Complete the following questions for homework. You can complete them in your notebook or type them and put them in your binder. We will go over the answers in a student-led discussion in class..

**Questions:**

1. Describe the hierarchy of life starting from the atom level and ending at the ecosystem level.

2. What is the purpose of a control group in an experiment? Give an example

3. What is Descent with Modification? How does it relate to gene frequencies?

4. Explain how it is that all organic molecules contain energy. Where do you find that energy?

5. What are the 3 domains of life?

6. What is meant when I say that humans are more closely related to frogs than to oak trees? Draw a phylogenetic tree that depicts this.

7. What are some characteristics of a prokaryote? What type of organisms are prokaryotes?

8. What are some characteristics of a eukaryotic cell? What types of organisms are eukaryotes?

9. Explain the analogy “DNA is a book”.

10. What is meant by differential gene expression?

11. Why is differential gene expression important in terms of differentiation of stem cells into adult cells?

12. What does ATP stand for and what does it fuel?

13. What are the four major elements of life?

14. What is meant when we talk about characteristics or genes being “conserved”? Give some examples of conserved characteristics.

15. What is the “Central Dogma” of biology?

- Watch video from Bozeman Biology on ["Essential Characteristics of Life"](http://www.youtube.com/watch?v=bILvTe2_FEE&feature=plcp) and take notes in your notebook.