

Lab 3: Introduction to Light Microscopy

BIOL-1

Name: _____ Date: _____

Objectives

By the end of this lab, you will be able to:

- Identify and label the parts of a compound light microscope
 - Demonstrate proper microscope handling and focusing techniques
 - Prepare and observe specimens under low and high power
 - Draw accurate scientific illustrations of microscopic observations
 - Make detailed observations and formulate questions about what you see
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Materials

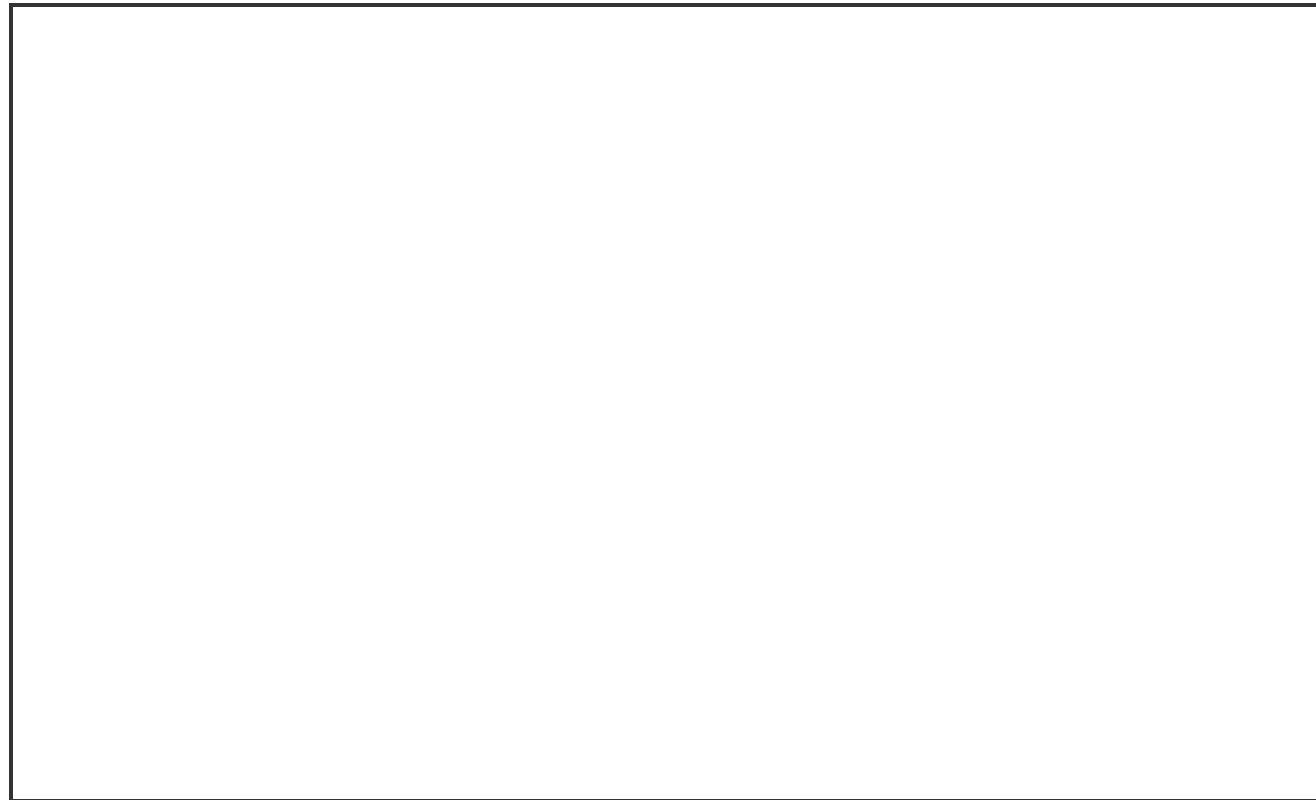
- Compound light microscope (1 per group)
 - Prepared slides (provided by instructor)
 - Lens paper
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Part 1: Microscope Anatomy & Labeling

Learning Goal: Become familiar with the parts of a compound light microscope and their functions.

Using the microscope at your station, examine its parts carefully. In the large box below, **draw your microscope** and label it using the terms from the list.

