Lab 7 Worksheet: Animal Diversity

In this lab you will explore the diversity of Animal Phyla. There are specimens of nine of the major phyla for you to examine.

1) PHYLUM PORIFERA

Porifera are the simplest multicellular animals. They have neither true tissues nor organs and their cells retain a considerable degree of independence. However there are individual types of cells which are specialized for feeding, support and reproduction.

A. Examine the sponge skeletons.

- a. How many of the specimens have a visible osculum (the opening through which water is expelled)? 1pt
- b. Name and state the amount of body forms of each of the sponges on display? 5 pts
- B. Examine the specimen of the sponge *Grantia*.
 - a. Are you able to see the osculum? 1pt
 - b. To which class of Porifera does Grantia belong? 1pt

C. Research the sponging industry in the Bahamas.

- a. Name two island(s) in the Bahamas still engaged in the sponging industry? 4 pts
- b. List two ways in which sponges defend themselves. 4 pts

2) PHYLUM CNIDARIA

The phylum Cnidaria are true multicellular animals. They are called radiates because all are radially symmetrical. They are the simplest animals having a tissue level of organization in which similar cells become aggregated into definite patterns or layers. With a few exceptions, the tissue of radiates are not organized into organs having specialized functions, and thus lack a feature characteristic of all higher multicellular organisms.

The Cnidarians include the sea anemones, jellyfish and corals as well hydroids. Many are brilliantly colored, and one group, the corals, form the great tropical coral reefs that harbor a diversity of life.

A. Examine the Hydra specimen.

- a. Draw and label the following: gastrovascular cavity, ectoderm, tentacles, mouth region and thin mesoglea. 5 pts
- B. Examine the coral specimen.
 - a. What is the form that corals take (polyp or medusa)? 1 pt
 - b. What is the significance of the coral "group"? 3 pts
- C. Examine the Gonionemus jellyfish specimen.
 - a. Indicate the Linnean classification from Kingdom to Genus. 5 pts
- D. Research the most deadly species of jellyfish.
 - a. What is its genus and species name? 2pts
 - b. What are two common names for this species? 2 pts

3) PHYLUM PLATYHELMINTHES

The phylum platyhelminthes include the Turbellaria (flatworms), the Trematoda (flukes) and the Cestoda) tapeworms. They are the simplest animals that are bilaterally symmetrical and triploblastic

A. Examine the *Planaria* specimen.

- a. Indicate the Linnean classification from Kingdom to Genus. 5 pts
- b. Draw and label the following: eyespots, mouth, anterior trunk of intestine, posterior trunk of intestine. 7 pts

B. Examine the tapeworm specimens.

- a. Draw and label the following: hooks, scolex, suckers. 6pts
- C. Research the classification of the Platyhelminthes.
 - a. Which class(es) of Platyhelminthes are free-living? 2 pts
 - b. Which class(es) of Platyhelminthes are parasitic? 5 pts
 - c. What are the different stages in the life cycle of the fluke, and what does each contribute to the cycle? 8 pts

4) PHYLUM ANNELIDA

Segmented worms make up the Phylum Annelida. The phylum includes earthworms and their relatives, leeches, and a large number of mostly marine worms known as polychaetes.

A. Examine the earthworm specimens.

- a. Draw and label the following: mouth, prostomium, clitellum, setae, and anus. Indicate the anterior and posterior regions. 10pts
- B. Research the classification of the Annelida.
 - a. Which structure of the earthworm engages in mechanical digestion? 2 pts
 - b. How many segments are covered by the clitellum? 2 pts
 - c. Which class(es) of the Annelids have a clitellum? 2 pts
 - d. What are parapodia? Which class(es) of the Annelids have parapodia? 4 pts
 - e. Which class(es) of Annelids have the least amount of setae? 2 pts

5) PHYLUM MOLLUSCA

After the Arthropods the Molluscs are the most successful of the animal phyla in terms of numbers of species. All molluscs have a muscular foot used for locomotion, as well as a mantle, an outgrowth that covers the animal. Many molluscs have an external calcium carbonate shell that is produced by the mantle.

A. Examine the assortment of Mollusca shells (clams, snails, and chitons).

- a. List three features they have in common. 3 pts
- b. List three major differences among the shells on display. 3 pts

- B. Examine the chiton specimens.
 - a. Identify the dorsal and ventral side of the animal.
 - b. Make a large labeled drawing of the dorsal side of the animal and label the girdle, anterior and posterior valves. 6 pts
 - c. Make a large labeled drawing of the ventral side of the animal and label the mouth, anus, mantle, gills and foot. 8 pts
- C. Examine the squid specimens.
 - a. Draw and label the following: fin, mantle, eyes, arms. 7pts
- D. Research the classification of the Mollusca.
 - a. What are gills? 2 pts
 - b. Name three reasons why gills are necessary in molluscs? 6 pts
 - c. In which classes of the Mollusca is the radula absent? 4 pts
 - Name two classes of the Mollusca that are Dioecious, and two classes that are Monoecious?
 4 pts.
 - e. Complete the Mollusca story below: 9 pts.

