

The Compound Light Microscope and The Dissection Microscope

Purpose: To learn how to use the compound and dissection microscopes.
To create biological drawings of specimens viewed under the microscope.

Proper Use of the Microscope:

- Carry the microscope with two hands – one on the arm and one on the base.
- Use **lens paper** to clean the lenses. Do not touch the lens with your fingers.
- Do not allow the lens to touch the slide or cover slip.
- Always start with the low power objective lens when focusing.
- Be sure your hands are dry when you plug and unplug your microscope. **DO NOT** pull the cord!
- Remove slides from the microscope stage, change to the low power objective, and wipe it off before putting it **carefully** away.

Getting to Know the Microscope (these questions are for your notes):

1. Obtain a prepared slide and place it on the stage of your microscope.
2. As you look through the ocular lens, what happens to the image when you move the slide to the right? To the left?
3. How does the image appear to move when you move the slide away from you?
Towards you?
4. Look at the image on low power (40x).
5. Move the revolving nose piece so that the medium power objective is in place. Watch from the side of the microscope to ensure the lens does not hit the slide. Focus using the fine adjustment knob. You may also need to adjust the light by adjusting the iris diaphragm.
6. Describe the image you see on medium power (100x). How does it compare to the image at low power? Can you see more or less of your specimen as you change from low to medium magnification?
7. Move to the high power objective lens. Focus using the fine adjustment knob and adjust the light if necessary.

You will now create 4 biological drawings – be sure to follow the instructions for proper biological drawings.

Biological Drawings:

1. Make a **wet mount slide** using 3 different coloured threads. To do this:
 - Arrange **3** threads on a clean slide. Have them **cross** in the middle on the slide.
 - Add a drop of water to the threads.
 - Take a clean cover slip and hold it by the edges with your thumb and forefinger.
 - Lower the cover slip so that it touches the slide at the edge of the water drop.
 - Hold it at a 45° angle.
 - **SLOWLY** lower it until the cover slip is down. Try to avoid air bubbles.

- a. Draw a circle to represent your field of view. Make a biological drawing of the threads on **LOW** power (40x).
2. Prepare a **wet mount slide** of the letter “e” following the instructions above. Examine the slide with the letter “e” right side up on the stage. Draw a circle to represent your field of view. Make a biological drawing of the letter “e” as it appears when viewed under the compound light microscope on **MEDIUM** power (100x).
 - a. How does the letter “e”, placed right side up, appear to look under the microscope?
3. Observe a prepared slide of **bacteria** on **oil immersion** (1000x) by:
 - Focus on low, then medium, then high power.
 - Without touching the focus adjustment knobs, swing the objective out of the way.
 - Add a drop of immersion oil to the slide only where you see the light.
 - Carefully swing the oil objective lens into the oil drop.
 - **BE SURE THE LENS SAYS OIL ON IT!** Oil will corrode the other lenses. If the other 3 objective lenses get oil on them, wipe them off immediately with lens paper please!
 - Draw a circle to represent your field of view. Make a biological drawing of the bacteria, but only **3-5 cells**.
 - **Clean the oil off the lens and the slide when you are finished.**

Change to the low power objective, clean up your slides, and wipe down your microscope.

Carefully put your compound light microscope away.

4. **Dissection microscope activity:**
 - Observe the tip of your finger or your finger nail.
 - Draw a circle for the field of view and make a biological drawing of your finger.
 - Calculate the actual size and drawing magnification. If you have trouble figuring out how with the dissection microscope, ask for help.

What do you think would determine whether you use a compound light microscope or a dissection microscope?

Assignment:

- A. The questions are for your notes.
- B. ***Hand in your 4 drawings.***