**Pre-AP Cells Test Review**

*Refer to the following questions and vocabulary to help you to review for the test.*

* Required vocabulary: phospholipid bilayer, transmembrane proteins, theory, organelle, cilia, flagella, semi-permeable/selectively permeable, hypo-/hyper-/isotonic, plasmolysis, cytolysis, wilting, flaccid, lyse, homeostasis, concentration gradient, passive transport, solute, solvent, dynamic equilibrium, homeostasis, microtubules, microfilaments, phagocytosis, exocytosis, endocytosis, and pinocytosis.
* What is a theory?
* What are the 3 tenets of the cell theory?
* What is the difference between a prokaryote and an eukaryote?
  + Give an example of each.
* Explain the endosymbiotic theory.
  + State 2 pieces of evidence that support it.
* How does a plant cell differ from an animal cell?
  + Draw an example of each
  + What organelles are present in plant cells that are absent in animal cells?
  + What organelles are present in animal cells that are absent in plant cells?
* What are the functions of the following organelles/ cell structures?
  + Which structures are found in eukaryotic (E) and prokaryotic (P) cells?
    - cytoskeleton
      * Microtubules
      * Microfilaments
    - centrioles
    - lysosomes
    - golgi apparatus
    - chloroplasts
    - mitochondria
    - nucleus
    - ribosome
    - smooth endoplasmic reticulum
    - rough endoplasmic reticulum
    - vacuoles
    - vesicles
    - cilia
    - flagella
    - cytoplasm
    - cell membrane
    - cell wall
* Draw the cell membrane and label its parts
  + How does the properties of the phospholipid affect the transport of molecules?
    - What does hydrophilic & hydrophobic mean?
    - Which part of the cell membrane is polar, which is nonpolar?
  + What does a phospholipid bilayer mean?
  + What is a transmembrane protein?
  + What does semi-permeable mean?
    - What substance can easily move through the lipid part of a cell membrane?
    - What substance must enter the cell membrane in a different way?
      * Why?
      * How do these substances enter the cell? Which structure in the membrane allows for these substances to enter and exit?
      * How do polar and nonpolar substances enter and exit the cell?
  + Where are receptors located on the cell membrane?
    - What is its function?
* What is a concentration gradient?
* What is diffusion?
  + What is an example of a substance that easily diffuses through the cell membrane?
  + Explain the difference between simple and facilitated diffusion.
    - Give an example of each
* What is active transport? Give an example.
  + What are the requirements for active transport to occur?
    - What form is the energy in?
    - Why is energy needed for active transport?
* What is osmosis?
  + What is the relationship between a solute and solvent?
  + What is hypertonic, hypotonic & isotonic?
  + What is dynamic equilibrium?
  + How does osmosis maintain homeostasis?
  + Use the terms- hypertonic and hypotonic to describe the following:
    - 0.9% salt vs. 10.3% salt
    - 87% water vs. 82% water
    - 0.6% salt vs. 94.4% water
  + What is plasmolysis?
  + If a cell swells, where is water moving, in or out of the cell?
    - Where is hypotonic and hypertonic- in or out of the cell?
  + What is the difference between animal and plant cells and the effect of water moving in cells?
  + If a cell shrivels/wilts/ gets flaccid/ cytolysis/ lyse/ undergoes plasmolysis, where is water moving, in or out of the cell?
    - Where is hypotonic and hypertonic- in or out of the cell?
  + In general, which direction does water move- from hypotonic to hypertonic or hypertonic to hypotonic?
  + Give an example
* What are bulk transport mechanisms?
* What is endocytosis & exocytosis? Give an example for each.
  + What organism engaged in phagocytosis?
* What is pinocytosis & phagocytosis? Give an example for each.
* How do the cells of the multicellular organisms work together to maintain homeostasis?
  + What is cell specialization?
    - Give an example of cell specialization
    - How does the DNA in a specialized cell compare with the DNA of another specialized cell?
    - How is a stem cell capable of producing a specialized cell?
* What are the levels of organization in multicellular organisms?
  + Give an example of each level