

Forensic Microscopy

Lab #1 - Kohler Illumination

Aritra Bhattacharya

Graduate teaching assistant

ecoevoaritra23@tamu.edu

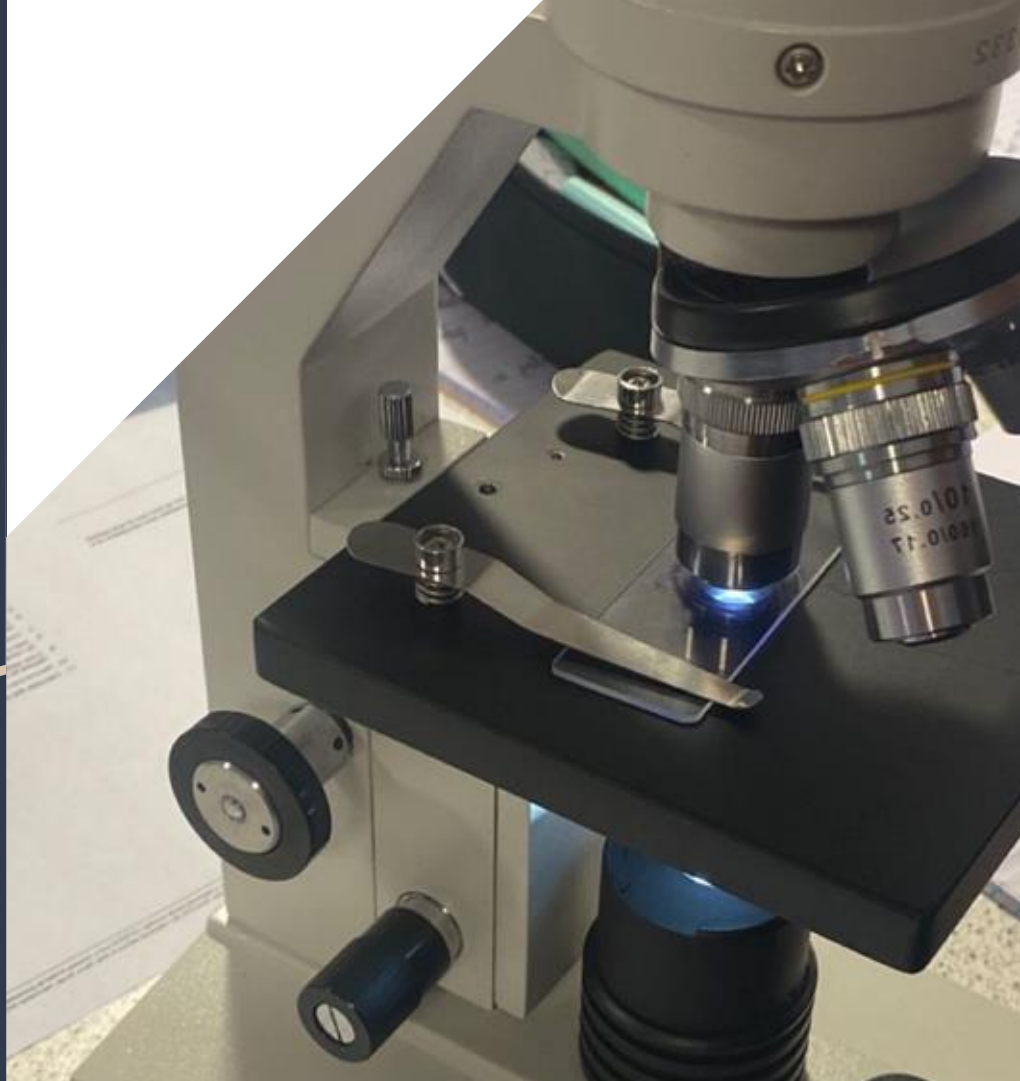
Where can you find the slides?



<https://aritra-evolves.github.io/FIVS215.html>

Today's Agenda

- ❖ Housekeeping
- ❖ Lab Notebooks
- ❖ Parts of the Microscope
- ❖ How is an Image Formed?
- ❖ Kohler Set Up
- ❖ Coming Up



Housekeeping

❖ Post-Labs

- Study Tool
- Due Before the Start of the Next Lab
- One point per week late will be deducted

❖ Grading

- If you have questions about grades, please send me an email or talk to me after class.

