

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.

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

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

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