

Microscope

History of microscope

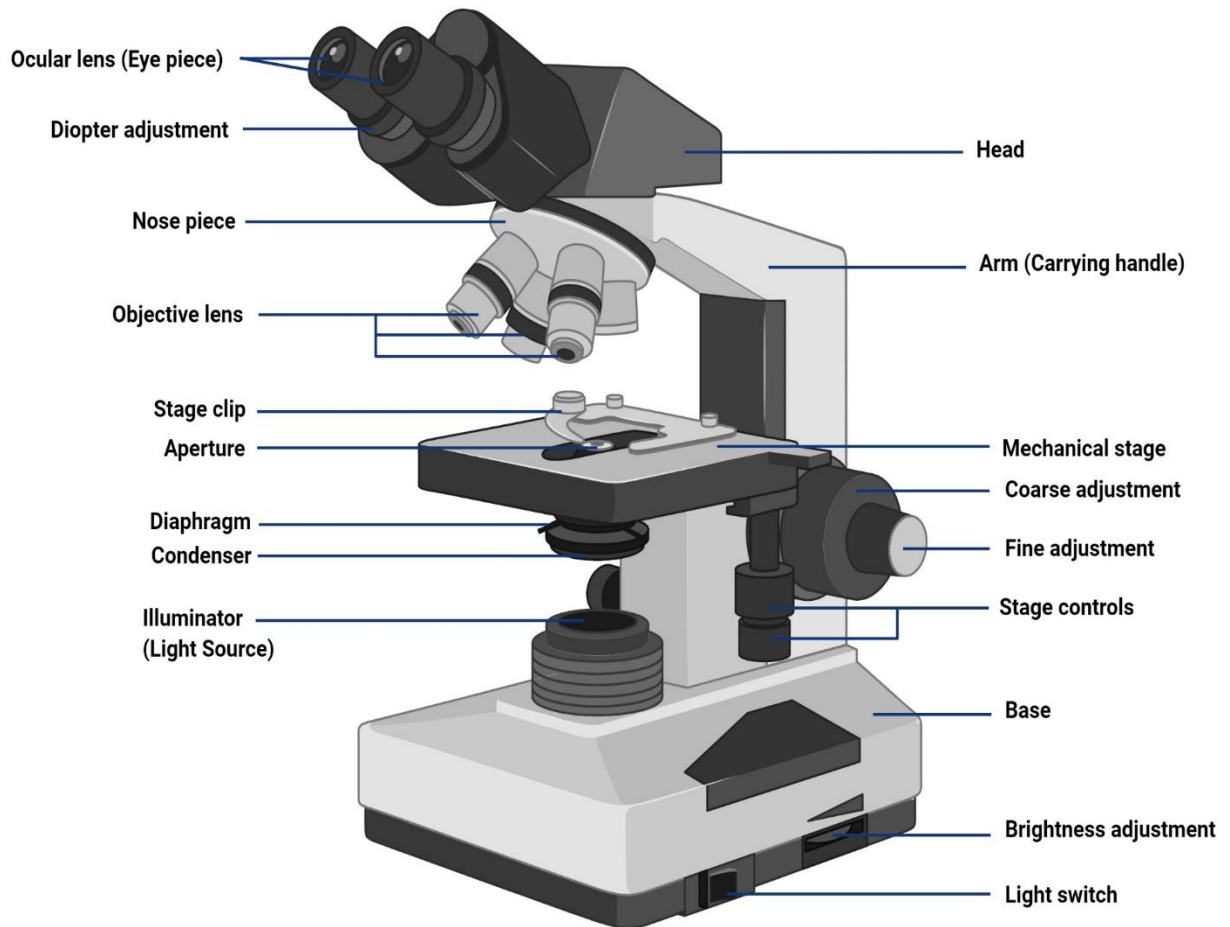
- There is no one person who invented the microscope as several different inventors experimented with theories and ideas and developed different parts of the concept as they evolved to what is. About 1590 two Dutch spectacle makers, Zaccharias Janssen and his son Hans, experimented with a crude concept of a microscope that enlarged objects 10x to 30x or so. In 1609,
- Galileo (an Italian) improved on the principle of lenses and added a focusing device to improve somewhat upon what the Janssen's had done. These rudimentary instruments didn't change much until the early 1670s.
- A Dutchman, Anton van Leeuwenhoek, is considered the father of microscopes because of the advances he made in microscope design and use. He worked as an apprentice in a dry goods store where magnifying lenses were used to count the threads in cloth. Anton was inspired by these glasses and he taught himself new methods for grinding and polishing small lenses which magnified up to 270x. This led to the first practical microscopes. In 1674, Anton was the first to see and describe bacteria, yeast, plants, and life in a drop of water

Types of Microscopes

1. light (bright field) microscopes
 - a. Compound Microscope
 - b. Stereo Microscope
2. Phase Contrast
3. Polarizing
4. Fluorescence
5. Metallurgical
6. Electron Beam
7. Digital
8. Handheld Digital Microscopes.....etc.

The uses of microscope

- Magnifies Objects (Makes Objects Look Bigger)
- Help Scientists Study Objects & Living Things Too Small To See With The Naked Eye



Parts of a Microscope

1. ocular (lens) eyepiece
the lens of the microscope that you look through
2. Head
the part that holds the eyepiece and the objective lenses

3. Nosepiece

the part at the bottom of the head that holds the objective lenses and allows them to be turned

4. Arm

the part of the microscope that supports the stage, as well as the head which contains the eyepieces

5. course adjustment

the large knob on the microscope that you turn to bring the object into focus

6. fine adjustment

small knob of the microscope that is used for focusing finer details of specimen being viewed

7. Objective Lenses

The objective lenses are the most important components of microscopes, their basic function is to gather the light passing through the specimen and then to project the image up into the head of the microscope. Then, the eyepiece lens system further magnifies the image for your eye to see.

- a. Low power (scanner) objective lens
- b. high power objective lens
- c. middle power objective lens
- d. oil immersion objective lens (high magnification, oil prevent refraction of light outwards and allows it to pass straight into objective)

8. Stage

the flat part below the objectives lens where the slide is placed

9. Clip

the part that holds the slide in place so it doesn't move

10. Diaphragm

the part that controls the amount of light entering the field of view

11. Light source

the lamp under the stage that sends light through the object being viewed

12. Stage control

move the stage left and right or forward and backward

13. Base

the bottom part that supports the rest of the microscope

14. Condenser Lens (Sub-stage Condenser)

A glass lens or lens system located within or below the stage on compound microscopes. Its basic function is to gather the light coming in from the light source and to concentrate that light into a light cone onto the specimen.

15. Brightness adjustment

16. Light switch

How to use microscope

1. Turn on the microscope and then rotate the nosepiece to click the red-banded objective into place
2. Place a slide on the stage and secure it using the stage clips. Use the coarse adjustment knob (large knob) to get the image into view and then use the fine adjustment knob (small knob) to make it clearer.
3. Once you have the image in view, rotate the nosepiece to view it under different powers
4. When you are done, turn off the microscope and put up the slides you used.