

Organelles

1. **endoplasmic reticulum**

The organelle made up of internal membranes where lipids and proteins are synthesized

2. **Golgi apparatus**

Enzymes in this apparatus attach carbohydrates and lipids to proteins for export

3. **Chloroplast**

These organelles use sunlight to make energy-rich food molecules by photosynthesis

4. **Mitochondria**

These organelles release energy from stored food molecules to power growth, movement, and development

5. **Cell wall**

The main function of this structure found in plant cells, but not animal cells, is to provide support and protection.

6. **Nucleus**

Controls most cell processes and contains the hereditary information, DNA

7. **Cytoskeleton**

Made of microtubules and microfilaments, helps the cell maintain its shape and aids in movement

8. **Ribosomes**

Small particles of RNA and protein that are the assembly machinery of protein

9. **Lysosome**

Found in animal cells, this organelle has powerful enzymes that digest lipids, carbohydrates, and proteins, as well as waste materials

10. **Vacuole**

A sac-like structure that can be large in plant cells and stores water

11. **Centrioles**

These structures usually come in pairs and are found in animal cells but not plant cells, and they help in cell reproduction.

12. **Nucleolus**

This is a dense structure inside the nucleus which makes ribosomes

13. **Cell membrane**

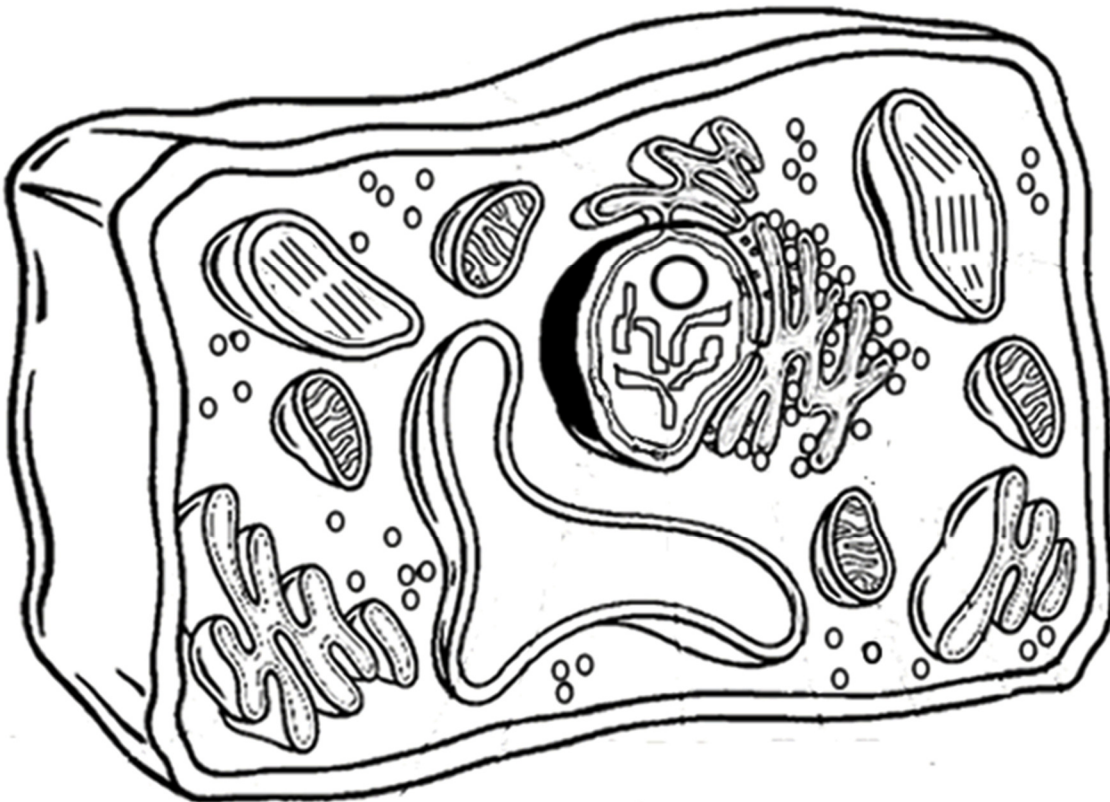
Every cell has one of these, and it separates the cell environment from the outside environment. It is selectively permeable.

