

# **Biology 103**

## **Exam 2 Study Guide**

The following topics and the topics covered on the practice exam may be on the second exam. Please be aware that these are not the exact questions that will be on the exam. This is a guide to help you focus your studies.

1. Animal tissues: Understand the difference between nervous, epithelial, connective, and muscle tissues. Be able to give multiple examples of each.
2. Homeostasis: Be able to describe a negative feedback loop, and understand how it differs from a positive feedback loop.
3. Nervous system:
  - a. Describe the neuron, its parts, and its functions. Describe what an action potential is and how it works.
  - b. Distinguish between the peripheral and the central nervous system. Describe the hierarchy of systems within the peripheral system: sensory and motor systems, and the sympathetic and parasympathetic divisions of the motor system. Understand what responses are governed by these last two divisions.
  - c. Describe how signals are passed from neuron to neuron.
  - d. Be able to name the parts of the brain, including the major lobes of the cerebrum, and state the major function of each.
  - e. Understand the basics of how the eye and ear work (as described in class). Describe how chemoreception in the nose and mouth sense taste, smell, and flavor.
  - f. Know what synesthesia is, and hypotheses of how it functions.
4. Endocrine system:
  - a. Know the functions of the following hormones: thyroxine, parathyroid hormone, insulin, glucagon. Be able to describe the negative feedback loops they are involved in.
  - b. Describe what a hormone is and what effects hormones have on the body.
5. Urinary system:
  - a. Know the parts of the urinary tract, and what functions they perform.
  - b. Know the parts of the nephron, and what the function of each part is.
6. Musculo-skeletal system:
  - a. Know the three types of muscle tissue, and explain what causes striations in some types.
  - b. Understand how “thick” and “thin” fibrils interact to produce muscle motion.
  - c. Define: flexion, extension, adduction, abduction, rotation. Know the muscles that we saw in the examples in lecture and in lab, and which of these actions they cause.
  - d. Describe the parts of a bone, and the functions of these parts.
  - e. Understand why connective tissue such as bone and cartilage takes so long to heal.
  - f. Understand the causes of osteoporosis, and how it can be prevented.
7. Circulatory system:
  - a. Describe the difference between open and closed circulatory systems, and know which is more efficient.
  - b. Describe the two-chambered, three-chambered, and four-chambered heart. Know what kinds of animals have each, and which is most efficient.
  - c. Understand the difference between arteries and veins.
  - d. Know the effects of the hormone erythropoietin.
  - e. Understand what causes plaques that lead to heart attacks, and how they can be prevented.