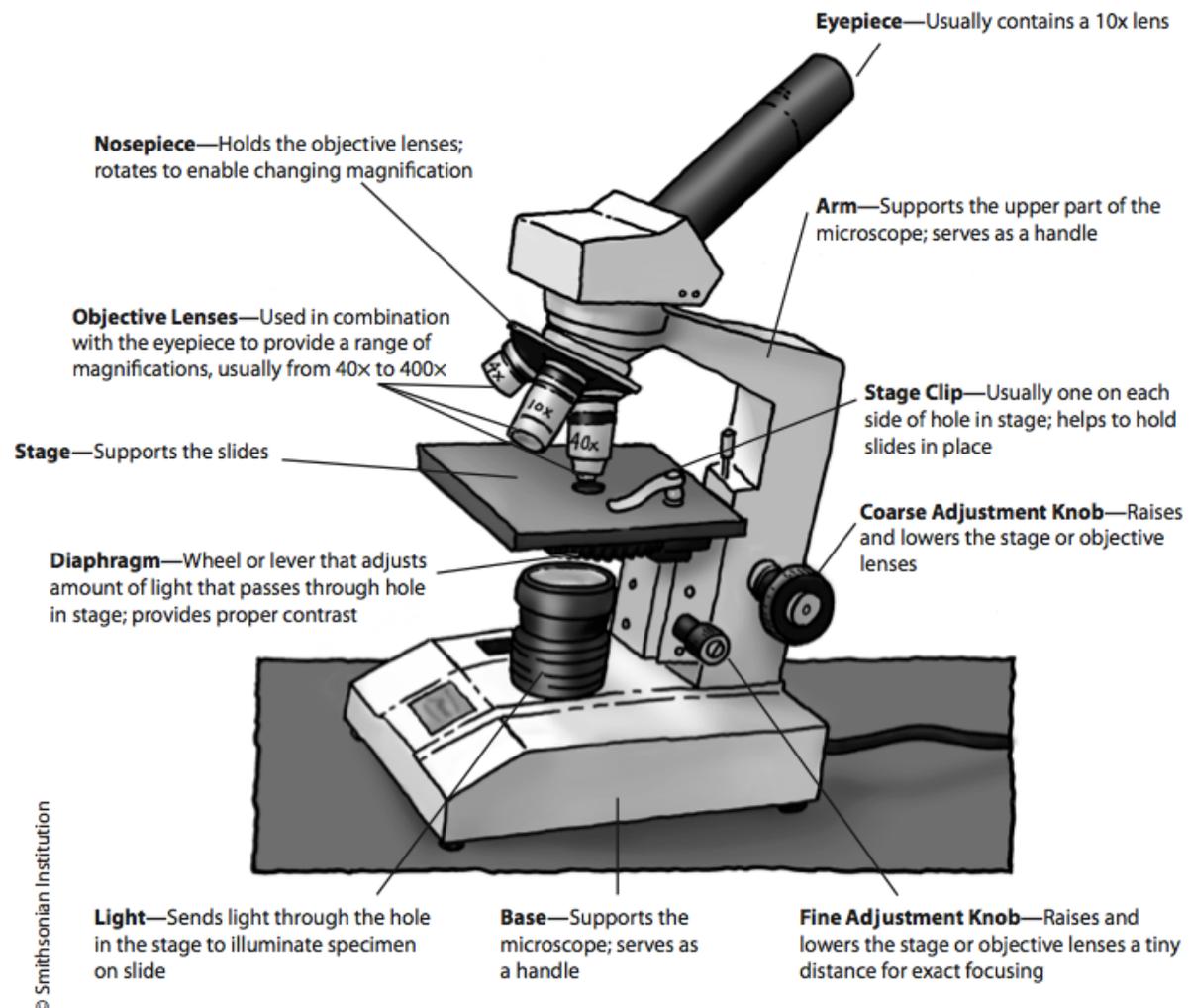


Lesson 2: Microscope Information Packet

- Purpose:**
- To help you identify the parts and functions of a microscope.
 - To provide procedures on how to use a microscope
 - To provide you with requirements for making a scientific drawing



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Follow the rules of microscope use

Microscopes are expensive tools. They have a high initial cost, maintenance can be expensive, and replacing parts can also be expensive. Therefore, it is important to follow the rules of microscope care.