❖ Contact

- EMAIL ME DIRECTLY
- Please don't contact me through Canvas,

Microscopes

- These are BRAND new
- Please be kind to them

Lab Policies

AI Use

- ❖ Follow the AI Policy in the Syllabus
- ❖ A&M REQUIRES that AI must be cited if used
- ❖ I don't recommend it for this course

Technology

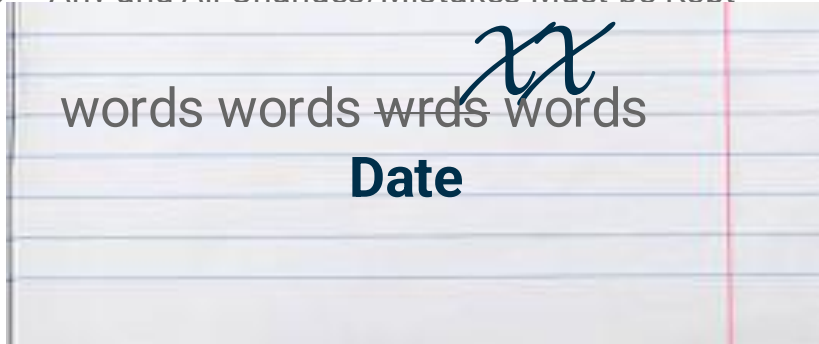
- ❖ Please refrain from using technology during lab
- ❖ No devices, earbuds, etc while I am teaching

Attendance

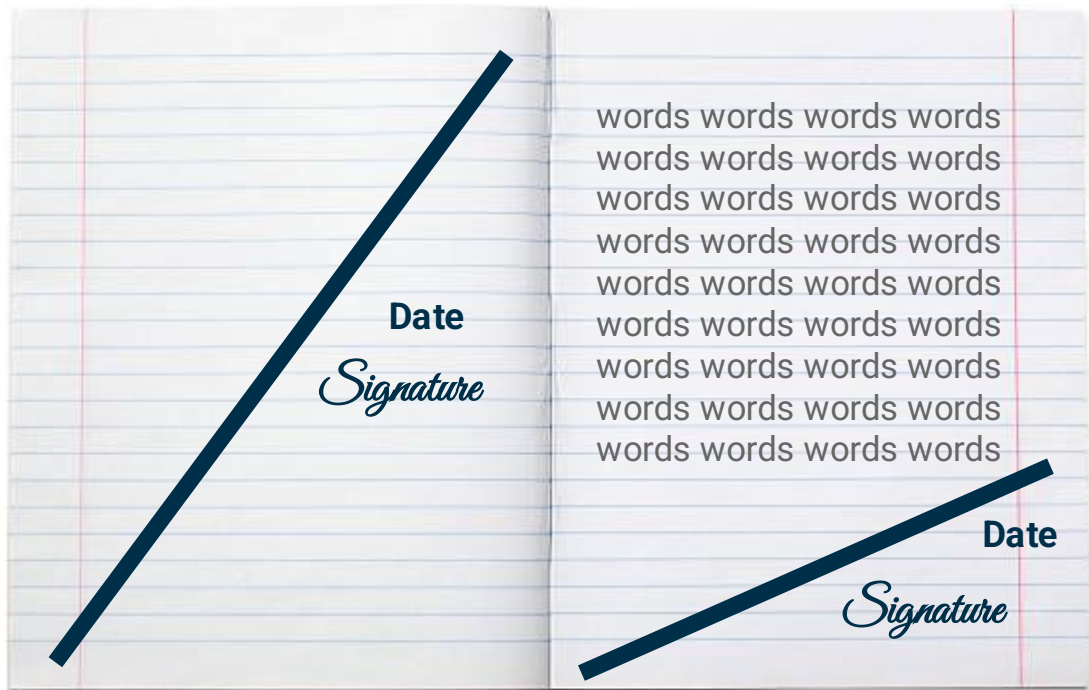
- ❖ MANDATORY for Lab
- ❖ Refer to A&M Policy for Absences
- ❖ Please email ME (not Kovar) as soon as possible if you will be absent so we can make a plan

Lab Notebooks

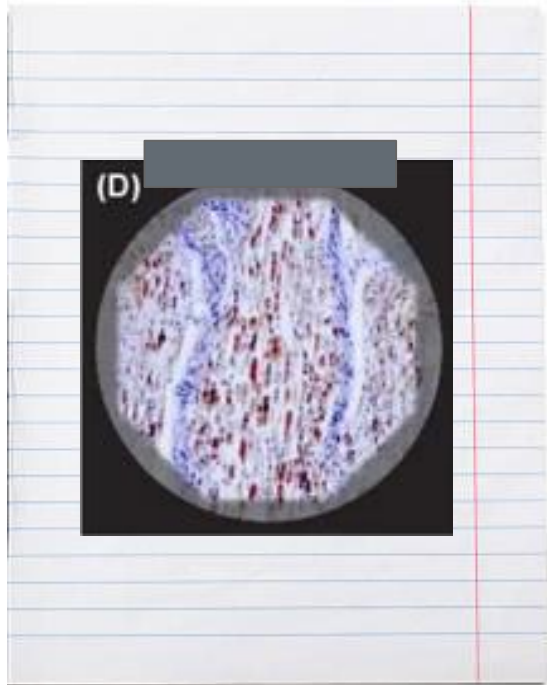
- ❖ Composition Notebook
 - Pen Only
 - Photos Cannot be Fully Glued/Taped Down
 - Must be Numbered, Closed Out, and Cataloged
- ❖ Used on the Practical
 - Only Item Allowed In
 - Detail is Up To You
- ❖ Any and All Changes/Mistakes Must be Kept



