**Questions to answer:**

1. Explain why the prokaryote/eukaryote dividing line represents a fundamental division among organisms.
2. Explain why we can infer that the Universal Common Ancestor of all life on earth was:
   1. Unicellular
   2. Heterotrophic
   3. Used DNA as its genetic material
3. Draw and label a typical prokaryotic cell.  Briefly describe the function of each part.
4. In eukaryotic cells, chloroplasts are the site of photosynthesis, and mitochondria are the site of aerobic cellular respiration.  How are bacteria able to carry out photosynthesis and aerobic cellular respiration without these organelles?
5. Why do bacteria evolve so much faster than multicellular eukaryotes?
6. Generally speaking, why do antibiotics only affect bacterial cells and not eukaryotic cells?

**Things you should make sure you understand:**

**(feel free to ask questions about them in class)**

* The differences between transformation, transduction, and conjugation, as methods of horizontal transfer of genetic information among bacteria.
* The following modes of nutrition and give examples of organisms that utilize each one:
  1. chemoheterotrophic nutrition
  2. photoautotrophic nutrition
  3. chemoautotrophic nutrition
  4. photoheterotrophic nutrition
* Why archea are placed in their own domain of life, even though they have only been known to science since the 1970’s.