

**BIO 1500**  
**Lecture 1 - Why Study Plants?**  
**Study Guide**

1. What are the four levels of cellular organization? Be able to define the atom, molecule, organelle, and cell.  
**Atom:** smallest unit of an element  
**Molecule:** many atoms  
**Organelle:** specialized part of cell with its own function  
**Cell:** basic unit of life, membrane-bound unit
2. What are the four levels of organismal organization? Be able to define the tissue, organ, organ system, and organism.  
**Tissue:** group of cells performing a common function  
**Organ:** composed of different tissues  
**Organ System:** group of organs to complete a task  
**Organism:** complete living thing
3. What are the four levels of population organization? Be able to define the species, population, community, ecosystem, and biosphere.  
**Species:** group of organisms that interbreed  
**Population:** group of organisms of the same species living in same place  
**Community:** all populations of diff species living in a particular area  
**Ecosystem:** community + physical environment  
**Biosphere:** water in any form, crust & atmosphere (highest)
4. What are the emergent properties? Be able to give examples of emergent properties.  
New properties present at one level that aren't seen at a previous level; Physical environment, community has different levels of species as opposed to a population
5. What is evolution? What is natural selection?  
**Evolution:**  
**Natural Selection:**
6. What are the four postulates of natural selection?
  - 1) **Individuals vary within a population**
  - 2) **More offspring are produced than can possibly survive**
  - 3) **Organisms compete, some lose**
  - 4) **The survivors live to reproduce**
7. What are the three domains of living organisms? What are the four eukaryotic kingdoms? Eukarya, Bacteria, Archea
8. What is the difference between eukaryotes vs. prokaryotes, autotrophs vs. heterotrophs?
9. What is photosynthesis?
10. What is cellular respiration?
11. What is the difference between essential vs. nonessential amino acids?
12. Be able to explain why it is important to eat plants.
13. What is cellulose and why do we care about it?
15. What are fossil fuels?
16. What does phytoremediation mean?
17. What kind of relationship exists between CO<sub>2</sub> and temperature?

18. What plant is the oldest known plant? What plant is the largest living tree?
19. What are carnivorous plants?