

Study Suggestions for Exam 3 - Bio 112

This exam will cover Chapters 43, 44, 45 and (hopefully) the beginning of 46 and labs on the phyla Arthropoda and Echinodermata, About 70% of the exam is on the lecture and 30% is from the Lab sessions. This guide will help you focus your studies.

Review all of your lab questions, expect to see some diagrams from lab and some questions directly from our lab book. Check your returned papers to be sure that you got the questions correct! Review the comparison of Annelids and Arthropods as well as the comparison of three types of Echinoderms that we did in the lab book.

***For EACH Phylum and Class that we detailed in class, know the traits that make it unique (ie for Platyhelminthes: bilateral, flat, acoelom and nervous system.) Best way to do this is flash cards. ***

Don't forget our first six phyla, can you compare their similarities/differences to the groups that we focused on in lab in this section?

What kind of coelom does each group has, and what is a coelom anyway?
What is the difference between a protostome and deuterostome organism?

WHAT KINGDOM? WHAT DOMAIN? - Seriously you should know these by now!

Phylum Arthropoda

What are the differences between the groups that we looked at (Hexapoda, Cheliceriformes, and Myriapods. Where would you find each group?
What defines this group?
What kind of circulatory system.
How do they differ from an Annelid?
What is metamorphosis and why do they do it?
Can you the legs of a crayfish? How about a grasshopper external structure? How do they differ?
Malpighian Tubules and Spiracles.

Phylum Echinodermata

Be able to label major parts such as the madreporite, eyes, mouth etc
Why kind of symmetry? Why?
List the three classes and describe 1 difference (from your comparison chart)
What are the major characteristics of this phylum?
Describe the water vascular system and what makes it special.

Chapter 43 - The Immune System

1. Distinguish between the following pairs of terms: antigens and antibodies; antigen and epitope; B lymphocytes and T lymphocytes; antibodies and B cell receptors; primary and secondary immune responses; active and passive immunity, variable and constant regions.
2. Define and give examples for the following: latency, pathogen, class I MHC molecules
3. Explain how B lymphocytes and T lymphocytes recognize specific antigens, how are B and T cells similar, how do they differ? Which ones make antibodies?
4. Explain why the antigen receptors of lymphocytes are tested for self-reactivity
5. Describe the inflammation response
6. Distinguish between innate and acquired immunity and give examples for both mammals and invertebrates.
7. Describe the basis for immunological memory
8. Describe some of the mechanisms that pathogens have evolved to thwart the immune response of their hosts
9. What does an autoimmune disease do, can you give an example?

Chapter 44 - Osmoregulation and excretion

1. Distinguish between the following terms: isoosmotic, hyperosmotic, and hypoosmotic; osmoregulators and osmoconformers
2. Define osmoregulation, excretion, anhydrobiosis
3. Compare the osmoregulatory challenges of freshwater and marine animals
4. What type of substances are excreted (ie ammonia, urea and uric acid) and why do different types of animals use different substances.
5. Describe some of the factors that affect the energetic cost of osmoregulation
6. Describe and compare the protonephridial and Malpighian tubule excretory systems
7. Using a diagram, identify and describe the function of each region of the nephron
8. Explain how the loop of Henle enhances water conservation
9. countercurrent multiplier system and energy use

Chapter 45 - Hormones and the Endocrine System

1. Distinguish between the following pairs of terms: hormones and local regulators, paracrine and autocrine signals, hormones and pheromones
2. Define and give an example for the following: hormones, endocrine system, nervous system, pheromones,

3. Explain how the antagonistic hormones insulin and glucagon regulate carbohydrate metabolism
4. Distinguish between type I and type II diabetes.

Chapter 45 - Hormones and the Endocrine System con't

5. Give a basic overview of the hormones involved in insect molting and development.
6. Why do we say that hormones have multiple effects?
7. Explain how the hypothalamus and the pituitary glands interact and how they coordinate the endocrine system
8. Explain the role of tropic hormones in coordinating endocrine signaling throughout the body
9. Name and describe the functions of hormones released by the following: anterior and posterior pituitary lobes, thyroid glands, parathyroid glands, adrenal medulla, adrenal cortex, gonads, pineal gland

Chapter 46 - Animal Reproduction (just first 17 slides) - most of this we have covered earlier as well so a lot of this should sound really familiar!

1. Distinguish between: asexual and sexual reproduction, internal and external fertilization,
2. Define and give an example for: Fission, budding, parthenogenesis, hermaphroditism, sex reversal.
3. Why do animals provide care for their offspring?
4. Explain how being a hermaphrodite may be advantageous to animals that have difficulty encountering a member of the opposite sex
5. Describe various ways in which animals may protect developing embryos