



جامعة الانبار  
كلية العلوم  
قسم التقنيات الاحيائية



المادة : علم الحيوان  
المادة باللغة الإنكليزية : Zoology

أستاذ المادة : م.م. زهراء ياسين محمد

المحاضرة الثالثة

Types of Microscope

## Types of Microscopes

### 1- Dark Field Microscope

This type of microscope works best with specimens that have natural color pigments. The background is dark, and the sample reflects the light of the beams only. This results in a light colored specimen against a dark background, perfect for viewing clear or translucent details.



### 2- Fluorescence Microscope

The fluorescence microscope is based on the phenomenon that certain material emits energy detectable as visible light when brighten with the light of a specific wavelength. The sample can either be fluorescing in its natural form like chlorophyll and some minerals, or treated with fluorescing chemicals.



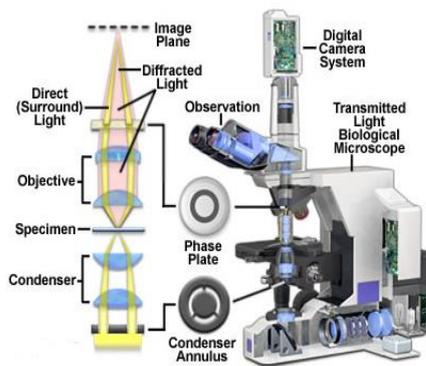
### 3- Stereo (Dissection) Microscope

This microscope provides a three-dimensional (3D) view of the specimen. It does this with separate objective lenses and eyepieces for each eye. They have lower magnification when compared to compound microscopes, but they also have a longer working distance. It is used to examine some small parts of plants, animals and insects.



#### 4- Phase contrast Microscope

This microscope is a contrast-enhancing optical technique that can be used to produce high-contrast images of transparent specimens, such as living cells (usually in culture), microorganisms and thin tissue slices.



#### 5- Electron Microscopes

Electron microscopy (EM) is a technique for obtaining high resolution images of biological and non-biological specimens. It is used in biomedical research to investigate the detailed structure of tissues, cells, organelles and macromolecular complexes. The high resolution of EM images results from the use of electrons



#### There are two main types of electron microscopes:

- A- The transmission electron microscope (TEM) is used to view thin specimens (tissue sections, molecules, etc.) through which electrons can pass through the sample and generating an image.
- B- Scanning electron microscope (SEM), in this type, a beam of electrons scans the surface of a sample. The electrons interact with the material in a way that causes the emission of secondary electrons. These secondary electrons are captured by a detector, which forms an image of the surface of the sample.