

Chapter 1
1.1

Observing Living Things
P. 11-21 BC Science 8

Vocabulary & Concepts

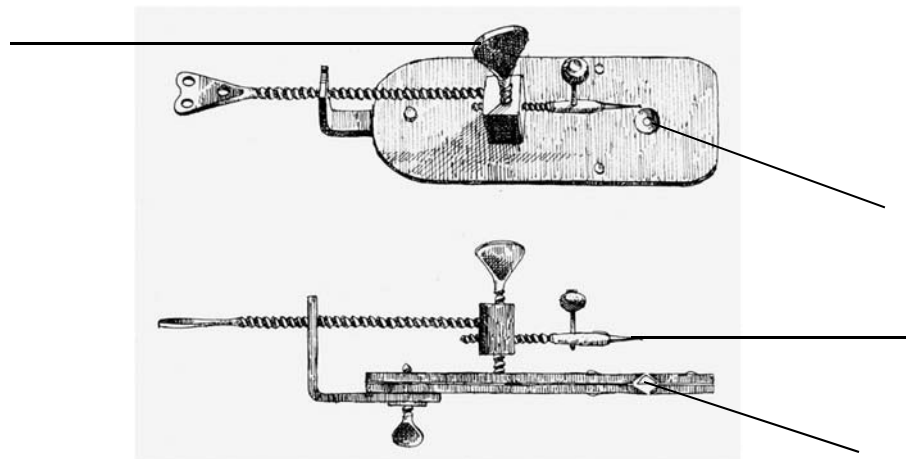
unicellular multicellular compound microscope magnification power
resolving power

Examining Very Small Living Things

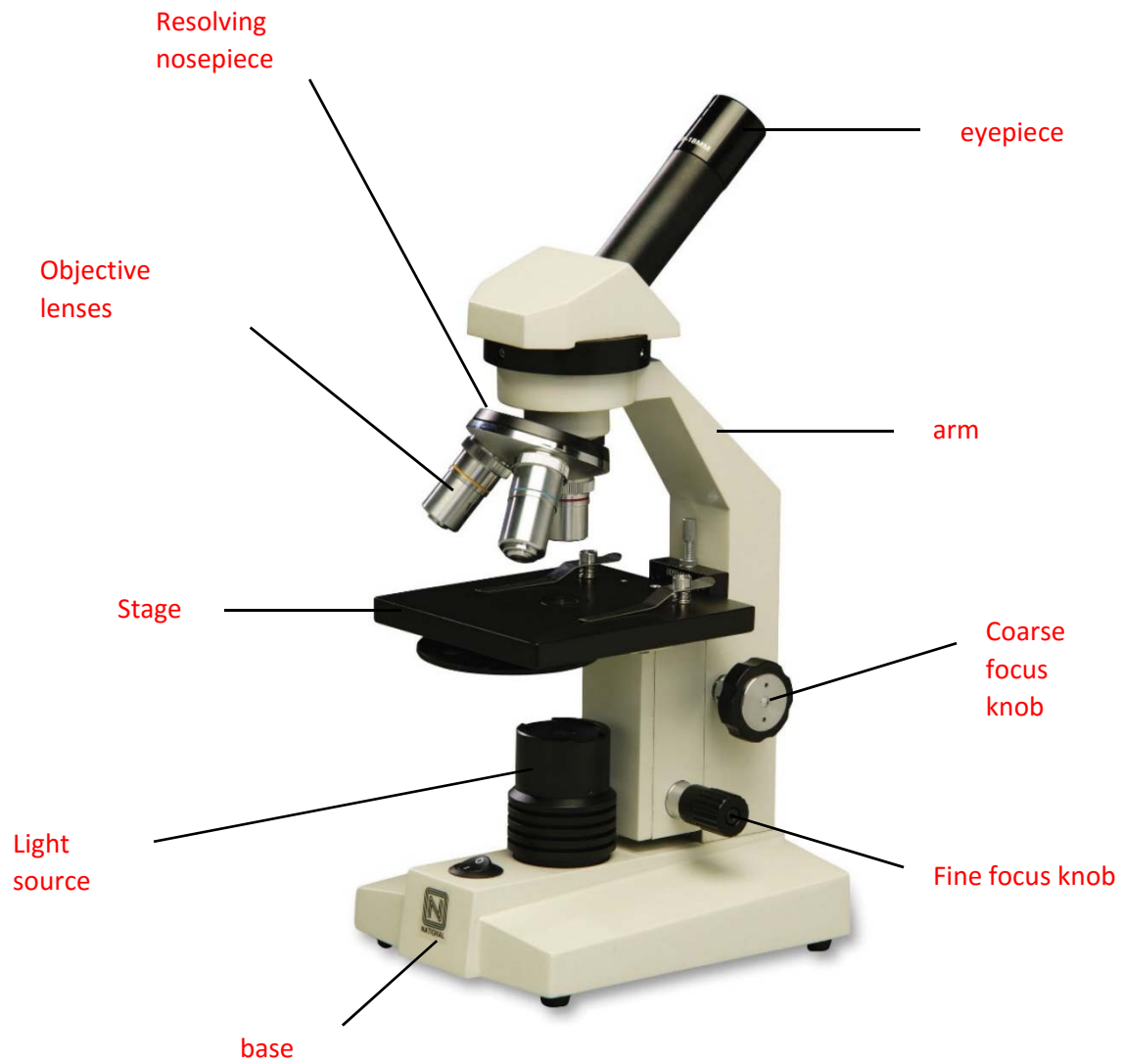
Brainstorm: Why are we interested in seeing very small things? What do we need to see very small things?