Closing Out



Photos/Add Ins



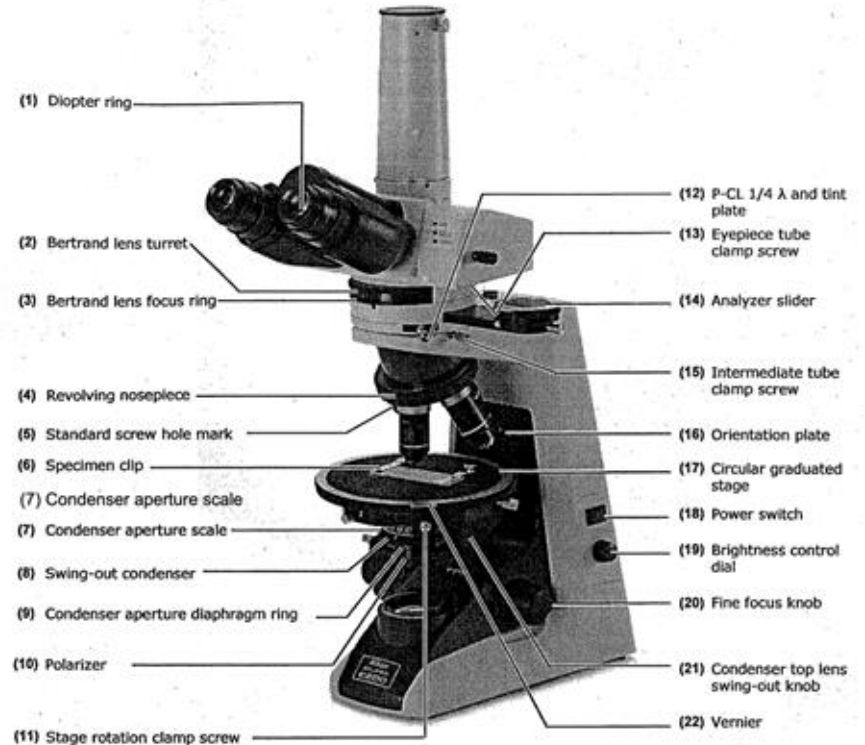
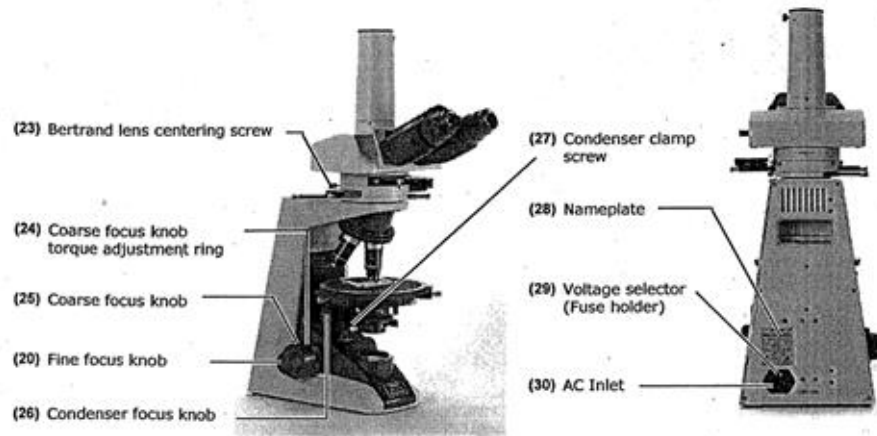
Must leave at LEAST one side unattached so you can see underneath the photo.

Close out the space under the photo or write notes about it underneath.



