

**Objective Questions and Techniques to Know for Lab Session #1:  
Brightfield Microscopy/cellular morphology and Colonial Morphology**

**Concepts to Know for Quizzes and Practicals**

1. Distinguish between resolution and magnification.
2. Which lens do you use oil with?
3. How does immersion oil work to enhance resolution?
4. What effect does opening and closing the diaphragm have on the following?
  - a. Image brightness:
  - b. Image contrast:
  - c. Resolution:
5. What is the maximum resolution of your microscope (in micrometers) or how far apart do two organisms have to be from one another in order to see them as 2 different organisms under the scope? \_\_\_\_\_
6. Be able to determine total magnification. What is the total magnification of your scope when you use each lens?
7. What do you have to do to your microscope before you put it away?
8. If your cells look washed out under the scope what can you do to fix the lighting?
9. Know the following parts of the microscope and what each is used for:
  - a. Condenser
  - b. Diaphragm
  - c. Objective lenses (10X, 40X and 100X; low power, high dry power and oil immersion)
  - d. Ocular lens
  - e. Binocular versus monocular
  - f. Course adjustment
  - g. Fine adjustment
  - h. Stage
  - i. Mechanical stage adjuster
  - j. Stage
10. Be able to trace a path of light through a microscope and tell what happens after the light passes through each part.
11. Know what a Eukaryote and a Prokaryote is and be able to identify each type under a microscope.
12. If you went from the 40X objective to the 100X objective and the cell you were looking at disappeared, give several explanations explaining what could have happened and how you could fix the problem.
13. Be able to define the following
  - a. Cellular morphology
  - b. Field of vision
  - c. Refractive index
  - d. Parfocal
14. Give 2 ways in which mold colonies differ from bacterial colonies under the dissecting scope? Be able to distinguish mold from bacteria.

15. Be able to distinguish colonial morphology from cellular morphology.  
What do you use to observe each?
16. What is the difference between a dissecting scope and a microscope?
17. Distinguish inoculate versus contaminate.

### **Identification: For Practicals**

18. Be able to identify the following Eukaryotes under microscope.
  - a. Helminth: *Schistosoma mansoni*
  - b. Dinoflagellate: *Peridinium*
  - c. Protozoa: *Trypanosoma gambiense*
  - d. Fungi: *Penicillium*
  - e. Fungi: *Rhizopus*
  - f. Fungi: *Aspergillus*
  - g. Fungi: Yeast
19. Be able to identify the following bacterial morphologies under 100X.
  - a. coccus
  - b. spirillum
  - c. rod (bacillus)
  - d. staph arrangement
  - e. strep arrangement
20. Be able to distinguish a Prokaryote from a Eukaryote under the microscope. And be able to classify all of the organisms that you are supposed to identify as a Prokaryote or a Eukaryote.
21. Identify parts of scope listed in objective 9 above.
22. Be able to distinguish a culture from sterile media.
23. Be able to identify the following based on their **colonial** morphology:
  - a. Penicillium
  - b. Rhizopus
  - c. Bacteria

### **Skills for Skills Test**

24. Be able to use all of the objective lenses (including the oil immersion lens) to view various slides.
25. Be able to focus a slide and identify something under 10, 40 and 100X.