**Bio 2 Exam 3 Study Guide**

Fill in the blank answers will come from the key words or terms from each lecture. Words not used in fill in questions will likely be used in true or false, or multiple choice questions. **Short answer and short essay questions will come from emboldened topics.** **Long answer questions will come from the emboldened and underlined topics**

**Chapter 32: Animal Diversity and Physiology**

**Know the following**: Characteristics of animals. Sister group to kingdom Animalia. When did most animal phyla appear in the fossil record? **Know the differences between Protostomes and Deuterostomes (cleavage, coelom formation, and fate of blastopore).** Differences between acoelomates, pseudocoelomates and coelomates. The three different germ layers and what they give rise to. Different types of skeletons and which phyla have each type of skeleton. Know which phyla are segmented. Know the different types of nitrogenous wastes and examples of organisms that release each type of waste. Know the different types of respiratory systems and examples of organisms with each type of system. Know the different circulatory systems and which phyla have each type of system. **Compare and contrast the open and closed circulatory system.** Know the different digestive systems and which phyla have each type of system. Know the different thermoregulatory strategies and which animals use each type of strategy. The different types of heat exchange with the environment. The different adaptations for thermoregulation. Modes of energy conservation. **Be able to explain how counter-current heat exchange works.** When do blood vessels become dilated/constricted? What is an essential nutrient? Know how much energy is produced by each macronutrient. Know the difference between low density lipoproteins and high density lipoproteins. Which one is considered “good” and which one is “bad” and why? Know which vitamins are water soluble (B and C) and which vitamins are fat soluble (A,D,E,K). Know the general role of water soluble vitamins (coenzymes or cotransports)

**Key words or terms**: Metamorphosis, larva, endoderm, mesoderm, ectoderm, diploblastic, triploblastic, acoelomates, pseudocoelomates, coelomates, hemolymph, endotherm, ectotherm, poikilotherm, homeotherm, vasoconstriction, vasodilataion. torpor, estivation, hibernation

**Chapter 33: Invertebrates 1**

**Know the following**: Know the general characteristics of all invertebrate phyla (organization, symmetry, tissue layers, circulatory system, and digestive system). Know the different classes in Porifera and the body forms found in each class. **Know the pathway of water movement through each of the sponge body forms**. The different classes Cnidaria and the dominant life stages (polyp and medusa) found in each class. What are protonephridia? Know the different types of flukes and tapeworms their symptoms and their hosts. Know the characteristics of lophophorates. Know the characteristics of molluscs and the characteristics of each class of molluscs.

**Key words or terms**: Choanocytes, asconoid, syconoid, leuconoid, cnidocytes, nematocysts, polyp, medusa, protonephridia, radula

**Chapter 33: Invertebrates II**

**Know the following**: Know the general characteristics of all invertebrate phyla (organization, symmetry, tissue layers, circulatory system, and digestive system). How do metanepheridia work? What animals have metanepheridia? Respiration in annelids. Movement in annelids (Peristalsis). Synapomorphy of ecdysozoans. What phyla are considered ecdysozoans? Know the modes of infection and the symptoms of the different parasitic nematodes. Know the characteristics of the Arthropod subphylums, classes, and groups. Know the function of Malpighian tubules. Know the different modes of respiration in Arthropods (book lungs and tracheal system). Differences between chilopoda and diplopoda. Different types of metamorphosis and the stages of each type. Know the differences between the different insect orders discussed in lecture (wings, mouth parts, antennae, metamorphosis).

**Key words or terms**: Parapodia, chaetae, clitellum, hirudin, peristalsis, metanepheriduium, metamorphosis

**Chapter 33, 34, and 42: Deuterostomes and Circulation**

**Know the following**: Characteristics of echinoderms. **Pathway of water through the water vascular system of echinoderms**. Function of dermal branchiae. Characteristics of Chordata. Characteristics of Vertebrates. **Know the key adaptations in vertebrate evolution and how they changed the course of vertebrate evolution. Also know where these adaptations arose during the course of vertebrate evolution (Be able to write in the adaptations on a phylogeny)**. Know the heart anatomy and circulatory system of the different vertebrate groups (number of chambers, circuits). **Know the path of blood through the heart and body. Be able to list and label the chambers, valves, and major blood vessels of the heart (Fill in)**. Phases of the cardiac cycle (diastolic and systolic) and the position of the heart valves during each phase. Differences between arteries, capillaries and veins. Area where blood pressure is the greatest/lowest. Different components of blood and their function. Types of cardiovascular disease. **Be able to describe how your breathing is controlled and why you breathe into a paper bag when hyperventilating (too much oxygen).**

**Key words or terms**: pedicellaria, madreporite, dermal branchiae, diastole, systole, myogenic, neurogenic, sinoatrial node, artioventricular node, erythrocytes, leukocytes, platelets, hemoglobin, plasma, hypertension, stroke, heart attack, atherosclerosis, clotting factors

**Chapters 40 and 49: Animal Structure and Muscle Function**

**Know the following**: The function of the different types of animal tissues. Know the location and function of the different epithelial tissues. Know the location (when provided) and function of the different connective tissues. Know the types of cells that form muscles, bone, and cartilage. **Be able to describe how a muscle contracts (sliding filament model) including the role of calcium ions, tropomyosin, and the troponin complex**. Differences between oxidative and glycolytic muscles concerning the process in which the gain ATP.

**Key words or terms**: simple, stratified, pseudostratified, cuboidal, columnar, squamous, fibroblasts, osteoblasts, chondrocytes, adipocytes, sarcomeres, actin, myosin, tropomyosin, troponin complex, oxidative, glycolytic

**Estuary and Intertidal Field Trip**

**Know the following**: Different habitats within an estuary and the types of plants and animals found in each habitat. Know which habitat has the greatest number of organisms. What percentage of wetlands have disappeared in southern California? Why is an estuary like an egg beater? Sponge? Hotel? Strainer? Difference between spring and neap tides. **Know the challenges to life in the intertidal zone and the adaptations that organisms have to cope with these challenges.** Know all the phyla that we saw in the intertidal zone.

**Key words or terms**: Estuary,