Be Able to Label Cells:



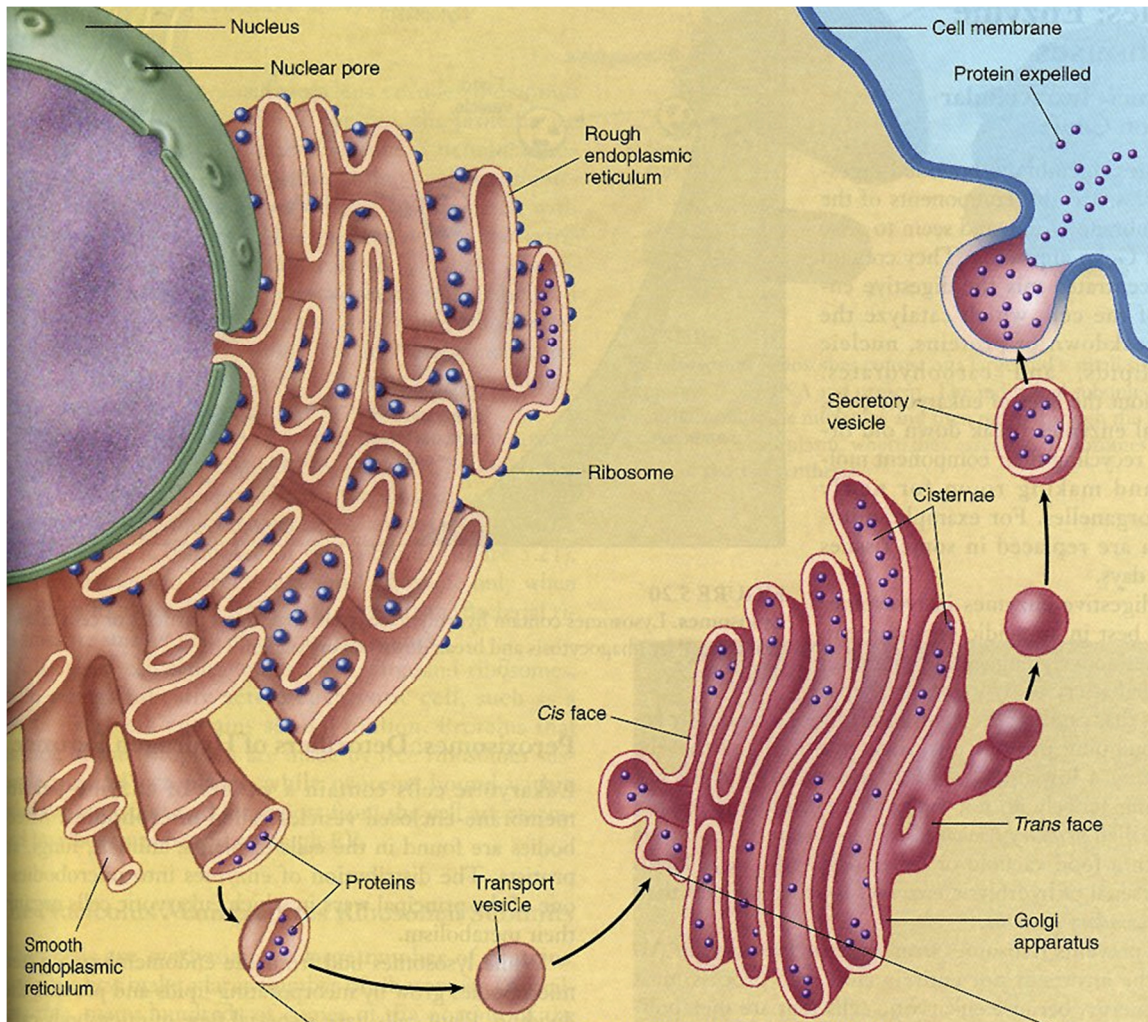
AN ANIMAL CELL

PLANT CELL



Explain what happens in the process of making and sending a protein.

Consider the nucleus, RNA, ribosomes, endoplasmic reticulum, and the Golgi apparatus.



Animal Cell versus Plant Cell

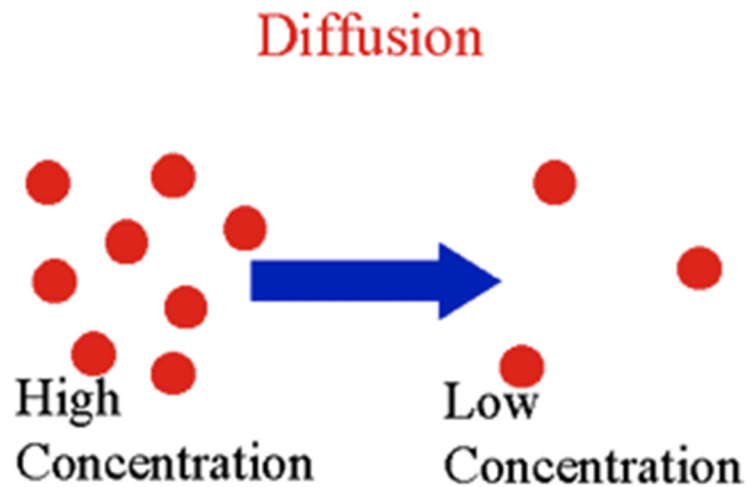
1. What are three things that are found in a plant cell, but not in an animal cell?

