

# Kingdom Animalia

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## Objectives

- Be able to recognize and name the major groups of animals
- Be able to identify key characteristics that separate animal taxa
- Be able to use a dichotomous key

## Introduction

Animals have diverse ways of accomplishing the tasks of living. This has resulted in some animals that appear very different from one another. Because of the unusual appearance of some, you might not even think of them as animals without close observation. In this laboratory exercise you will have an opportunity to see some of this diversity.

The following are some significant features of animals that are used to separate the animal groups from one another. In your observations you should see other differences as well.

### Some animal features -

Type of symmetry:

Lacking symmetry - not able to divide the animal to get mirror images.

Bilateral symmetry - where one line can be drawn that divides the animal to get mirror images.

Radial symmetry - where several lines can be that divide the animal to get mirror images.

Segmentation of body:

Unsegmented - body not divided into repeating units.

Simple segmentation - body divided into repeating units, all the same.

Metameric segmentation - body divided into repeating units, each unit or a set of units modified for a particular function

Appendages:

Appendages to body lacking - lacks projections from body.

Paired appendages - projections from body occur in pairs, frequently 1 pair per segment.

Unpaired appendages - projections from body present but not in pairs.

Appendages may be jointed or unjointed.

Skeleton:

Hydrostatic - Body fluid pressure is used to maintain body shape.

Endoskeleton - Supportive tissues/structures are located inside the body.

Exoskeleton - Supportive tissues/structures are located outside the body.

Nutrition:

Absorption - nutrients are absorbed across the body surface, no internal chamber for digestion.

Internal digestion - digestion occurs within a chamber in the body.

Digestive system:

Lacking - organisms which absorb nutrients across body surface.

Complete system - a digestive system with separate mouth and anus.

Incomplete system - a digestive system with only one orifice.

## Activity 23.1 Classification of Animals

Of course there is a generally accepted (although subject to change) classification system for the animals known to exist. These groups of animals have recognized names. Below are some of the larger groups of animals and their common names as used in this lab module.

Look over these to get a feel for the types of organisms that belong to each phylum and class. As you use the dichotomous key to identify organisms in the next section, consult this list to identify classes with their phylum and common name.

Kingdom	Phylum	Class	Common Name		
Animalia	Porifera		Sponges		
	Cnidaria	Hydrozoa	Hydras		
		Scyphozoa	Jellyfish		
		Anthozoa	Sea anemones and Corals		
	Platyhelminthes	Turbellaria	Flatworms		
		Trematoda	Flukes		
		Cestoda	Tapeworms		
	Nemertina		Ribbon worms		
	Nematoda		Round worms		
	Mollusca	Monoplacophora			
		Polyplacophora		Chitons	
		Bivalvia		Bivalves	
		Gastropoda		Snails	
		Cephalopoda		Octopus/Squid	
		Annelida	Polychaeta		Marine worms
			Oligochaeta		Earthworms
	Hirudinea			Leeches	
	Arthropoda	Merostomata		Horseshoe Crab	
		Arachnida		Spiders	
		Crustacea		Crabs, etc.	
		Chilopoda		Centipedes	
		Diplopoda		Millipedes	
		Insecta		Insects	
		Echinodermata	Echinodea		Sea urchins
	Holothuroidea			Sea cucumbers	
	Crinoidea			Sea lillies	
	Asteroidea			Sea stars	
	Ophiuroidea			Brittle stars	
	Chordata	sub-phyla	Cephalochordata	Lancelets	
			Urochordata	Sea squirts	
		Vertebrata	Agnatha	Lampreys	
			Chondrichthyes	Sharks	
			Osteichthyes	Bony fish	
Amphibia			Amphibians		
Reptilia			Reptiles		
Aves			Birds		
Mammalia			Mammals		

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## Activity 23.2

### Key to the Animal Kingdom

Use the following key to find the name for the organisms shown in the Results Section.

1a. No apparent symmetry	Go to 2
1b. Symmetry apparent	Go to 3
2a. Organism lacks shell	<b>Phylum Porifera</b>
2b. Shell present	<b>Class Gastropoda</b>
3a. No apparent segmentation and no vertebrae present	Go to 4
3b. Body apparently segmented or vertebrae present	Go to 18
4a. Radial symmetry	Go to 5
4b. Bilateral symmetry	Go to 12
5a. Symmetry pentamerous (5 ways)	Go to 6
5b. Symmetry not pentamerous	Go to 10
6a. Body with short or long spines	Go to 7
6b. Body without spines	Go to 9
7a. Body star-shaped	Go to 8
7b. Body not star-shaped	<b>Class Echinoidea</b>
8a. Arms narrow and long	<b>Class Ophiuroidea</b>
8b. Arms thick and shorter	<b>Class Asteroidea</b>
9a. Body cucumber shaped	<b>Class Holothuroidea</b>
9b. Body stalk shaped, feather-like arms	<b>Class Crinoidea</b>
10a. Medusa body	<b>Class Scyphozoa</b>
10b. Polyp body	Go to 11
11a. Few , long tentacles	<b>Class Hydrozoa</b>
11b. Many, short tentacles	<b>Class Anthozoa</b>
12a. Body covered by shell or with tentacles	Go to 13
12b. Body without shell or tentacles	Go to 15
13a. Tentacles present	<b>Class Cephalopoda</b>
13b. Tentacles absent	Go to 14

