Evolution and Biodiversity Laboratory
Activity: Observing Aquatic Microorganisms

Effective observation of organisms under the microscope takes practice. You must learn to distinguish between living things and distractions such as air bubbles and detritus.

You will sample two different sources in lab today:

1. Aquarium culture teeming with **Carolina Mystery Mix** microorganisms
2. **Pond water** collected from a local source.

First: Practice with the Mystery Mix culture. There is a laminated identification guide at your lab station to help you identify the microorganisms you find.

Second: Practice with the pond water. This will be more similar to the data collection your team will perform in the next two lab sessions.

A. Instructions: Observing Microorganisms

Don your latex gloves and bring to the front desk:

- **One plastic tri pour beaker**
- **One disposable plastic pipet**

Place two to three pipetsful of pond water into your beaker.

You will almost always find more interesting things if you sample the bottom and get a bit of organic detritus, which provides food and shelter.

This is Where the Wild Things Are.

Take your sample back to your station.
The supplies you will need are available from the tray on your lab table.
Obtain a **concavity slide** (Figure 1). Concavity slides are relatively thick and have a circular indentation ground and polished into the center.

CONCAVITY SLIDES ARE EXPENSIVE AND RE-USABLE.
HANDLE WITH CARE.
***DO NOT DISCARD CONCAVITY SLIDES AFTER USE*!**
When finished,
(1) rinse the concavity slide well with tapwater
(2) dry with a Kimwipe
(3) return it to its proper storage box.

Instructions:

1. Place 2-3 drops of pond water into the slide concavity.
2. Gently drop a coverslip onto the concave area, sealing in the liquid.
3. Place one small drop of **methyl cellulose** *at the edge of the coverslip*.
4. Allow the methyl cellulose to diffuse under the coverslip for a minute or so.

Methyl cellulose is quite viscous. It will slow fast-swimming organisms enough for you to see more detail than a beige blur zipping across your field of view.

Do not drip methyl cellulose directly onto your sample!
You'll just get a blurry, sludgy mess.

5. ***STARTING ON LOW POWER***, observe your sample under the microscope.
   Rotate to higher magnification only after focusing on low power, if necessary.
6. Begin viewing at one corner of the coverslip.
   Move the slide in a zig-zag pattern as you view, gradually working your way across and down until you have observed the entire coverslip field.
7. Whenever you find a motile (moving) organism stop and try to identify it.
   Use the Identification Guide below as well as online resources.
8. Record your results on the **tally sheets** linked to the online syllabus.
9. Record the **characteristics** that allowed you to identify each organism.

Figure 1. A concavity microscope slide

B. Instructions: When You are Finished

When you have finished observing microorganisms, you must do the following.

1. **Discard all coverslips** in the **sharps container** at the front desk.
2. Discard all flat slides in the **sharps container** at the front desk.
3. DO NOT DISCARD **Concavity slides**
   a. Wash with soap and water
   b. Rinse very well
   c. Dry with a Kimwipe
   d. Replace in blue concavity slide box on your center lab table tray.
4. **Microscope**:
   a. Swivel objective to low power over the stage
   b. Wipe down microscope to remove dirt and water
   c. Unplug the cord and *loosely* wrap it around the base
   d. Replace in its correct cabinet
   e. Replace its plastic dust cover
   f. Close cabinet, but do not padlock.

5. Properly **dispose of all trash** at your station.
6. **Wipe down your station's countertop** with paper towels.
7. Let your instructor know that you are **ready for station inspection**.

C. Assignment: Species Identification Tally Sheet

When you have completed it, submit your **Species Identification Tally Sheet** to your instructor. Your instructor will tell you the format (hard copy or electronic) he or she prefers.