

Name _____

Lab Partner _____

HYDRA LAB

Background:

Hydra is a genus of the Phylum *Cnidaria*, which also contains jellyfish, anemones, and coral. This phylum is known for its stinging cells, located on tentacles. Most members of the phylum are very thin – the hydra is only two cells thick at any point of its body wall. Because all coelenterates live in water and because of their thinness, their body structures tend to lack sophisticated systems. Hydras are very small, and are therefore easiest to observe with a microscope.

Materials:

Cultures any of the various species of *Hydra*;
microscopes, depression slides, cover slips, large droppers, and pins

Live Animal Safety Note:

The hydras used in this lab are living animals. When performing labs with live specimens, be sure to handle them correctly and return them to the teacher promptly when finished, to avoid unnecessary suffering or death of the specimen.

Procedure:

1. Obtain a depression slide and make sure that the indentation is on the top surface. (See diagram at right) Using a dropper, carefully place one living hydra and a water drop into the indentation, but do not use a cover slip. (See diagram at right)



2. Observe the hydra without using the microscope.

a. What color is the hydra?



b. Estimate the size of the hydra.

c. How many tentacles does the hydra have?

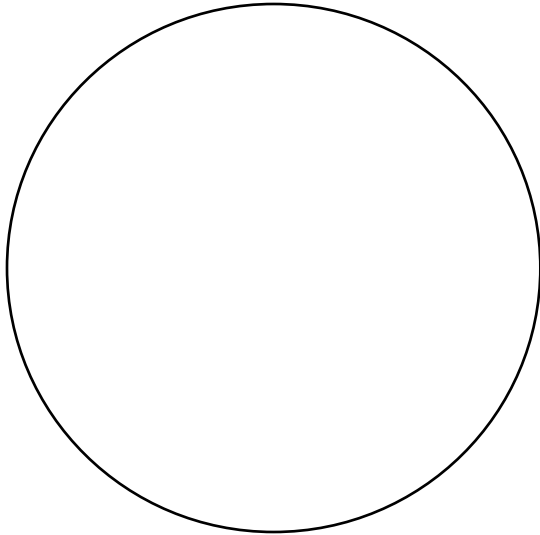
d. Describe the body shape, and explain why focusing the microscope on the hydra will be difficult.

e. Lightly tap the side of the slide with your fingernail or a pen. How does the hydra react to this?

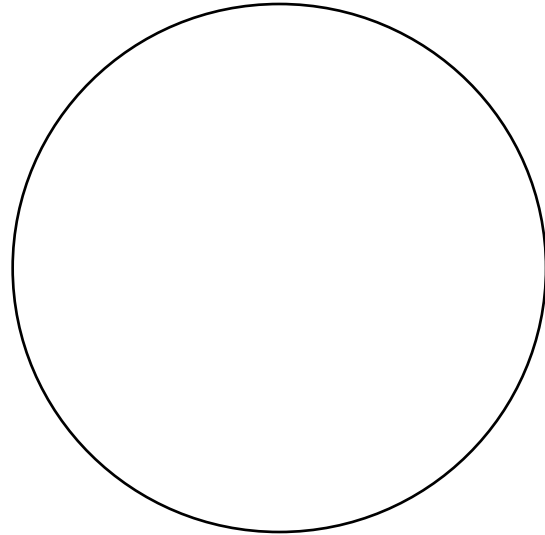
3. Make sure that your microscope is set to low power (40x). Place the slide with the hydra onto the microscope stage and center it. Then, leave the hydra alone for about a minute. Observe the hydra at low power (40x) or medium power (100x), but DO NOT use high power (400x). [On high power, the hydra will be magnified too large to see, and the objective lens may dip into the water that the hydra is in.]

4. One person in your lab group should watch through the microscope, while the other person gently uses a pin or straightened paper clip to touch the tentacles of the hydra.
f. Describe the reactions of the hydra to the pin.

5. Use the circles below to draw the hydra at low power and medium power. (Depending on the size of your hydra, you may not be able to have it all in the field of view at one time. Make sure that one of your drawings includes the tentacles and one drawing includes the base.)



Live hydra (40x)



Live hydra (100x)

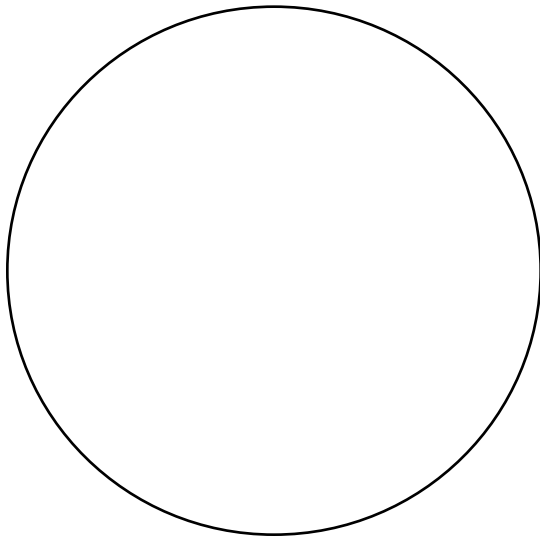
6. Use a textbook (chapter 26) to help you to label your diagrams with the following:
base, tentacles, mouth/anus, gastrovascular cavity (if present)
7. Look at the tentacles closely at 100x. The small, round cells that can be seen on the tentacles are stinging cells. (The stinging cells may inject poison or release a long thread when touched, but the threads are too small to see.) Draw stinging cells on your diagrams above, and label them.
g. Explain how and why you think the hydra uses these stinging cells.

8. Return your slide with the hydra to the front of the room, and put the hydra back into its container. Then wash and dry the depression slide, and return it to the box.

9. Obtain a prepared slide of a budding hydra. Observe this preserved hydra under your microscope and draw it in the circle on the next page.

Label the diagram with the following:

base, tentacles, mouth/anus, gastrovascular cavity, stinging cells, bud



Preserved hydra with bud (40x)

h. Explain the purpose of the hydra's bud.

Questions (use a textbook for help):

1. Where do hydras and other cnidarians usually live?
2. What do hydras usually eat?
3. How do the cells of a hydra get oxygen?
4. How can a hydra release metabolic wastes?
5. What characteristics make a hydra an animal?
6. What makes hydras different than other cnidarians?