

Microscope

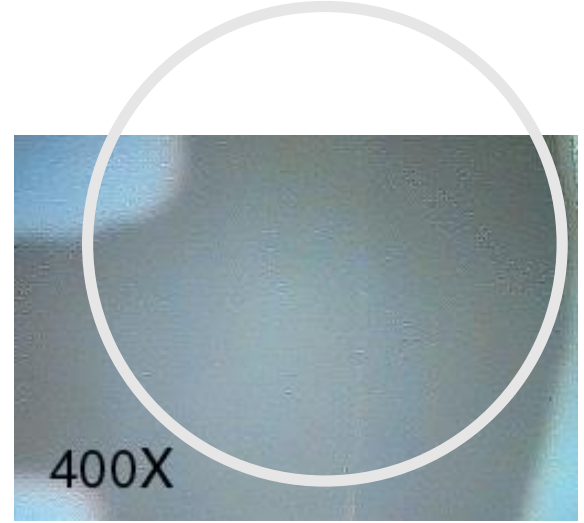
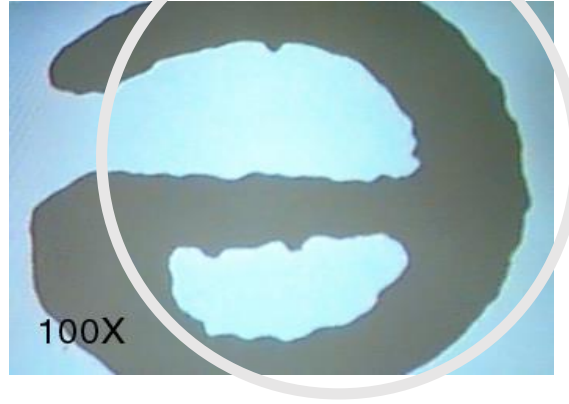
What is the Microscope?

Microscopes are devices with magnifying lenses used to see details, and enlarged images of small objects.

Two main function

1. Magnification: it is enlarging an image. As magnification increases, we are zooming in on the specimen
2. Resolution: it is the amount of fine detail that can be seen.

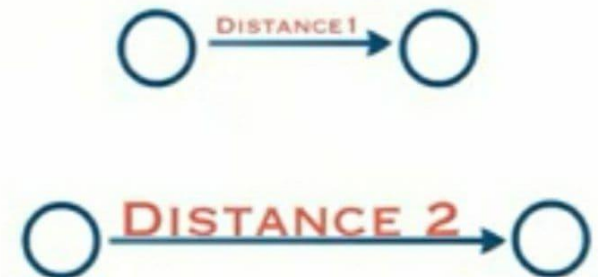
Magnification



Resolution

It's the ability to see details, that mean ability to determine 2 points as being separate.