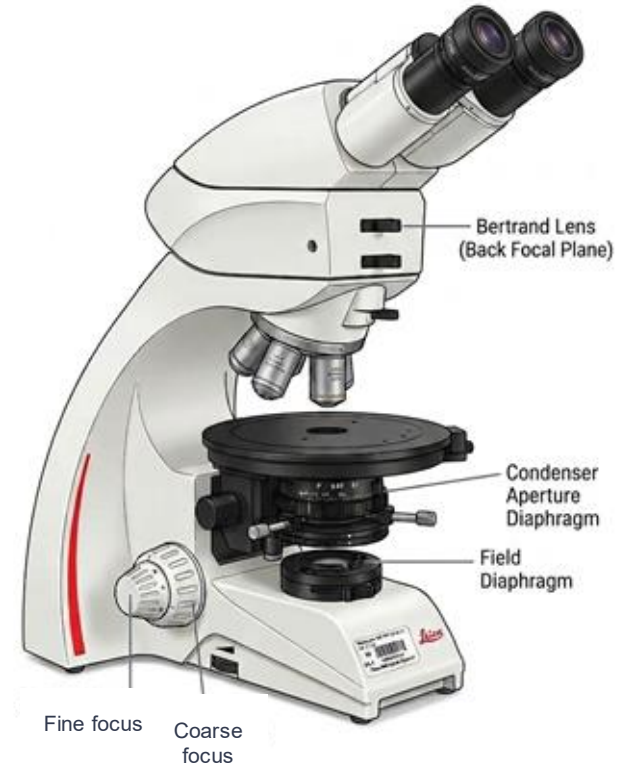
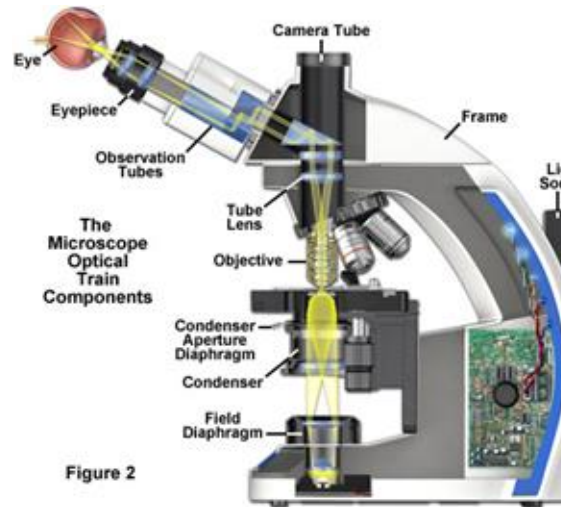
Parts of the Microscope

Polarizing Light Microscope



Parts to Know (for Today)

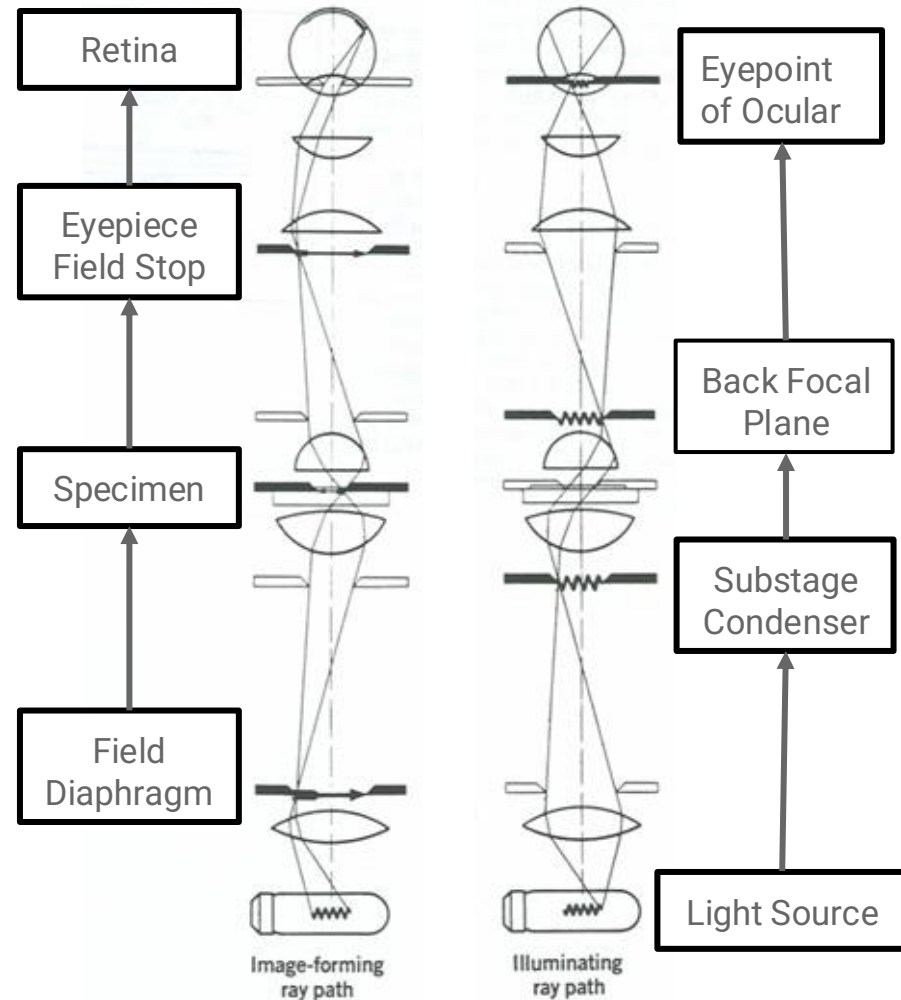
- ❖ Substage Condenser
- ❖ Coarse Focus
- ❖ Fine Focus
- ❖ Bertrand Lens - aka Back Focal Plane
- ❖ Field Diaphragm



