Print Name _____ Period _____ Date _____

2:12 Lab - Ecology in a Drop of Water

Before and during today's lab, read over Appendix 1 – Using a Compound Microscope. It will make your work with the microscope a lot easier.

Our goal today is to use a compound microscope and/or a dissecting microscope to examine some of the tiny organisms that live in a single drop of water. As we work, we should think about the ecology of such a tiny system. There are producers that carry on photosynthesis, along with competitors and even predators and prey.

Usually, the organisms in our water samples require dissolved oxygen (O_2), so that we should not keep any single drop of water under our microscopes for too long. In addition, the heat from a microscope's illuminating system can eventually kill many organisms if we allow it to warm a water sample too much. In addition, we should never try to resupply our organisms using tap water because the chlorine in the tap water is deadly to virtually all protozoans.

USING A COMPOUND MICROSCOPE

1. Remember to begin examination of every specimen using the scope's low power (4x) objective.

2. Place the slide on the stage and hold it in place with the stage clips and then center it.

3. Before attempting to focus, be sure the coarse adjustment knob is dialed completely to its "down" position.

4. Look through the eyepiece lense (the "ocular") and use the coarse adjustment knob to dial the optical system slowly upward until objects on the slide come into good focus.

5. Next turn the fine adjustment ¼ turn in either direction, if necessary, to bring the image into perfect focus for your own eyes.

6. To brighten or dim the lighting conditions, simply adjust the dial or lever alongside the stage platform.

USING A DISSECTING MICROSCOPE

Place about 60 ml of water from the sample you have been provided into a six-inch glass fingerbowl. Try to include a small amount of debris or tiny leaf particles in your sample in order to discover those organisms that hide among or live attached to such particles.

SAFETY

For safety, <u>never employ sunlight as a light source with any microscope that relies on a mirror</u> as its source of illumination.

Always carry a microscope with two hands. In addition, be sure that it is always standing upright and is a safe distance from the edge of the table or lab station.

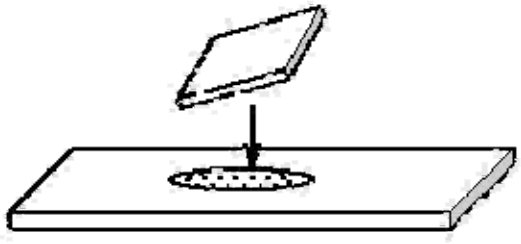
Print Name _____ Period _____ Date _____

2:12 Ecology in a Drop of Water

Today's Lab: You are now ready to begin examining the microorganisms present in today's water samples. You will do this by either using a six-inch glass fingerbowl (see "Using a Dissecting Microscope" above), or by using glass microscope slides and cover slips to make a "wet mount" of individual drops of water. If you are going to be using glass slides and cover slips, remember to follow all the steps in "Using a Compound Microscope" on the previous page.

How to Make a Wet-Mount

1. Begin with a clean microscope slide and a tiny coverslip. If necessary, rinse and clean them with a piece of special lens paper.
2. Use a pipette to place a single drop of water in the center of your glass slide. (Try to include a tiny speck or two of leaf debris in your droplet.)



3. Tilt your coverslip at an angle and place one edge of the coverslip on the water droplet. Then gently lower the rest of the coverslip onto the droplet. This helps prevent any air bubbles from being trapped under the coverslip. (If we trap air bubbles, we sometimes end up focusing the microscope's optical system on the air bubbles instead of the microorganisms we wish to study.)

You may now begin your lab activity. If you are using the compound microscope, plan to make at least seven or more wet-mounts during today's lab time. (Some of them will have few, if any, organisms. Others – especially those with specks of leaf debris – will often have many organisms.) Be sure to work slowly at first and follow all the instructions for proper use of the compound microscope as outlined above. It will take you a little practice to get use to finding and focusing on your organisms and adjusting the lighting, etc. After you have done the first two or three slides slowly and carefully, you will find that you can process the remaining wet mounts much more quickly.

Whichever microscope you use, this is your task: Find and draw (carefully) at least five different organisms in your water samples. Most of the one-celled organisms that you see today will be members of **Domain Eukarya**, **Kingdom Protista**. A careful drawing should show the exact shape; the exact number of spines and their proper shapes, lengths, and locations, etc. Take your time and try to render a true and accurate likeness of the creatures you see. Use the next page of this worksheet for your drawings. Place the fifth drawing on the back of the worksheet.

Print Name _____ Period _____ Date _____

2:12 -- Ecology in a Drop of Water