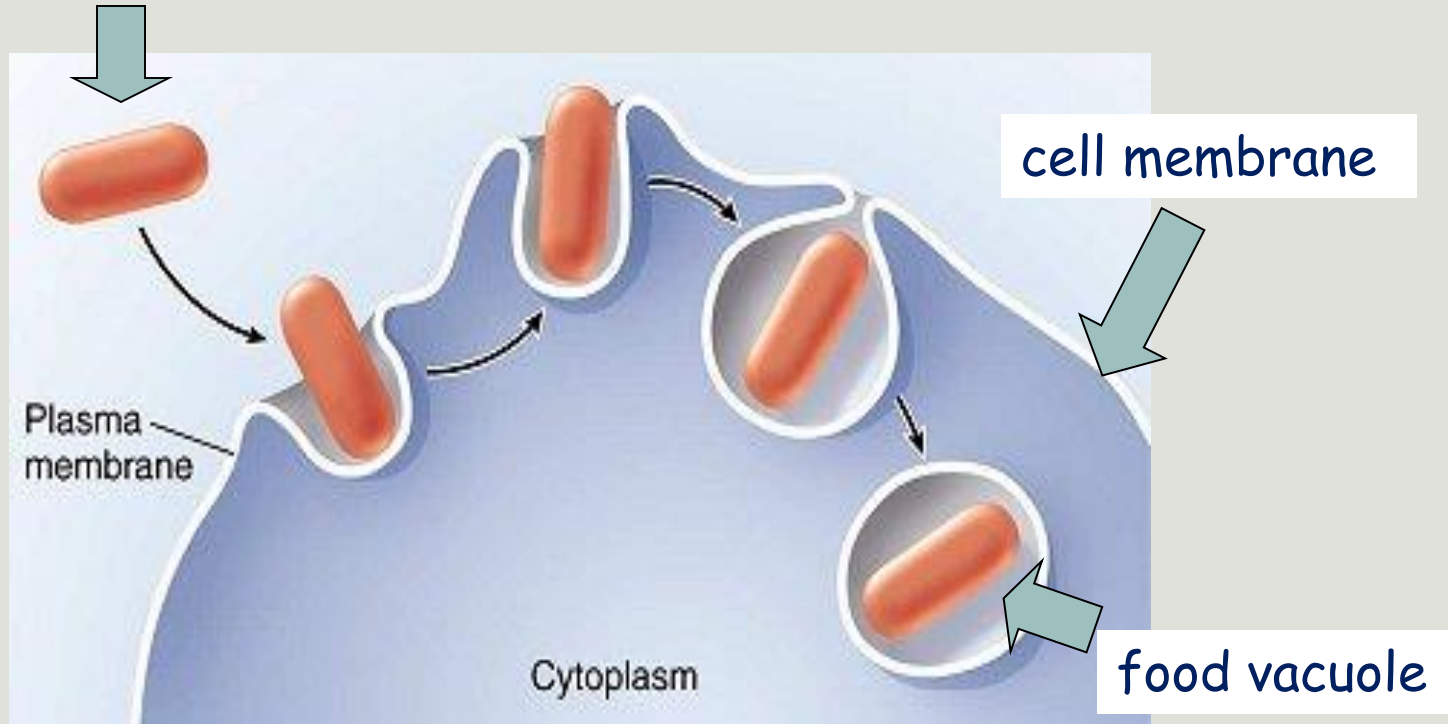
enter as a **vesicle**

Note: In both processes, the cell membrane wraps around the material being brought into the cell.



