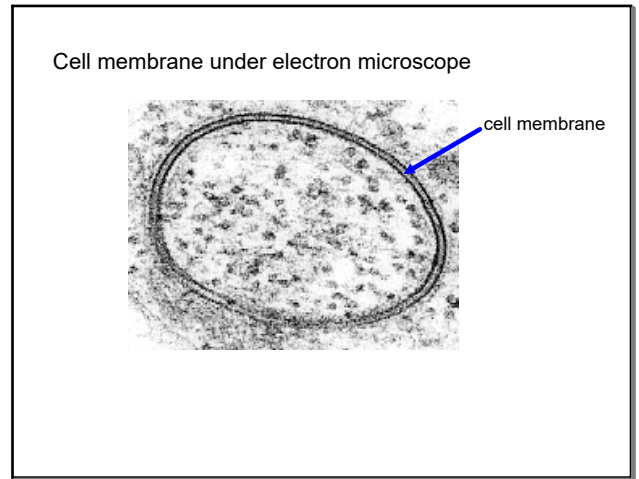
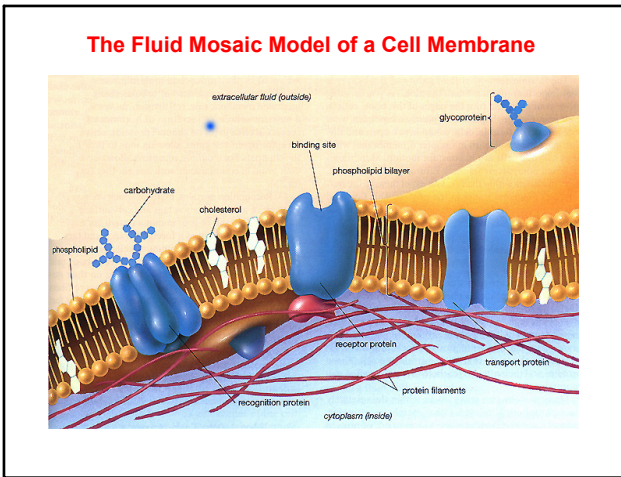


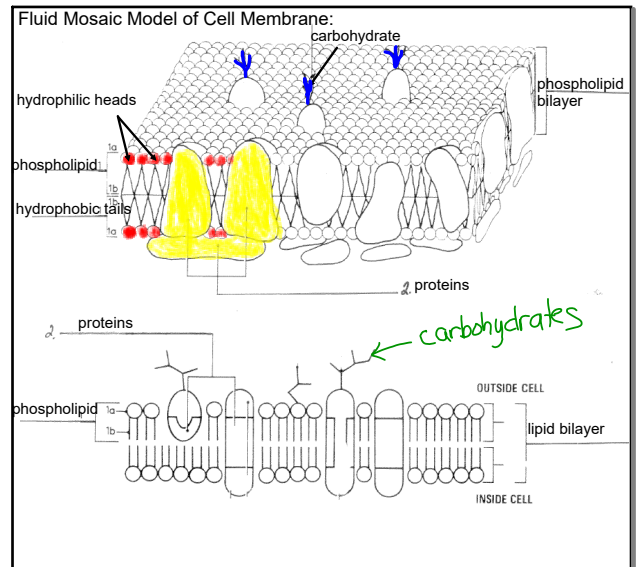
Feb 16-9:31 AM



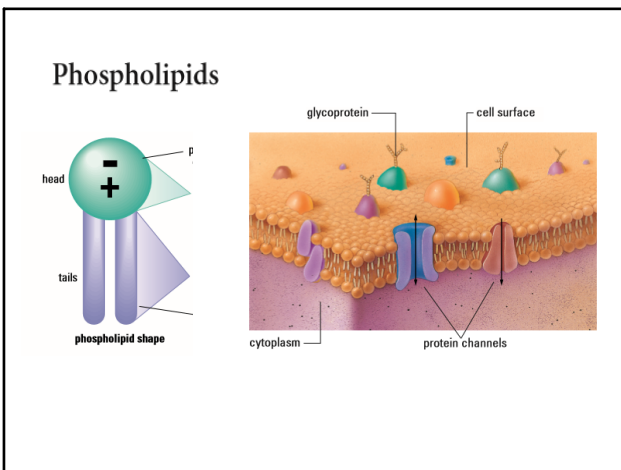
Feb 16-9:35 AM



Feb 25-7:48 PM



Feb 25-8:04 PM



Feb 13-5:31 PM

Types of Passive Transport (page 64-68)

There are three types of passive transport:

1. simple diffusion
2. osmosis
3. facilitated diffusion

1. **Simple Diffusion:**

- The movement of molecules from an area of high concentration to an area of low concentration.
- Diffusion works because molecules are constantly in motion.

Where or how have you experienced simple diffusion in your life?