The microscope is used by scientists to observe small unicellular and multicellular things.

- There are many different types:
 - Magnifying glass
 - Compound light microscope
 - Transmission electron microscope (TEM)
 - Scanning electron microscope (SEM)
- Early microscopes were built in the late 1600s and early 1700s
- Anton van Leeuwenhoek was one of the first people to build a microscope
 - Could magnify up to 250X and used it to observe microscopic living things



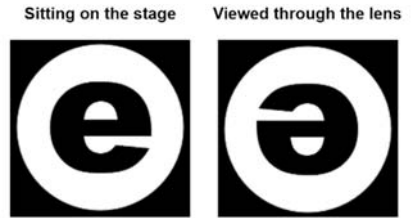
The Modern Compound Light Microscope



How the Compound Microscope Works

The compound light microscope has 3 sets of lenses that magnify an image. The image you observe is **magnified, inverted** and **reversed**

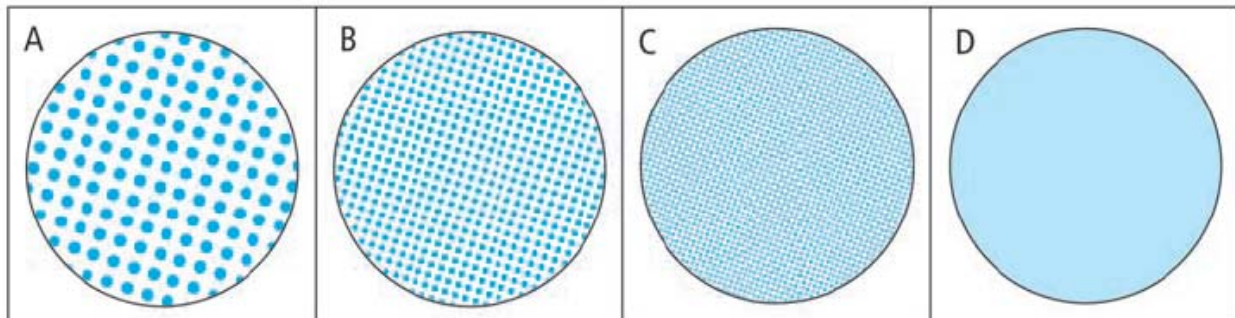
Each objective lens has a different **magnification power**: **the number of times larger an image appears under a particular lens**



Total magnification power = **low power objective lens x eyepiece lens**

Power	Objective Lens Magnification	Eyepiece Lens Magnification	Total Magnification Power
Low	4	10	40
Medium	10	10	100
High	40	10	400

Most people can see only dots separated by 0.1 mm or more in the diagram below. This means that most people can see the individual dots in diagrams A, B and C, but do not have the resolving power to see the dots in diagram D.



Resolving power: **the ability to distinguish between two dots or objects that are very close together**

- The microscope extends human vision by enabling us to view objects that are **smaller** and **closer** together.
- The compound light microscope has a resolving power of **0.2 microns (μm)** A micron or micrometre is **a millionth 10^{-6} of a metre**.