

Appendix B Using a Microscope

The microscope is an essential tool in the study of life science. It allows you to see things that are too small to be seen with the unaided eye.

You will probably use a compound microscope like the one you see here. The compound microscope has more than one lens that magnifies the object you view.

Typically, a compound microscope has one lens in the eyepiece, the part you look through. The eyepiece lens usually magnifies $10\times$. Any object you view through this lens would appear 10 times larger than it is.

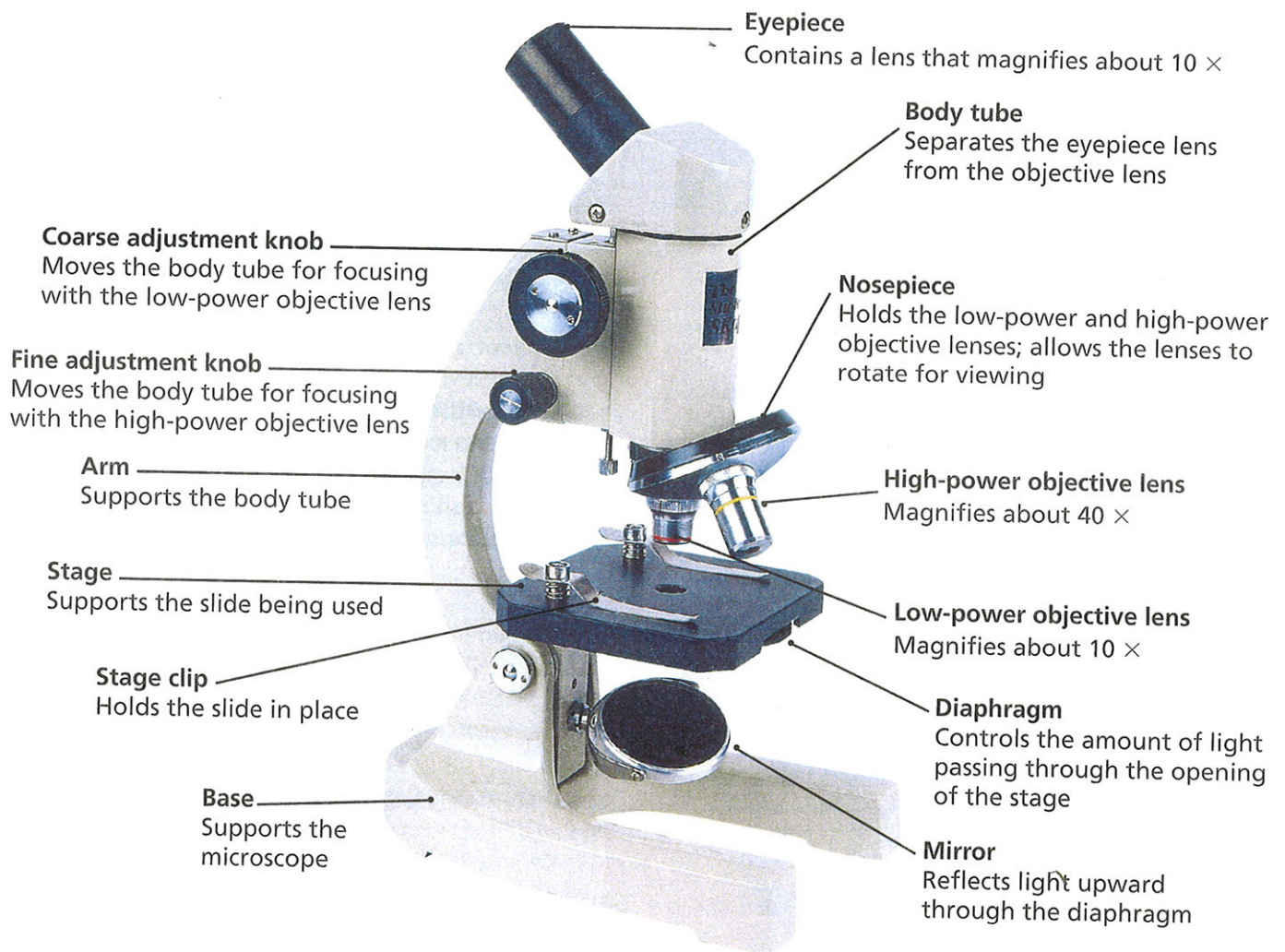
The compound microscope may contain one or two other lenses called objective lenses. If there are two objective lenses, they are called the low-power and

high-power objective lenses. The low-power objective lens usually magnifies $10\times$. The high-power objective lens usually magnifies $40\times$.

To calculate the total magnification with which you are viewing an object, multiply the magnification of the eyepiece lens by the magnification of the objective lens you are using. For example, the eyepiece's magnification of $10\times$ multiplied by the low-power objective's magnification of $10\times$ equals a total magnification of $100\times$.

Use the photo of the compound microscope to become familiar with the parts of the microscope and their functions.

The Parts of a Compound Microscope



Using the Microscope

Use the following procedures when you are working with a microscope.

1. To carry the microscope, grasp the microscope's arm with one hand. Place your other hand under the base.
2. Place the microscope on a table with the arm toward you.
3. Turn the coarse adjustment knob to raise the body tube.
4. Revolve the nosepiece until the low-power objective lens clicks into place.
5. Adjust the diaphragm. While looking through the eyepiece, also adjust the mirror until you see a bright white circle of light. **CAUTION:** *Never use direct sunlight as a light source.*
6. Place a slide on the stage. Center the specimen over the opening on the stage. Use the stage clips to hold the slide in place. **CAUTION:** *Glass slides are fragile.*
7. Look at the stage from the side. Carefully turn the coarse adjustment knob to lower the body tube until the low-power objective almost touches the slide.
8. Looking through the eyepiece, very slowly turn the coarse adjustment knob until the specimen comes into focus.
9. To switch to the high-power objective lens, look at the microscope from the side. Carefully revolve the nosepiece until the high-power objective lens clicks into place. Make sure the lens does not hit the slide.
10. Looking through the eyepiece, turn the fine adjustment knob until the specimen comes into focus.

Making a Wet-Mount Slide

Use the following procedures to make a wet-mount slide of a specimen.

1. Obtain a clean microscope slide and a coverslip. **CAUTION:** *Glass slides and coverslips are fragile.*
2. Place the specimen on the slide. The specimen must be thin enough for light to pass through it.
3. Using a plastic dropper, place a drop of water on the specimen.
4. Gently place one edge of the coverslip against the slide so that it touches the edge of the water drop at a 45° angle. Slowly lower the coverslip over the specimen. If air bubbles are trapped beneath the coverslip, tap the coverslip gently with the eraser end of a pencil.
5. Remove any excess water at the edge of the coverslip with a paper towel.