1. You can smell perfume because it diffuses into the air and makes its way into your nose.
2. Cigarette smoke diffuses into the air.
3. Leave a soda bottle open and the carbon dioxide bubble will diffuse and leave it flat.
4. A tea bag placed in a cup of hot water will diffuse into the water.
5. Aroma of food diffuses into the air and smell reaches you.
6. Heat is diffused during heat conduction, such as a mug getting hot when a hot liquid is placed in it.
7. Water sweeteners slowly diffuse through your water bottle.
8. Axe deodorant spray slowly diffuses through the change room and makes its way to you.

Feb 13-5:34 PM

Concentration gradient - gradual change in concentration between two areas

Doesn't require any energy

When diffusion occurs, it is called simple or facilitated diffusion

Cell membranes are semi-permeable - only select substances can pass through by diffusion

Water, oxygen and carbon dioxide pass through the membrane on their own ions (charged molecules) and large molecules can't get through (glucose)

Simple Diffusion vs Facilitated Diffusion

Oct 14-8:37 AM

2. **Osmosis:**

- diffusion of water molecules across a selectively permeable membrane
- water moves from an area of high concentration to an area of low concentration

Where or how have you experienced osmosis in your life?

When we sit in the bathtub or submerge our fingers in water for a while they get wrinkly. And that is too because of osmosis. The skin of our fingers absorb water and get expanded or bloated; leading to the pruned or wrinkled fingers.

Oct 13-8:55 AM

3. **Facilitated Diffusion:**

- ions and large molecules cannot pass through the cell membrane on their own
- proteins help these molecules cross the membrane

Isotonic: Water particles move in and out at the same rate.
Equal solute concentration

The surroundings are hypotonic: low concentration of solute outside the cell
There is a net movement of water into the cell.

The surroundings are hypertonic: high concentration of solute inside the cell
There is a net movement of water out of the cell.

Feb 13-5:41 PM

Red blood cells	Plant cells
<p><u>Equal concentration</u> inside and out</p> <p>normal cells</p> <p>Isotonic solution</p> <p>normal cell</p>	<p><u>Greater concentration of solutes inside the cell</u></p> <p>Hemolysis, bursting of red blood cells Too much water in the cells can be dangerous.</p> <p>cells swell, burst</p> <p>Hypotonic solution</p> <p>normal turgid cell</p>
<p><u>Greater concentration of solutes outside the cell</u></p> <p>Microcytosis, shrinking of blood cells Too little water in the cells can also be dangerous.</p> <p>shriveled cells</p> <p>Hypertonic solution</p> <p>cytoplasm shrinks from cell wall</p>	<p>Plant cells</p>

Feb 13-5:58 PM

Feb 15-10:33 AM

Beaker 1

A. What is the % of water inside the cell? 90%

B. What is the % of water outside the cell? 10%

C. Will osmosis occur? YES

D. If so, in what direction will osmosis occur? OUT OF CELL

E. Will glucose diffuse? NO

F. Will the cell shrink or swell? bc water moves out

G. How do you know? bc water moves out

H. This diagram shows the cell in a(n) hypertonic / hypertonic / isotonic solution.

Beaker 2

A. What is the % of water inside the cell? 40%

B. What is the % of water outside the cell? 80%

C. Will osmosis occur? YES

D. If so, in what direction will osmosis occur? IN THE CELL

E. Will glucose diffuse? NO

F. Will the cell shrink or swell? swell bc water moves in

G. How do you know? bc water moves in

H. This diagram shows the cell in a(n) hypotonic / hypotonic / isotonic solution.

Feb 15-1:40 PM

Beaker 3

A. What is the % of water inside the cell? **30%**

B. What is the % of water outside the cell? **30% NO**

C. Will there be a net change in these concentrations? **NO**

D. Will osmosis occur? **YES** why? **water always moves**

E. Will starch diffuse? **NO** Will glucose diffuse? **NO**

F. If iodine were placed in the beaker, why would you see immediately? **Blue-black**

G. What would you see after several hours? Why? **Blue-black in the cell**

H. This diagram shows the cell in a(n) (circle one) hypotonic / hypertonic / isotonic solution.

Feb 16-11:20 AM

Active Transport:

Feb 25-10:33 AM

Feb 25-10:35 AM

1. Define *active transport*:
The movement of a substance through a membrane that requires the cell to use energy to move the substance.
2. Why might a cell go through active transport?
A cell would use active transport to move something from a LOW concentration to a HIGH concentration - against the concentration gradient.
3. Name one substance that is actively transported through the cell membrane of an animal cell.
Glucose, amino acids (proteins), small proteins, vitamins

Feb 25-8:20 PM

ENDOCYTOSIS: Movement of material INTO the cell.

The cell membrane folds around the substance to be absorbed and pinches off, forming a vesicle or vacuole.

EXOCYTOSIS: Movement of material OUT OF the cell.

