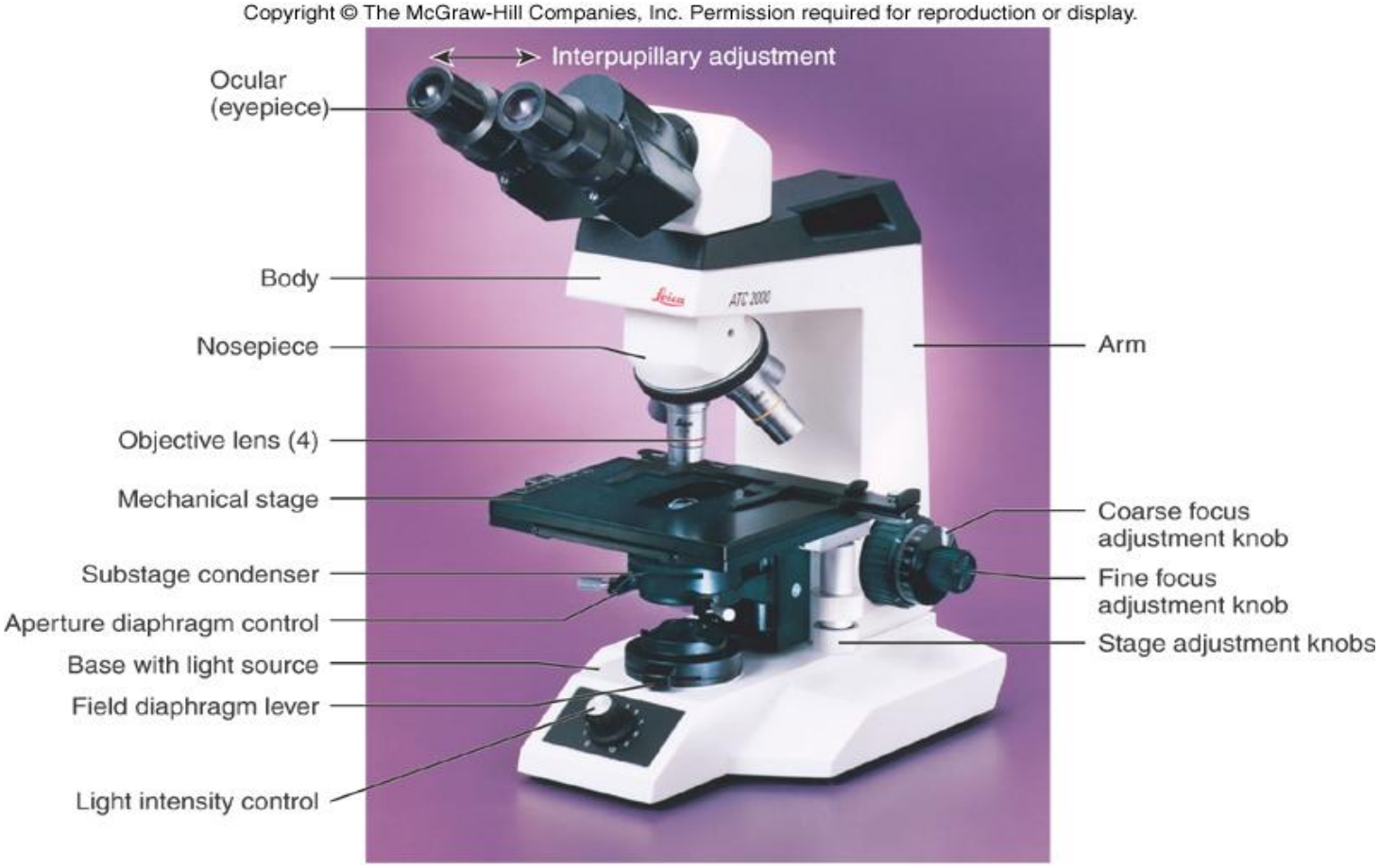
# Microbiology Lab

## Optical Microscope

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.




© Leica Microsystems Inc

## Use of microscope

The optical (light) microscope is a very useful but delicate intrument used in many laboratories including the microbiology laboratory.

It allows us to look at very small objects, otherwise invisible to the naked eye. It does so by magnifying (multiplying) the size of the object several folds and directing it to our eye. Two sets of lenses make this possible.

The first set, named the objective, is closest to the object and the other, the eye piece, is closest to the eye.

The objective magnifies the the object by a factor X and then the eyepiece magnifies it further by a factor Y. Therefore the total magnification as seen by the eye is X times Y.

The object, mounted on a microscope slide, is placed on the stage and a light is focused through it. The objective is aligned along a straight line with the light source and the object. Looking through the eye piece, the object should be visible to the eye. The object can be brought into focus by adjusting the focus adjustment knobs. The coarse knob should be the first to be adjusted till the object is in view and the fine adjusted to bring the object into sharp focus. It is important that the coarse adjustment knob is not moved after the initial adjustment. It is possible to break the slide or damage the objective lens with the coarse adjustment.

**Oil immersion:** The oil immersion lens on the nosepiece is used for this purpose. The oil used by this method allows for minimal dispersion of light coming from the object, thus increasing the contrast of vision.

A drop ob mineral oil is placed on the slide over the object. The oil lens is brought into focus. The coarse adjustment is used to make the lens touch the oil. A flash of light will be seen due to refraction when the lens touches the oil. Then the fine adjustment is made to bring the object into focus. The lens need to to wiped clean with a lens paper after use.

The usual care need to be taken when using the microscope and storing it away.