**Questions to answer:**

1. Why do cells need to communicate?
2. Explain what happens during the three phases of signal transduction.
3. What is the purpose of second messengers?
4. Diagram the epinephrine signaling pathway.  Diagram signal reception, transduction and response.
5. Define each of the following phenomena, identify the organisms that they occur in, and explain how cellular signaling is used in each of them:
   1. Quorum Sensing
   2. Mating in Yeast
   3. Apoptosis
6. Why do you think cellular signaling pathways and mechanisms are so universal among life’s domains?

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

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

* How cells use signaling pathways in their physiology.
* The similarities and differences in G-Protein, Tyrosine Kinase, and ligant-gated ion channel signaling pathways.
* How a signaling pathway can lead to an amplification of the response to the signal.
* How a signaling pathway can have multiple physiological effects on a cell or organism.