Ray Paths

Image Forming: path that light takes to form the image

Illuminating: path that light takes to illuminate the specimen

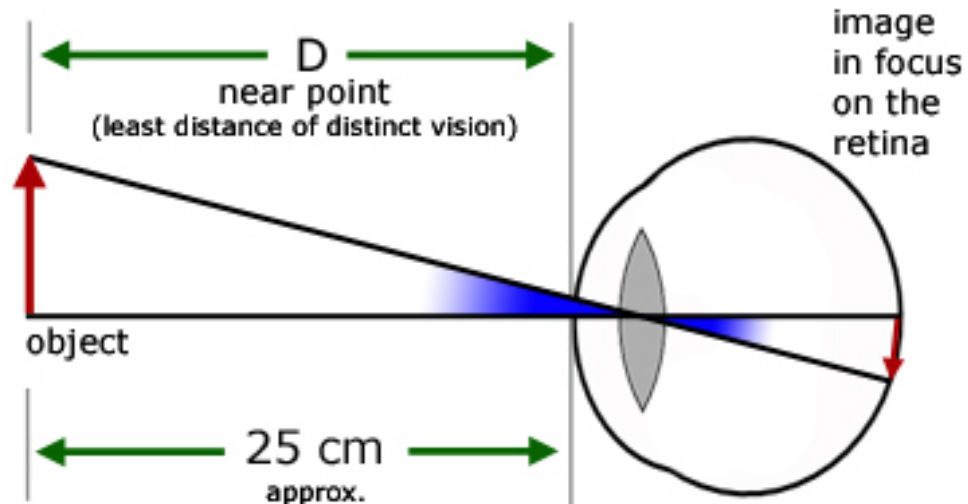


Least Distance of Vision

Describes the minimum distance an object must be at in order for our eyes to focus.

If something is too close, our eyes have difficulty focusing on it.

Normally it is 25cm.



Getting started!



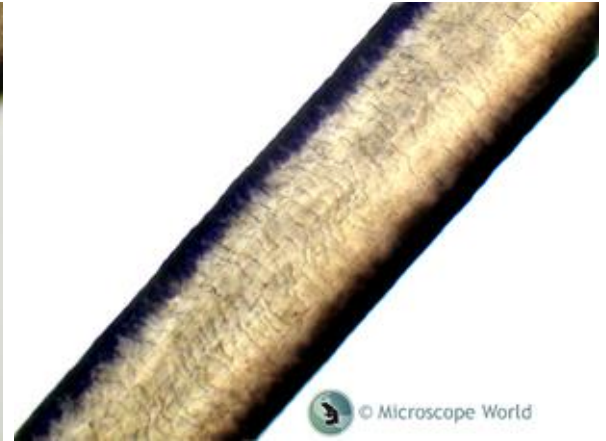
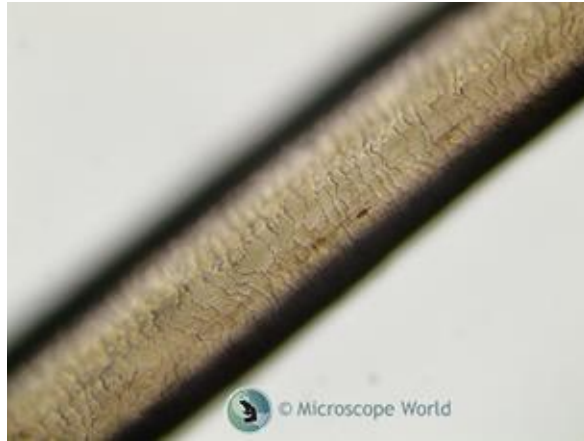
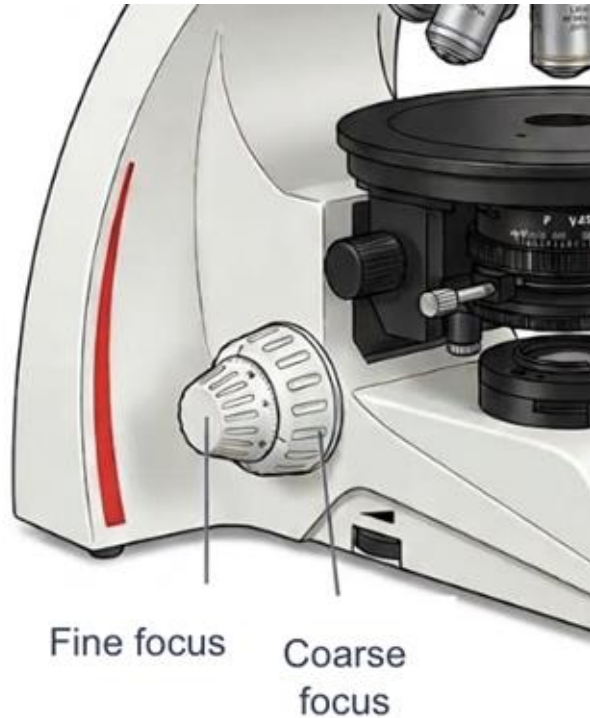
Power on/off

