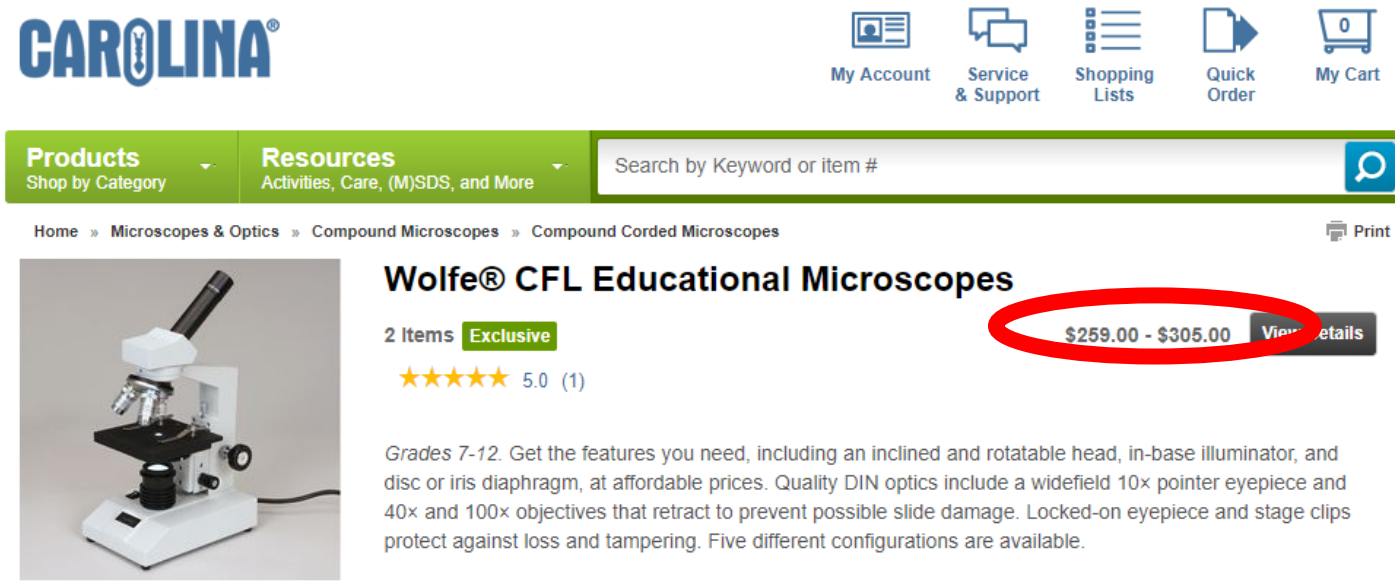
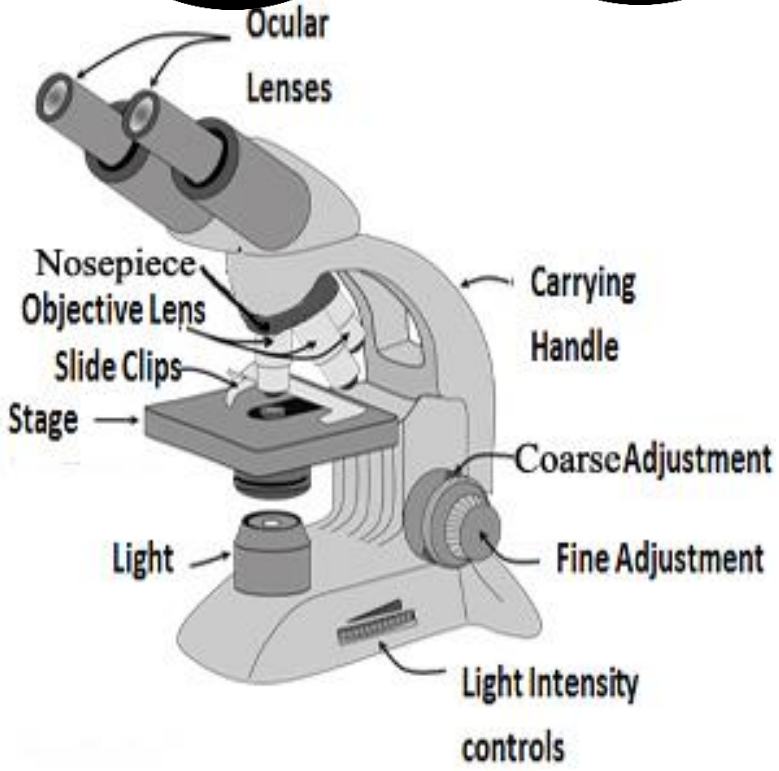
# The Microscope




