# CH. 3 Cells

* Prokaryotes and Eukaryotes
  + Prokaryote
    - Structurally simple but extremely diverse
    - No nucleus
  + Eukaryotic Cells
    - Have Compartments with special functions
    - Single-celled or multicellular organisms consisting of cells with a nucleus.
* Endosymbiosis
  + Ancestor to eukaryotes
  + Had DNA and a plasma Membrane
  + Evolved to Invagination, the membranes folded upon themselves
* Cell Membranes are gatekeepers
  + Every cell of every living organism is enclosed by a plasma membrane, a 2-layered membrane that holds the contents of a cell in place and regulates what enters and leaves the cell
* OSMOSIS
  + Water goes inside -> out unless there’s more water outside. (high concentration to low concentration)
* Endocytosis and Exocytosis
  + Used for bulk transport of particles
    - Endocytosis
      * When materials can’t get into a cell by diffusion or through a pump, cells can engulf the molecules or particles with the plasma membrane through endocytosis
    - Exocytosis
      * Moving out of a cell through the same way.
      * It’s when it engulfs the cell and then takes it apart
* Nine Important Landmarks to an eukaryotic cell

1. Nucleus is the control center
2. Cytoskeleton
3. Mitochondria are the cell’s energy converters
4. Lysosomes, garbage disposals
5. Endoplasmic Reticulum
   1. Smooth ER is proteins
   2. and Rough is something else
6. Golgi Apparatus
7. Cell wall (in plants)
   1. In plants *plasmodesmata* connect cells and enable communication and transport between them.
8. Plants have a Vacuole
   1. Multipurpose storage sacs for cells
9. Chloroplasts