Invertebrate Lab I

Learning Objectives

• State the phyla of the organisms discussed in the lab activities
• Use the characteristics of symmetry, coelom, embryo tissue layers, and patterns of development to differentiate between the different invertebrate groups
• Recognize and identify the sponge specimens viewed in the lab
• Explain the purpose of the different sponge cells
• Recognize and identify the cnidaria specimens viewed in lab and if the specimens are polyp or medusa form
• Recognize and identify the nematoda examples viewed in the lab
• Recognize and identify the arthropoda examples viewed in the lab

Sponges

Procedure

Access the page “Reading: Sponges”

Questions

1. The preserved sponge specimens will be on display, but may differ from the ones directly mentioned in the lab handout. Please make observations on the available specimens and fill in the chart below.

<table>
<thead>
<tr>
<th>Name of specimen</th>
<th>Physical description</th>
<th>Sponge structures visible (osculum, other pores, spicules)</th>
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   a. What type of symmetry is displayed in the sponge specimens?

1. View the *Grantia* slides. There will not be slides available of the spicules but view the pictures in the lab materials.
   a. What is the function of spicules?

   b. Do sponges contain true tissues?
c. Can you find any collar cells in the slide?

d. What is the function of the collar cells?

e. Can you find any epidermal cells in the sponge slide?

f. What is the function of the epidermal cells?

Cnidarians

Procedure

1. Access the page “Reading: Cnidarian”
2. View the hydra specimens (live and slides).

Questions

1. Does the hydra illustrate the polyp or the medusa stage?

2. How many germ layers does the hydra contain?

3. What type of symmetry is seen in the hydra?

4. Can you find the hydra tentacles? How many tentacles does your hydra specimen contain?

5. Name the stinging cells present on the tentacles that are unique to cnidarians.

6. Explain the movement of the hydra if live specimens are available. If not, view this youtube video: https://www.youtube.com/watch?v=-UI531GMRTM
7. If there are live hydra specimens do not add the vinegar as indicated on the lab website. Vinegar causes them to expel the cnidocytes. Instead, view this youtube that shows a jellyfish discharging the nematocyst cells: https://www.youtube.com/watch?v=6zJiBe_N1Zk

8. View the preserved cnidarian specimens will be on display. They may differ from the ones directly mentioned in the lab website but there should be some medusa cnidarians as well as corals and sea anemones. Please make observations on the available specimens. And fill in the chart below.

<table>
<thead>
<tr>
<th>Name of specimen</th>
<th>Physical description</th>
<th>Polyp or Medusa stage?</th>
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**Roundworms**

**Procedure**

Access the page “Reading: Roundworms.”

**Questions**

1. We will not be dissecting the *Ascaris* as indicated in the website. Instead view the preserved slide.
   a. What type of symmetry is seen in the roundworm?
   b. Does it exhibit cephalization?
   c. *Ascaris* is a parasite that swims constantly in human intestines. What structure protects the nematode from being digested?

2. View the *Trichinella* slide. *Trichinella* is also a parasite. It can infect humans as well as other mammals like pigs, bears, and rodents. If untreated, it can lead to death.
   a. What mammal tissue does this roundworm infect?
b. Draw a picture below of the *Trichinella* as viewed under the microscope.

3. Although not mentioned on the website, if available view the live vinegar eel specimens. If there are no live specimens available, check out this youtube video instead: [https://www.youtube.com/watch?v=UnjwvtFvyeQ](https://www.youtube.com/watch?v=UnjwvtFvyeQ)
   a. Describe the movement of the vinegar eels.

   b. Do they have a complete or incomplete digestive system?

**Arthropods**

**Procedure**

Access the page “Reading: Arthropods.”

**Questions**

View the preserved arthropod specimens available. There will be at least one example of each lineage group discussed on the website but not all of the specimens may be available. Use the table on the next page to organize your observations.

<table>
<thead>
<tr>
<th>Name of specimen</th>
<th>Lineage</th>
<th>Exoskeleton?</th>
<th>Jointed appendages?</th>
<th>Specialized segments</th>
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</table>
1. What type of symmetry is displayed in the arthropods?

2. Do the arthropods exhibit cephalization?

**Crayfish Dissection**

**Procedure**
Complete the crayfish dissection using the directions available on the lab website.

**Questions**
Make sure you can identify the following external structures: antenna, chiliped, cephalothorax, abdomen, and walking legs.

1. Do you have a male or female crayfish?

2. How many swimmerets does your crayfish have?

3. How many rows of gills does the crayfish have?

4. Where do the gills attach?
5. Can you find the stomach and the digestive glands?

6. What does the stomach attach to directly?

7. Try to locate the green glands. What is the function of this structure?

**Review Questions**

Answer the review questions below. The phyla we viewed today were the porifera, the cnidaria, the nematoda and the arthropoda

1. Which phyla exhibited bilateral symmetry?

2. Which phyla had no true tissues?

3. Which phyla contained parasitic organisms?

4. Which phyla were coelomates?

5. Which phyla exhibited cephalization?

6. Which phyla that you viewed today contained specialized appendages?

7. Which phyla exhibited radial symmetry?

8. Which phyla were pseudocoelomates?
9. Which phyla had a complete digestive system?

10. Which phyla were multicellular?

11. Which phyla were asymmetrical?

12. Which phyla were acoelomates?
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