Ashur university collage

Dept. of Biology

First-year

lab 3 and 4

Zoology

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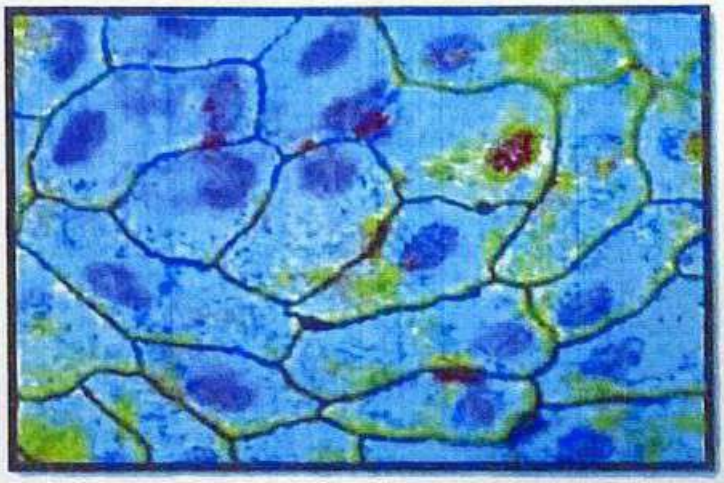
2022-2023

Lab:3

Cell shape

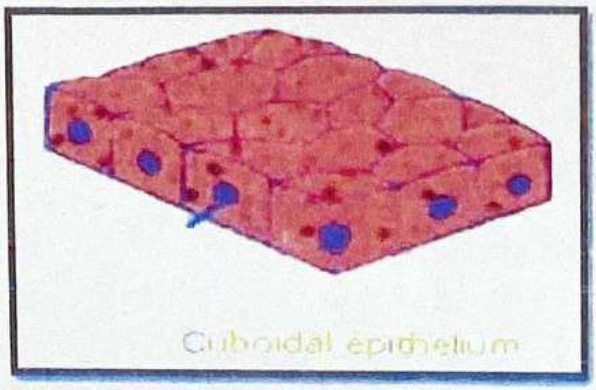
1- Squamous shape / Irregular – shaped cell forming a continuous surface with small nuclei.

[ex. Squamous epithelial tissue in Skin , mouth].



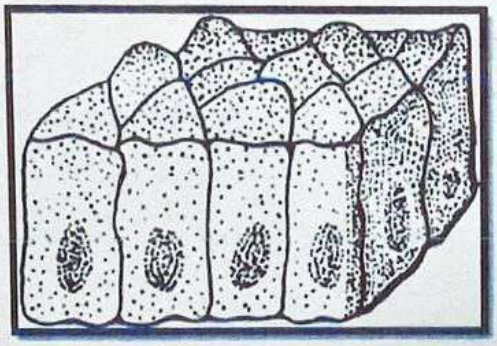
2- Cuboidal shape / the cells appear square & the nuclei is in the middle of cell.

[ex. Cuboidal epithelial tissue in c.s in Kidney , Urinary bladder & pancreas].



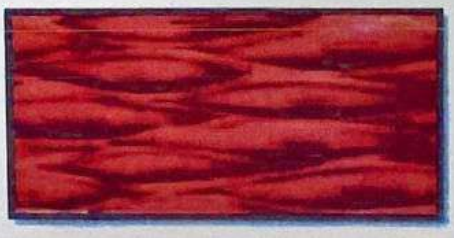
3- Columnar shape / is similar to Cuboidal epithelialium except that the cell are taller & appear columnar in section, the nuclei may be located towards the base.

[ex. Columnar epithelial tissue in Stomach , Trachea]

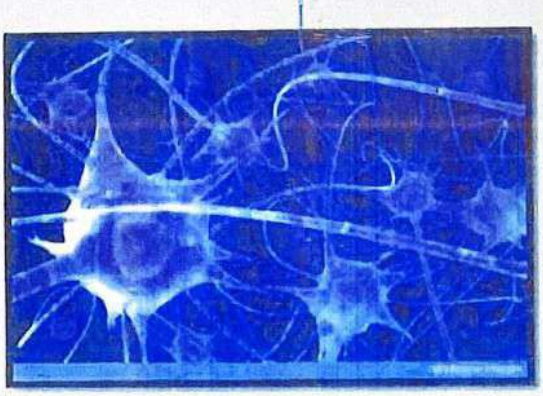


4- Spindle cell / the cell elongated spindle shaped with pointed end.

