**Lecture Learning Outcomes and Objectives**

**Week 7: The Kingdom Animalia: Invertebrates and Vertebrate Chordates**

*Given 2 hours of discussion and assigned reading on the subject, upon an examination and within 70% accuracy, the student should be able to:*

**Evolution of Animals**

1. Describe the characteristics that separate the animal phyla from other phyla of living organisms.
2. Discuss the "colonial flagellate hypothesis" as it relates to the evolution of animals.
3. Explain the criteria used to develop the animal phylogenetic tree.

**Introducing Invertebrates**

1. Describe the sponges.
2. Describe the comb jellies.
3. List examples of cnidarians.
4. Discuss the specializations unique to cnidarians.
5. List the characteristics of members of phylum Platyhelminthes.
6. Distinguish between the free-living flatworms and the parasitic flatworms.
7. Describe rotifers.
8. Discuss the characteristics of mollusks.
9. List and describe examples of the major groups within phylum Mollusca.
10. Describe the major characteristics of annelids.
11. Distinguish between the major groups of annelids.
12. List and describe examples of roundworms and their effects on humans.
13. Discuss the five characteristics credited for the success of arthropods.
14. Give examples of the major groups of arthropods and describe their specializations.
15. **Invertebrate Deuterostomes**
16. Describe the characteristics of echinoderms.
17. List examples of the major groups of echinoderms.

**The Chordates**

1. Outline the four characteristics of chordates.
2. Describe and give examples of the two non-vertebrate chordates.
3. List the seven derived characteristics used to form the chordate phylogenetic tree.

**The Vertebrates**

1. Describe the four features in addition to the chordate that characterize the vertebrates.
2. Discuss the evolution of vertebrates.
3. Understand the terms: germ layer, Hox genes, coelom, acoelomate, pseudocoelomate, eucoelomate, bilateral symmetry, radial symmetry, protostome, deuterostome, metaozoa, parazoa, molting, ecdysozoa, lophotrochozoa, notochord, tetrapod