**Study Guide for General Biology I**

**Chapter 5**

***Make Flash Cards:***  It is highly recommended to make flash cards of all vocabulary terms in the chapter and in the lecture notes (PowerPoints).

***Use the following expected student learning outcomes as a guide for studying this chapter…***

**CHAPTER 5: MEMBRANES**

5.1 The Structure of Membranes

* Define fluid mosaic model.
* Define integral membrane protein, peripheral membrane protein, and transmembrane protein.
* List and describe the four components shared by all the membranes in a cell.
* Define glycolipid and glycoprotein.
* Study Figure 5.3, then close your book and draw a depiction of the fluid mosaic model of cell membranes.

5.2 Phospholipids: The Membrane’s Foundation

* Recall the general structure of a phospholipid.
* Define phospholipid bilayer and know that it represents the foundation of a biological membrane.
* Discuss the “fluid” nature of the phospholipid bilayer, and how temperature and fatty acid composition affect the fluidity.

5.3 Proteins: multifunctional Components

* List six key classes of membrane proteins and briefly describe each class.
* Define transmembrane domain and describe the characteristic of the R groups of the amino acids in a transmembrane domain.
* Briefly describe porins and their function.

5.4 Passive Transport Across Membranes

* Know that “transport” refers to movement of molecules from one side of a membrane to the other.
* Define passive transport.
* Define concentration gradient.
* Know that a concentration gradient is the driving force behind passive transport.
* Define diffusion.
* Define facilitated diffusion.
* Distinguish between carrier proteins and channel proteins.
* Define ion channels and briefly describe their function.
* Define gated channels.
* Define membrane potential.
* Give an example of facilitated diffusion in red blood cells.
* Define osmosis, aqueous solution, solute, and solvent.
* Define osmotic concentration, hypertonic, hypotonic, and isotonic.
* Define aquaporin.
* Define osmotic pressure.
* Know what Figure 5.12 demonstrates about cell responses to surroundings with different “tonicity”.
* List three ways cells maintain osmotic balance.

5.5 Active Transport Across Membranes

* Define active transport.
* Distinguish between active transport and facilitated diffusion.
* Define uniporter, symporter, and antiporter.
* Briefly describe the function of the sodium-potassium pump.
* Describe coupled transport and give an example.

5.6 Bulk Transport by Endocytosis and Exocytosis

* Recall the definition of vesicle.
* Define endocytosis and exocytosis.
* Define phagocytosis and pinocytosis.
* Define receptor-mediated endocytosis.

**In addition to the above objectives, also do the following:**

* Accomplish the “Learning Outcomes” in this chapter and be able to do the “Learning Outcomes Review” items.
* Read and look at the information in any “Scientific Thinking” figures for this chapter and be able to use the information to illustrate the classic steps and process of a scientific investigation.
* Know the material in the Chapter Review.
* Do the “Understand” and “Apply” questions in the chapter Review Questions and know *why* the correct answer is the right choice (and *why* the incorrect answers are the wrong choices). Be able to answer similar questions based on any of the above specific learning objectives.