

The Microscope

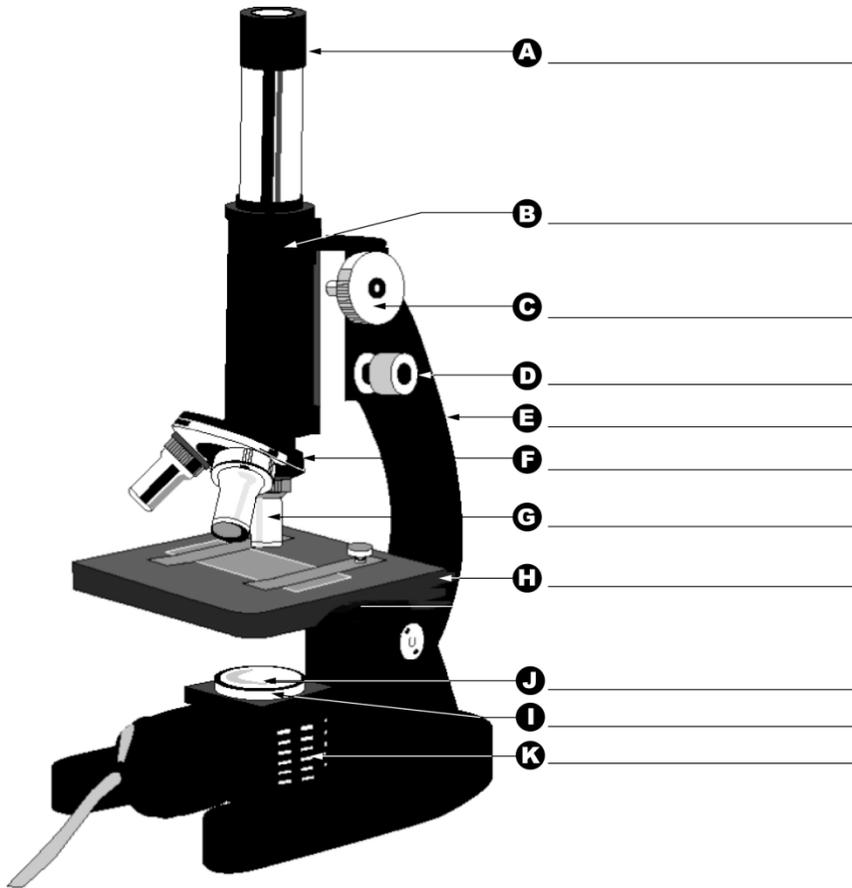
**History, Development, Care, Use, Parts, &
Function**



Why Do We Use a Microscope?

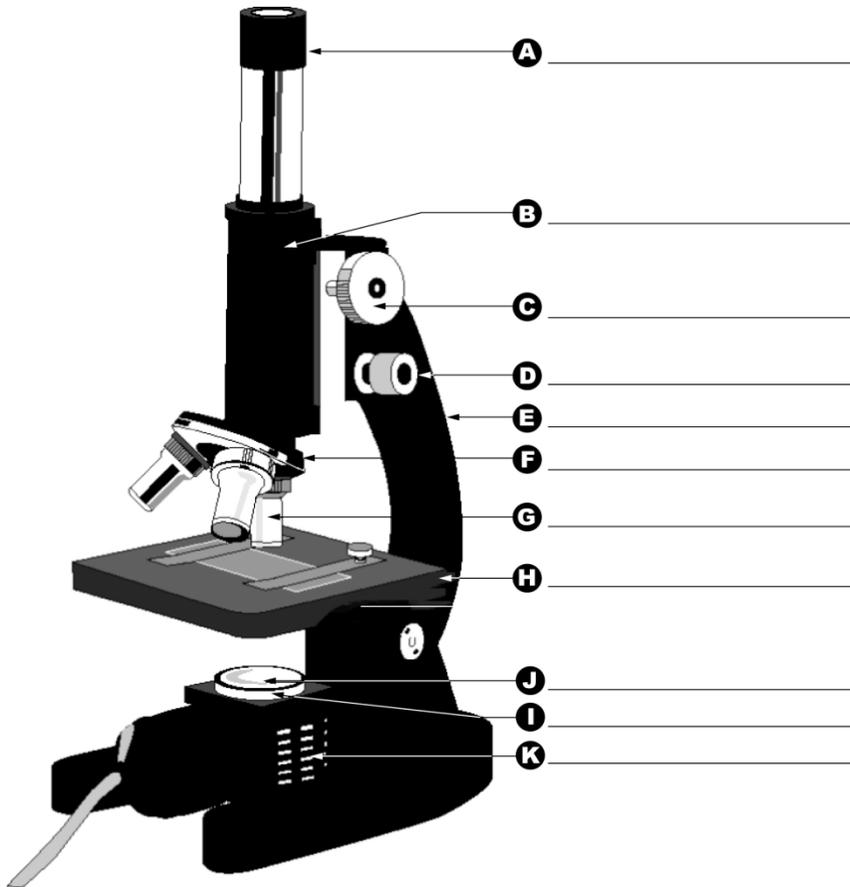
- The microscope is an instrument that magnifies extremely small objects so they can be seen easily.
- It produces an image much larger than the original object.
- Scientists use the term *specimen* for any object studied with a microscope.

Parts of the Microscope



- a) Eyepiece (ocular lens)
- b) Body Tube
- c) Coarse-adjustment Knob
- d) Fine-adjustment Knob
- e) Support Arm

Parts of the Microscope



f) Revolving
nosepiece

g) Objective Lenses

h) Stage

i) Condenser Lens

j) Diaphragm

k) Light Source

Parts of a Microscope

- a) Eyepiece (ocular lens) - lens which we look into; at top of the body tube; usually 10X
- b) Body tube - tube that contains the eyepiece and supports the nosepiece
- c) Coarse-adjustment Knob - large knob for focusing with the low power objective lens
- d) Fine-adjustment Knob - small knob for focusing with the medium and high power lenses
- e) Support Arm - supports the body tube and lenses; used to carry microscope

Parts of a Microscope

- f) Revolving Nosepiece - rotates to select an objective lens
- g) Objective Lenses - (L, M, H) low, medium and high power lenses (usually 4X, 10X, and 40X)
- h) Stage - supports the stage clips and slide
- i) Condenser Lens - focuses the light from the light source on to the specimen
- j) Diaphragm - regulates the amount of light illuminating the specimen
- k) Light source - provides light to illuminate the specimen; usually electrical

Magnification

- The magnification of an object is the number of times bigger it appears in the microscope compared to seeing it with the naked eye.
- An object magnified 10 times (X) will appear 10 times longer and wider in the microscope.

Magnification for a Compound Microscope

- For a compound light microscope, the TOTAL magnification is the product of the objective lens power and the ocular lens power.
- In a equation form :
 - TOTAL magnification = objective lens X ocular lens
- For example:
 - What is the total magnification of the specimen viewed if the objective lens power were 4X and the ocular lens power were 10X?
 - TOTAL magnification = $4 \times 10 = 40X$.

Magnification Exercises

Objective Lens Power	Ocular Lens Power	TOTAL Magnification (Objective X Ocular)
4	10	40
10	10	
40	10	
100	20	
25		200
	10	500



Care & Use of the Microscope

- ❑ Be very careful using the compound light microscope – it is very fragile and very expensive.
- ❑ **Carrying the Microscope:**
 - Carry the microscope with two hands – one hand on the support arm and the other under the base of the microscope.
- ❑ **Cleaning the Microscope:**
 - Use **ONLY** lens paper to clean the lenses of the microscope.