Bulk Transport - Phagocytosis

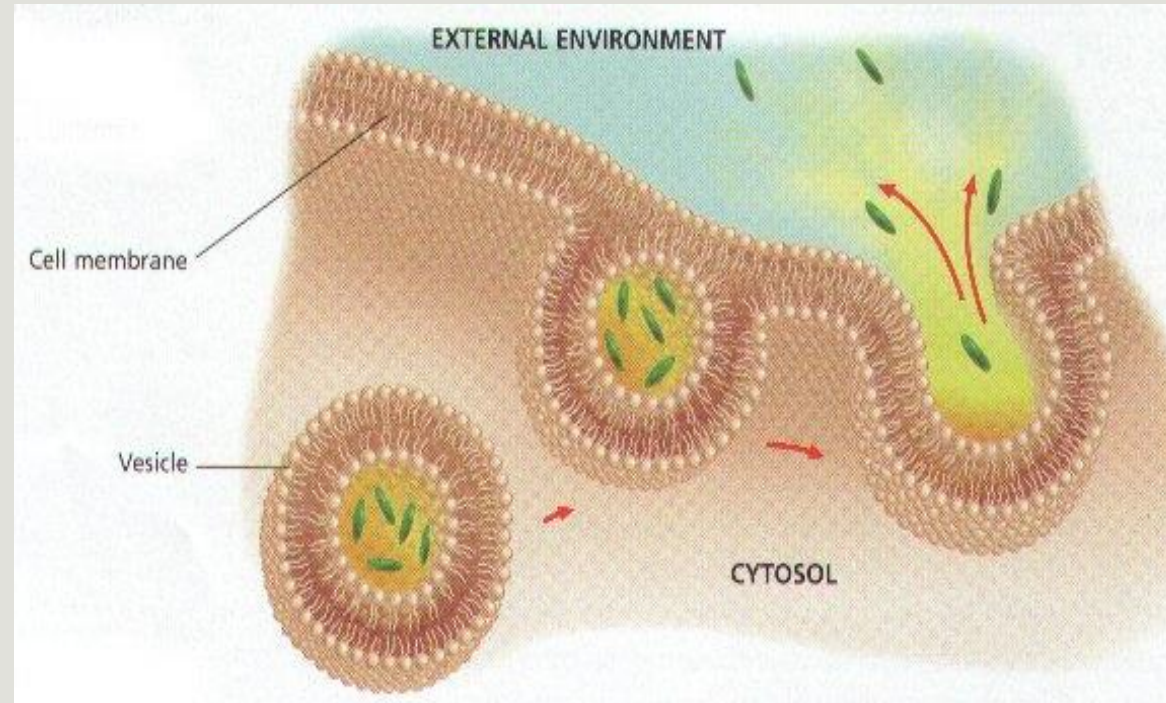
food particle



Active Transport

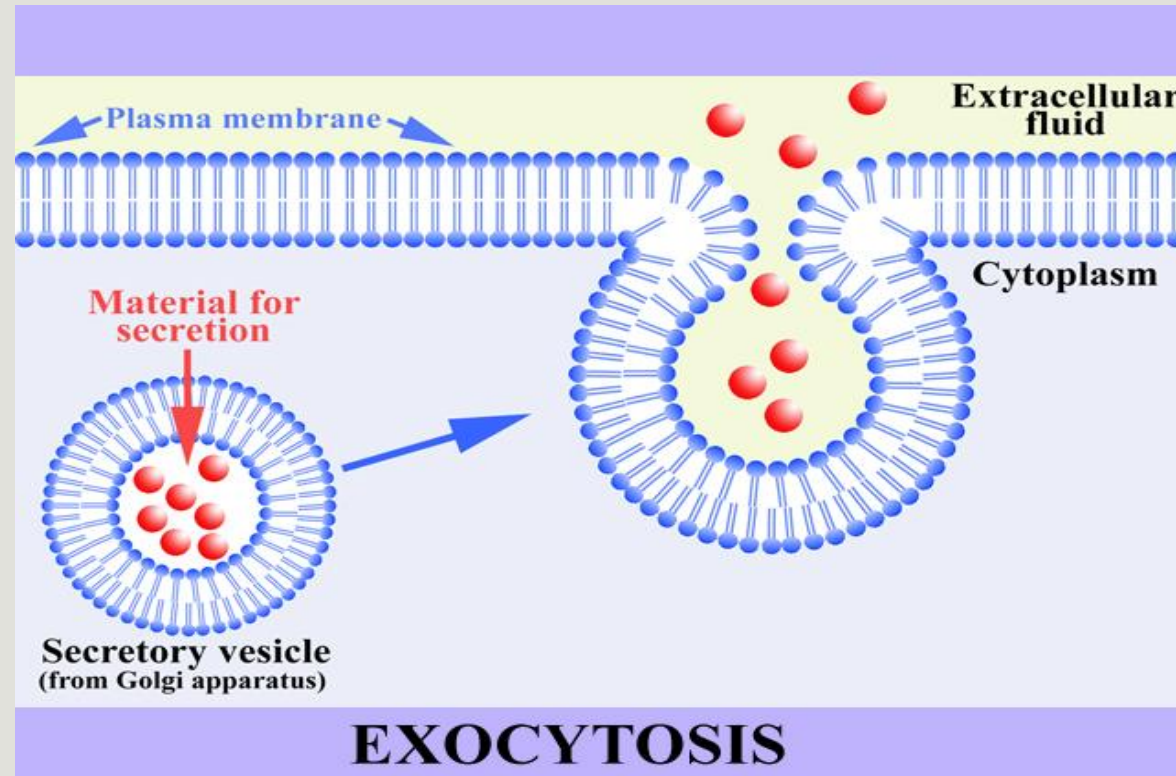
3. Exocytosis:

