Animal Diversity

Name _____ Date _____ Period _____

Laboratory Objectives:

After completing this lab topic, you should be able to:
1. Compare the anatomy of the representative animals, describing similarities and differences in organs and body form that allow the animal to carry out body functions.
2. Discuss how these similarities and differences may indicate phylogenetic relationships.
3. Discuss the relationship between body form and the lifestyle or niche of the organism.
4. List the characteristics that are criteria for major branching points among less complex animal groups in the phylogenetic tree.

Results Summary

Complete the summary table, Table 1, recording in the appropriate row information about characteristics of all animals studied. Use this information to answer questions in the Applying Your Knowledge section that follows.

Applying Your Knowledge

1. Using specific examples from the animals you have studied during the semester, describe ways that organisms have adapted to specific environments.
    a. Compare organisms adapted to aquatic environments with those from terrestrial environments.

    b. Compare adaptations of parasitic organisms with similar free-living organisms.

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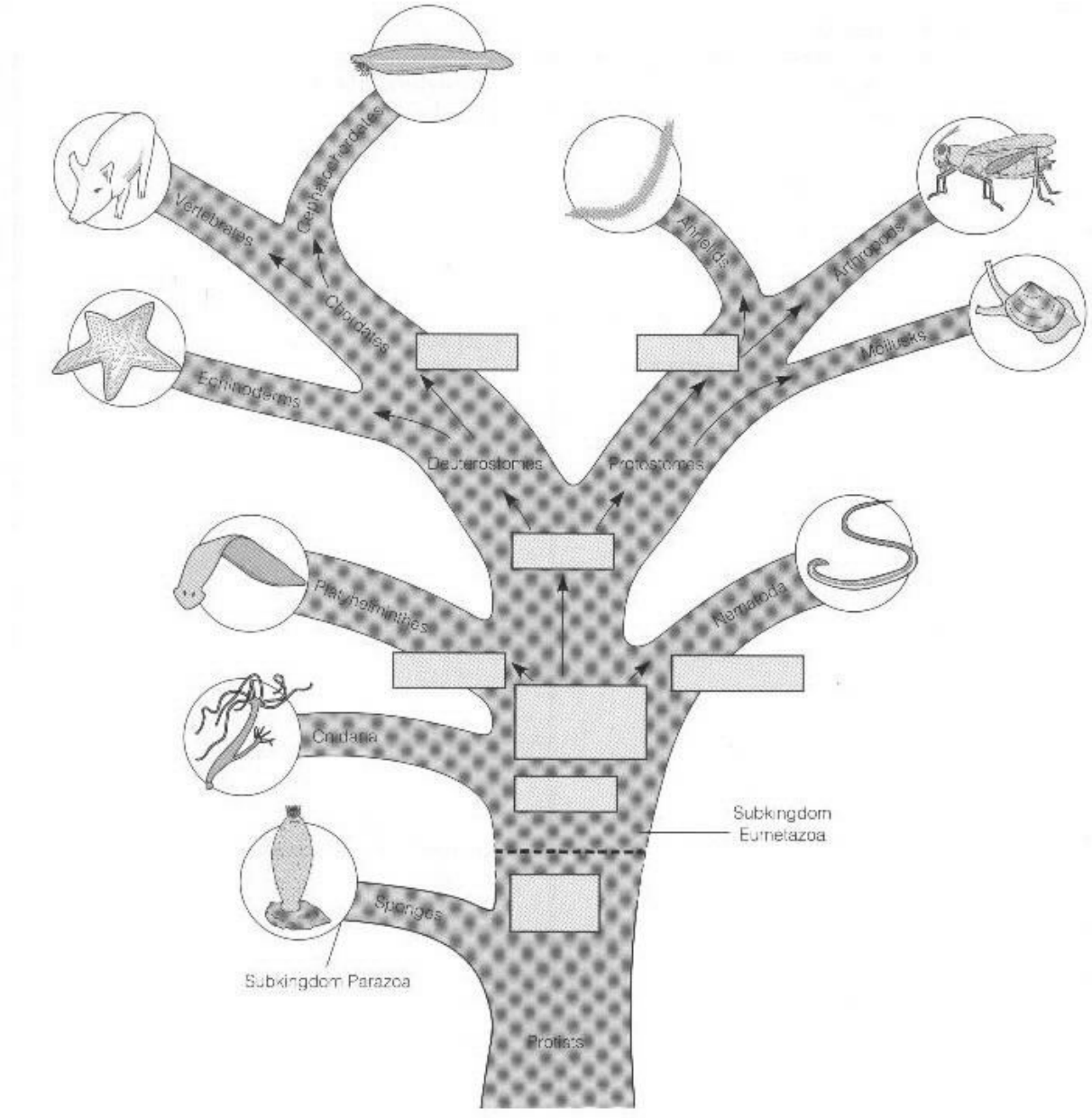
2. Examine the phylogenetic tree in Figure 2, which illustrates evolutionary relationships among members of the animal kingdom. Each branching point on the tree represents a major characteristic that separates groups of organisms. For example, tissue organization (presence or absence of distinct tissue layers) separates sponges from all other animals. Based on your observations, select at least seven major criteria to be used for branching points in this phylogenetic tree. Using Figure 2 as a guide, reproduce the figure and write one criterion in the space provided at each branch point.



