**Characteristics of Life**

* **Cellular Organization/Cell Theory**
  + All living things are made up of one or more cells
  + Cell is the smallest unit capable of life functions
  + All cells come from pre-existing cells
    - Basic cellular structure is similar in all organisms
* **Reproduction/Heredity**
  + Perpetuation of the species (producing progeny)
  + Genetic material to pass on characteristics/traits through meiosis
* **Require Energy / Metabolism**
  + Sum of all chemical reactions in an organism
  + Use of energy; production of energy
* **Responsiveness/Homeostasis**
  + Ability to keep constant internal environment
  + Ability to respond to stimuli such as environmental conditions, predator/prey
* **Grow, Develop and Heal**
  + Cell Cycle – all cells have a certain lifespan

**There are two different types of cells**

**Prokaryotic Cells**

* Considered the first cells
* Very primitive cells
* **No membrane bound nucleus** **or organelles**
* Can’t carry out most cellular functions
* Exist today only as bacteria

**Eukaryotic Cells**

* Highly organized cells
* **Have membrane bound nucleus and organelles**
* Perform cellular functions
* Are found in animals, plants, protests, fungi
* Most are multi-cellular, but there are a limited number of unicellular eukaryotic organisms such as amoeba, paramecium and yeast. Complex cells because they need to be able to move, obtain food and carry out functions essential for life

***Cell Processes***

1. cells can produce substances
2. cells have the ability to store and release energy as needed
3. cells can transport materials
4. cells can reproduce