Light intensity

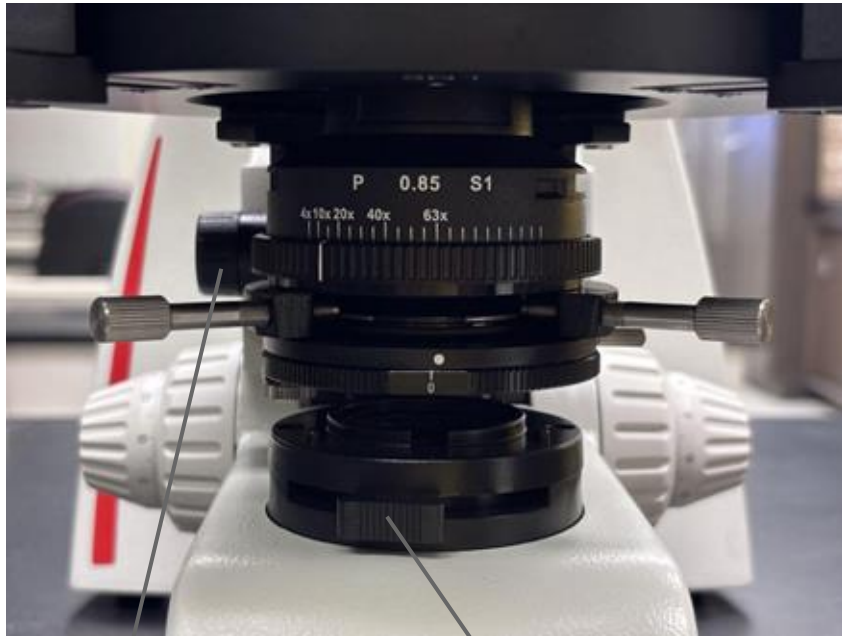
Setting Up Kohler

1. Get Comfortable!
2. Place your Specimen on the Stage & Rotate the 10x lens
3. Adjust the Diopters and eyepiece distance
4. Adjust coarse-focus then fine-focus
5. Close the field diaphragm to be just inside the field of view
6. Sharpen the edges of the hexagon
7. Center the hexagon if necessary
8. Open the field diaphragm to just outside the field of view
9. Swing in the bertrand lens
10. Close down the substage condenser to 75%
11. Pull bertrand lens out and adjust light intensity

