Histology lab : 1

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General Histology Lab Guide

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Note :

امتحان الlab مو شرط يكونوا نفس صور الtissues الي معنا بالslides, عشان هيك مهم نعرف خصائص كل tissue بشكل عام عشان نميز الصور الخارجية.

Important Notes

1. This presentation contains images of the microscope slides studied during the histology lab session and images taken from other sources.

2. While studying the images in this presentation, keep the theory lectures by hand to compare the features of the tissues seen in the images with the features mentioned in the lectures.

3. This presentation depends heavily on colors.

Light Microscope

Parts and Functions

- أول لاب سهل، لا تضيعوا وقتكم عليه ٧

Tube:
Connects the eyepiece to the objective lenses.

Arm:
Used to carry the microscope.

Ocular Lens (Eyepiece):
The lens (or lenses) at the top of the microscope through which we look at the slide. They are usually 10X power. It may have a built-in pointer.

Ocular lens <eyepiece>

1

What part of the LM allows us to observe the specimen ?

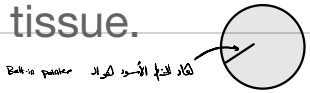
2

Magnification power : usually 10x

* might reach up to 15X

3

Might contain a built in pointer that is used to point on different parts of the tissue.



Tube

1

يربط بين نوعين العدسات

(ocular lens to objective lens)

2

Note : tube is NOT empty, contains mirrors and lenses to transfer the image between the two lenses (ocular & objective)

Arm

عشان نقدر نشيل (نحمل) الmicroscope ;)

Filter and Condenser

Light Source:

Either an electric light source or a mirror that reflects light from an external source (like sun light). The light from the source can be modified by ***filters*** and focused onto the specimen by a ***condenser***.

Light Switch

↳ Turns light on/off

Light intensity adjustment knob

Base:

The bottom of the microscope.

Supports the microscope.

Light source

Could be:
Built-in light
Electric light
External light source
(هاد النوع في الأنواع القديمة.)

On what part does the microscope rest on?

