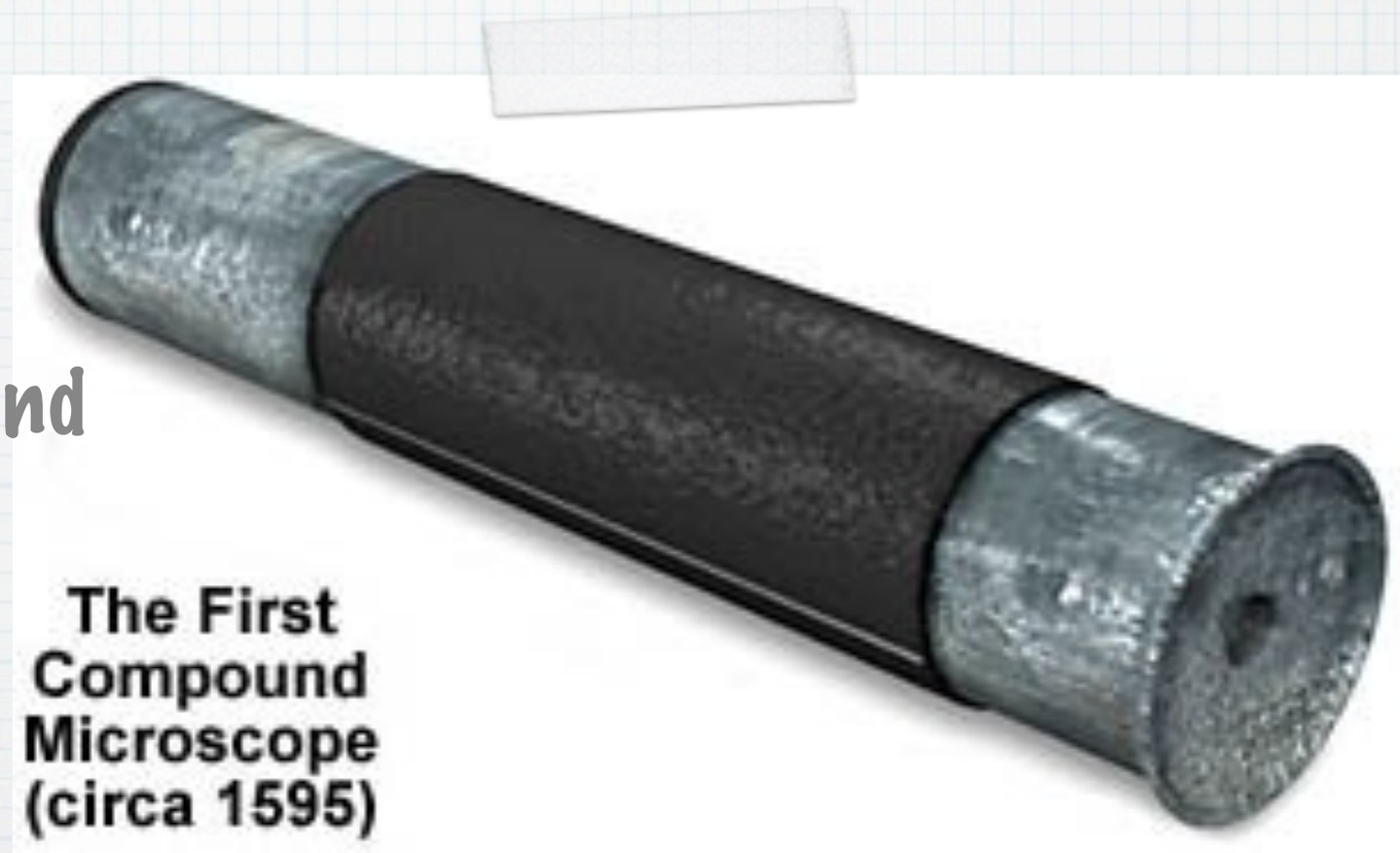
Microscopy

How We Investigate the Biological World

History of the Microscope

* 1590: First Compound Microscope



The First Compound Microscope (circa 1595)

Microscope Vocabulary

* Magnification: increase of an object's apparent size
* Resolution: power to show details clearly
* Both are needed to see a clear image

Types of Microscopes

* Compound Light Microscope
  * 1st type of microscope, most widely used
  * light passes through 2 lenses
  * Can magnify up to 2000x