Adjust Coarse & Fine Focus

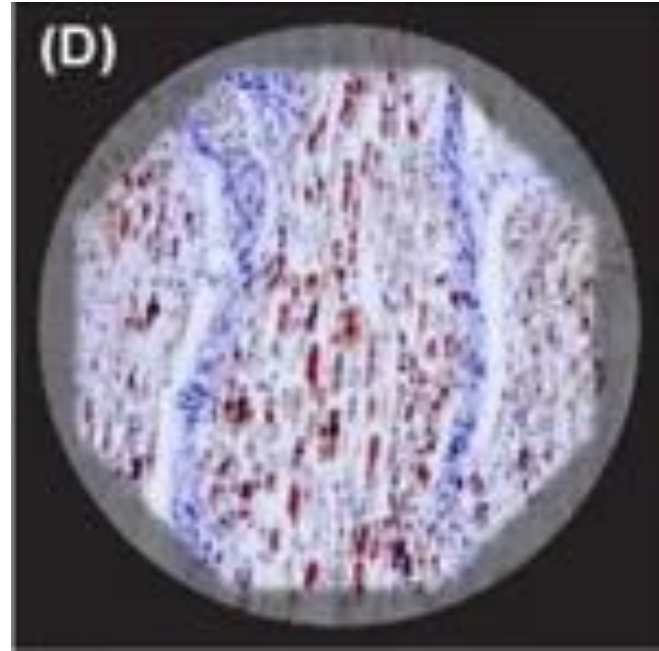


Close Field Diaphragm & Sharpen Edges



Condenser height
adjustment

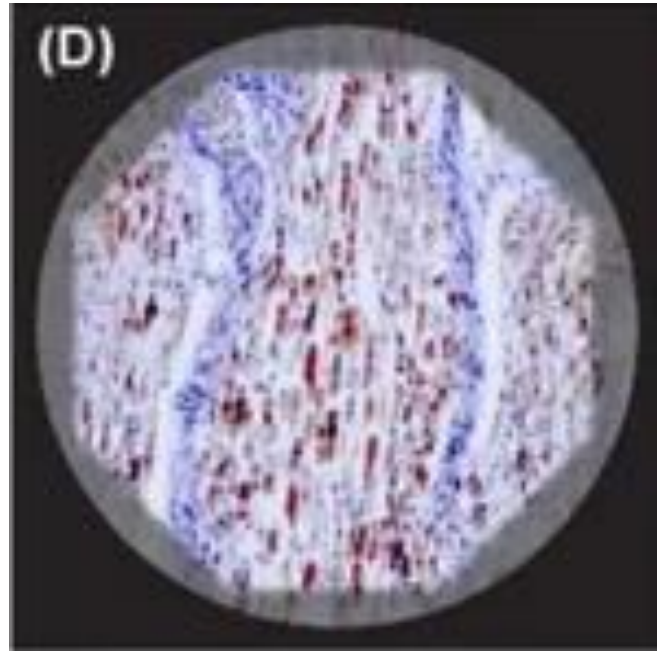
Field diaphragm ring



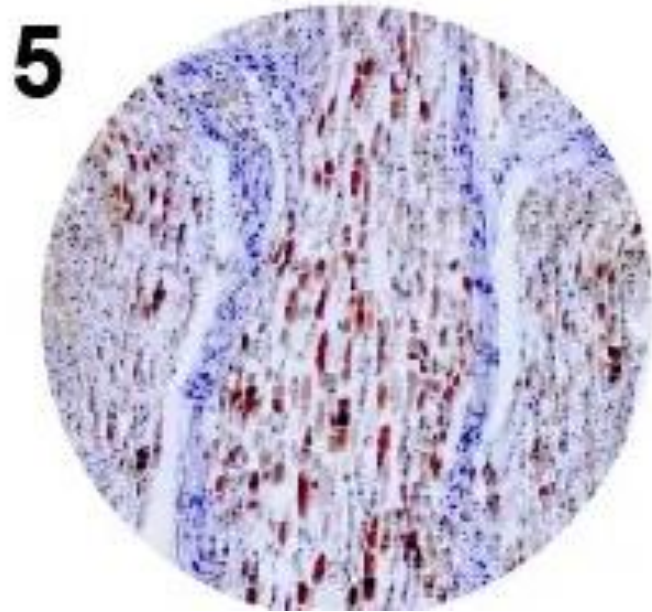
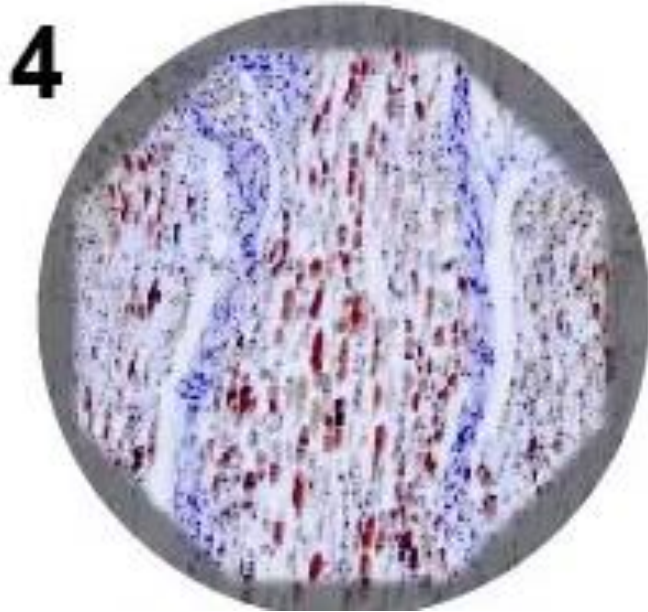
Center Field Diaphragm