2. What is the function of the chloroplast?
3. What is the function of the large central vacuole?
4. What is the function of the cell wall?
5. Which of the following is NOT found in an animal cell?
 - a) lysosome
 - b) centrioles
 - c) mitochondria
 - d) cell wall
6. Which of the following is NOT found in a plant cell?
 - a) lysosome
 - b) central vacuole
 - c) chloroplasts
 - d) cell wall
7. What is the difference between chromatin and a chromosome?
8. What is the difference between the smooth endoplasmic reticulum and the rough endoplasmic reticulum?
9. A freshwater fish has cells isotonic to regular water found in a pond. Where will the water move when you place the freshwater fish into saltwater?
 - a) Water moves out of the fish
 - b) Water moves into the fish
 - c) Active transport of water into the fish's cells
 - d) No change in the fish's water content would occur
10. A saltwater fish has cells isotonic to the salty ocean. Where will the water move when you place the saltwater fish into fresh water?
 - a) Water moves out of the fish
 - b) Water moves into the fish
 - c) Active transport of water into the fish's cells
 - d) No change in the fish's water content would occur

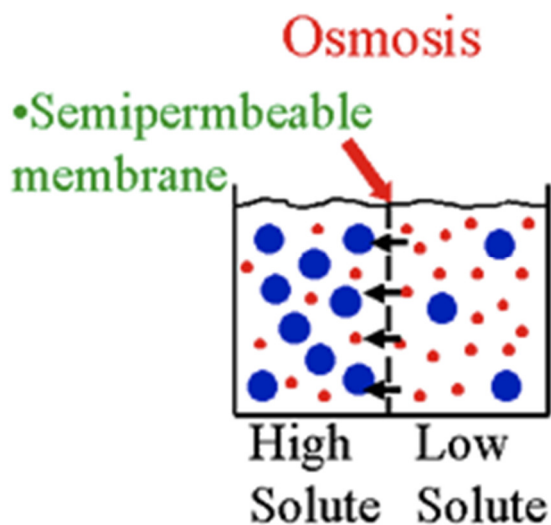
Section 7-3 Diffusion, Osmosis, Facilitated Diffusion, and Active Transport

PASSIVE TRANSPORT: no energy required

Diffusion: the process by which substances move from higher concentration to areas of lower concentration. Continues until equilibrium is reached.



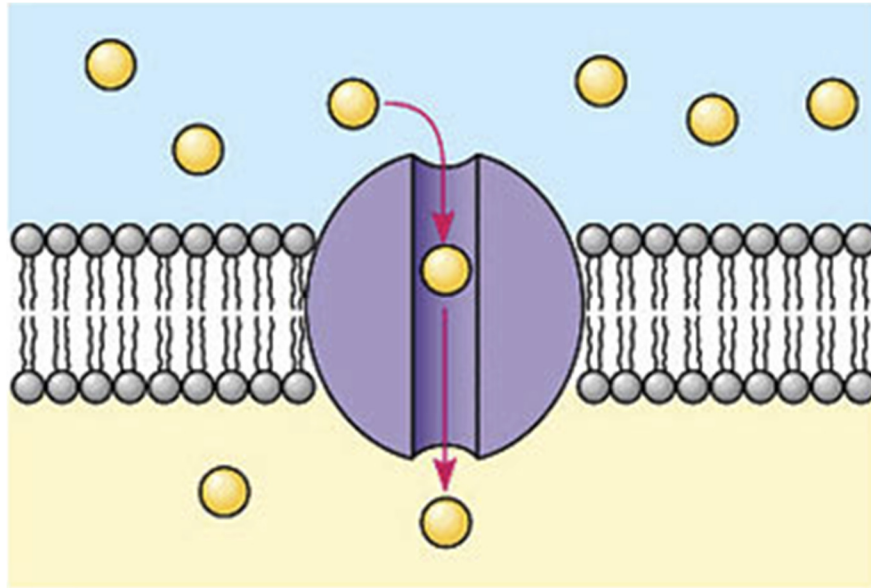
Osmosis: diffusion of water across a membrane



The net movement of water is to the left, where there is a high concentration of solute.