The Mollusca consists	of a diverse array of organisms.	They have a specialized muscular foot		
used for	and a	where the gills		
are found. Their circu	latory system is	and their digestive system is		
	because they have a mouth a	and an anus. In their mouth they have a		
unique structure used for scraping their food called the				
The shells of the Mollusca consist of a mother of pearl surface called the				
layer with the middle layer being called the				
which is made up of _		. Growth in the mollusc's shell		
begins from a region called the				

6) PHYLUM NEMATODA

Members of the Phylum Nematoda are commonly known as "roundworms." Most are free-living and can be found in nearly any habitat (from rotting fruit to arctic soils). Some members of this phylum are parasitic, and these have given the phylum a lot of bad press, since they are the animals usually covered. *Ascaris lumbricoides* is one of the best known of the parasitic nematodes.

A. Examine the Ascaris specimens.

a. Indicate the Linnean classification from Kingdom to Genus. 5 pts

7) PHYLUM ARTHROPODA

Arthropods make up over 75% of the world's animal species and include animals such as insects, crustaceans and arachnids. The largest group of Arthropods is the insects. The next largest group is the crustaceans, including lobsters and crabs. Other arthropods include spiders and ticks, and centipedes and millipedes.

The arthropod body is segmented and can usually be divided into 2 or more distinct regions or tagmata. Segments become fused so that they can provide specific functions for example feeding or movement.

A. Examine the crayfish specimens.

- a. Identify the subphylum for this group. 1pt
- b. Identify and label the structures indicated in the diagram below. 10 pts



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- B. Examine the crab, millipede, centipede, spider, and grasshopper specimens.
 - a. Fill out the table below with the Subphylum and tagmata (major body regions) of each arthropod. 10 pts

Organism	Subphylum	Tagmata
Crab		
Millipede		
Centipede		
Spider		
Grasshopper		

8) PHYLUM ECHINODERMATA

Almost all of the species of echinodermata are marine; a few can live in brackish water. Echinoderms are bilaterally symmetrical in the larvae stage, meaning that they are not closely related to animals of phylum Cnidaria, which never show bilateral symmetry. Included in this phylum are the familiar sea stars ("starfish"), brittle stars, sand dollars, sea urchins, crinoids and sea cucumbers.

A. Examine the starfish specimes.

- a. Identify the oral and aboral surfaces.
- b. Make a large labeled drawing of the aboral (dorsal) surface. Draw and label the circular madreporite and spines. 5 pts
- c. Make a large labeled drawing of the oral (ventral) surface. Draw and label the mouth and tube feet. 5 pts
- B. Examine the sea urchin, sea cucumber, sand dollar, and sea biscuit specimens.
 - a. List two features they have in common. 2pts
 - b. List two major differences between these specimens. 2pts

C. Research the classification of the Echinodermata.

- a. What is the function of the madreporite? 2 pts
- b. Where is the madreporite located on other echinoderms from different classes? 8 pts
- c. Which class(es) of the Echinoderms have tube feet without suckers? 4 pts

9) PHYLUM CHORDATA

In lab we will look at the common, morphological and anatomical threads that run through the Phylum Chordata (Subphylum Urochordata, Subphylum Cephalochordata, and Subphylum Vertebrata). As you look at the specimens provided try to look for the features that are common to all chordates:

1) notochord

- 2) dorsal hollow nerve cord
- 3) pharyngeal slits some stages
- 4) post anal tail

SUBPHYLUM UROCHORDATA

A. Examine the sea squirt specimens.

- a. What is another common name for the sea squirts? 1 pt
- b. Of what protective value would reflexes be to the sea squirt? 2 pts
- c. Try to observe as many of the structures listed below as possible.

The brachial sac/basket or pharynx is the largest internal structure and the space between it and the mantle is the atrium. The pharyngeal wall is perforated with pharyngeal slits through which water passes into the animal and is discharged through the atrial siphon. Inside the pharynx is the endostyle that secretes mucus. Draw and label.



http://depts.washington.edu/fhlk12/links/StudentProjects/Images/CionaTunicateBiology/Tadult_low.gif

http://www.marlin.ac.uk/images/taxonomy_descriptions/Tunicata.jpg

SUBPHYLUM CEPHALOCHORDATA

Cephalochordates are filter feeders that use cilia to generate a current of water into the mouth. Water and suspended food enter the pharynx where they are separated by filtration by the gill slits in the pharynx. They are generally known by the common name "lancelet" and all species are less than 10 cm in length. Lancelets inhabit shallow offshore sands in oceans with only the head protruding above the sand surface.

A. Examine the Amphioxus specimen.

- a. Indicate the Linnean classification from Kingdom to Family. 5 pts
- b. Draw and label the following: notochord, dorsal nerve cord, tail, caudal fin, myomeres, cecum, wheel organ, pharynx, oral head and rostrum and attempt to see the pharyngeal slits.
 While it appears to possess more of a cephala than Urochordates, a true cephala is not evident. 10 pts
- B. Research the classification of the Cephalochordata.
 - a. Does the myotome of an amphioxus zigzag more or less than the myomere of a bony fish? 1 pt
 - b. How might the differences in musculature help predict whether amphioxus or the fish would be the better swimmer? 3 pts



https://www.google.bs/search?q=do+sea+squirts+belong+to+the+subphylum+urochordata&biw



SUBPHYLUM VERTEBRATA

These are the vertebrate animals and probably the most familiar specimens in the lab today.

A. Examine the specimens on display.

a. Fill out the table below with the Class and a unique feature of each vertebrate. 8 pts

Organism	Class	Unique Feature
Frog/Toad		
Lizard		
Snake		
Bird		