- As we increase magnification, we increase resolution

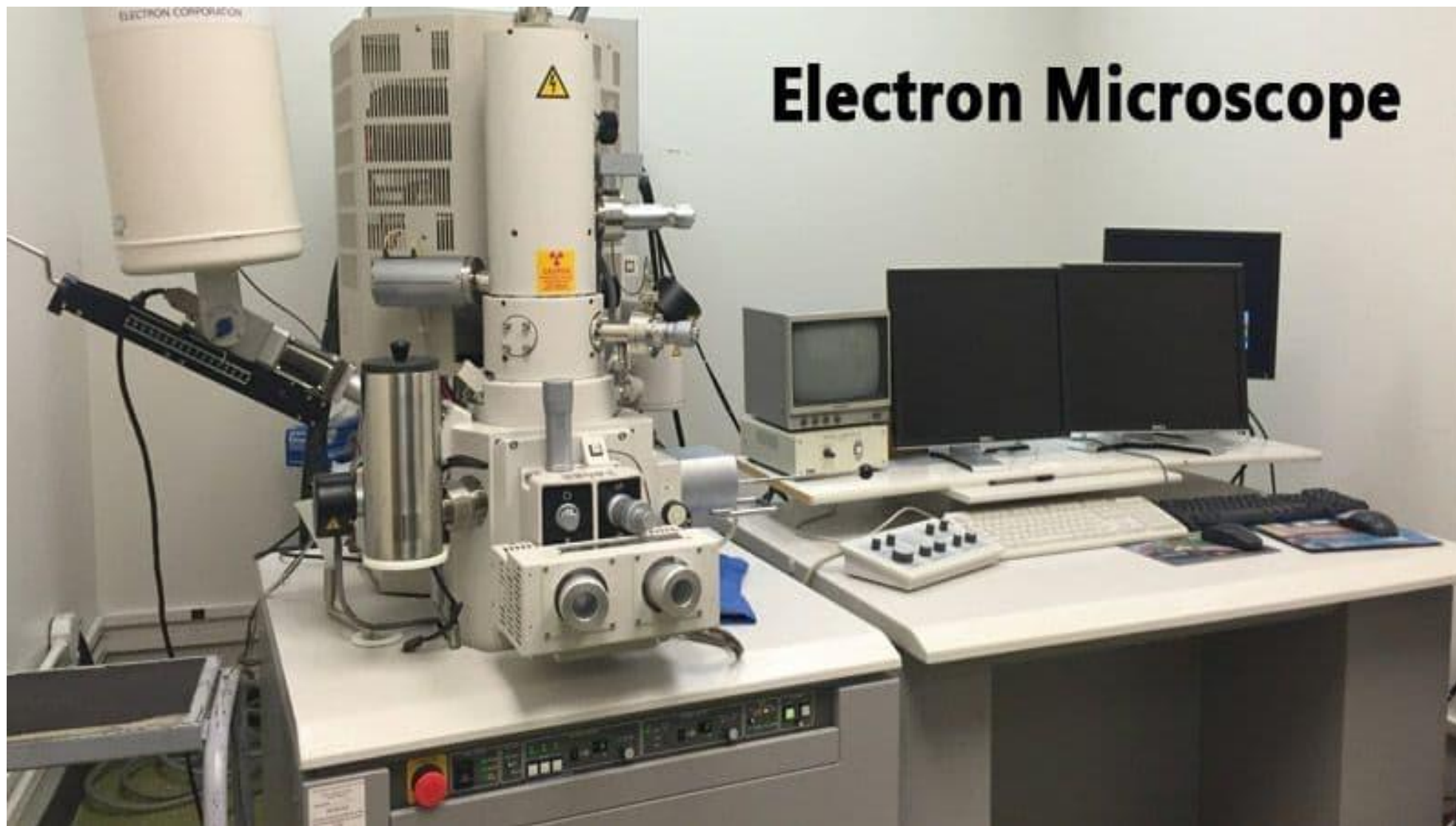


Types of Microscopes

- Light Microscopes
- Electron Microscopes
- Dissecting Microscopes

Electron Microscopes

- Most modern microscopes
- Extremely high magnifications are possible up to 1,000,000x
- Used to see extremely small details within a cell, can't see a complete cell