Compound

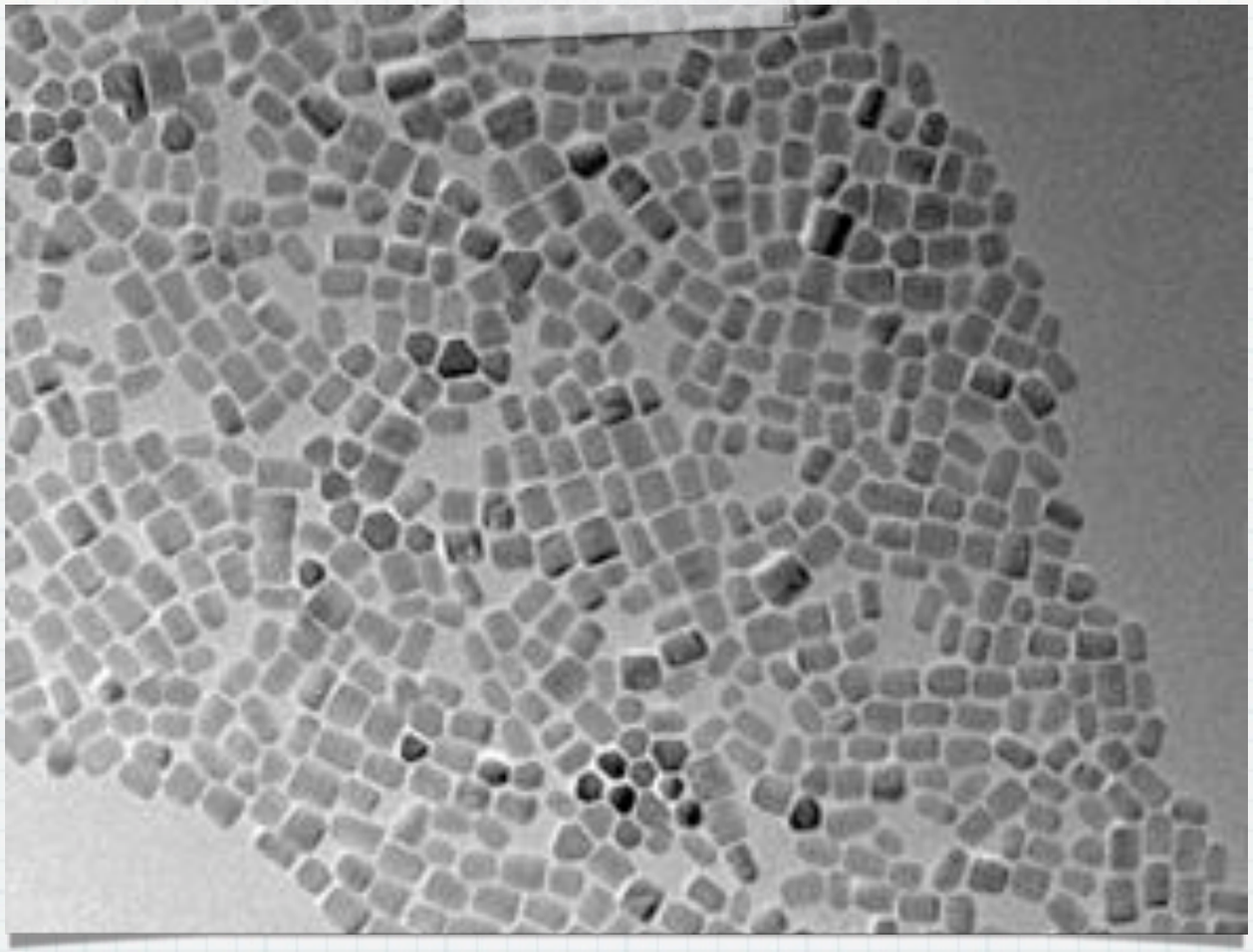
Types of Microscopes

* Electron Microscope
  * Used to observe VERY small objects: viruses, DNA, parts of cells
  * Uses beams of electrons rather than light
  * Much more powerful

Electron Image

Types of Microscopes

* Transmission Electron Microscope (TEM)
  * Can magnify up to 250,000x



TEM Image

Types of Microscopes

* Scanning Electron Microscope (SEM)
  * Can magnify up to 100,000x

Parts of a Microscope

* **Arm:** Used to support the microscope when carried
* **Coarse Adjustment Knob:** Moves the stage up and down for focusing
* **Fine Adjustment Knob:** Moves the stage slightly to sharpen the image
* **Diaphragm:** Regulates the amount of light on the specimen

Parts of a Microscope

* **Base:** Supports the microscope
* **Light Source:** Projects light upwards through the diaphragm, the specimen, and the lenses
* **Stage:** Supports the slide being viewed
* **Stage Clips:** Hold the slide in place

Parts of a Microscope

* Objective Lens: Magnification ranges from 10 x to 40 x
* Nosepiece: Holds the high and low power objective lenses; can be rotated to change magnification
* Eyepiece: Contains ocular lens

Ocular Lens (Eyepiece)

Body Tube

Revolving Nosepiece

Arm

Objectives

Stage

Stage Clips

Course Adjustment Knob

Diaphragm

Fine Adjustment Knob

Light Source

Base