Phylogenetic tree. Complete the figure by writing in the major criteria used to determine branching points.

Figure 2

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3. Upon superficial examination, the body form of certain present-day animals might be described as simple, yet these animals may have developed specialized structures, perhaps unique to their particular phylum. Illustrate this point using examples from some of the simpler organisms you have dissected.

4. From this series of dissections, one might conclude that certain trends can be detected, trends from "primitive" features (those that arose early in the evolution of animals) to more "advanced" traits (those that arose later). However, animals with these alleged primitive characteristics still successfully exist on Earth today Why is this so? Why have the more advanced animals not completely replaced the more primitive ones? Use examples from the lab to illustrate your answer.

5. A major theme in biology is the relationship between form and function in organisms. Select one of the major characteristics from Table 1, and illustrate the relationship of form and function for this characteristic using examples from the organisms studied.

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Table 1: Summary Table of Animal Characteristics

Animal	Tissue Organ-ization	Sym-metry	Type of Body Cavity	Digestive Openings	Circ-ulatory System	Habitat	Excretory System	Respir-atory Organs	Support System	Loco-motion	Nervous system	Segmen-tation	Appen-dages
Grantia schypa (Sponge)													
Aurelia flavidula (Jellyfish)													
Lumbricus terrestris (Earthworm)													
Anodonta alba (Clam)													
Loligo brevipennia (Squid)													
Cambarus affinis (Crayfish)													
Romelea micoptera (Grasshopper)													
Squalus acanthias (Shark)													
Perca flavescens (Perch)													
Rana catabeiana (Frog)													
Sus scrofta (Fetal Pig)													
Felis domestica (Cat)													

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Table 2: Comparison of Organisms by Major Features

1. Tissue Organization a. Distinct tissues absent: b. distinct tissues present:	**5. Circulatory System** a. none: b. open: c. closed:	**8. Organs for Gas Exchange** a. skin: b. gills: c. lungs: d. spiracles/tracheae:	**11. Nervous System** a. ventral nerve cord: b. dorsal nerve cord: c. other:
2. Symmetry a. radial: b. bilateral:			
3. Body Cavity a. acoelomate: b. pseudocoelomate: c. eucoelomate:	**6. Habitat:** a. aquatic: b. terrestrial: c. parasitic:	**9. Support System** a. external: b. internal: c. hydrostatic:	**12. Segmented Body** a. no: b. yes:
4. Openings to Digestive Tract a. one: b. two:	**7. Organs for Excretion** (list organ and animal)	**10. Types of Locomotion** (list type and animals)	**13. Appendages** c. no: d. yes: