Practical class 1: Microscopic Anatomy

Class Leader: Dr Smitha Georgy s.georgy@unimelb.edu.au

Where: Learning and Teaching building Rom 331, Werribee

When: Week 1 – Friday 4th March 2022 2.00 – 3.00 pm Group A

3.30 – 5.00 pm Group B

Learning Outcomes

At the end of this practical class, you should be able to:

- Identify and distinguish different cells and tissues in tissue sections.
- Recognize the appearance of normal tissues as studied with the light microscope, in preparation for studies on abnormal conditions and their impact on function.

Use of Microscopes

Setting up a binocular microscope

The following is a convenient routine to follow each time the microscope is used.

(1) Check that the light dimmer is set at zero.

(2) Turn on the power switch [on/off switch] and adjust the light dimmer until the proper light intensity is obtained.

(3) Insert a specimen slide onto the mechanical stage by opening the spring-loaded specimen holder with one hand whilst inserting the slide with the other hand. Take care to release the spring-loaded clamp gently once the specimen is in place.

(4) Swing the x10 objective into place, bring the specimen into focus using the coarse and fine adjustment knobs. Rotate the focus adjustment knobs clockwise to raise the stage (with the specimen) towards the objective, taking care not to bring the specimen and the objective into contact.

(5) Look through the eyepieces and adjust the interpupillary distance by moving the two eyepieces either toward or away from one another. A scale is provided between the eyepieces giving a proper setting, which should be remembered for future use.

(6) Look at the image through the right eyepiece with your right eye while covering your left eye with your hand (do not squeeze your eyelid shut) and focus on the specimen with the focus adjustment knobs. Look into the middle distance to relax your eyes. Then, covering your right eye look at the image through the left eyepiece with the left eye and rotate the diopter adjustment ring located at the base of the left eyepiece until the specimen comes into focus. Do not use the focus adjustment knobs when using your left eye.

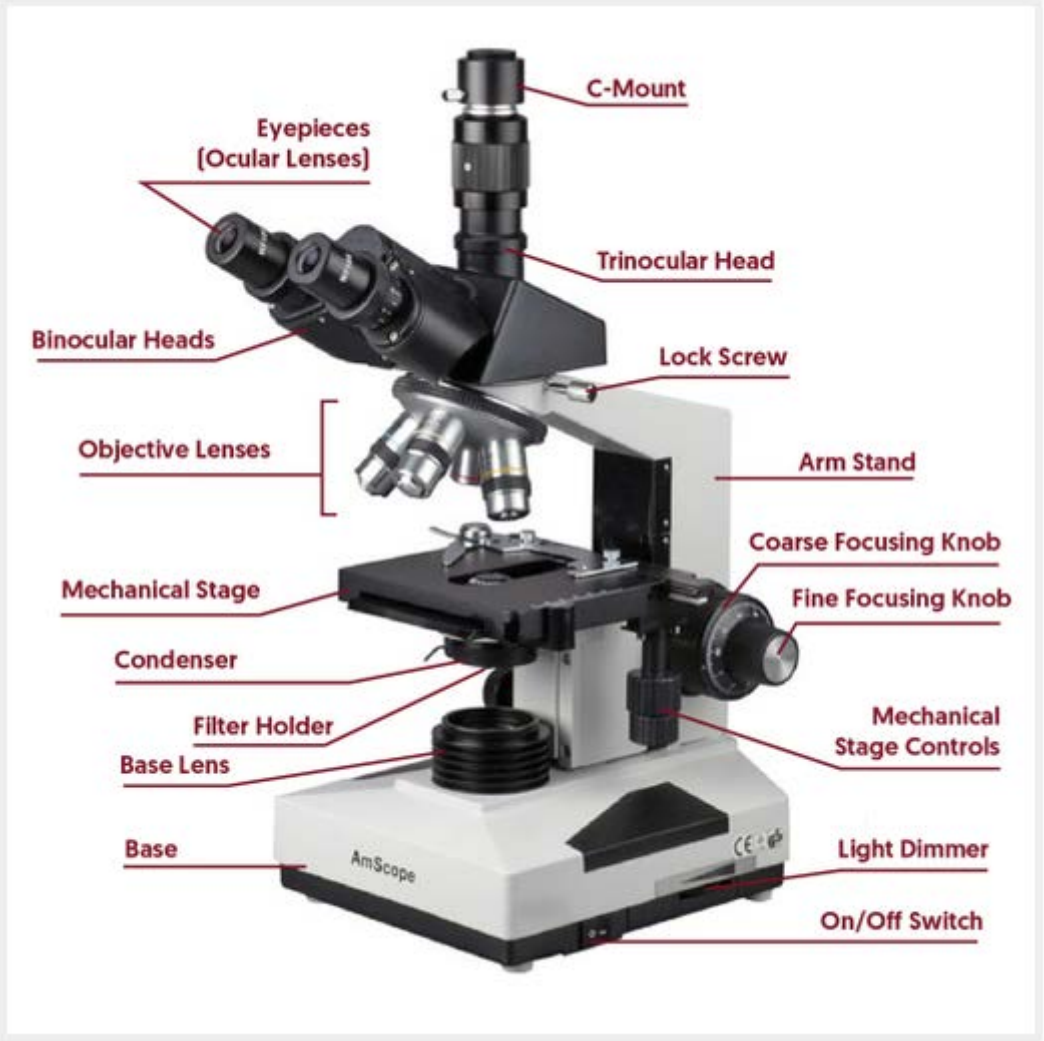


Figure 1 Parts of a microscope

(7) To centre the field iris diaphragm, rotate the diaphragm ring counter clockwise to stop down the iris diaphragm to the minimum.