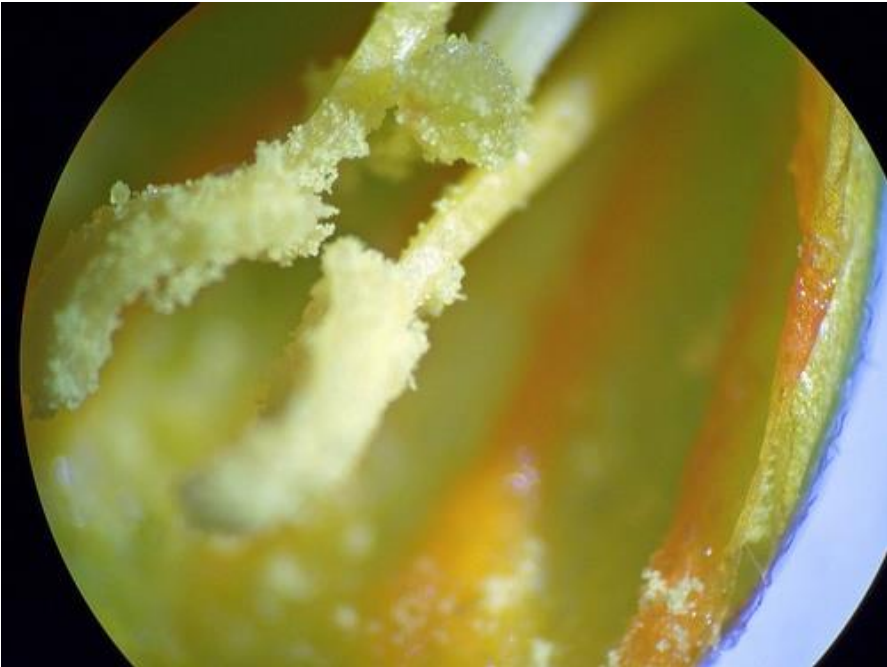


Electron Microscope

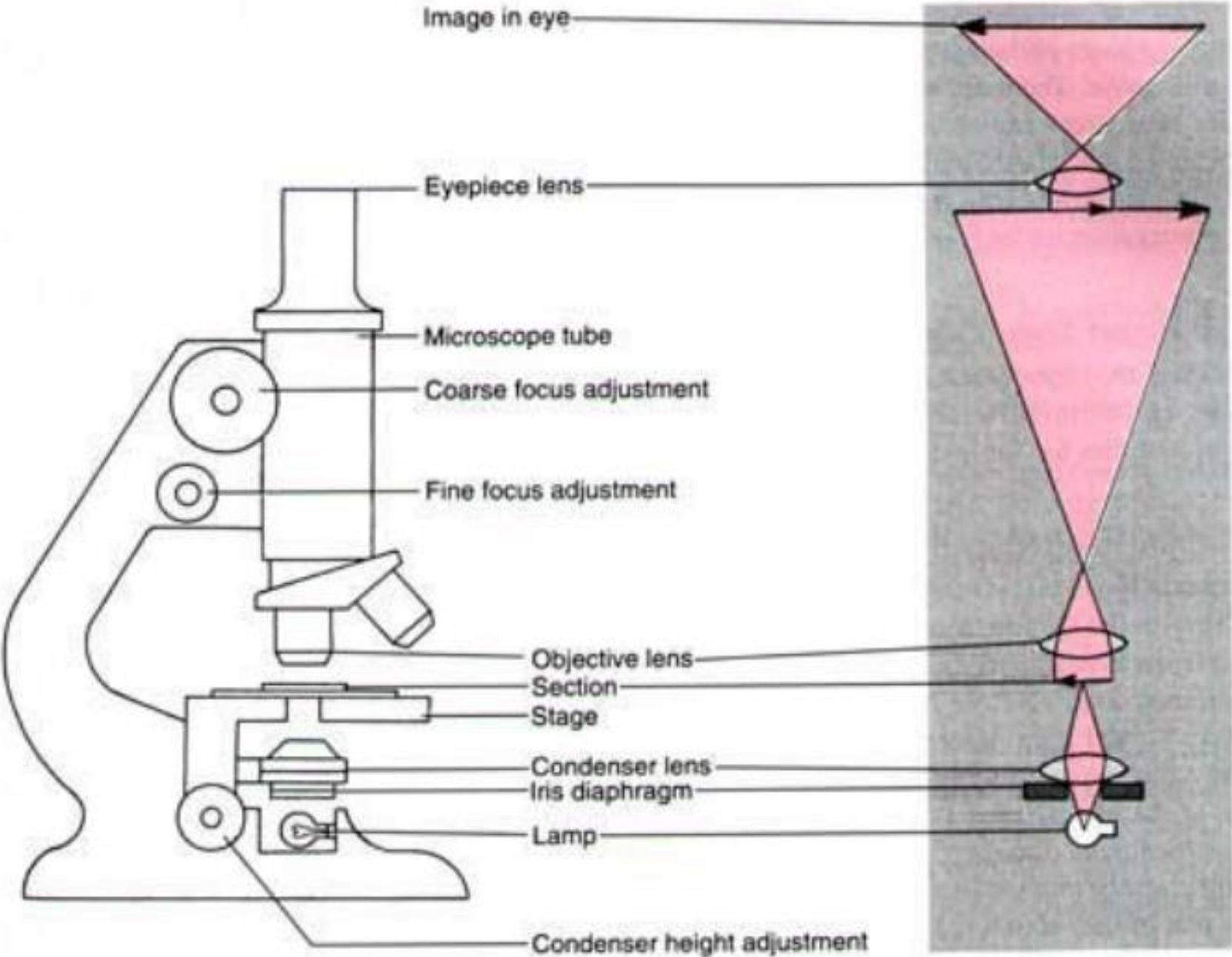
Dissecting Microscope

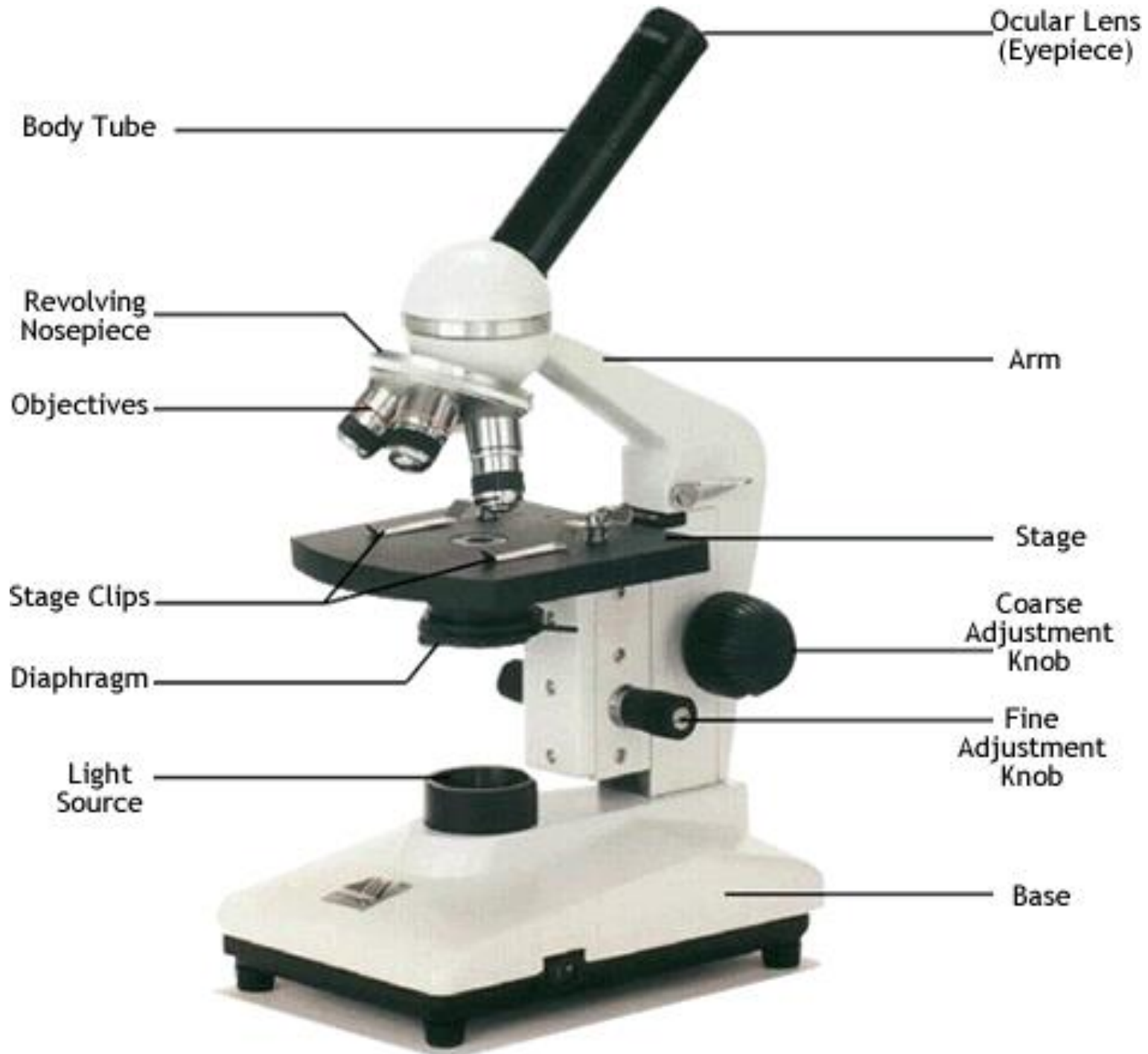
- A simple, binocular, light microscope
- Good for seeing 3 dimensional features
- Used during dissections and to see fairly large, opaque (non-transparent) objects

Dissecting Microscope



The parts of light microscope





- Eyepiece
 - Also known as the ocular
 - Contains the first lens you look through - usually a magnification of 10x
 - Located on the top of the body tube



- Body tube



- Nosepiece
 - Holds the objective lenses
 - Rotates to enable magnification
 - Located at the bottom of the body tube



- Objective lenses
 - Low power (short)
 - High power (long)
- Used in combination with the eyepiece to provide a range of magnification
- Magnification ranges from 40x to 400x
- Located on the nosepiece at the bottom of the body tube



Supports the upper parts of the microscope

Used to carry the microscope

When carrying a microscope, always have one hand on the arm and one hand on the base. Use two hands!!



• Arm

- Stage
 - Supports the slide
 - The slide contains the specimen or object that you are viewing with the microscope.



- Stage clips
 - Helps to hold the slide in place
 - Usually one on each side of the hole (stage opening) = 2 stage clips
 - The stage opening allows light to pass from the light source to the lenses.



- Coarse adjustment knob
 - Raises and lowers the stage or objective lenses
 - Used only when focusing the low power (4x) objective lens
 - fine adjustment knobs
 - Raises and lowers the stage or objective lenses a small distance for exact focusing
 - Used when focusing the medium power (10x) and high power (40x) objective lenses



- Light source
 - Provides light necessary for viewing the specimen
 - Usually either a mirror or illuminator
 - Sends light through the stage opening to the diaphragm



- Base
- Supports the whole microscope
- Used to carry the microscope
- When carrying a microscope, always have one hand on the arm and one hand on the base. Use two hands!!



How to use a microscope

- Place the slide on the stage
- Use stage clips to secure slide
- Adjust nosepiece to lowest setting
- (Lowest = shortest objective)
- Look into eyepiece
- Use coarse focus knob and fine one as needed

Which microscope produced these images?

Picture A



Picture B



Picture C

