



Al-Mustaqbal University
College of Sciences
Intelligent Medical Systems Department



جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

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LECTURE: (3)

Subject: Bioligy

Level: First

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Microscope

Microscope : is the means by which to enlarge the small things that cannot be seen with the naked eye.

Types of microscopes

- 1- microscope light Compound
 - 2- phase contrast microscope
 - 3- Dark field microscope
 - 4- Fluorescence microscope
 - 5- Dissecting microscope
 - 6- Ultraviolet microscope
 - 7- Polarization microscope
 - 8- Electron microscope
- a) Transmission electron microscope (TEM)
- b) Scanning electron microscope (SEM)

The Optical (light) Microscope

Microscope Light

Parts & Function

1-Eypiece (Ocular lenses): It one or two lenses use to look through the microscope and it has 5 or 20 times of the magnification but X10 it generally used.

2-Optical tube: It connect the eye piece with objective lenses standard length 16cm.

3- Revolving Nose piece : It hold four objectives lenses .It can be rotation left and right to change magnification power.

Objectives lenses: It four lenses on the Revolving Nosepiece.it has differs with length and magnification power. Then the shorter one it the lower mag.

4- a-Low power(L.P) :It magnify about 4 times(X4)

b-Low power (L.P) :It magnify about 10 time(X10)

c-High power objective (H.P):It magnify about 40 times (X40)

d-Oil immersion objective: It magnify about 100 time(X100)and use specialoil on the slide.

5- specimen Stage :It hold the specimen

6- Clips: it used for slide fixing on the stage

7- Condencer: It located under the stage and can moved it up and down to adjust the light band on the object(sample).

8- Iris Diaphragm : It used for regulation the illumination of the object(sample) to examined.

9- Illumination: (Tungsten-halogen light bulb) for all microscope types except (u.v or carbon) for Fluorescent microscope.

10- Coarse adjustment knob: Used for stage movement up and down to adjust the distance between objectives lenses and the slide.

11- Fine adjustment knob: Used for clarity of the vision .

12- Arm: Used for microscope hold

13- Foot Base: Used for standing and supporting of the microscope.

Microscope Care

1. Always carry with two hands one holding the arm and the other hold the base of instrument.

2. Only use lenses paper for cleaning.

3. Do not force the knobs and Focus smoothly; don't try to speed through the focusing process or force anything.

4. Always make sure the stage and lenses are clean before putting away the microscope.
5. Always store covered.
6. Turn the instrument off when it is not in use.



Lab tools

- 1. loop:** used for transfer of bacterial cells from medium to another as colony or as drop (0.01 ml), sterilized by the flame of burner before and after using.
- 2. Pipette :** used for transferred cultured and uncultured broth from tube or flask to other. Sterilized in autoclave.
- 3. Spreader :** used for spreading the bacterial cells on the surface of medium in Petri plate. before using put in alcohol then sterilized by flame of burner (before using).
- 4. Swab:** used for swabbing the bacterial cells on the surface of solid medium in Petri plate, must be put in test tube and sterilized by autoclave (with test tube).
- 5. Needle:** used for transfer bacterial cells to a solid medium or semisolid medium by stabbing. Sterilized (before and after using) by the flame of burner.
- 6. Slide and Cover slides:** used for the examination.
- 7. Test tube:** used to put the broth, or semisolid medium for stabbing, or put as slant for bacteria culturing. sterilized by autoclave .
- 8. Petri dish (Petri plate) :** used for put the solid medium in it. Glass Petri – plate used for many time & sterilized by oven or by autoclave, sterilized plastic plates used for one time.
- 9. Flask:** used for put cultured or uncultured broth in it. Sterilized after plugs with cotton by autoclave.
- 10. Beaker and Cylinder:** used for graduate the volume of liquid. Sterilized by oven..
- 11. Burner:** may be gaseous or alcoholic, used for sterilize the loop, needle and other metal tools by the flame (dry heat sterilization).