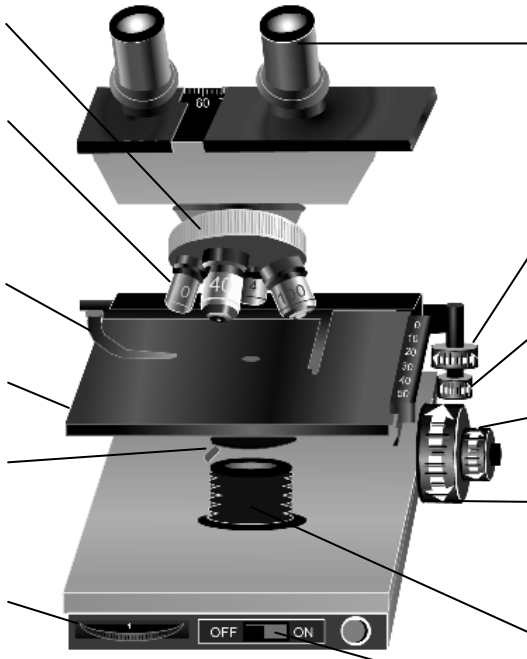
Name _____ **Per.** _____ **Date** _____

The Virtual Microscope

Using the website, http://www.udel.edu/Biology/ketcham/microscope/scope.html, answer the questions by performing the given steps and directions. To move parts or switch on, click on the part.



Turret- rotates objective lenses

Objective lens- Low power (4X mag), Medium Power (10X or 40X mag), High Power (100X mag)

Stage Clips- secures slide to stage

Stage- where the slide is placed

Diaphragm- controls the intensity of light and the size of the field

Rheostat Dial- controls the intensity of light

Ocular (10X magnification)

Up/Down- moves stage clips towards or away from you. L- away, R- towards (not on our lab microscopes)

Right/Left- moves stage clips to the right or left. R- right, L- left. (not on our lab microscopes)

Fine Adjustment Knob- use to clearly focus for detail

Coarse Adjustment Knob- use at Low Magnification to find object in Field. Do not use at High Power Magnification!!!

Light Source

On/Off Power Switch

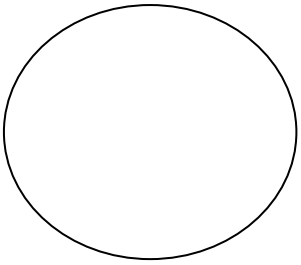
Things to know:
1) Always start looking at your slide at low power with the slide as close to the objective as possible. Once the specimen has been located, turn the turret to a higher power magnification and focus. Never focus downward.
2) Never use the coarse adjustment knob with the high power objective. You could break the lens.
3) Total Magnification = Magnification of the Eye Piece X Magnification of the Objective Lens

Before You Start

1 Turn the microscope on. Turn the rheostat to 10. Turn the diaphragm 2/3 to the right.
2 Go to switch views and fix your field by moving the oculars so that 2 circles become 1. Click on switch views to go back.
3 Make sure your objective is at low power (4X magnification).

The Letter E

1 Click on the slide with the letter E. Adjust the slide using the Up/Down and Right Left Knobs, so that the letter E is in the center of the field
2 Switch views and use both the coarse adjustment and fine adjustment knobs to locate and see the letter E.
3 Center you letter E so that it is in the middle of your field.
5 At low power, how many millimeters long is the letter E? _____ mm
6 What is your **total** magnification? _____ total mag.
7 Draw what you see in your field.

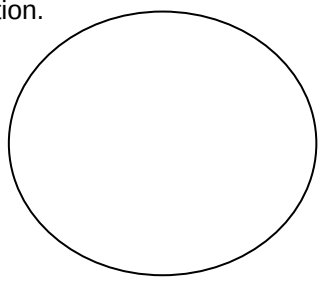


8 How many millimeters long is the letter E at 100X total magnification? _____ mm

Switch views and return to low power magnification.

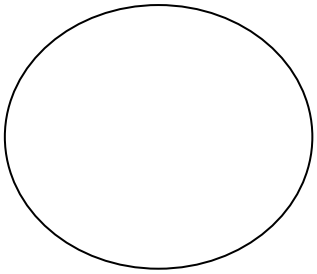
The Onion Root Tip

1 Switch the letter E slide for the onion root tip slide. Adjust the slide so the specimen is in the center of the field.
2 Switch views and use the coarse adjustment knob to find the onion root tip.
3 Adjust your specimen so that the red circle is in the center of your field. Switch objective lens to 40X.
4 Use the fine adjustment knob to sharpen the image and draw what you see in your field. Be sure to include the total magnification.



_____ total mag.

5 Switch objective to 100X mag. Use the fine adjustment know to create a sharper image. Draw what you see in your field. Be sure to include the total magnification.



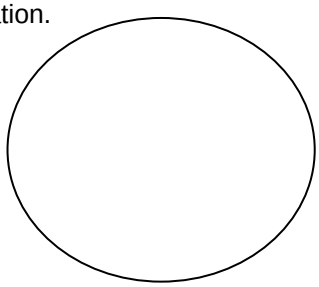
_____ total mag.

6 Compare and contrast the images at 400X total magnification and 1000X total magnification.

Switch views and return to low power magnification.

The Cheek Smear

1 Switch the onion root tip slide with the cheek smear slide. Adjust the specimen so that it is in the center of your field.
2 Switch views and use the coarse adjustment knob to find the cheek cells.
3 Adjust your specimen so that the red circle is in the center of your field. Switch objective lens to 40X.
4 Use the fine adjustment knob to sharpen the image and draw what you see in your field. Be sure to include the total magnification.



_____ total mag.

5 Compare and contrast an onion root cell and a human cheek cell.