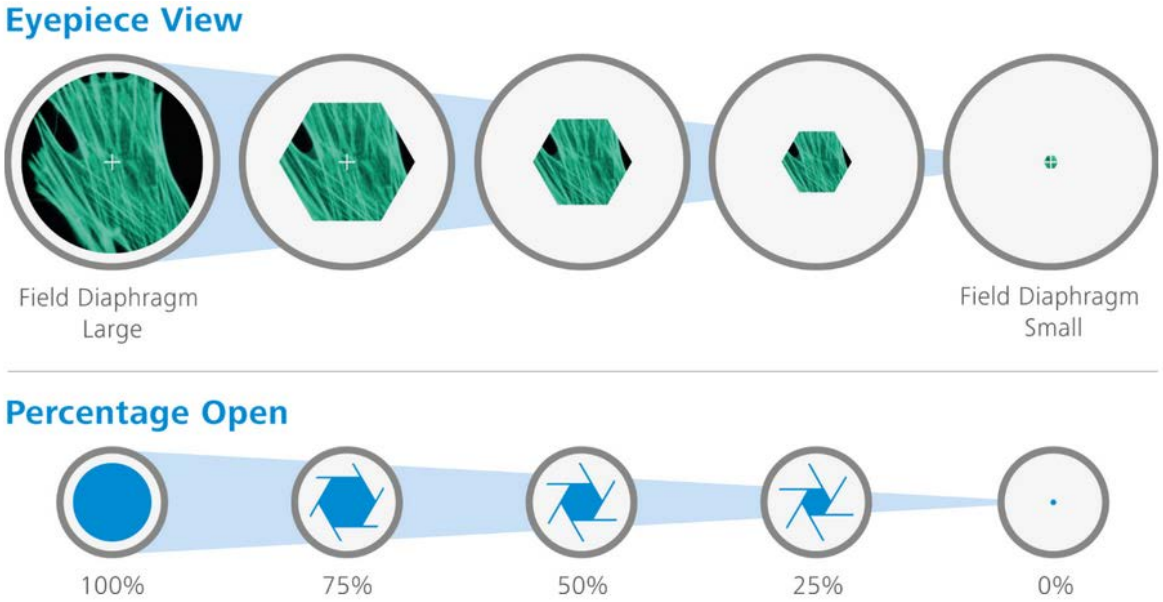
(8) Rotate the condenser height adjustment knob in either direction until the image of the field diaphragm is sharply in the field of view. Bring the image of the field diaphragm into the centre of the field by use of the two screws used to centre the attachment lens located at the base of the condenser. Open the diaphragm until only a small ring of the diaphragm is visible in the field. If the polygonal ring is not concentric with the field of view, repeat the procedure.

(9) The opening of the aperture iris diaphragm built in the condenser can be adjusted to match with the numerical aperture of the objective in use, in order to achieve optimum objective performance as depth of focus, image contrast and resolution. Turning the diaphragm lever counter clockwise reduces the diaphragm opening. Remove an eyepiece, and looking through the empty eyepiece tube, adjust the opening of the diaphragm. It is preferable to stop down the aperture diaphragm to 70-80% of the objective. If the specimen is pale further reduce the diaphragm opening to increase the contrast for better image observation.

(10) This microscope is bifocal, which means once one objective is in focus; the other objectives can be swung around and clicked into place with only minor adjustment in focusing required.

A note on the Oil Immersion Lens (not utilized in these classes)

The oil immersion lens is a permanent part of the binocular microscope but should not be used without immersion oil. Please do not use this lens to view slides in these classes.



The aperture diaphragm is attached to the condenser lens and used to control resolving power, contrast and depth of focus.

Aperture diaphragm	Resolving power	Contrast	Depth of focus	Brightness
100 % open	High	Low	Shallow	Bright
0 % open	Low	High	Deep	Dark

At the beginning of each class, gently wipe the surface of each objective lens with lens tissue. Wipe clean each slide between examinations. Breathing on the slide may be necessary to clean it properly.

At the end of each practical session cover the microscope with the cover provided and ensure that no slide remains on the stage.

The instructions for this practical and links to view the slides will be given through a cloud-based learning platform called Lt, where you will be able to interact, analyse and take notes.

You will receive an email to join the ‘Lt platform’. All you need to do is to click on the link and generate a password. Then you will be directed to the Lt instance, you can log in and see the content of the practical.