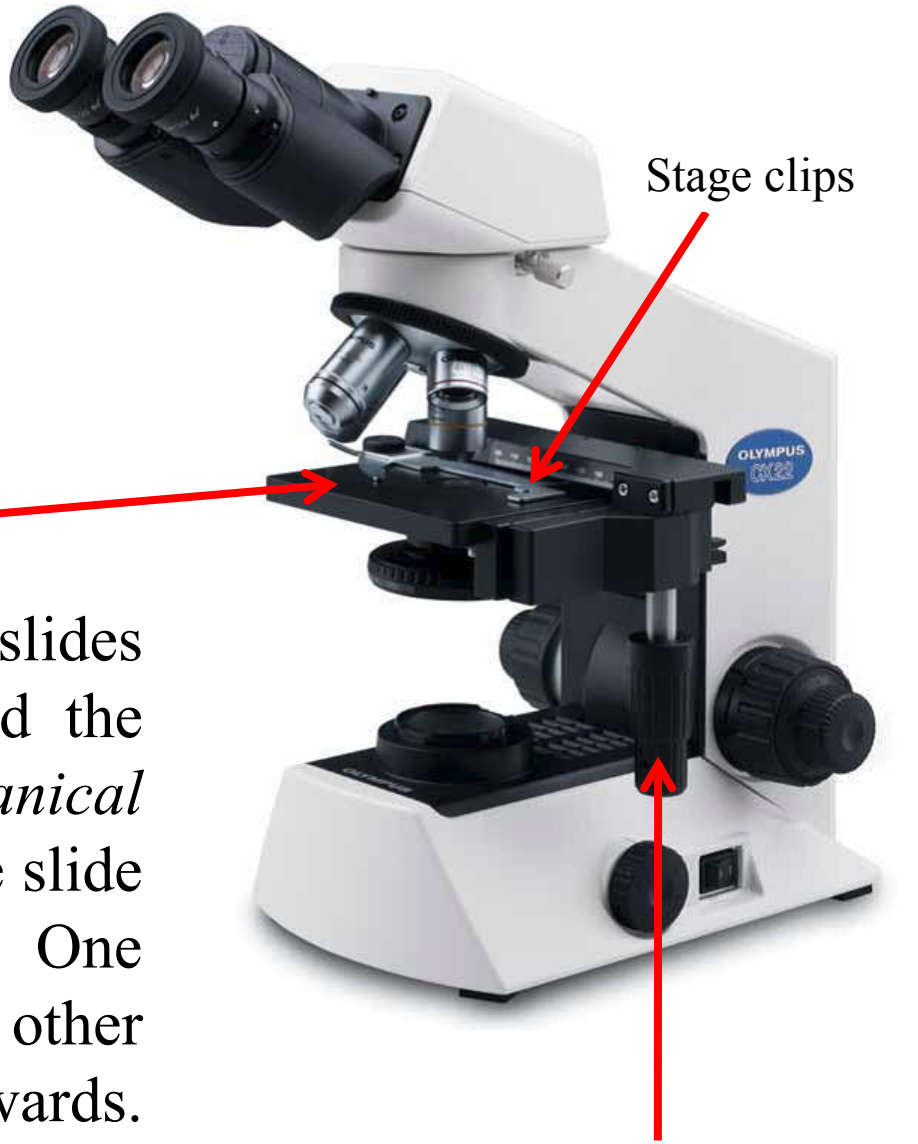
Base

Light switch

Turns light: on/off

Light intensity adjustment knob

By rotating the wheel, ⬆️ light or ⬇️



Stage:

The flat platform where the slides are placed. ***Stage clips*** hold the slide in place. With a *mechanical stage*, we are able to move the slide around by turning two knobs. One moves it left and right, the other moves it backwards and forwards. This is done to bring the part we want to examine into the path of light.

Filter & Contenser

نتحكم باي لون نبين من الضوء و شو الألوان الباقية الي نخفيها

Condenses light into the specimen.
(بتجمع الضو و بتركزه على العينة)

Stage

(2) We hold the specimen in place by the stage clips.

(1) Rectangular platform, we place the specimen slide above the stage.

(3) Movable stage in modern microscopes (called mechanical stage), we use 2 knobs: right& left / backward & forward
We use another knob called: **course adjustment knob & fine adjustment knob** to move stage up & down
old microscopes: stage is immovable

(4) Importance of mechanical stage: Focusing on specific parts of the tissue

Course Adjustment Knob:

Moves the stage up/down a great distance bringing the image into general focus.

Fine Adjustment Knob:

Moves the stage up/down a small distance bringing the image into fine focus.

Adjustment knobs

Course

general focus

Fine

Fine focus

Both :

Move the stage up & down to reach the maximally clear image of a tissue which is at focal point

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Revolving nosepiece

(1) What part of LM holds the objective lens?

(2) Can the revolving nosepiece be rotated?
Yes, results in change of magnification power

Objective lenses

(1) Convex lenses

(2) Main image magnifiers

(3) 3 to 5 lenses with different magnification powers

(4) Lenses differ in length and colors

كل وحدة عليها لون يميزها [حفظ]

4 < 10 < 20 < 40 < 100 x

الاقصر ← → الاطول

Revolving Nosepiece:

This is the part that holds the objective lenses and can be rotated to easily change power.

Objective Lenses:

They are the main image magnifiers. There are, usually, 3 - 5 objective lenses on a microscope. They almost always have 4X, 10X, 20X, 40X, and 100X powers. They differ in length and color code according to their power.

Total Magnification = Eyepiece power X Objective Lens power

ocular lens

Principle of bright-field light microscope

- Light, from the source, is focused on the specimen by the condenser.
- Light passing through the specimen is then collected by the objective lens to form a magnified image.
- The image is further magnified by the ocular lens.