Name:_____ Date:_____

## Virtual Microscope by BIONETWORK

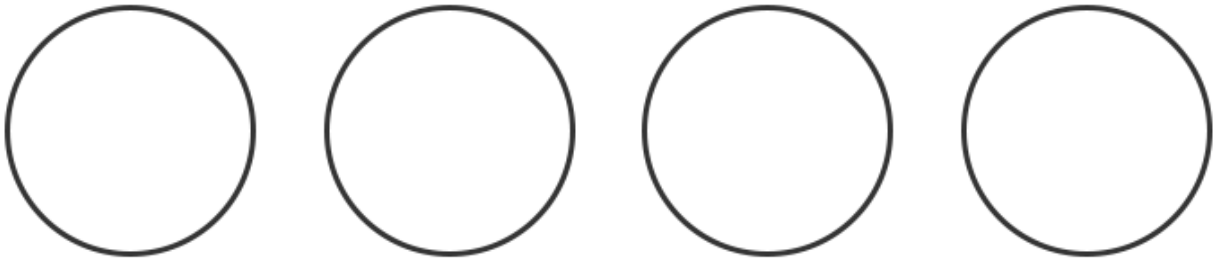
http://www.ncbionetwork.org/iet/microscope/

Instructions: You can use the "learn" tab to familiarize yourself with the virtual microscope. Click on the "explore" tab to examine specimens. Your sketches should be drawn as you see them in the field of view. Use the adjustments to get a clear image.

### Sample Slides - Letter E

1. Sketch the view at each magnification.

4x 10x 40x 100x



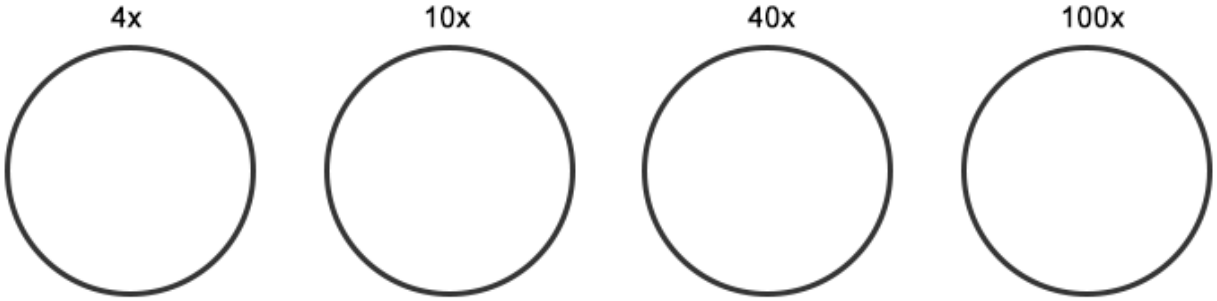
2. What did you need to do before viewing the slide at 100x?

3. A common mistake for beginners is thinking that the "e" just disappears at the high magnification. How would you explain to a younger student what happened to the e as you increase the magnification?

### Plant Cells

4. Sketch the view at each magnification. You may need to adjust the light.

4x 10x 40x 100x

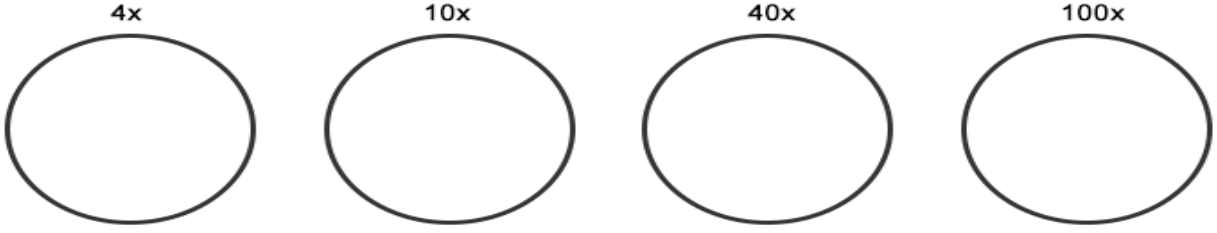


5. **Label Your Drawings**: On the 40x view, center the cell, tiny green dots are visible. These are chloroplasts. Label them on your drawing. You can also see a large, darker circle at this view. That is the nucleus. Label it on your drawing.

### Human Blood

6. Sketch the blood cells at each magnification.

4x 10x 40x 100x



7. At 100x, you will see a cell that is larger and has a dark shape in it. This cell doesn't look like the others because it is a white blood cell and it functions to protect your body against microbes. Red blood cells do not have a nucleus. White blood cell count is used as a diagnostic tool to determine if someone is sick. If you were fighting an infection, would you expect to have more or less WBC's? Why?

