A second

Al-Mustagbal University

College of Sciences Intelligent Medical Systems Department



LECTURE: (3)

Subject: **Bioligy** Level: First

Lecturer: MSc. Sura Mohammed

Al-Mustaqbal University



College of Sciences Artificial Intelligence Department

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 Compound2phase 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.

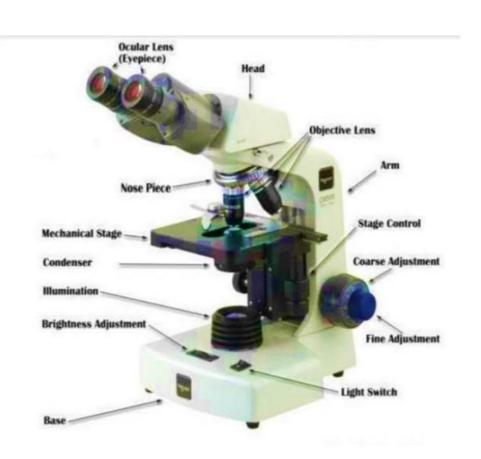
Objectives lenses: It four lenses on the Revolving Nosepiece.it has differs with length and magnification power. Then the shorter one it the lower mag.

- 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 baseof 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).