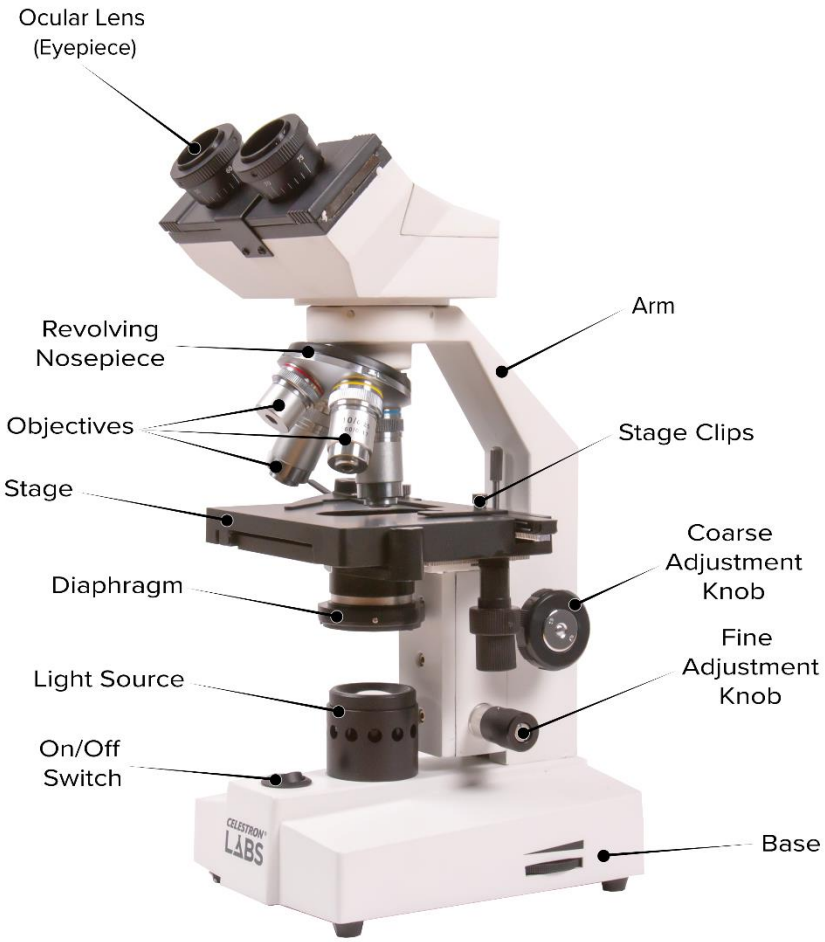
How to Use a Microscope

Microscopes are instruments that allow you to see things that are very small. The usefulness of a microscope is dependent on the condition and quality of the lenses used to make the eyepiece and the objectives. When you use a microscope, it is important to follow certain procedures to ensure the lenses do not get damaged.

Carrying and Storing the Microscope

- Carry a microscope with two hands—one hand under the base and the other hand holding the arm of the microscope.
- Before storing the microscope, turn the light all the way down and turn the microscope off.

The Parts of a Microscope



Using the Microscope

- Plug the electric cord into an outlet.
- Be sure the cord is in a safe position—where it is not near any sources of heat or flame and cannot accidentally become entangled or pulled.
- Turn on the light.

Magnification

- The oculars magnify a specimen 10 times its original size.
- The degree to which each objective will magnify a specimen is labeled on the objective.
    - Total magnification: To determine the total magnification of a specimen you are viewing, multiply the power of the oculars by the power of the objective.
        - For example, you are viewing a specimen using the 40x objective. The total magnification would be: 10 x 40 = 400x

Focusing the Microscope

- Use the low power or 10x objective first.
    - To focus, slowly turn the coarse adjustment knob.
    - To adjust the focus, slowly turn the fine adjustment knob.
    - To adjust the amount of light, move the diaphragm or the condenser.
- Center what you want to look at in the field of view.
- To use the next higher power objective, usually 40x, turn the nosepiece.
    - Focus using only the fine adjustment; the object quickly comes into focus with very light adjustment.
    - If you need to adjust the amount of light, use the diaphragm.
- Center what you want to look at in the field of view.

Using Oil Immersion

Oil immersion is a technique used to increase the resolving power of your microscope. Using oil allows for a clearer image and helps resolve tiny details in the specimen you are viewing. Your teacher will direct you to use oil immersion when appropriate.

To use oil immersion:

- Follow the steps to focus the microscope until the specimen is in focus with the 40x objective.
- Turn the nosepiece so the 40x objective is no longer over the specimen but the 100x objective is not yet in place.
- Place one drop of oil onto the slide. Place the oil where the 100x objective will be once it is locked into position.

- Turn the nosepiece slowly to bring the 100x objective into position.
- Watch as the objective moves into position to make sure it does not hit the slide and that it contacts the drop of oil.
- Focus using the fine adjustment.
- If you need to adjust the amount of light, use the diaphragm.