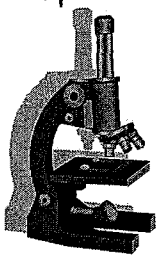
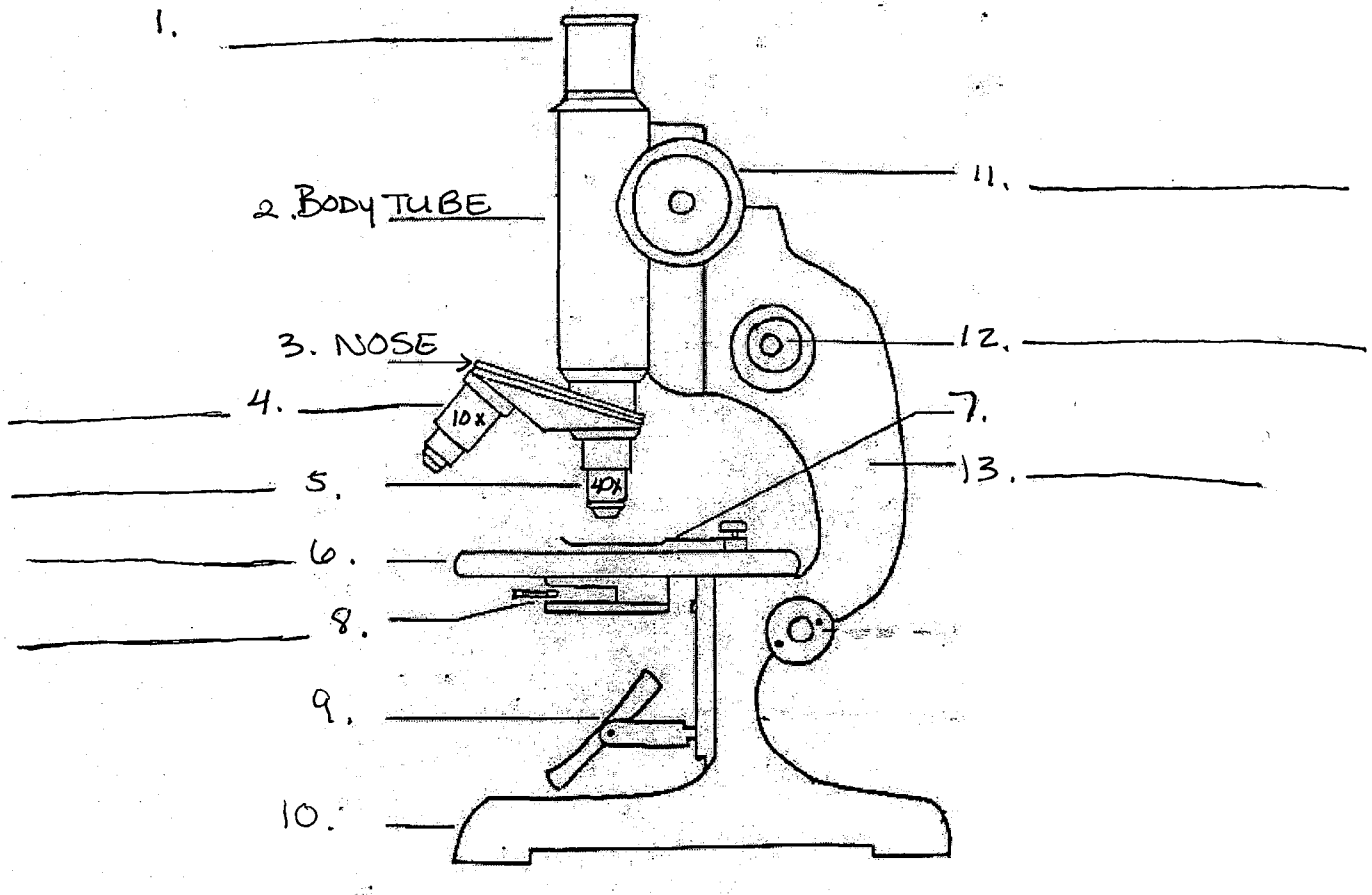
Discovering the Compound Light Microscope



The microscope was a crucial development in understanding the cause of disease and revealing previously invisible organisms. As you read in the timeline of the microscope, there were several advancements made over time to the original two-lens microscope developed by Janssen.

While there are several types of microscopes, the one we will be using is the compound light microscope as illustrated in the diagram below:



Parts of the compound light microscope and their functions: You will use the compound light microscope at your lab table and the descriptions provided to label the diagram above.

Eyepiece (Ocular lens): This is the part of the microscope that you look into in order to view the specimen. This is one of the lenses responsible for magnifying the specimen.

Objective lenses: These are responsible for further magnification of the object. There are typically two or three of these lenses: low, medium and high. For our purposes we will be using the medium and high power objectives during lab work.

- Total magnification: Since there are two sets of lenses (eyepiece and objective), the powers of each are multiplied to determine the total magnification under that power. The formula is:

  Total magnification = Eyepiece magnification x Objective magnification

  Example: If the eyepiece magnification is 10x and the low power objective is 15x, calculate the total magnification in the space provided below:

Body tube: The body tube is labeled in the diagram on the first page. What is the function of this structure?

_____

_____

Stage: Label the stage on the diagram and describe its function based on observing the microscope at your table.

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Stage Clips: Label the stage clips on the diagram and describe their function based on observing the microscope at your table.

Light source: Label the light source on the diagram and describe its function based on observing the microscope at your table.

Diaphragm: This structure regulates the amount of light that enters the lenses through the stage. Identify this structure on the diagram and on the microscope at your table.

Adjustment knobs: These knobs are for focusing the image.

Coarse adjustment: Used ONLY under LOW power to provide a rough focus.

- Plug the microscope in and turn it on
- Turn both sets of knobs (make sure that the low power objective is in place) to identify the coarse adjustment and label it on the diagram.

Fine adjustment: Used under high and low power for slight adjustments to the image. Turn the fine adjustment knob to observe its movement and label it on the diagram.

Base and arm: The base of the microscope enables it to lay flat on the lab surface and the arm is used for support and for transporting the microscope. Label these parts on the diagram.

When carrying the microscope, one hand goes on the base and the other goes on the arm

Appearance of objects under the microscope: Since the image is magnified by two lenses, one imposed on the other, the image appears upside down and backwards.

Use the cards at your table to demonstrate this and record what each object looks like before flipping it upside down and backwards and then after in the table below.

Object before	Object after

**In addition to appearing upside down and backwards, objects also appear to move in the opposite direction.

Example: Describe how you would move the letter "x" under a microscope to center it.