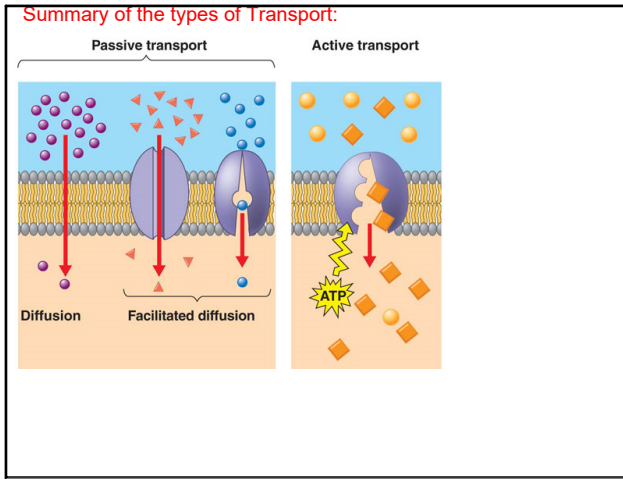
A vesicle containing substances to be removed fuses with the cell membrane and the substances are released.

Feb 24-8:31 AM

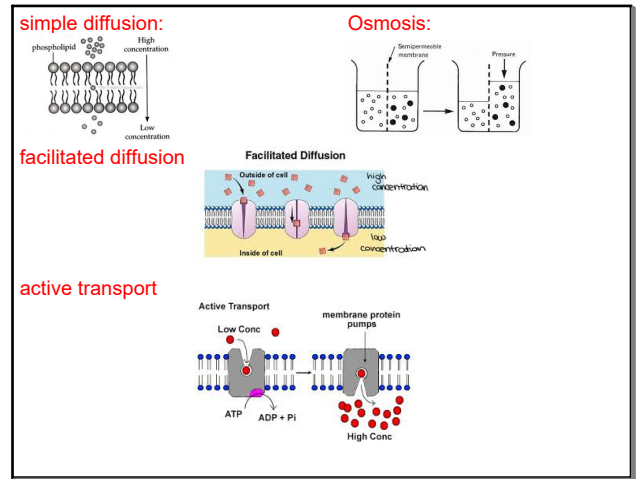
Endocytosis (Bulk transport of solid material INTO a cell)

Exocytosis:

Feb 26-10:56 AM



Feb 25-8:08 PM



Feb 25-8:08 PM

There are 3 types of passive transport. They are 1. simple diffusion
 2. facilitated diffusion
 3. osmosis

(text p. 59-64)

1. Simple Diffusion:

Cell membranes are selectively permeable - only certain substances can pass through by diffusion.

Water, oxygen and carbon dioxide pass through the membrane freely.

Charged molecules such as amino acids, carbohydrates, nucleic acids, and large lipids cannot pass through easily.

Simple diffusion is the movement of particles from an area of High concentration to an area of Low concentration.

A concentration gradient is a difference in concentration between 2 areas.

This type of transport does not require any energy.

The rate (speed) of diffusion depends on temperature and concentration of solute molecules in solution.

Diffusion occurs faster at high temperatures because molecules move faster.

Feb 25-8:06 PM

2. Facilitated Diffusion:

Cell membranes have protein molecules that "help" large charged molecules to get through.

Molecules such as glucose and charged ions such as sodium and chloride pass through the cell membrane by facilitated diffusion.

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Facilitated Diffusion

Outside of cell Inside of cell

Feb 25-8:17 PM

3. Osmosis:

Osmosis is the net movement of water across a selectively permeable membrane.

Osmosis occurs when there is a difference in solute concentration across a selectively permeable membrane.

If a cell is in a hypertonic solution, water will flow by osmosis out of the cell and the cell will shrivel.

If a cell is in a hypotonic solution, water will flow by osmosis in the cell and the cell will swell and possibly burst.

Ideally, cells should be in isotonic solution, with water flowing by osmosis both into and out of the cell equally.

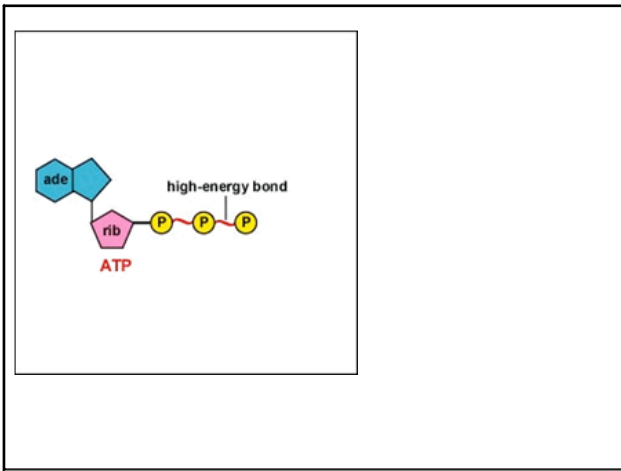
Semipermeable membrane Pressure

Feb 25-8:18 PM

How Does This Relate to Us?

1. Why do some people add salt to a steak only after it has been cooked?
2. Chemical fertilizers are composed of salts that dissolve into soil moisture and then are absorbed by the root cells of plants. Why should you never overfertilize a plant?
3. Why is it safe to inject a solution of 5% glucose directly into a vein, but not a solution of 20% glucose?
4. Why does salted popcorn dry your lips?

Feb 25-8:19 PM



Feb 28-12:48 PM



Mar 3-12:14 PM