Draw your compound light microscope here:



Terms to Label on Your Drawing

Use the following terms to label your drawing. Draw lines from each part to its label on your diagram.

Term	Function
Eyepiece (Ocular Lens)	Lens you look through; typically 10× magnification
Objective Lenses	Rotating lenses providing different magnifications (4×, 10×, 40×)
Revolving Nosepiece	Rotates to change objective lenses
Stage	Platform where the slide is placed
Stage Clips	Hold the slide in place on the stage
Coarse Adjustment Knob	Large knob for rough focusing (use only with low power)
Fine Adjustment Knob	Small knob for precise focusing
Diaphragm/Iris	Controls the amount of light passing through specimen
Light Source	Illuminates the specimen from below
Arm	Used to carry the microscope; connects body to base
Base	Bottom support of the microscope

After drawing and labeling, answer these questions:

1. What is the total magnification when using the $10\times$ eyepiece and the $40\times$ objective lens?

1. Why should you always start focusing with the lowest power objective lens?

1. Why is it important to never use the coarse adjustment knob with high power objectives?

Part 2: Slide Observation – Specimen A

Learning Goal: Practice observing, drawing, and analyzing a microscopic specimen.

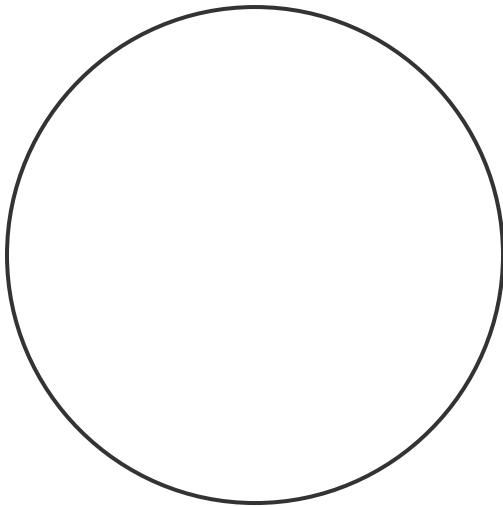
Specimen Name:

Prepared Slide Description (if available):

Observation Drawing

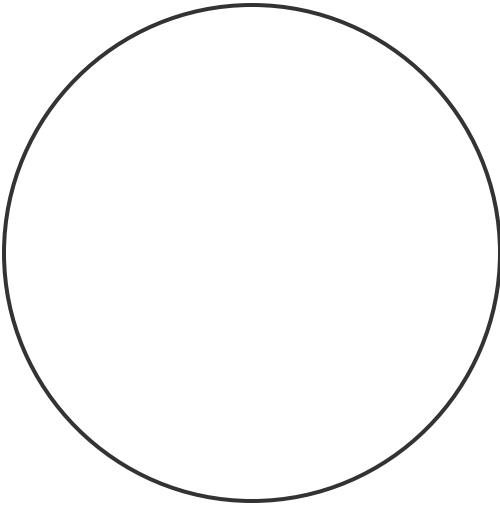
In the circles below, draw what you see at **low power** and **high power**. Your drawings should accurately represent what you observe—include details like shapes, structures, colors, and relative sizes.

Low Power (Total Magnification: ____ ×)



Magnification used:

High Power (Total Magnification: ____ ×)



Magnification used:

Observations

Describe at least 3 things you observe about this specimen:

1.

2.

3.

What structures or patterns do you notice?

Questions you have about this specimen:

Write at least 2 questions that arose from your observations:

1.

2.

Part 3: Slide Observation – Specimen B

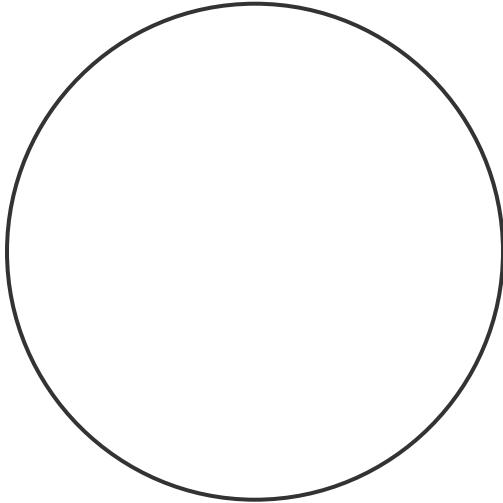
Learning Goal: Continue developing observation and scientific illustration skills with a different specimen.

