**Biology 30 Unit – Cell Structure and Function**

In this unit, we will review the structure and functions of all cell components. The next step will be to learn how molecules move in and out of the cells, as well as how energy is used within the cells. To discuss how energy is used, we also have to discuss and learn about where the energy comes from and how it is produced.

**The History of Cells**

Have you ever heard of the cell theory??? A quick timeline:

1590 – Believed to be the first microscope developed

1665 – Robert Hooke views the first cells through his microscope studying dead cork cells – only seeing the hard outer walls of the cells. He did not link that the cells were the building block of all living things.

1670’s – Antoni van Leeuwenhoek not only improved microscopes (a glass shaper, lens cutter by trade), but then was the first to discover red blood cells and has become known as the Father of Microbiology.

1839 - German botanist Matthias Schleiden and German zoologist Theodor Schwann, working together, recognize the fundamental similarities between plant and animal cells and propose that all living things are made up of cells.

1858 – Rudolf Virchow suggested that cells come from preexisting cells.

These discoveries led to the creation of the Cell Theory which was stated as:

1. All living things are made of cells
2. Cells come from preexisting cells
3. Cells are the basic building units of life

The Modern Interpretation of the Cell Theory has as many as nine points, but the basis of the theory is found in these three early points as determined by the early scientists. Additional points include information on cells containing DNA, and that energy flow and metabolism takes place in the cells. The advances in cytology (the study of cells) furthered with the introduction of electron microscopes, and more recently, scanning probe microscopy. Scientists continue to push microscopes further and we will continue to learn more about cells in the future.

**Cell Size**

         atoms --> DNA --> virus --> bacteria (Prokaryotes)  -->mitochondria--> Eukaryotic cells

 Why must cells remain small?

**All Cells Have Three Basic Features:**

**1.  Plasma Membrane (aka Cell Membrane)**

phospholipid bilayer

**2. Genetic Material**

DNA

**3.  Cytoplasm (aka cyosol)**

**Prokaryote vs Eukaryote Cells**

Endosymbiosis Theory :

**Prokaryotes**

* no membrane bound nucleus, chromosomes grouped together in an area called the "nucleoid"
* no membrane bound organelles
* smaller than eukaryotes

Label the Bacteria



**Eukaryotes**

* has a membrane bound nucleus and organelles
* plants, animals, fungi, protista

animals, plants, fungi, protists