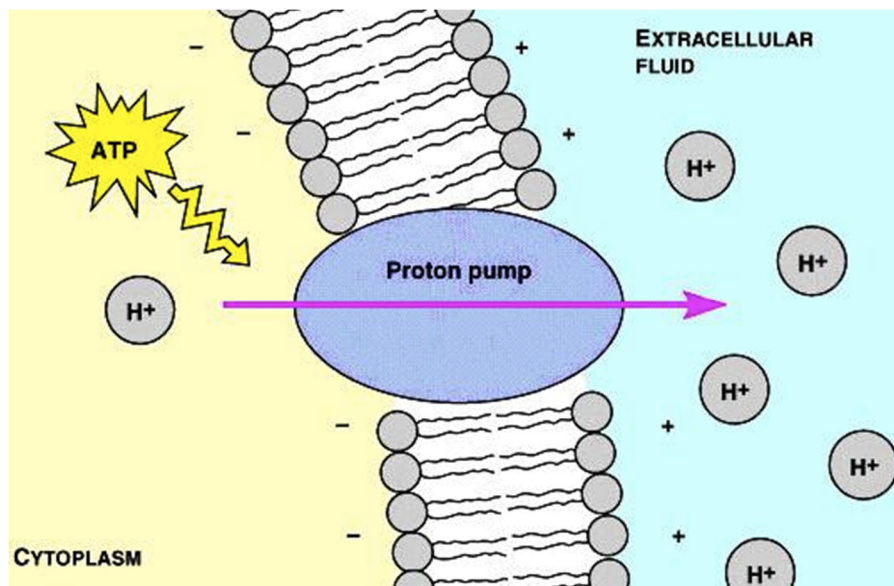
(The solute is represented by the large dots.)

Facilitated Diffusion: diffusion of substances through the membrane using a shape-specific protein channel

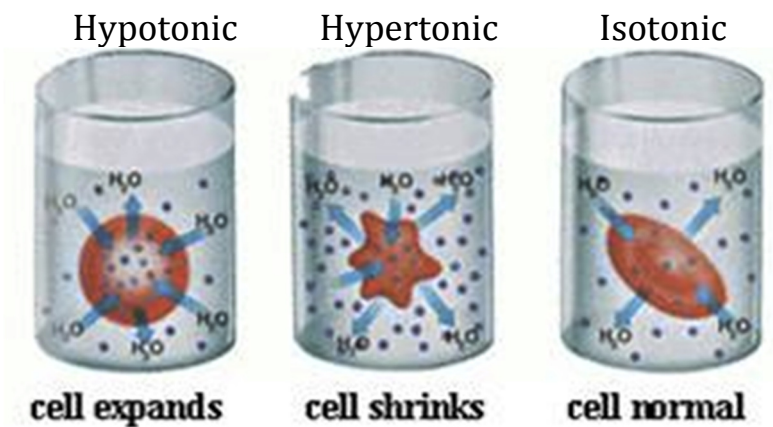


ACTIVE TRANSPORT: energy input required

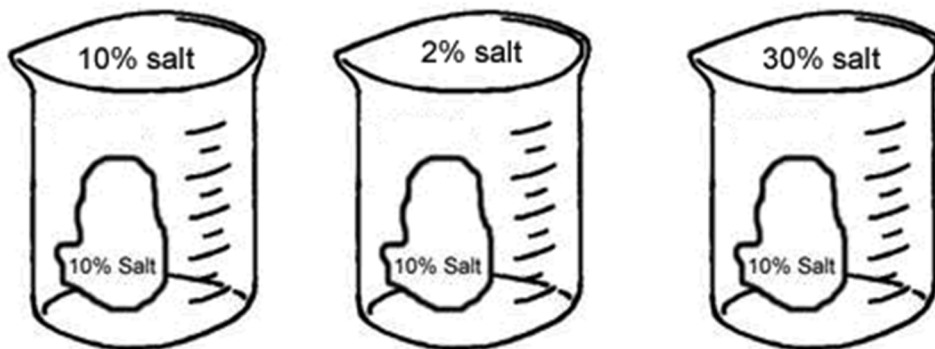
Active Transport: movement of substances from low concentration to high concentration, against the gradient. Uses energy and proteins in the cell membrane to pump substances from low to high concentration.



Osmotic Pressure and the Movement of Water



Problem: You have three cells and you put one in each beaker with a salt-water solution. The cells have 10% salt solution inside them, and their cell membranes are impermeable to salt. Salt cannot cross the membrane; however, water can cross the membrane! What will happen to the cells due to the movement of water by osmosis? Will they remain the same size, swell, or shrink in their solutions?



To help you answer this question:

- Label the beakers where the solution is HYPOTONIC, ISOTONIC, or HYPERTONIC.
- Draw an arrow to show net **water flow** (into the cell, out of the cell, or equal movement)
- Indicate in which solution the cell would remain the same size, where it would swell, and where it would shrink