

***Guidelines:**

Create a concept map following the guidelines we used as a class:

1. All terms/concepts/words/phrases should be connected with an arrow that has direction (line segments don't count!)
2. All arrows should have labels (either singular words or more lengthy explanations)

Refer to the following list of questions to guide your concept map creation:

1. What are the key differences between prokaryotic and eukaryotic cells?
2. How does the endosymbiont theory explain the progression from prokaryotic to eukaryotic cells? Make sure your answer includes the evidence.
3. Identify the importance of surface area to volume ratios in cells.
4. Why is compartmentalization important for cells?
5. Describe the nucleus and its contents.
6. What are the components of the endomembrane system?
7. Compare the structure and functions of rough ER and smooth ER.
8. Imagine a protein is to be exported from the cell. Trace the path of the protein through the cell starting with the mRNA in the nucleus.
9. Differentiate between vacuoles and vesicles. What are some roles of vacuoles?
10. Give some similarities and differences between mitochondria and chloroplasts.
11. How does the cytoskeleton contribute to motility and cell structure?
12. How do cilia and flagella bend?
13. Describe the three types of junctions between cells.
14. Molecules move according to their gradient. What does that mean?
15. What is the role of phosphate groups from ATP in the transport of Na/K ions across the membrane? (specifically, what does it do to the shape of the protein pump?)
16. Why is turgor pressure not used in reference to animal cells?
17. Suppose that the concentration of carbon dioxide in the fluid outside a cell became higher than that on the inside. Predict what would happen. What prevents this from happening normally?
18. How is the structure of the phospholipid important for its function?
19. What characteristics of the cell membrane make it selectively permeable?
20. Hormones are chemical messengers that travel in the blood throughout the body. Protein hormones (polar) attach themselves to receptors on the cell surface while lipid hormones (nonpolar) actually enter the cell. Explain this difference.
21. Explain the difference between endo and exocytosis. Why are they considered active transport?
22. Describe three things you could do to increase the rate of diffusion.

For previous a concept map on Enzymes, refer to the following list of items:

Metabolism	Thermal energy	Endergonic reaction
Non-competitive inhibitors	Potential energy	Catalyst
Metabolic pathway	Chemical energy	Activation Energy
Allosteric regulation	Thermodynamics	Substrate
Catabolic pathway	First law of thermodynamics	Enzyme-substrate complex
Cooperativity	Second law of thermodynamics	Active site
Anabolic pathway	Free energy	Induced fit
Feedback inhibition	Exergonic reaction	Cofactors
Kinetic energy		Coenzymes

Example 2:



