

CNIDARIAN & CTENOPHORE LAB ACTIVITIES

A. Colonial Hydrozoans

1. Examine hydroid colonies for the presence of attached, degenerate medusae. If they are present, transfer the colony to a dish with filtered sea and leave undisturbed overnight. Depending on the breeding season, many such colonies will release larvae in the morning. Glass slides can be placed in the dishes in the event larval attachment is rapid. If larval release does not occur, embryos may be teased from the gonophores using fine needles (See figures below and Plate 13 in the Peterson Guide). Note that usually all the gonophores on one colony will be the same sex. Genera that we might find that work well for such analyses are *Bougainvillia*, *Eudendrium*, *Hydractinia*, and *Tubularia*.
2. We might collect hydromedusae in our plankton hauls. If so, transfer them to large dishes and check them twice a day to see if spawning occurs. Make sure any developmental stages are not crowded.

The picture on the left shows a small fragment of an *Obelia* colony, including a feeding zooid, its tentacles withdrawn into its goblet-shaped theca. The larger balloon-like structure below it is the reproductive zooid, called the **gonangium**. Gonangia include gonophores (budding medusa-zooids), which you can see as round shapes inside the gonangium. When ready, the medusa buds off and swims away, as you can see in the picture on the right.



B. Effects of Prey Chemicals on Ctenophore Swimming Behavior

1. Place a large number of *Artemia* larvae in seawater having the same salinity as that your ctenophores are in. After a few hours, pour the *Artemia*-containing water through a filter — this is now “*Artemia*-conditioned” seawater.
2. Prepare two large dishes, one of which contains *Artemia*-conditioned seawater and the other unconditioned seawater (be sure to properly label the dishes).
3. Draw a circle the same diameter as the dishes on a piece of plain paper. In the center of the circle draw a large “X”, dividing the circle into 4 equal quadrants.
4. Place one of the dishes on the circle. Put a ctenophore into the dish and let it rest for 30 seconds. After 30 seconds, observe the movement of the ctenophore, recording the number of times the ctenophore crosses one of the lines of the “X” over a set time period (e.g. 2 or 3 minutes). Repeat with the other dish, using the same ctenophore. Do this paired comparison with several ctenophores.
5. Does the presence of prey chemicals change the swimming speed of the ctenophore? If so, do they go slower or faster? Of what adaptive value would this change in swimming speed be for the ctenophore?