

Activity Five

Phylum Comparison Challenge

Episode Title: Any or all episodes (episode review and/or series culminating activity)

Activity Subject: Body plans and parts, evolution, diversity

Grade Level: 6-12

National Science Education Standards:

Standards are noted as (standard:benchmarks).

Grades 6-8

Life Sciences (4:5), (5:4,5,6,7), (7:1,4,5)

Grades 9-12

Life Sciences (4:1), (5:5,8), (7:1,2,3,6,7)

Video Segment References: Refer to the “Video Time Code Index” for segments contained in each episode on body plans and parts, animal behavior, evolution, life cycles/

reproduction, and more.

Learning Objective: Students explore the characteristics of the eight major animal phyla.

Assessment: Students sort puzzle pieces containing animal group characteristics by phylum. For each characteristic (puzzle piece), students draw a sketch and list an example of a particular organism that has that characteristic.

Time: Flexible, based on available time and number of episodes or video segments viewed; one hour to view each episode and additional class period to complete the activity

Group Size: Entire class views videos and contributes to discussion; individual students or pairs or small teams of students conduct activity.

Materials and Preparation

Duplicate the accompanying, reproducible “Phylum Comparison Chart Key” for each group. Provide scissors, colored pencils and/or markers, and newsprint or poster board.

Procedure





- 1) View the episodes or pre-selected episode segments with your students, and review the characteristics of each animal group, using the “Phylum Comparison Chart Key” provided as a guide to reinforce student learning of the characteristics of each animal group. Highlight the characteristics that are included in the chart. Note that some characteristics are found in more than one phylum.
- 2) Review with students the eight major animal phyla and their characteristics provided in the “Introduction to Phyla.”


- 3) Have students design their own display on poster board or newsprint, with room for each piece of the chart and an accompanying illustration and label (provided).
- 4) Have students look over the “Phylum Comparison Chart” pieces. Let them ask questions about the characteristics they don’t understand.
- 5) Ask students to cut apart and shuffle the chart pieces with printed side down, then draw and sort the pieces into the eight major phyla based on the characteristics of the animals in each phylum.
- 6) Have students rotate turns drawing and sorting the pieces.
- 7) Each group places the pieces on the display chart they have designed. For each characteristic (chart piece), have students draw a sketch and list an example of a particular organism that has that characteristic. The resulting display will have

illustrations and names of organisms as well as chart pieces.

- 8) When all groups are finished, have students defend their placement decisions in a class discussion. This should help to reconcile any conflicting decisions.
- 9) Relevant sections of the chart can also be used for review of each phylum after viewing each episode or segments of each episode.

See following pages for Comparison Chart and answer key.

<p>Phylum Cnidaria</p> 	<p>Hollow body cavity for food</p>	<p>Five-part radial symmetry</p>	<p>Complete digestive tract with two ends</p>
<p>Muscular “foot” used to slide, dig, or jump</p>	<p>ANNELIDS</p>	<p>Tube feet used for locomotion</p>	<p>No symmetry or consistent body shape</p>
<p>Some have stinging structures (nematocysts)</p>	<p>Jaws and skulls important in their evolution</p>	<p>Water flows through its body, full of canals</p>	<p>Phylum Chordata</p> 
<p>Increased complexity made possible by much more DNA</p>	<p>Phylum Mollusca</p> 	<p>Most have inside skeleton of bones</p>	<p>Pioneered jointed legs</p>
<p>Some propel, using their siphon as a water jet</p>	<p>Phylum to which humans belong</p>	<p>ECHINODERMS</p>	<p>More species than any other phylum</p>
<p>FLATWORMS</p>	<p>Specialized cells, but not organized into organs or tissues</p>	<p>First phylum to venture into the air</p>	<p>Some spines are little pincers (pedicellaria)</p>
<p>Mantle of tissue covering the body</p>	<p>All have notochord; most have backbone</p>	<p>Phylum Platyhelminthes</p> 	<p>MOLLUSCS</p>

<p>Spicules act as a skeleton to give it structure</p>	<p>Phylum Porifera</p> 	<p>Some of the simplest animals with bilateral symmetry</p>	<p>Champions of variations in appendages</p>
<p>CNIDARIANS</p>	<p>Some non-swimming polyps</p>	<p>Phylum Annelida</p> 	<p>Feeding device like a toothed, rasping tongue (radula)</p>
<p>Three tissue layers, but no body cavity</p>	<p>Exoskeleton (outside skeleton) made of chitin and protein</p>	<p>ARTHROPODS</p>	<p>All members live in the ocean</p>
<p>Most have a calcium-carbonate shell</p>	<p>Most members are parasitic</p>	<p>Tubular mouth (pharynx) at mid-body</p>	<p>Phylum Arthropoda</p> 
<p>Their active burrowing has affected global climate</p>	<p>Hard but flexible bodies with interlocking plates under thin skin</p>	<p>First muscles and nerves</p>	<p>CHORDATES</p>
<p>Body design basically a tube within a tube</p>	<p>SPONGES</p>	<p>No locomotion; stationary animal</p>	<p>Fluid-filled compartments used for locomotion</p>
<p>Phylum Echinodermata</p> 	<p>Bilateral phylum that added segmentation</p>	<p>Some free-drifting medusae</p>	<p>Digestive tract with the entrance being the exit</p>

Phylum Comparison Chart Key

SPONGES



Phylum Porifera

- No symmetry or consistent body shape
- Water flows through its body, full of canals
- Spicules act as a skeleton to give it structure
- No locomotion; stationary animal
- Specialized cells, but not organized into organs or tissues

CNIDARIANS



Phylum Cnidaria

- First muscles and nerves
- Some have stinging structures (nematocysts)
- Some free-drifting medusae
- Some non-swimming polyps
- Hollow body cavity for food
- Digestive tract with the entrance being the exit

FLATWORMS



Phylum Platyhelminthes

- Some of the simplest animals with bilateral symmetry
- Tubular mouth (pharynx) at mid-body
- Three tissue layers, but no body cavity
- Digestive tract with the entrance being the exit
- Most members are parasitic

ANNELIDS



Phylum Annelida

- Bilateral phylum that added segmentation
- Complete digestive tract with two ends
- Fluid-filled compartments used for locomotion
- Their active burrowing has affected global climate
- Body design basically a tube within a tube

ARTHROPODS



Phylum Arthropoda

- Champions of variations in appendages
- Exoskeleton (outside skeleton) made of chitin and protein
- First phylum to venture into the air
- Pioneered jointed legs
- More species than any other phylum
- Complete digestive tract with two ends
- Bilateral phylum that added segmentation

MOLLUSCS



Phylum Mollusca

- Feeding device like a toothed, rasping tongue (radula)
- Most have a calcium-carbonate shell
- Muscular "foot" used to slide, dig, or jump
- Some propel, using their siphon as a water jet
- Mantle of tissue covering the body
- Complete digestive tract with two ends

ECHINODERMS



Phylum Echinodermata

- Five-part radial symmetry
- Tube feet used for locomotion
- Some spines are little pincers (pedicellaria)
- Hard but flexible bodies with interlocking plates under thin skin
- All members live in the ocean
- Complete digestive tract with two ends

CHORDATES



Phylum Chordata

- All have notochord; most have backbone
- Increased complexity made possible by much more DNA
- Most have inside skeleton of bones
- Phylum to which humans belong
- Jaws and skulls important in their evolution
- Complete digestive tract with two ends
- Bilateral phylum that added segmentation