[ex. Smooth muscle]

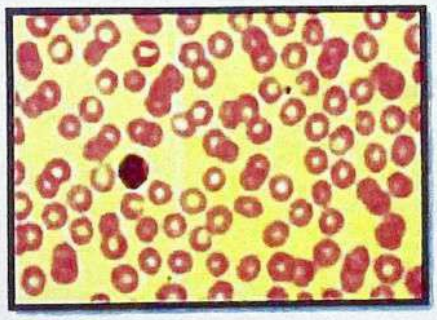


5- Stellate (Asteriodal shape) [ex. Neuron]

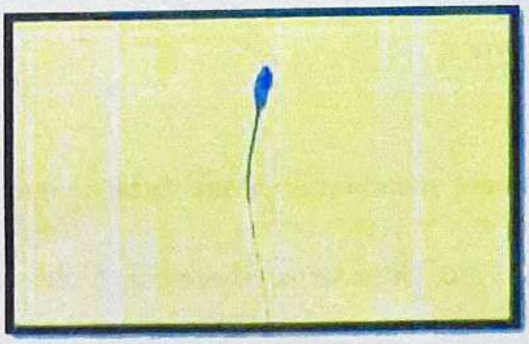


6- Circular (Discoid shape)

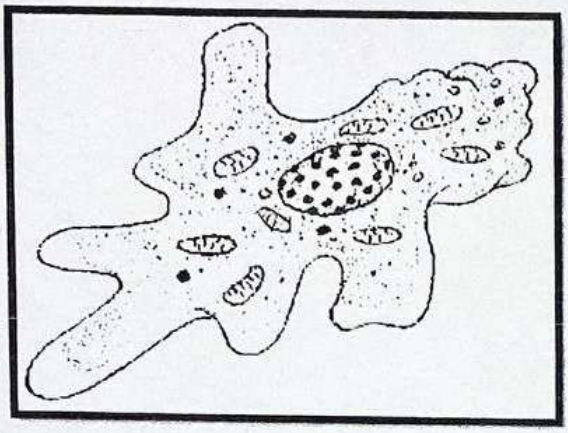
[ex. Red blood cell(R.B.C) in Human blood]



7- Sperm shape [ex. Rabbit sperm]



8- Amoeboid shape [ex. Amoeba]



Lab:4

Tissues

Tissue: It is a group of cells similar in shape and function.

There are four main chief tissues in the body.

1- **Epithelial tissue**
2- **Connective tissue**
3- **Muscular tissue**
4- **Nervous tissue**

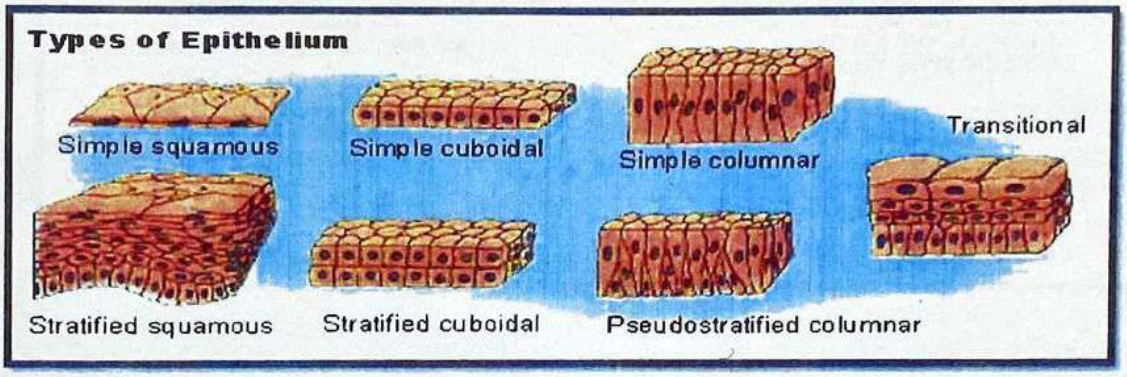
Epithelial tissue

Epithelium is divided into two types:

a. **Simple epithelium:**
   1) One cell layer thick
   2) All cells rest on the basement membrane (basal surface) and all cells face the free surface.
   3) Types of simple epithelium are: Squamous, Cuboidal, Columnar, Pseudo stratified.

b. **Stratified epithelium:**
   1) More than one cell layer thick

2) Only the deepest layer of cells contacts the basement membrane and only the superficial-most cells have a free surface.
3) Types of stratified epithelium are: Squamous, Cuboidal, Columnar and Transitional.



