





You are responsible for the welfare of the microscope in your numbered seat. Take care of it *please*. You may also have received a set of slides numbered according to your seat. You are responsible for their welfare also. Keep them clean and in good order. Polish slides with Kimwipes if necessary. Check to see that they are in proper order and good condition, then sign your name on the label on the slide box cover to take responsibility for them.

In the first part of this exercise, you will evaluate the condition of your microscope as well as learn its use. If the condition is anything but excellent, notify instructor.

**PLACING THE SLIDE ON THE MICROSCOPE:**

1. Assure that these three set up requirements are satisfied (correct them in necessary):
  - a) The **stage** should already be fully lowered
  - b) the **4x objective** should already be clicked into position
  - c) and the **adjustable left ocular** should be set on zero.
2. **Handle all slides by the edges only.** Pick up the specified prepared slide. Polish if smudged.
3. **Open the slide retainer** by pressing the thumb knob to the right. **Place the slide on the stage** with the label to the left, release the retainer. Move the slide with the mechanical stage until the specimen is over the optic center of the stage. (View from side and front to get a best estimate of the center.)
4. **While viewing from the side, raise the stage** until it stops or the slide *almost* touches the objective.

**FOCUSING:**

5. Now look through the oculars and **lower the stage with the coarse focus** until the image comes into focus. If it never appears, re-adjust the position of the slide nearer the optic center, and repeat steps 4 and 5. (If your eyes are not closely matched, focus the R ocular for the R eye, then adjust the L ocular to match your L eye.) Adjust interpupillary distance, write this number in your book, label clearly. Using the mechanical stage, move the slide to the L. Note that the image moves in the opposite direction of the actual slide. Is the view bright and clear? Lighting may be adjusted using:
  - a) the **iris diaphragm**: brighter with lever to the left, greater depth of field with it to the right
  - b) the **condenser positioning knob** (brighter closer to the slide, edges sharper slightly lowered
  - c) the **rheostat**: try to keep it no higher than 6 or 7. Below 4, the image will be dark and yellow. Experiment with these for optimum viewing. Scan specimen for the location of the optimum view.
6. **Rotate the nosepiece to select 10x objective.** (What is the power of the view?) Center the image again. If you lose the view of the specimen, go back to low power to find it again and center more carefully. Make minor adjustments for lighting and clarity. Polish the objective if the view is cloudy.
7. **Rotate the nose piece to select the 40x objective.** Make minor adjustments with the fine focus. Is the view clear and bright?
8. Practice using the **mechanical stage** to scan the specimen. Does it function perfectly? You may need to tighten the silver retaining screws on the R under the stage.

<p><b>HOW TO RETURN MICROSCOPE TO STORAGE:</b></p> <ol style="list-style-type: none"> <li>1: Lower stage fully</li> <li>2: Return the 4x objective to the viewing position.</li> <li>3: Adjustable ocular returned to zero</li> <li>4: Reduce rheostat to lowest setting, turn off power switch</li> <li>5: Wrap cord snugly, no sharp bends, tuck in plug.</li> <li>6: Replace dust cover, return to storage, arm towards you.</li> <li>7: Report any problem with the instrument immediately.</li> </ol>	<p><b>QUICK CHECK LIST:</b></p> <p>stage lowered                  4x objective in place                  adjustable ocular on zero                  rheostat at 1, power off                  cord wrapped snugly                  dust cover on                  arm towards you in cabinet</p>
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**BACTERIAL MORPHOLOGY FOR MICROBIOLOGY STUDENTS**

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[http://biology.clc.uc.edu/fankhauser/Labs/Microbiology/Bacterial\\_Morphology/Bacterial\\_Morphology.htm](http://biology.clc.uc.edu/fankhauser/Labs/Microbiology/Bacterial_Morphology/Bacterial_Morphology.htm)

Slide 2 in your slide collection contains stained examples of the three morphologies of bacteria, **bacilli** (rods), **cocci** (grain or berry-like, called sarcinae when in cubes of eight) and **spirilla** (coiled or wavy).

1. Focus on the center specimen with the 4x objective. It is the one stained purple, and may look like a mass of tangled dark threads. Examine next under the 10x lens, find an area which is not too densely packed with cells. Then view with the 40x lens. What is its morphology? Do you see occasional transparent areas within the bacteria? These are spores. Illustrate this view large enough to fill 1/3rd of the page. Make the cells about 3 mm wide (1/8th inch), and make the length proportional to their width. Label the illustration according to morphology, color and power of magnification (400x). Include several spores.
2. Move the slide laterally to the left (view the right hand specimen). Illustrate and label as in step 1. Note the arrangement of the cells. Try to keep the same scale as the previous illustration.
3. Move the slide the opposite direction (to the right), past the center specimen, Carefully adjust for optimum lighting and repeat the illustration process for the remaining (difficult) specimen.