bulk transport of solutes or fluids out of the cell



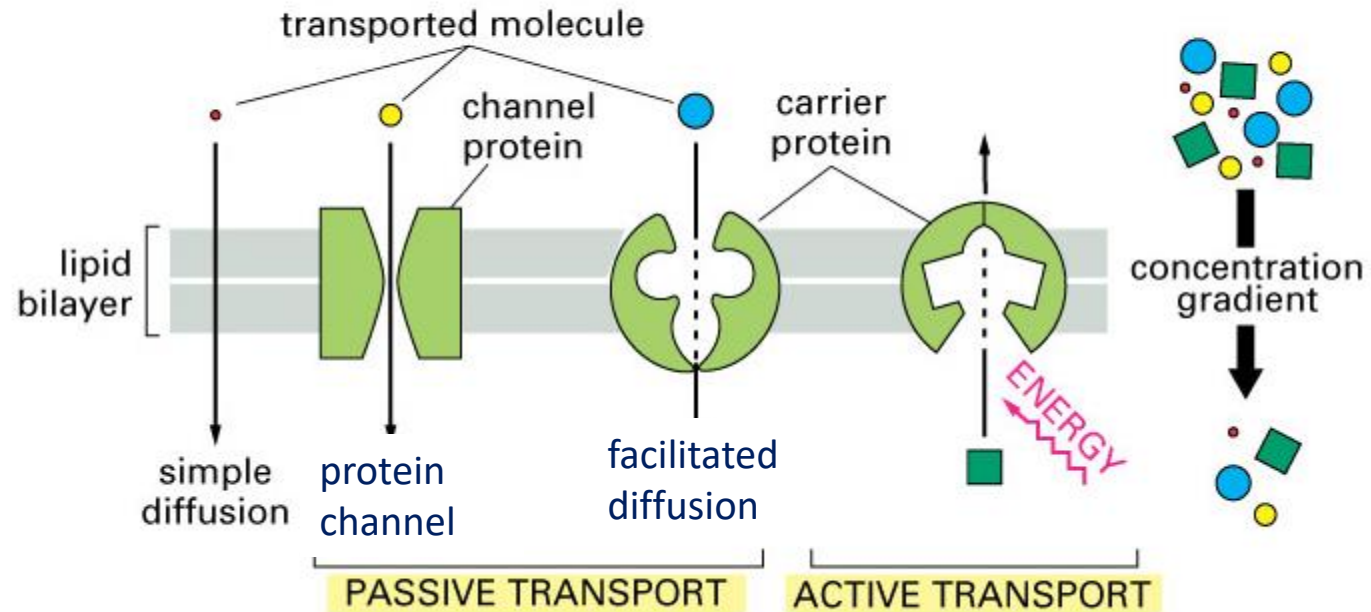
Bulk Transport - Exocytosis

This diagram is showing the same process as the last slide.



Cell Transport Overview

Single Molecules



Homework

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