131 Week 7 Lab: Deuterostomes

# Echinodermata

## Sea Star Anatomy

Paste your completed sea star diagram below:

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## Aristotle’s Lantern

Paste your Aristotle’s lantern sketch below:

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# Chordata

# Fishes

1. Describe at least two adaptations fishes possess that allow them to live successfully in aquatic habitats

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1. Examine the fishes pictured below.
   * How do the skeletons of these two animals differ?

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* + What type of body symmetry do they exhibit?

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1. What new adaptations do the lobe-finned fishes have, that ray-finned fishes do not?

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1. Why do you think many people refer to the Coelacanth as a "living fossil?"

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# Transition to Land

1. Tetrapods are \_\_\_\_\_\_\_. Examples of tetrapods include:

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1. Tetrapods first appear in the fossil record \_\_\_\_\_\_\_\_ million years ago.

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1. Charles Darwin predicted that tetrapods evolved from \_\_\_\_\_\_\_\_\_\_\_\_\_. What observation leads to that hypothesis?

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1. What evidence would you expect to find to support that hypothesis? What age rocks would you look in and why?

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1. Fish use \_\_\_\_\_\_\_\_\_ to breathe underwater. (However, many species of lobe-finned fishes that evolved during the Devonian period also had \_\_\_\_\_\_\_\_\_\_)

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1. In fossils, what anatomical evidence indicates that gills were present?

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1. Tetrapods use \_\_\_\_\_\_\_\_\_\_ to breathe. Do any modern tetrapods have gills? Explain.

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1. Why is a sturdy ribcage important for tetrapods?

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1. What is homology? To what are fins homologous?

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1. Most modern tetrapods have \_\_\_\_\_\_\_\_ digits on front limbs and \_\_\_\_\_\_\_ digits on back limbs, although some species have fewer. How does this number compare to the number of digits on the limbs of transitional fossil forms?

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1. Why do many of the transitional fossils between fish and tetrapods have flat heads?

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1. How did the anatomy of the shoulder and head change during tetrapod evolution?

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1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are fossil species have characteristics unique to fish as well as characteristics found in fish and tetrapods. Describe the characteristics of lobe-finned fish that are similar to those of tetrapods.

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1. Which lobe-finned fish is alive today? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Acanthostega and Icythyostega have been called fish-like tetrapods. Explain why they are d

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1. scribed as such and describe the environment in which they probably lived.

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1. Why is Tiktaalik such an important transitional fossil?

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1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are early tetrapods that do not have features unique to fish. Describe how these two species differ anatomically and what that means about where they each lived.

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# Amphibians

1. What are the major groups of amphibians?

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1. Explain how their reproductive

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1. strategy dictates the habitats in which they are able to live.

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1. What is the major characteristic that distinguishes the Caecilians from the other two orders?

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# Reptilian Vertebrates

1. Describe two adaptations that these animals possess that allow reptiles to live away from water

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1. List two characteristics that allow you to tell the difference between venomous rattlesnakes and non-venomous gopher snakes

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1. List two characteristics that allow you to tell the difference between an alligator and a crocodile.

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1. Question: Why are we making all the fuss about the name of this group and referring to it as  ‘reptilian’ instead of just calling them reptiles?

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1. **Does** grouping these organisms into reptiles make evolutionary sense?  **Why/Why not??**

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# Birds

1. Birds are the first group of endothermic animals that we have encountered today.
   * Describe the differences between ectotherms and endotherms.

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* + Why is endothermy advantageous?

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1. List three adaptations that allow birds to fly

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1. Which group of birds is the most diverse/has the greatest number of species?

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# Mammals

1. What are the two adaptations that are unique to mammals?

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1. Look at the photos of the pangolin.
   * Does this animal appear to belong with the others in this category? Why or why not?

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* + What structures on your own body are similar, in terms of the material from which they are composed, to the pangolin’s scales?

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1. List the three groups of mammals

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1. Give an example of each group

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# Adaptations: Locomotion

### Specimen 1

1. To which class of vertebrates does this organism belong?

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1. What type of habitat do you think this animal prefers?

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1. List two adaptations that could give a clue about its lifestyle.

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### Specimen 2

1. Notice the leg bones on this skeleton. What type of locomotion is suggested by their length and shape?

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### Specimen 3

1. To what animal do you think this leg belongs? What sort of locomotion do you think it uses?

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### Specimen 4

1. This skeleton belongs to a house cat. Knowing what you do about the habits of domestic cats, describe two morphological characteristics that could assist this animal in its lifestyle.

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### Specimen 5

1. What sort of locomotion does this animal use? Explain what physical characteristic helped you determine the form(s) of locomotion.

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### Specimen 6

1. What sort of locomotion does this animal use?

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1. How do the bones in its “arms” correspond to the bones in your own body?

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### Follow-up Questions

* **What** are the anatomical structures you used to allow you to match these specimens with each form of locomotion?

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* See above

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* **What** are the characteristics you identified on each structure to make the associations?
  + Which of these structures are **analogous**?

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* + Which of these structures are **homologous**?

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# Mystery Skull Activity

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|  | Feeding Strategy | Sense of Smell | Quality of Eyesight | Eye placement (forward or side) | Predator, Prey, or Both? | Whose Skull Is it? |
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