## Tips for Not Getting Yelled at for Misusing the Microscope

1. Always carry the microscope with one hand on the base and one on the handle
2. Always use a microscope slide and cover slip to protect the lenses
3. Always start on low power
4. NEVER use the coarse adjustment on high power
5. Don't let the objective lenses touch the slide

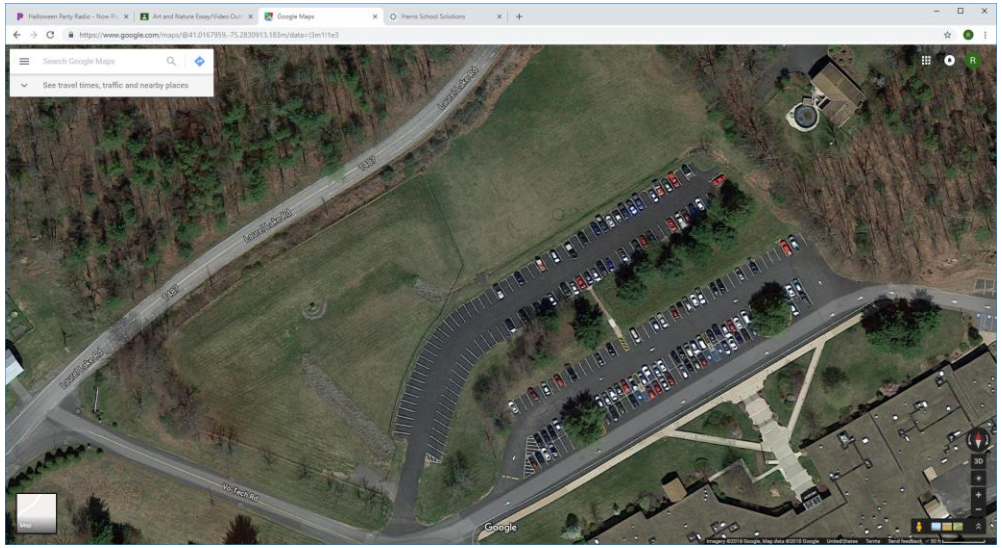
# Types of Microscope

1. Light Microscopes
   A. Compound Microscope
      - Multiple lenses
      - Light passes through the sample, through the lenses and into the eye
      - Useful for very small, transparent objects (i.e. cells, water samples)
      - Typically magnifies between 40 and 400 times
   B. Dissecting Microscope
      - Simple microscope with only one lens
      - Light reflects off the sample, through the lens, and into the eye
      - Useful for solid objects (i.e. rocks, insects, flowers)
      - Works like a powerful magnifying glass
      - Typically magnifies less than 100 times
2. Electron Microscopes
   A. Uses electrons and cameras instead of light and lenses
   B. Magnifies 300,000 times
   C. TEM – Transmission Electron Microscope
   D. SEM – Scanning Electron Microscope

# Effects of Magnification

As you increase the magnification……

- The image gets bigger (duh)
- The resolution (clearness) gets worse
- The field of view (how much you see) decreases



# Determining Magnification

1. Compound Microscope
   A. Compound Microscope
      - Eyepiece x Objective Lens
        - 10 x 4 = 40x
        - 10 x 10 = 100x
        - 10 x 40 = 400x


X


2. Dissecting Microscope
   A. Magnification Knob – includes eyepiece so just read it

# Focusing

1. Make sure the lower power objective lens is in place
2. Use the coarse focus to lower the stage as far as it will go
3. Put the slide on the stage and clip it in
4. Slowly raise the objective lens until the image is in focus
5. Make sure the image is centered in the field of view
6. Use the fine focus knob to fine tune the image
7. Increase power if necessary/desired
8. Use the fine focus knob to fine tune the image again

# Other parts of the Microscope

## Stage and Stage Clips

- Holds the slide
- Locks the slide in place
- Moves the slide (see stage controls)

