Tishk International University
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Microscope parts and their functions

Introduction to Human Biology LAB / 2nd Lab
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Light Compound Microscope

Introduction to the microscope

The compound light microscope is one of the most important tools in biology. It allows observation of microscopic structures such as cells, tissues, and microorganisms that cannot be seen with the naked eye. Proper handling and correct use of the microscope are essential to obtain clear images and to prevent damage to this sensitive instrument.

Types of Microscopes

- **Compound light microscope**: Uses multiple lenses and visible light; commonly used in biology labs.

- **Dissecting microscope:** Low magnification; provides a three-dimensional view of larger specimens.

Types of Microscopes

- **Phase-contrast microscope:** Enhances contrast in unstained, living cells.

- **Dark-field microscope:** Bright specimen on a dark background; useful for thin organisms.

Types of Microscopes

- **Fluorescence microscope:** Uses fluorescent dyes and UV light to detect specific structures.

- **Confocal microscope:** Uses laser light to produce detailed 3D images.

Types of Microscopes

- **Transmission electron microscope (TEM):** Shows internal cell structures at very high resolution.

- **Scanning electron microscope (SEM):** Shows detailed surface structures in 3D.

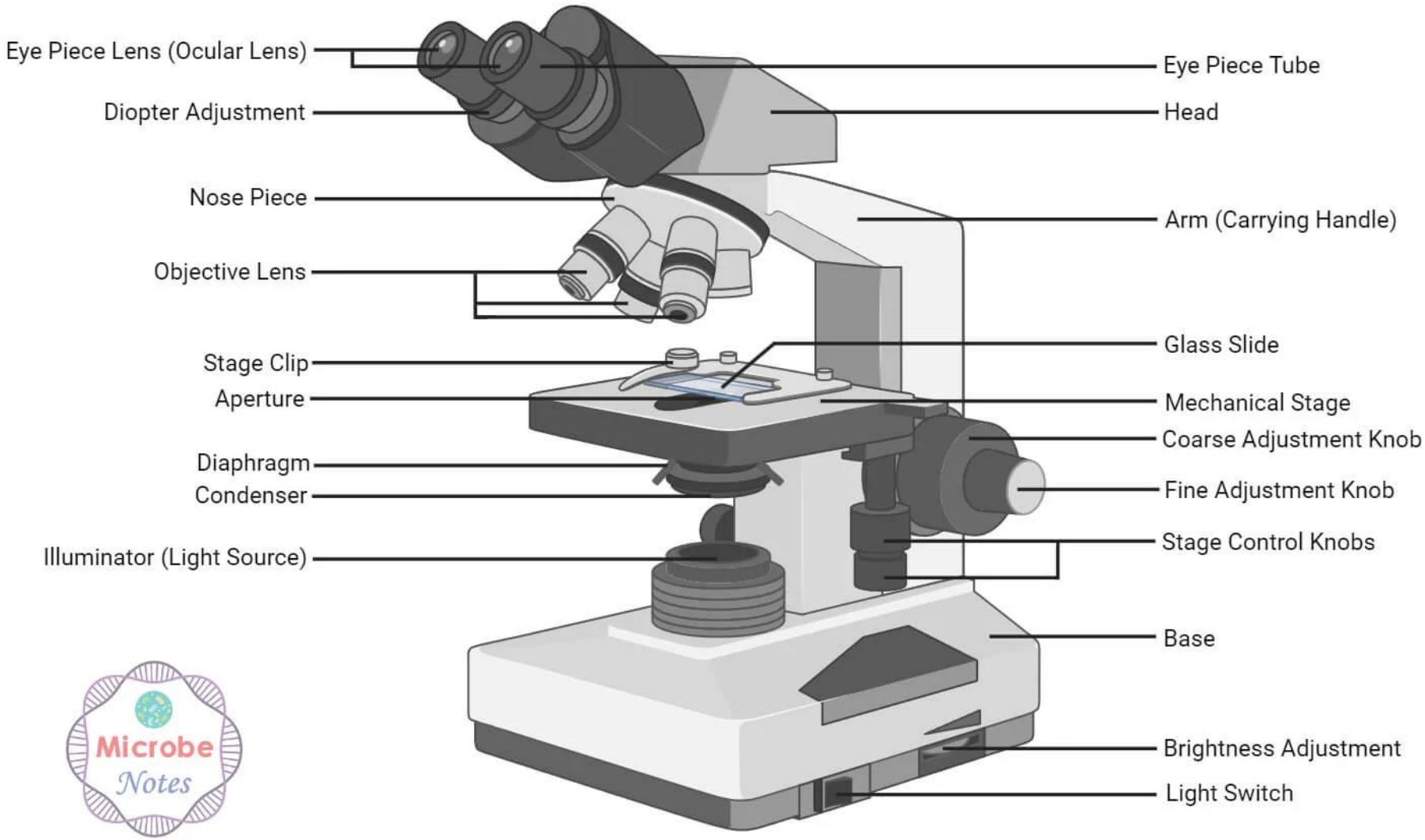
Parts of the Compound Light Microscope and Their Functions

- **The eyepiece (ocular lens):** is usually 10× and is used to view the specimen.
- **Objective lenses:** provide different levels of magnification, commonly 4×, 10×, 40×, and 100× oil immersion.
- **The revolving nosepiece:** holds the objective lenses and allows them to be rotated into position.
- **The stage:** is the flat platform where the slide is placed, and stage clips or a mechanical stage hold the slide securely

Parts of the Compound Light Microscope and Their Functions

- **Coarse adjustment knob:** moves the stage up and down to achieve rough focus and should only be used with low-power objectives.
- **Fine adjustment knob:** is used to sharpen the image, especially under high magnification.
- **Condenser:** focuses light onto the specimen
- **Iris diaphragm:** controls the amount of light passing through it.
- **Light source** or mirror provides illumination.
- **Arm:** supports the upper part of the microscope and is used for carrying, while the base supports the entire microscope and often contains the light source.

Microscope Parts Worksheet Answer Key



Microbe Notes

microbenotes.com

Rules for using a microscope

- Always carry with 2 hands
- Only use lens paper for cleaning
- Do not force knobs
- Always store covered
- Be careful of the cords

How to use a microscope

- Place the slide on the stage
- Use stage clips to secure the slide
- Adjust the nosepiece to the lowest setting
  - (Lowest = shortest objective)
- Look into the eyepiece
- Use the coarse focus knob to find the field