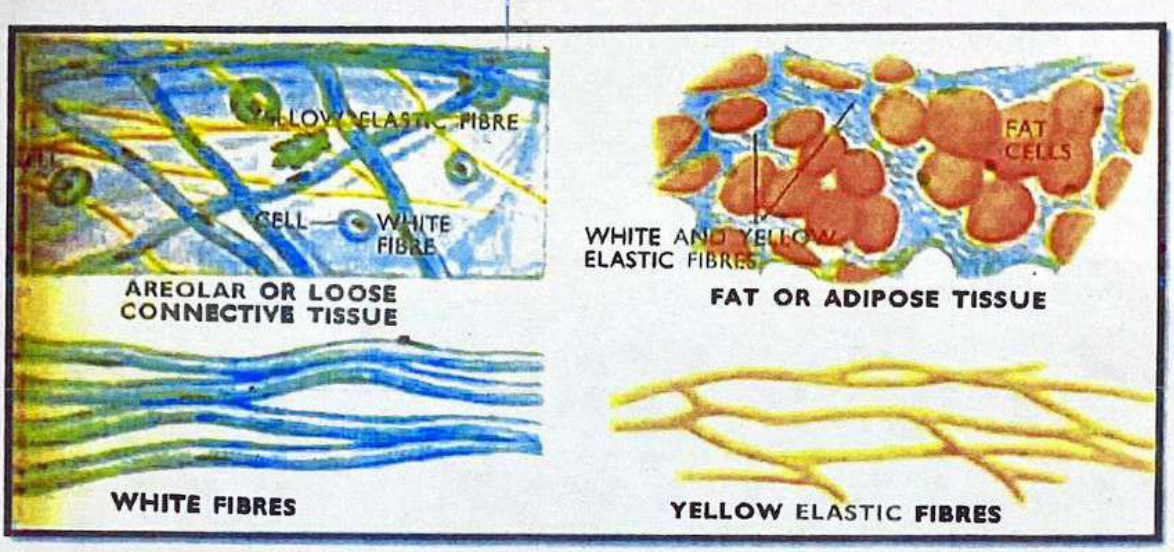
Connective tissue

The connective tissue has an important function include **connecting, supporting** and **protection**.

Classification of connective tissue:

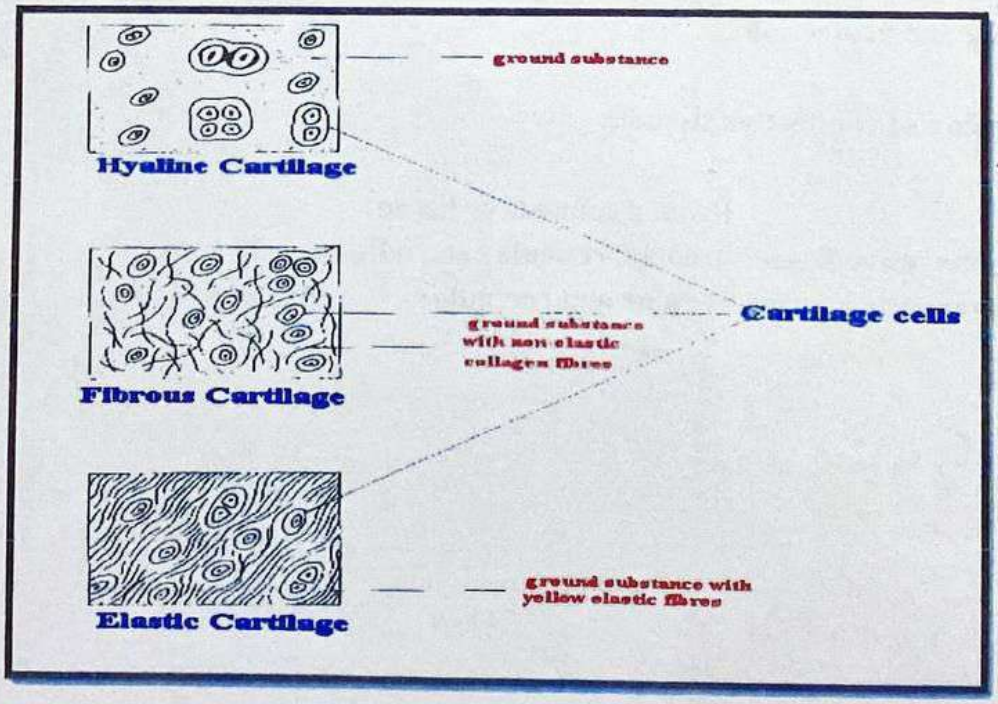
Proper connective tissue

1-Loose connective tissue: areolar, reticular and **adipose.**
2-Dense connective tissue: regular and **Irregular**