Specimen Name:

Prepared Slide Description (if available):

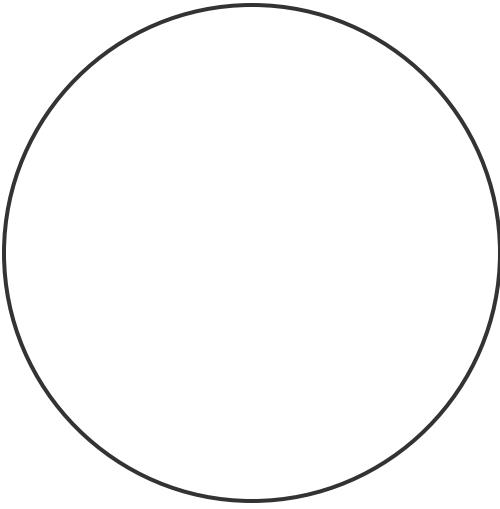
Observation Drawing

Low Power (Total Magnification: ____ \times)



Magnification used:

High Power (Total Magnification: ____ \times)



Magnification used:

Observations

Describe at least 3 things you observe about this specimen:

1.

2.

3.

What structures or patterns do you notice?

Questions you have about this specimen:

1.

2.

Part 4: Slide Observation – Specimen C

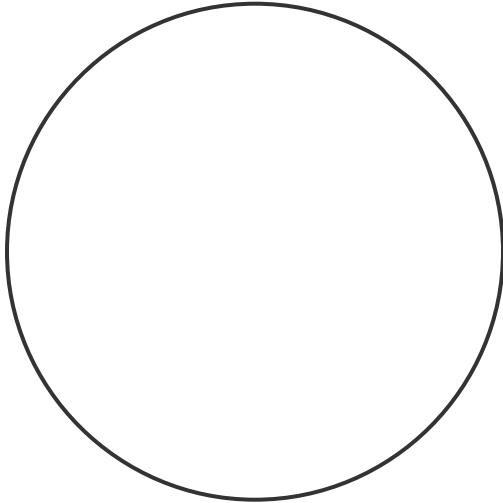
Learning Goal: Apply your microscopy skills to a third specimen and reflect on your learning.

Specimen Name:

Prepared Slide Description (if available):

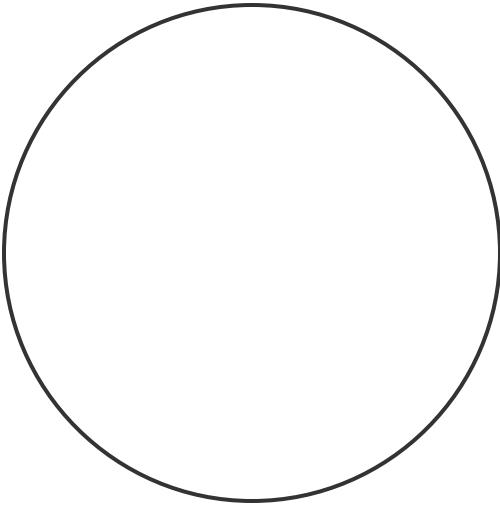
Observation Drawing

Low Power (Total Magnification: ___ \times)



Magnification used:

High Power (Total Magnification: ___ \times)



Magnification used:

Observations

Describe at least 3 things you observe about this specimen:

1.

2.

3.

What structures or patterns do you notice?

Questions you have about this specimen:

1.

2.

Conclusion

Reflect on your microscopy experience today:

1. What was the most challenging part of using the microscope?

2. What was the most interesting thing you observed?

3. How did changing magnification affect what you could see?

4. What would you want to examine under a microscope in the future?

Summary

Part	Skill	What You Learned
1	Microscope Anatomy	Parts and functions of a light microscope
2-4	Specimen Observation	Drawing, describing, and questioning microscopic specimens
2-4	Scientific Illustration	Creating accurate drawings of what you observe
2-4	Inquiry	Generating questions from careful observation

Key Takeaway: Light microscopy reveals a hidden world invisible to the naked eye. Scientific observation requires careful attention to detail and accurate documentation of what we see.