

# MICROSCOPES

## Introduction:

The first step in scientific investigation is observation. In order to observe small objects, biologists use a microscope. The purpose of this activity is for you to learn how to use the microscope.

## The parts of a microscope:

The following is a list of the parts of a standard compound microscope. You may also refer to Appendix B of the science textbook whenever you are unsure of the parts of a microscope and their use.

1. The **eyepiece** at the top of the microscope. It has one lens called the ocular lens (which magnifies 10 times). This is the part you look through.
2. The **body tube** forms the body of the microscope. The upper portion of the tube holds the eyepiece.
3. The lower part of the body tube is the **revolving nosepiece**. This holds the objective lenses and turns from low, medium, or high power. The revolving nosepiece contains two or more small magnifying lenses called *objectives*.
4. The **low-power objective** is the shortest lens. The low-power on our microscopes magnifies 4 times more. When you multiply the eyepiece (10X) with the low-power objective (4X) you magnify an object a total of 40 times (40X) using the lowest power.
5. The **high-power objective** is the longest lens. The high-power on our microscopes magnifies 40 times more. When you multiply the eyepiece (10X) with the high-power objective (40X) you magnify an object a total of 400 times (400X) using the highest power.
6. The microscope is focused, or the image is made clear, by turning one or two focusing or **adjustment knobs**. The adjustment knobs lift or lower the stage so the object you are observing is made clear or in focus. Our microscopes have only one focusing knob however others have a *fine focus* and a *coarse focus* (the fine focus is the smaller knob that fine tunes an image). Use a small turn of the knob to focus the image clearly.
7. The **arm** is the curved part of the scope that supports the body tube and focusing knobs. ALWAYS carry the microscope by holding the arm and the base firmly and hold the microscope upright.
8. The **stage** is the platform that supports the microscope slide. Just like the stage is where you see the show in a play, the stage of a microscope is where you place the slide so you can see the show in science 😊!
9. A pair of metal **stage clips** attached to the stage holds the slides in position.
10. The **diaphragm** is an adjustable opening under the stage controls the amount of light as the size of the opening changes. Always set the hole to the largest light level to start.
11. The **light** is attached to the base. It is used to light up the object so you can see it more clearly. CAREFUL! The lights get very hot. Some microscopes have a mirror to reflect light up through the stage.
12. The **base** supports the whole microscope. It is shaped like a "U". ALWAYS carry the microscope with one hand on the base and the other holding the arm firmly.

