Cells

EOCT Review Session

- **SB1. Students will analyze the nature of the relationships between structures and functions in living cells.**

Macromolecules

- SB1c. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

Carbohydrates - _____

Monosaccharides- _____

Disaccharides- _____

Polysaccharides- _____

Lipids - _____

Fats _____

Sterols _____

Waxes _____

Nucleic Acids - _____

DNA - _____

RNA - _____

ATP - _____

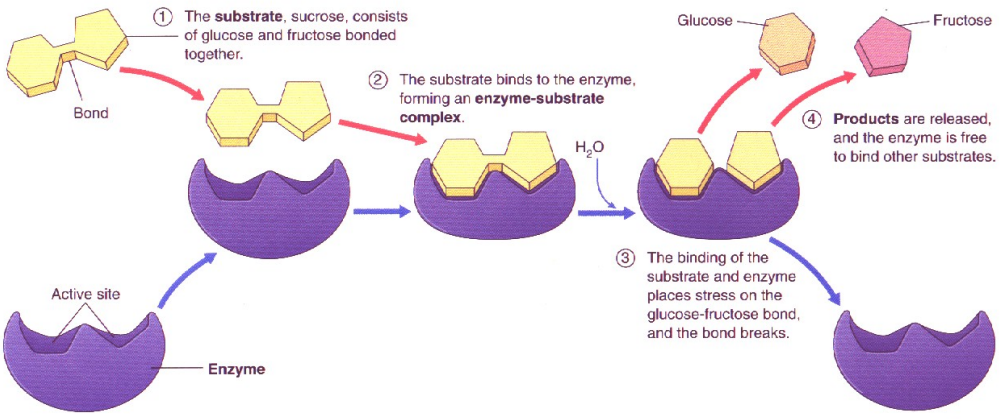
What is the difference between Pyrimidines and Purines?

_____

Proteins - _____

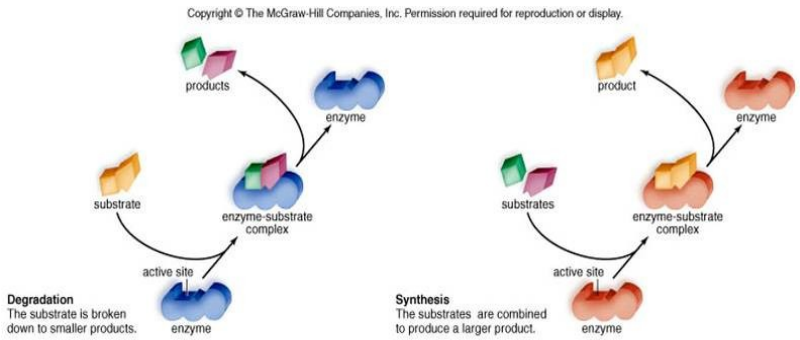
Enzymes

- SB1b. Explain how enzymes function as catalysts.



Enzymes are PROTEINS that act as catalysts. What does a catalyst do?

_____



Cell Structure and Function

- SB1a. Explain the role of cell organelles for both prokaryotic and eukaryotic cells...
- SB3b. Compare how structures and function vary between the six kingdoms (archaebacteria, eubacteria, protists, fungi, plants, and animals).

Explain the difference between a prokaryotic and a eukaryotic cell.

_____

What organelle do prokaryotes and eukaryotes both contain? _____

Sketch and label the following types of cells.

Prokaryote Animal Cell Plant Cell

Give the function of each of the following organelles.

Nucleus _____

Ribosome _____

Endoplasmic Reticulum

Smooth ER _____

Rough ER _____

Golgi Apparatus _____

Mitochondria _____

What theory explains that mitochondria and chloroplast may have originated as separate bacteria cells that were engulfed by a larger cell? _____

Chloroplast _____

Cell Membrane _____

Cell Wall _____

What is the major compound in each of the following organisms' cell wall?

Plant _____

Fungi _____

Bacteria _____

Cell Membrane and Transport

- SB1a. Explain the role of cell organelles...including the cell membrane, in maintaining homeostasis and cell reproduction.

Sketch and label a the lipid bilayer of a cell membrane.

Compare and Contrast the following

hydrophobic and hydrophilic _____

polar and nonpolar _____

What is the function of the following?

Transport proteins _____

Carbohydrate Groups _____

Cholesterol _____

Lipid Bilayer _____

Passive Transport	Active Transport
Diffusion	Pumps
Osmosis	Vesicles
Facilitated Diffusion	

The time it takes for molecules to diffuse into a cell depends on the _____. If a cell is wider, molecules will take a long time to diffuse to the middle of the cell. If the cell is smaller, molecules will take a short time to diffuse to the middle of the cell.(Remember the agar lab.)

Properties of Water

- SB1d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

Sketch a few water molecules.

Explain the following characteristics of water.

