

ANIMAL BIOLOGY LABORATORY

Lab 8: Phylum Echinodermata and Subphylum Cephalochordata (Phylum Chordata)

Read pages 172-173, 187 in your lab manual before coming to lab.

Objectives:

- Recognize the basic structure and organization of the echinoderm classes:
- *Class Asteroidea*
- *Class Echinoidea*
- *Class Holothuroidea*
- Compare and contrast the basic structure and organization of sea stars, sea urchins, and sea cucumbers
- Recognize the basic structure and organization of the SP Cephalochordata

Phylum Echinodermata (sea stars, urchins, and cucumbers, sand dollars, crinoids)

- Marine animals
- No freshwater or terrestrial representatives
- Water Vascular System

Exercise 14A: Sea Star Anatomy

Sea Star Dissection

(see instructions on pp. 173-178; Figs. 14.1-14.4)

Class Asteroidea

- Pentaradial symmetry
- Tube feet with suckers
- Appendages arranged around central disk containing mouth

Identify the following external structures:

- Oral surface
- Aboral surface
- Mouth
- Tube feet
- Madreporite
- Anus
- Ambulacral grooves

Identify the following internal structures:

- Cardiac stomach
- Pyloric stomach
- Radial canals
- Ring canal
- Stone canal
- Ampullae
- Ambulacral ridges

Review Questions

All questions pp. 174-176

Exercise 14C Figs. 14.7-14.8 & pp. 180-182: Sea Urchin Anatomy

Class Echinoidea

- Disk shaped with no arms
- Compact skeleton
- Movable spines
- Tube feet with suckers

Identify the following external structures:

- Oral surface
- Tube feet
- Teeth
- Peristome
- Mouth
- Aboral surface
- Spines

Identify the following internal structures:

- Aristotle's lantern

Review Questions

All questions pp. 181-182

Exercise 14D Figs. 14.9-14.10 & pp. 183-185: Sea Cucumber Anatomy

Class Holothuroidea

- Pseudo-pentaradial symmetry
- Spines absent
- Tube feet with tentacles and suckers

Identify the following external structures:

- Tentacles
- Tube feet
- Anus

Review Questions

All questions pp. 183-185, additionally fill out the table for sea stars, sea urchins and sea cucumbers on page 186.

Phylum Chordata (tunicates, lancelets, vertebrates)

Subphylum Cephalochordata (lancelets)

- Marine
- Segmented and elongated body
- Notochord extends length of body

Exercise 15B pp. 192-194 & Figs. 15.5-15.6: Cephalochordate Anatomy

Cephalochordate: whole mount slide

Identify the following structures:

- Notochord
- Dorsal nerve cord
- Wheel organ
- Oral cirri
- Gill slits
- Gill bars

Cephalochordate: cross-section through pharyngeal region slide

Identify the following structures:

- Notochord
- Dorsal nerve cord
- Myomeres
- Gill slits
- Gill bars

Review Questions

All questions pp. 192-194

**Read pages 195, 199-200, 205, and 214 in your lab manual before coming to lab next week.*