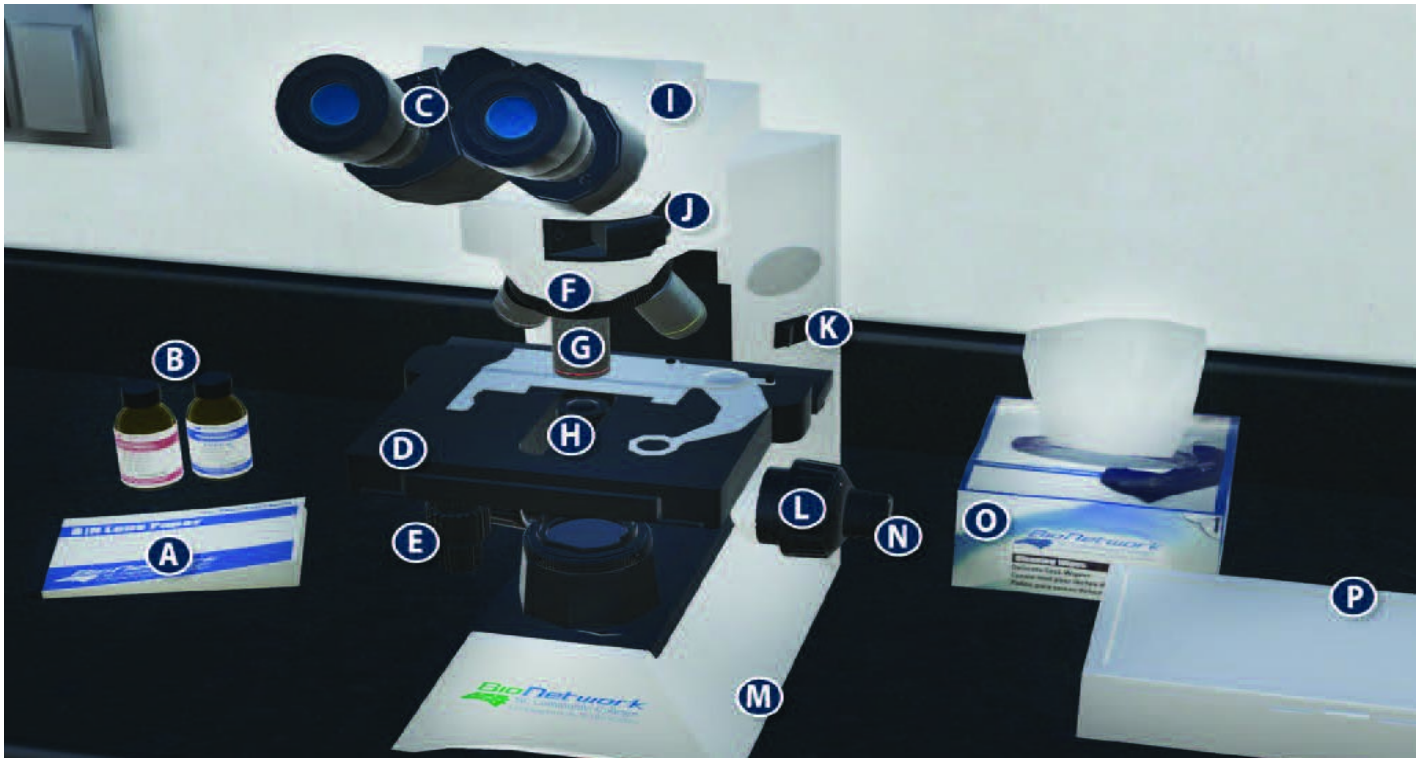
## Synthesis and Discussion

8. **Compare** blood cells to plant cells, include details about color, general shape, and size. Write this as a complete sentence or paragraph.

## Virtual Microscope by BIONETWORK ONLINE EDITION

http://www.ncbionetwork.org/iet/microscope/

Instructions: You can use the "learn" tab to familiarize yourself with the virtual microscope. As you click on each of the microscope parts, read the pop-up to answer the following.




**1. Identify each of the following by letter.**

| | | | |
|---|---|---|---|
| ____ | On/Off Switch | ____ | Eyepiece / Ocular Lens |
| ____ | Arm | ____ | Nosepiece |
| ____ | Objective Lenses | ____ | Stage |
| ____ | Diaphragm | ____ | Stage Adjustment |
| ____ | Base | ____ | Coarse Adjustment |
| ____ | Lens Paper | ____ | Fine Adjustment |
| ____ | Immersion Oil | ____ | Slide box |
| ____ | Kimwipes | | |

2. Explain what each of the following does:

kimwipes _____

immersion oil _____

diaphragm _____

stage adjustment knob _____

Go to the “EXPLORE” tab to view slides. You will need to use the coarse and fine focus and adjust the light to get clear views of the following. The slide can also be moved within the viewing field.

## Sample Slides - Letter E

3. Include a screenshot of the letter “e” at 10x. To take a screenshot, use the print screen on your keyboard or use your phone to capture the screen. Insert the image in the space below. Your image should clearly show that you viewed the “e” and focused it.

4. What did you need to do before viewing the slide at 100x?

5. A common mistake for beginners is thinking that the “e” just disappears at the high magnification. How would you explain to a younger student what happened to the e as you increase the magnification?

## Plant Cells

Return to the slide box and choose plant slides → plant cells. Focus with 4x, 10x, and 40x. You may need to adjust the light and center your slide.

7. Plant cells can be identified by their boxy appearance, where lines represent cell walls. Within the cell are green circles which are chloroplasts and a dark gray area which represents the nucleus.

At 40x, how many individual cells can be seen in the viewing field? _____

## Human Blood

Return to the slide box and choose human → blood Focus with 4x, 10x, and 40x. You may need to adjust the light and center your slide.

8. Blood cells can be identified by their round appearance. Unlike plant cells, they do not have cell walls.

At 40x, how many individual blood cells can be seen in the viewing field? _____

9. At 100x, you will see a cell that is larger and has a dark shape in it. This cell doesn't look like the others because it is a white blood cell and it functions to protect your body against microbes. Red blood cells do not have a nucleus. White blood cell count is used as a diagnostic tool to determine if someone is sick. If you were fighting an infection, would you expect to have more or less WBC's? Why?

## Synthesis and Discussion

10. **Compare** blood cells to plant cells, including details about color, general shape, and size. Write this as a complete sentence or paragraph.

11. Explore bacteria slides. You don't need to screenshot them. Compare the bacteria slides to the blood cells and include details about their color, general shape, and size. Write this as a complete sentence or paragraph.