14a. Shell of 2 parts, halves hinged	<b>Class Bivalvia</b>
14b. Shell greater than 2 parts	<b>Class Polyplacophora</b>
15a. Body round & worm-like	Go to 16
15b. Body flattened	Go to 17
16a. Bulb at anterior end of body	<b>Phylum Nemertina</b>
16b. Lacks bulb at anterior end	<b>Phylum Nematoda</b>
17a. Suckers absent	<b>Class Turbellaria</b>
17b. Suckers present	<b>Class Trematoda</b>
18a. Paired appendages not apparent	Go to 19
18b. Paired appendages apparent	Go to 22
19a. Flattened body, all but first segment identical	<b>Class Cestoda</b>
19b. Round, worm-like body	Go to 20
20a. Vertebrae present	Go to 34
20b. Vertebrae absent	Go to 21
21a. Suckers absent	<b>Class Oligochaeta</b>
21b. Suckers present	<b>Class Hirudinea</b>
22a. Body with exoskeleton	Go to 23
22b. Body without exoskeleton	Go to 28
23a. Body divided into 2 or 3 sections	Go to 24
23b. Body divided into more than 3 sections	Go to 27
24a. Body divided into 2 sections	Go to 25
24b. Body divided into 3 sections	<b>Class Insecta</b>
25a. Body with obvious book lungs	<b>Class Merostomata</b>
25b. Book lungs not obvious	Go to 26
26a. Antennae absent	<b>Class Arachnida</b>
26b. Antennae present	<b>Class Crustacea</b>
27a. 1 pair of appendages per segment	<b>Class Chilopoda</b>
27b. 2 pair of appendages per segment	<b>Class Diplopoda</b>

28a. Backbone absent	Go to 29
28b. Backbone present	Go to 30
29a. Cylindrical body	<b>Subphylum Urochordata</b>
29b. Elongated body	<b>Subphylum Cephalochordata</b>
30a. Hair or feathers absent	Go to 31
30b. Hair or feathers present	Go to 35
31a. Lacking jaws	<b>Class Agnatha</b>
31b. Jaws present	Go to 32
32a. Fish-like body	Go to 33
32b. Not a fish-like body	Go to 34
33a. Operculum absent	<b>Class Chondrichthyes</b>
33b. Operculum present	<b>Class Osteichthyes</b>
34a. Scales absent	<b>Class Amphibia</b>
34b. Scales present	<b>Class Reptilia</b>
35a. Hair and mammary glands	<b>Class Mammalia</b>
35b. Feathers, lacking mammary glands	<b>Class Aves</b>

# Results Section

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**Activity 23.2**  
**Key to the Animal Kingdom**

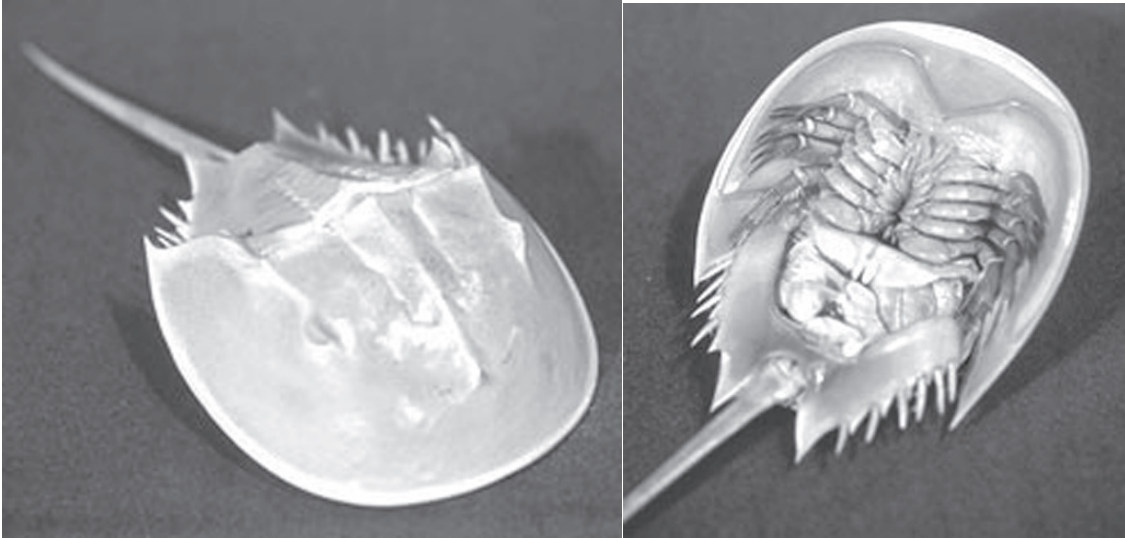
Animal 1: The fruit fly. Some not so obvious characteristics of this organism you may need:  
the body is covered with an exoskeleton.



List the choices you made in the key to identify this organism.  
(for example, list as 1b, 3b, 18a, etc.)

What is the taxonomic group for this organism?

Animal 2: The horseshoe crab. Some not so obvious characteristics of this organism you may need: the organism uses booklungs for respiration.



List the choices you made in the key to identify this organism.  
(for example, list as 1b, 3b, 18a, etc.)

What is the taxonomic group for this organism?

Animal 3: A whale. Some not so obvious characteristics of this organism you may need:  
a vertebral column is present, hair is found on this organism.



List the choices you made in the key to identify this organism.  
(for example, list as 1b, 3b, 18a, etc.)

What is the taxonomic group for this organism?



Animal 4: The mudpuppy. Some not so obvious characteristics of this organism you may need:  
this organism has a vertebral column, it lacks scales.



List the choices you made in the key to identify this organism.  
(for example, list as 1b, 3b, 18a, etc.)

What is the taxonomic group for this organism?