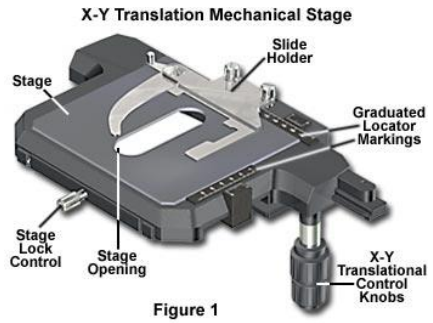


Figure 1

## Stage Controls

- Moves the stage forward/ backward and side to side
- Moves slide without touching slide

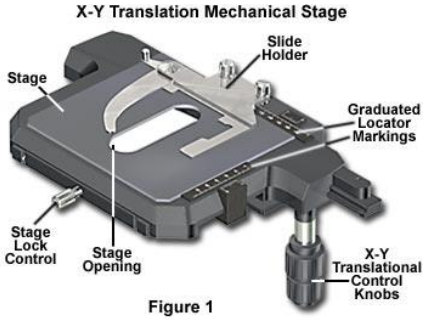


Figure 1

## Diaphragm

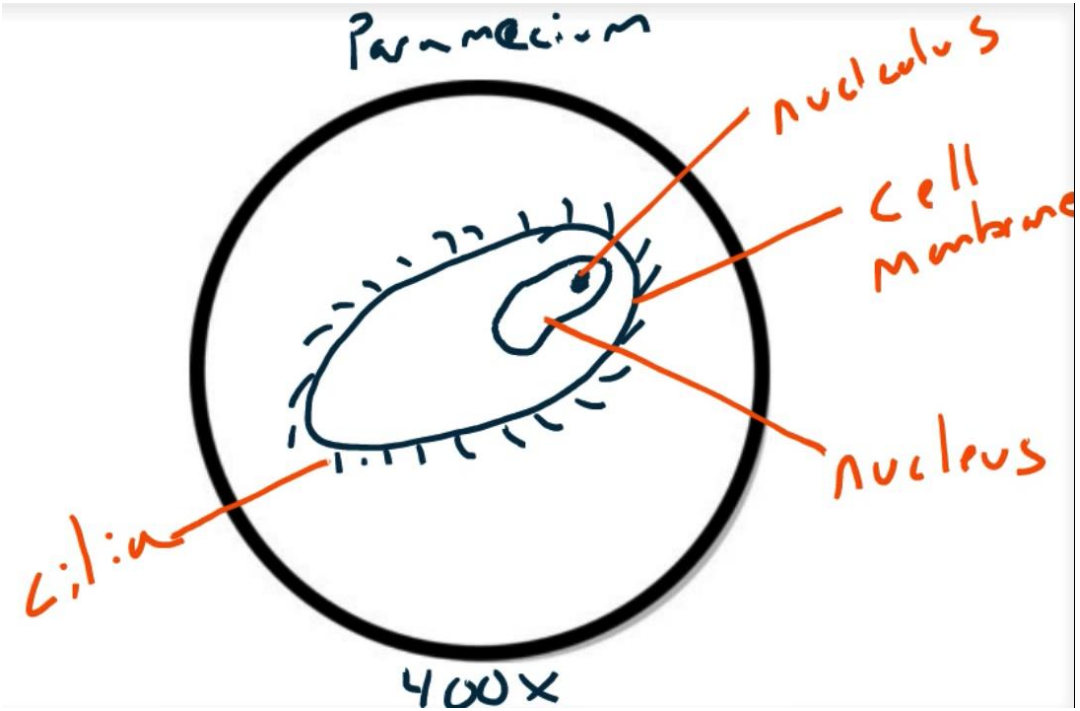
- Controls the amount of light entering the lens
- Helps provide contrast by brightening or darkening the image

## Nosepiece

- Holds the objective lenses
- When changing magnification, turn the nosepiece, NOT the lenses

# Recording Observations

- Draw what you SEE
- Draw specimen large enough to fill "field of view" circle
- Draw as many details as possible
- Drawing should be neat
- Label specimen
- Label power of magnification
- Name & date on paper



# Making a Wet-Mount Slide

1. Get a clean slide and coverslip.
2. Place **ONE** drop of water in the middle of the slide. Don't use too much or the water will run off the edge and make a mess!
3. Place the edge of the cover slip on one side of the water drop.
4. Slowly lower the cover slip on top of the drop.