



LABROTORY INSTRUMENTATION AND TECHNIQUES

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LECTURE TWO

LIGHT MICROSCOPE

A microscope is an optical instrument that uses a lens or a combination of lenses to produce highly magnified images of small specimens or objects when they are too small to be seen by the naked (unaided) eye.

A light source is used (either by mirrors or lamps) to make it easier to see the subject matter.

Parts of a Microscope:-

Eyepiece (Ocular): The eyepiece consists of a series of lenses mounted in a tube at the upper end of the microscope. Its basic function is to look at the focused, magnified image projected by the objective lens and magnify that image a second time before the eye looks at the image of the specimen.

The “x” refers to the amount of magnification (power) that this lens adds as a multiplier to the magnification

Head (Body)

The head is the upper part of the microscope that connects the eyepiece to the nosepiece or turret

Nosepiece (Turret or Revolving Nosepiece)

The nosepiece is a rotating turret located above the stage on compound microscopes that can hold multiple objective lenses of various magnifications.

Objective Lenses: The objectives are the lens system closest to the specimen. Most compound microscopes have three or four (occasionally five) objectives usually of 4x, 10x, 40x, and 100x (oil immersion) which revolve on a nosepiece (turret) to give different magnifying powers. Their basic function is to gather the light passing through the specimen and then to present the image up into the body of the microscope.

Stage

The platform beneath the objectives on which the slide or object to be observed is placed is called a stage. It has a smooth, flat surface . On most compound microscopes, the stage moves up and down

Condenser Lens (Sub-stage Condenser)

A glass lens or lens system located within or below the stage on compound microscopes. **Its basic function** is to gather the light coming in from the light source and to concentrate that light into a light cone onto the specimen.

Illumination Systems (Light Source)

Since specimens rarely generate their own light, illumination is necessary. Illumination is the application of light onto an object or specimen in a microscope. The illuminator is the source of light which illuminates the object or specimen to be observed.

Focus Systems

A focus control allows you to adjust the focus of the microscope. Every microscope includes a focusing control (knob) for **quick (coarse) focusing of the image**. **More expensive compound microscope models include a coarse (quick) and fine focusing control.**

