



كلية المعارف الجامعة

**Al-Maarif
University College**



Medical Laboratory Techniques Department

Human Biology

First stage

Lab (1)



Assist. Lect: Hadeel Ahmed Kenoosh

Microscope Definition:

An optical instrument that uses a lens or a combination of lenses to produce magnified images of small objects, especially of objects too small to be seen by the unaided eye.

Types of microscopes:

1- **Light Microscope:** Magnification is obtained by a system of optical lenses using light waves.

Light microscopes can be grouped into two

(a) **Simple microscope:** It consists of only one bi-convex lens along with a stage to keep the specimen.

(b) **Compound microscope:** It employs two separate lens systems namely, (i) objective and (ii) ocular (eye piece).

2- **Electron Microscope:** A system of electromagnetic lenses and a short beam of electrons are used to obtain magnification. It is of two types: (I) Transmission electron microscope (TEM) (ii) Scanning electron microscope (SEM).

The following are the parts of microscope: -

- **Eyepiece or ocular lens:** Eyepiece is the lens, present at the top and is used to see the objects under study. Eyepiece lens contains a magnification of 10X or 15X.
- **Tube:** connects the eyepiece to the objective lenses.
- **Resolving nosepiece:** It is also known as the Turret. It allows the rotation of the lenses while viewing.

- **Objective lenses:** Generally, three or four objective lenses are found on a microscope, with ranges of 10X, 40X, 100X powers.
- **Diaphragm:** Diaphragm helps in controlling the amount of light that is passing through the opening of the stage.
- **Coarse adjustment knob:** Used for focus on scanning.
- **Fine adjustment knob:** Used for focus on oil.
- **Arm:** It supports the tube of the microscope and connects to the base of the microscope.
- **Stage:** The platform that is flat used for placing the slides under observation.
- **Stage clip:** Stage clips hold the slides in proper place.
- **Condenser:** The main function of condenser lens is focusing the light on the specimen under observation.

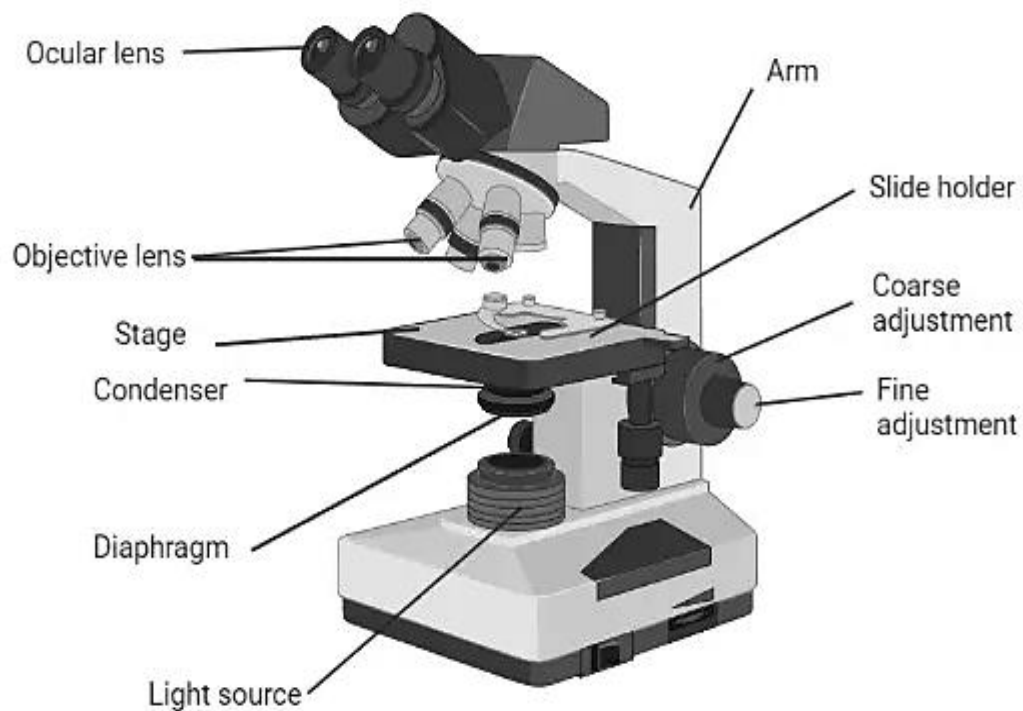


Fig: Parts of Compound microscope

Carrying microscope:

Always carry your microscope with two hands, one grasping the arm or back slot and the other supporting the base.

Cleaning microscope:

Lenses must be clean for resolution. Use only lens paper or gauze and cleaning solution. Never use your finger, handkerchief, paper towels or spit to clean the lenses. Do not remove any parts for cleaning; it only allows dust to enter the microscope.

Putting away:

Turn off light & center mechanical stage. Position the nosepiece so that the lowest scanning (4X) objective is in place. Remove the slide from the stage, put in proper place. Clean the stage and lenses with gauze and lens cleaner, wipe off any oil. Wrap the cord around the arm.

Set your goals high and do not stop till you get there.