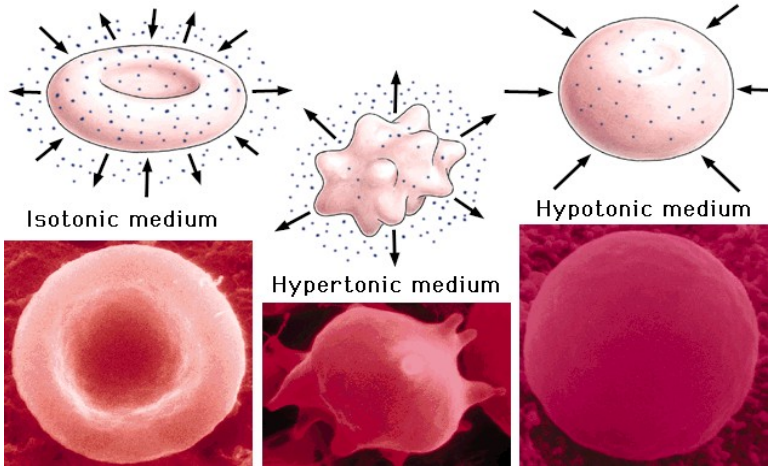
Cohesion _____

Adhesion _____

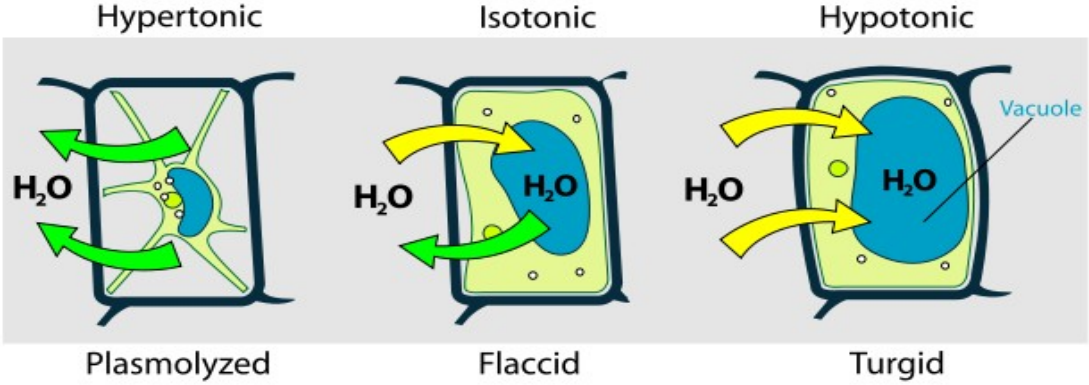
High Specific Heat _____

Expansion on Freezing _____

OSMOSIS in Red Blood Cells



OSMOSIS in Plant Cells



Practice Questions

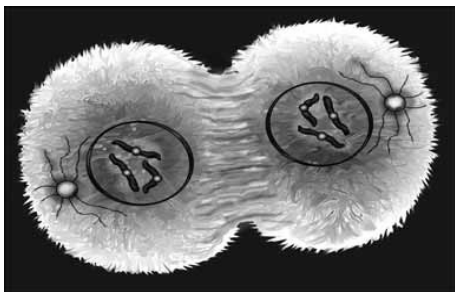
1. If a cell is placed in a highly concentrated glucose solution, water will leave the cell by
   A. osmosis
   B. diffusion
   C. active transport
   D. facilitated diffusion

2. Which organelle is the site of protein synthesis?
   A. ribosome B. nucleus C. cell membrane D. mitochondria

3. The cell theory states that:
   A. most living things are made of cells.
   B. most cells come from other living cells of the same kind.
   C. some cells are the basic unit of all living things.
   D. none of the above

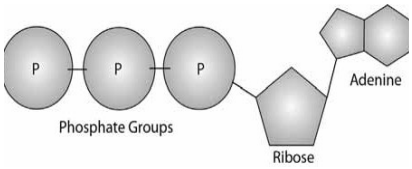
4. Cellular respiration is to the mitochondria as photosynthesis is to the
   A. chloroplast B. Golgi apparatus C. cytoplasm D. vacuole

5. With regard to enzymes, key is to lock as?
   A. substrate is to enzyme
   B. enzyme is to active site
   C. product is to substrate
   D. substrate is to active site



6. Mitosis occurs
   A. only in gamete cells
   B. in somatic cells.
   C. only when an organism makes repairs to cells.
   D. as part of active transport

7. The majority of the energy in the ATP molecule is
   A. stored chemically in all the phosphate bonds
   B. stored mechanically in the shape of the molecule
   C. stored chemically in the third phosphate bond
   D. found in the adenosine molecule



8. Glands in your neck contain digestive enzymes that help digest starch. Cells that produce and package digestive enzymes must contain relatively large amounts of _____ and _____ in comparison to other cells.
   A. lysosomes; ribosomes
   B. mitochondria; ribosomes
   C. ribosomes; Golgi bodies
   D. Golgi bodies; mitochondria

9. Which feature is found only in prokaryotic cells?
   A. plasmid B. flagella C. cytoplasm D. cell membrane

10. Which is the BEST explanation for how fluid pressure from freshwater helps plants to stand upright?
   A. Freshwater is a hypertonic solution, which causes the plant cells to swell with turgor pressure.
   B. Freshwater is a hypotonic solution, which causes the plant cells to swell because of plasmolysis.
   C. Freshwater is a hypertonic solution, which causes the plant cells to swell because of plasmolysis.
   D. Freshwater is a hypotonic solution, which causes the plant cells to swell because of turgor pressure.

11. Small, uncharged substances enter and leave the cell membrane through the process of
   A. endocytosis.
   B. simple diffusion.
   C. active transport.
   D. facilitated diffusion.

12. Enzymes
   A. are composed of long chains of fatty acids.
   B. can be destroyed by variations in temperature or pH.
   C. are used up, in the process of performing a chemical reaction.
   D. raise the amount of energy required to start a chemical reaction.

13. Bacteria communicate and exchange genetic information through extensions of their cell walls called
   A. cilia B. desmotids. C. flagella D. pili