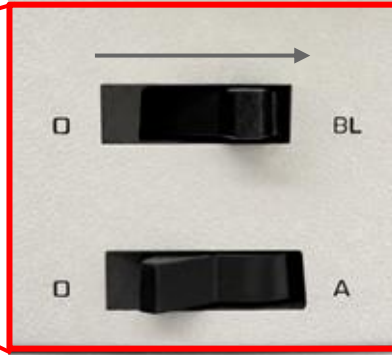
Condenser centering screws



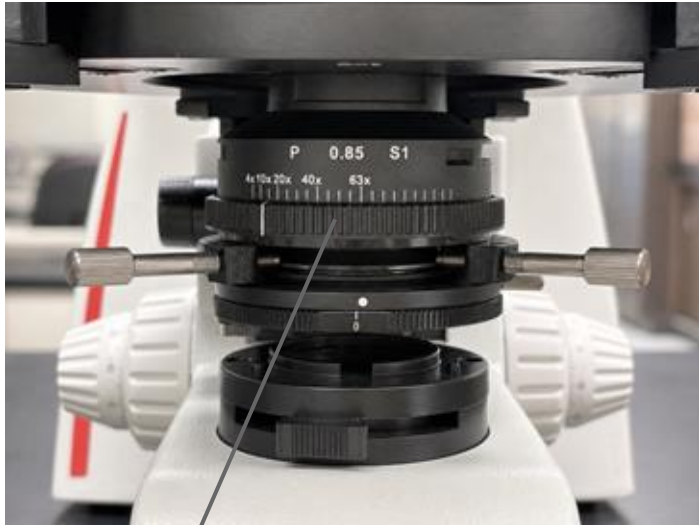
Open Field Diaphragm



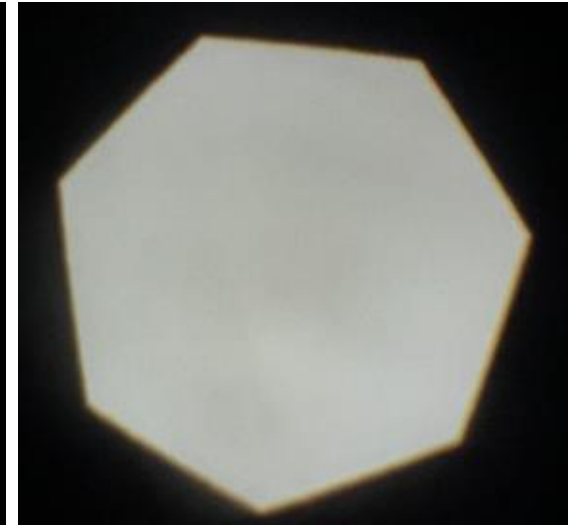
Swing in Bertrand Lens



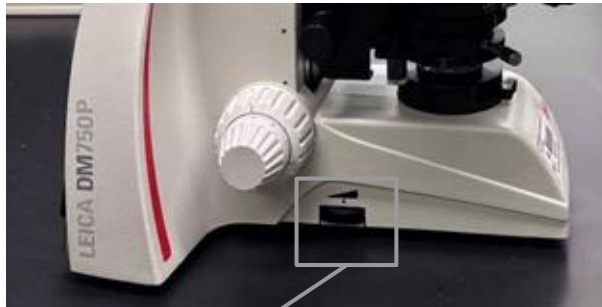
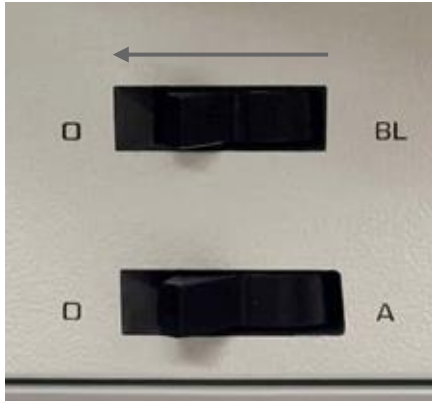
Close Substage Condenser



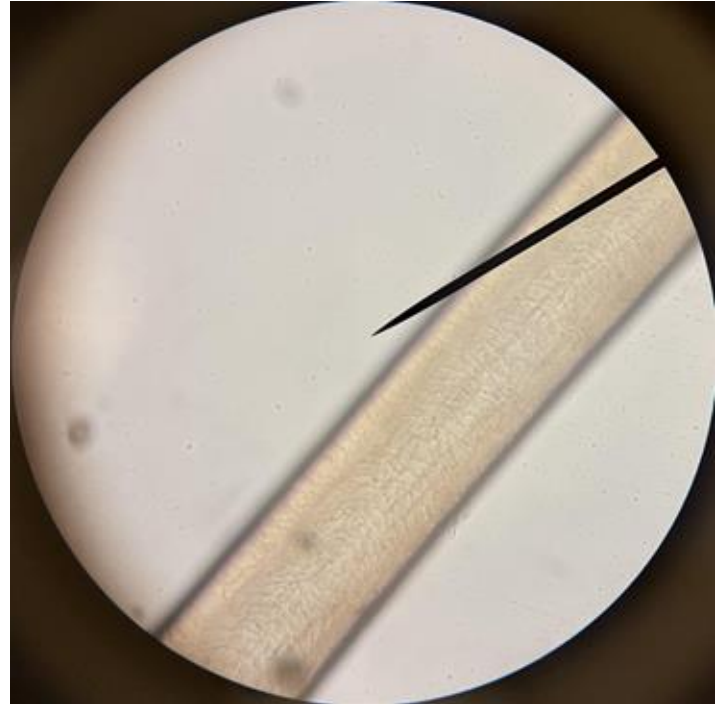
Condenser aperture diaphragm



Pull Out Bertrand Lens & Adjust Light Intensity



Light intensity



Practice

Practice setting up Kohler and viewing five specimens each.

Record in your notebook what specimens you looked at and what you observed.

Get comfortable with how it works, you'll use this every week.

Remember to start the process over for each new specimen.

1. Get Comfortable!
2. Place your Specimen on the Stage & Rotate the 10x lens
3. Adjust the Diopters and eyepiece distance
4. Adjust coarse-focus then fine-focus
5. Close the field diaphragm to be just inside the field of view
6. Sharpen the edges of the hexagon
7. Center the hexagon if necessary
8. Open the field diaphragm to just outside the field of view
9. Swing in the bertrand lens
10. Close down the substage condenser to 75%
11. Pull bertrand lens out and adjust light intensity

Coming Up

Next week: Micrometry

Post Lab Questions

- Due by next week (before Lab 2)

See you next week!