1. **Never touch any lens.** The lenses need to be kept as clean as possible. Putting your finger on them will leave oils and other residues that will make it difficult to focus. If your lens is dirty you need to use special paper to clean it. This prevents the lens from being scratched.
2. **Always start and finish on the lowest objective lens.** There are several reasons why you should start and finish on the lowest objective lens. First, starting there ensure you will have an easier time focusing. Second, finishing on the low objective prepares you shut down the microscope. Third, finishing on the low objective makes it easier and safer (for the microscope) to remove the slide.
3. **Always carry the microscope by the arm AND base.** Imagine the microscope as a baby: it's delicate, fragile, cute, but it doesn't make unusual smells. It is important to carry it correctly to prevent dropping it or damaging any of its parts.
4. **Clean the microscope when you are done with appropriate materials.** It's inevitable: the microscope will get dirty. Cleaning up any messes promptly will keep the microscope in better shape, reduce the wear and tear on the parts, and make it easier to operate. (Imagine minerals crystallizing in the diaphragm: it's happened and its hard to clean!) Only use approved materials to clean the microscope. There will be certain chemicals and papers used.
5. **Always keep the microscope away from the edge of any surface.** Gravity is mean to microscopes. Keeping a microscope near the edge is a chance for it to fall off and break.
6. **Only use the coarse adjustment knob on the low power objective lens.** Remember: the coarse adjustment knob moves the stage quickly. Using this on low power is fine because the stage will never hit the objective lens. However, the use of the coarse knob on medium and high power can result in the lens hitting the slide and causing damage. Plus, the fine adjustment knob is much easier to use on higher powers!
7. **Keep both eyes open when looking in the microscope.** Keeping both eyes open prevents fatigue and is easier to do. If you have trouble seeing in the microscope with both eyes open, cover one eye with a hand. It feels awkward, but it is worth it!

Proper microscope use requires following the correct procedure

Following procedure is the best way to prevent any accidents with a microscope. The following five procedures are what we do most commonly with the microscopes.

Getting your microscope ready

1. Remove the dust cover first and plug it in second.
2. Set the nosepiece to the lowest objective.
3. Lower the stage as far as it can go.
4. Set the diaphragm to the lowest setting.
5. Turn on the light.

Placing the slide on the microscope

1. Rotate the stage clips to the side of the stage.
2. Pick up the slide without touching the cover slip (hold the slide by its edges).
3. Place the slide with specimen directly over the aperture.
4. Secure the slide with the stage clips.

Focusing

1. Rotate the coarse objective knob until the stage is as high as it can go.
1. Look into the eyepiece.
2. Lower the stage slowly until the specimen comes into focus.
3. Use the fine adjustment knob to further focus the specimen. Adjust the diaphragm as needed.
4. Place yourself at eye-level with the slide, stage, and objective lenses.
5. Rotate the nosepiece so that the middle objective lens is used.
6. Focus the specimen using only the adjustment knob. Make adjustments as necessary.
7. Repeat steps 4-6 for going to the high power. You must have permission to go to high power.

Removing a slide

1. Return the nosepiece to the lowest objective lens. If you are on high power you must go to medium power and then low power.
2. Lower the stage as far as it can go.
3. Set the diaphragm to the lowest setting.
4. Remove the stage clips from the slide and rotate them to the side of the stage.
5. Remove the slide.

Shutting down the microscope

1. Set the nosepiece to the lowest objective lens.
2. Lower the stage as far as it can go using the coarse adjustment knob.
3. Set the diaphragm to the lowest setting.
4. Turn off the light.
5. Place the dustcover over the microscope.

Requirements for Scientific Drawings

An acceptable scientific drawing includes the following 10 elements:

1. The drawing is made with a sharp, No. 2 pencil.
2. The size of the drawing is proportional to the way the magnified object appears in the field of view.
3. The magnification and/or the diameter of the field of view is printed just below the circle. (Usually 40X, 100X, or 400X).
4. The title appears in UPPER-CASE letters just below the magnification.
5. The lines used for labeling end at, or just inside of, the feature being identified.
6. A ruler is used to draw the lines for labels.
7. Labels are printed neatly outside the field of view and parallel to the bottom of the page.
8. The magnification, title, and labels are printed, not written in cursive.
9. There are no noticeable erasure marks.
10. Measurements are printed within parentheses to the right of the title.

This drawing of cells from the bulb (leaf) of the onion is considered acceptable because it follows all of the 10 guidelines.

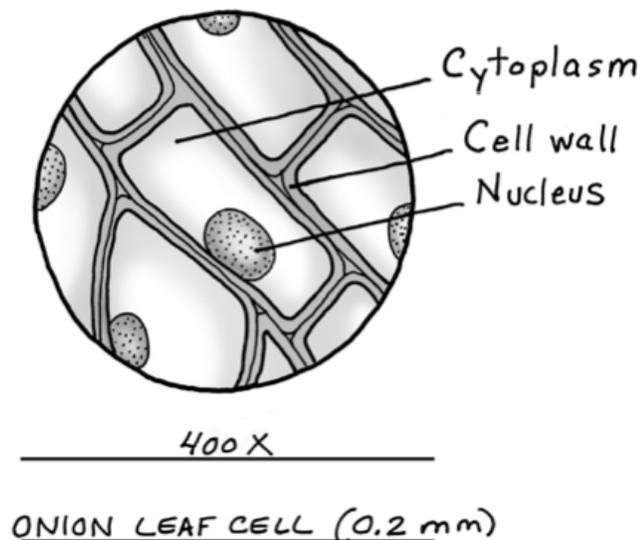


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