**Biology I – Study Guide for the Final Exam on 05/06/16**

**Describe the focus of each discipline of Biological study:**

Anatomy

Physiology

Cytology

Histology

**Characterize the Levels of Structural Organization within the Human Body.**

Be able to say something about show structure and function relate from one level of organization to another. Give examples (i.e. intercalated disks within cardiac cells allow the fast transmission of impulses throughout the cardiac tissue).

**Know the following anatomical terms and be able to apply them**

Anterior

Posterior

Superior

Inferior

**Have and understanding of the Powers of Ten and relative size**

Meters

Centimeters

Millimeters

Micrometers

Nanometers

Picometers

Be able to describe the pathway of blood through the heart and the rest of the body.

What do the terms Systole and Diastole mean? Describe the phenomena of blood pressure.

**Diffusion and Osmosis**

Describe the phenomenon of selective permeability. Why does this occur? Be able to give examples of selective permeability in the human body.

Explain how passive diffusion works. What is a concentration gradient? Be able to apply the concept of passive diffusion to examples from the body systems we’ve studied.

Why are surface area to volume ratios important for diffusion rates? Give examples of how your body maximizes surface area in certain organs or organ systems.

What is osmosis? How does the concentration of solutes in the interstitial fluid and cytoplasm influence the flow/diffusion of water into and out of the cell?

Explain what active diffusion/transport is. Why can’t the body rely on passive diffusion alone? (we’ll explore this on Tuesday)

**Know the functions and roles of these specialized cells/structures:**

Cardiac Muscle Cells

Red Blood Cells

White Blood Cells

Platelets

Microvilli

How are prokaryotic and eukaryotic cells different? (we’ll spend some more time on this on Tuesday)

**Name and convey the roles/contributions that each organelle makes within a cell:**

Nucleus

Nucleolus

Ribosomes

Endoplasmic Reticulum

* Smooth
* Rough

Golgi Apparatus

Mitochondria

Cytoplasm

Plasma Membrane

Cillia/Flagella

Plasma Membrane

Lysosome/Peroxisome

How do these specialized components work together to carry out the various activities of the cell?

Why is each important?

Why do cells look different and have different ratios/mixes of organelles? Why does a nerve cell look different than, say, a cardiac muscle cell?