**Background Information**

Taxonomy, simply stated, is the practice and science of classifying organisms arranged into a hierarchical structure. Each level of the classification system places species into groups based on their shared common features while separating groups of species because of their differences. For instance, species appearing more closely related are grouped into the same genus. In this lab you will be observing 10 different species with respect to their phylum. In sections 2-9 you will document the features common to the corresponding phylum. In column 10, you will identify the organism.



Phylum\Division

Sample 1: Chrysophyta

Sample 2: Annelida



Sample 3: Arthropoda



Sample 4: Amphibia



Sample 5: Aves



Sample 6: Reptilians



Sample 7: Mammalia



Sample 8: Bryophyta



Sample 9: Gymnosperm



Sample 10: Angiosperm



 Chrysophyta: Unicellular, primary producers

 Annelida: Segmented body

 Arthropoda: External skeleton and segmented body

 Amphibia: Can obtain oxygen from aquatic and terrestrial biomes

 Aves: Able to fly; covered with feathers

 Reptilians: Covered with scales

 Mammalia: Nurture their young with milk

 Bryophyta: Nonvascular plants

 Gymnosperm: Have needles and seeds but no flowers

 Angiosperm; Have flowers

**Nutrition**

**Autotrophic**

Angiosperm

Gymnosperm

Chrysophyta

Bryophyta

Heterotrophic: Earthworms eat their way through dirt, so they are detritivores.

Annelida

Heterotrophic: Some are vegetarian, some are carnivorous, and some are decomposers.

Arthropoda

Heterotrophic: These are usually vegetarian as tadpoles and carnivores as adults.

Amphibia

Heterotrophic

Aves

Mammalia

Reptilians

# Circulatory System (Transport)

Diffusion only

Chrysophyta

Closed with 5 aortic arches (hearts)

Annelida

Open circulatory system with a heart pumping hemolymph

Arthropoda

Closed with 3-chambered heart

Amphibia

Closed with 4-chambered heart

Mammalia

Aves

Reptilians

Diffusion through cell walls and cell membranes

Bryophyta

Xylem and phloem

Angiosperm

Gymnosperm

# Respiratory System

Diffusion only

Chrysophyta

Diffusion through skin

Annelida

Diffusion through tracheal tubes

Arthropoda

Diffusion through gills as a tadpole and through lungs and skin (especially) as adults

Amphibia

Diffusion through the lungs

Aves

Reptilians

Mammalia

Diffusion through cell membranes

Bryophyta

Diffusion through stomata

Gymnosperm

Angiosperm

**Reproductive System**

Asexual

Chrysophyta

Hermaphrodites: One body has both sexes Sexual: Has special organ called clitellum that moves from the front of the worm to the rear and then falls off, containing the eggs

Annelida

Sexual: Mostly internal fertilization

Arthropoda

Sexual: Mostly external fertilization; must be in water or very moist area

Amphibia

Sexual: Eggs; internal

Aves

Reptilians

Sexual: Placental, in-uterus development (internal)

Mammalia

Sexual: Alternation of generations. Must be in a moist area for the sperm to swim to the egg

Bryophyta

Sexual: Alternation of generations. Pollen is the male sex cell

Angiosperm

Gymnosperm

**Excretory System**

Diffusion

Chrysophyta

Nephridia in each segment; solid waste exits through the anus

Annelida

Malpighian tubules

Arthropoda

Kidneys, intestines, anus

Aves

Reptilians

Mammalia

Amphibia

None

Angiosperm

Bryophyta

Gymnosperm

# Growth and Development

Start as small cells; grow bigger until division

Chrysophyta

Start out as fertilized eggs, hatch into little worms that continue to grow, and then mature sexually into adults

Annelida

Complete (egg, larvae, pupae, adult) or incomplete (egg, nymph, adult) metamorphosis

Arthropoda

Metamorphosis: Egg, tadpole, adult

Amphibia

Develop in egg

Aves

Reptilians

Develop in-uterus

Mammalia

Spores, not seeds

Bryophyta

Naked seeds in cones

Gymnosperm

Seeds protected in pods, shells, fruit, and so forth

Angiosperm

**Regulation**

The nucleus directs protein synthesis. Euglena have eye spots that can detect light

Chrysophyta

Tiny anterior brain, ganglia, and the nerve cord runs the length of the body

Annelida

Tiny anterior brain, nerve cord, ganglia, and extremely well-developed sensory organs

Arthropoda

Brain, nervous system, good reflexes

Amphibia

Nervous and endocrine systems

Reptilians

Aves

Big brain; well-developed nervous system and endocrine system

Mammalia

None

Bryophyta

Hormones in apical bud, root, and stem

Gymnosperm

Hormones in apical bud, root, stem, and leaves

Angiosperm

# Sample Organism

Phytoplankton

Chrysophyta

Earthworm

Annelida

Fruit fly

Arthropoda

Frog

Amphibia

Bird

Aves

Snake

Reptilians

Cat

Mammalia

Moss

Bryophyta

Pine tree

Gymnosperm

Rose

Angiosperm

### Reference

Audesirk, T., Audesirk, G., & Byers, B. E. (2010). Biology: Life on earth with physiology (9th ed.). Upper Saddle River, NJ: Prentice Hall.