**Review for Biology 100 Final Exam Fall 2010**

-you should all have a thorough understanding of scientific methodology. What is it, what are the components, what is required for a good accurate experimental test/design etc. This will be the basis for all of your future objective decisions so make sure you understand it.

-review diffusion, osmosis (passive transport) and endo and exocytosis (active transport).

-know the subatomic particles: what are they, what are their charges and where are they in the atom. What is an atom, how do various elements differ?

-Know the organic compounds and their building blocks (carbohydrates, proteins and nucleic acids). Many of you are very weak on this topic!

-Review pH

-Review the cellular organelles and their functions (ex mitochondria, golgi, nucleus ETC.). Many of you are also weak on this topic.

-review the scientific classification of life: Kingdom, Phylum etc

**The Skeletal system:**

-Know all of the major bones including those of both the Axial and Appendicular groups and The pelvic and pectoral girdles of the appendicular group

-Structure of a typical long bone

-What is a joint and what are the different types of joints? This is another weakness I have found on exams.

-ligaments vs. tendons

-review all figures

**The Muscular system:**

-Know the major muscles (6.4)

-how muscles contract i.e., the sliding filament model which includes the function of the sarcomere and how calcium is involved in contraction (6.5, 6.6). What is sarcoplasmic reticulum?

-structure of muscles (6.8)

**Digestion:**

-Know the functions of all the organs and accessory organs in the digestive system!

-understand, in detail, how various nutrients are digested (what organs contribute what factors etc)

Figures: 7.2, 7.5, 7.6, 7.10, 7.11, 7.12, Table 7.3

**The Circulatory system:**

Review the 2 circuits (pulmonary and systemic) and know the difference between them (6.13)

-Figure 9.4, 9.8

-review the path of blood starting with the vena cava.

-Veins vs. Arteries 9.15

-structures of the heart

As you review this topic, remind yourself of how it interacts with the respiratory system and how the sympathetic nervous response effects these systems specifically. For example, the bronchioles dilate, the heart pumps faster…etc
**Blood:**
- know the types of cells in the blood (leukocytes and erythrocytes) and their functions.
- know all the functions of human blood
- blood type (antigens and antibodies, universal donor and universal recipient)
- ALL the functions of the lymphatic system

**Immunity:**
- barriers to infection
- passive vs. active immunity, know the difference
- know the main cell types (memory vs. effector cells, B cells, Helper T cells, cytotoxic T cells), what they do and where they mature, from what precursor cells.
- Inflammatory response (10.5)
- Specific Immunity (B and T Cell mediated immunity that recognizes specific pathogens) 10.6, 10.8, 10.9, 10.13, 10.18)
- Allergies (7.17)

**The Respiratory System:**
- Know all the organs and structures
- What is inspiration and expiration? How do they work?
- review how gas exchange works. Partial pressures of gasses and diffusion at the pulmonary capillaries (lungs) and the systemic capillaries.
  Figures: 11.2, 11.8, 11.9, 11.11, table 11.1

**The Urinary System:**
- How do fluids travel beginning from the digestive system and into the kidney. i.e., How do they get to the kidney from the water glass?
- Understand how urine is formed in the nephron of the kidney; pressure filtration, tubular secretion, excretion and the effects of ADH on concentration
- Know the plumbing i.e. the nephrons connected to the collecting duct that leads into the renal pelvis that drains into the ureter and deposits urine into the bladder etc.
- Know the organs of the urinary system
- Understand how each section of the nephron contributes to the formation of urine
  Figures: 12.3, 12.4, 12.5, 12.6, 12.7, 12.9, 12.10

**The Nervous system**
- Direction of flow of an action potential (Dendrite to Cell body to axon).
- What is an action potential and what are the specific changes that occur to cause it?...momentary changes to charge gradients across neuron membranes.
- How are action potentials transmitted between neurons?
- Know the major divisions within the nervous system (central vs. peripheral, autonomic vs. somatic, sympathetic vs. parasympathetic), what they do and how they work
- Reflex arch
- Review all figures and make sure you fully understand them
The Senses
- Know the types of receptors and examples (chemoreceptors, mechanoreceptors, photoreceptors)
- Know how the eye and ear (balance AND hearing) work in detail
- Review all of the figures
- Know how each sensory receptor is attached to the nervous system

Reproductive System:
Male: - know where the sperm is made, stored and how it flows out as well as all of the anatomy
Female: review the anatomy
- know the ovarian and uterine cycles and how they are coordinated.
- What is menopause and when does it occur
- how is further ovulation prevented if fertilization occurs?
Both male and female: know the common hormones and where they are produced (FSH, GnRH, FSH)
- Know the female monthly cycle including the hormonal fluctuations and when ovulation occurs during that cycle
Figures: 16.2, 16.3, 16.4, 16.5, 16.6, 16.7, 16.8, 16.9