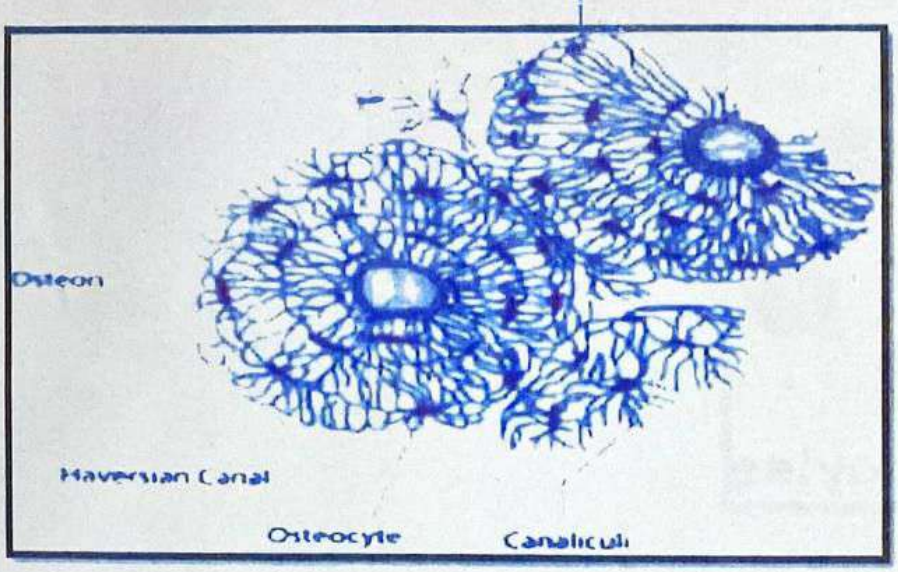


Special Connective tissue

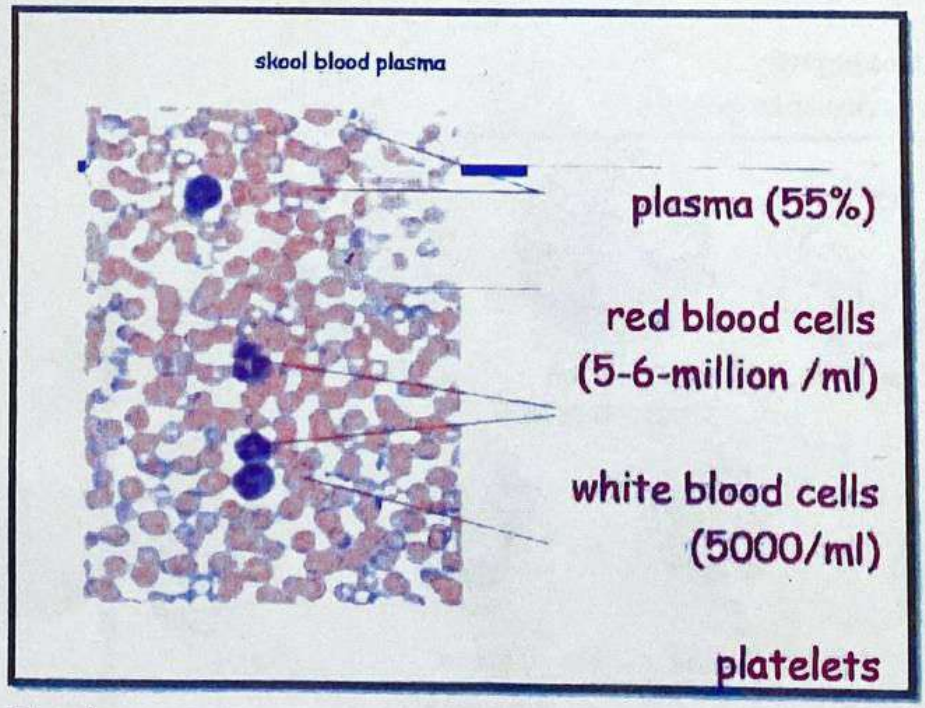
1-Cartilage: There are three types of cartilage: **hyaline**, **fibro** and **elastic**.



2-Bone: There are two types of bone: **compact** and **spongy**

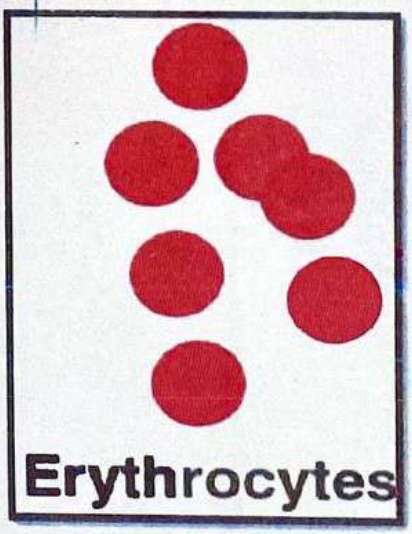


3- Blood: Consists of formed elements (cells) Are erythrocytes (RBCs), leukocytes (WBCs) & platelets suspended & carried in plasma (fluid part)



Erythrocytes

RBCs are flattened biconcave discs, Lack nuclei & mitochondria



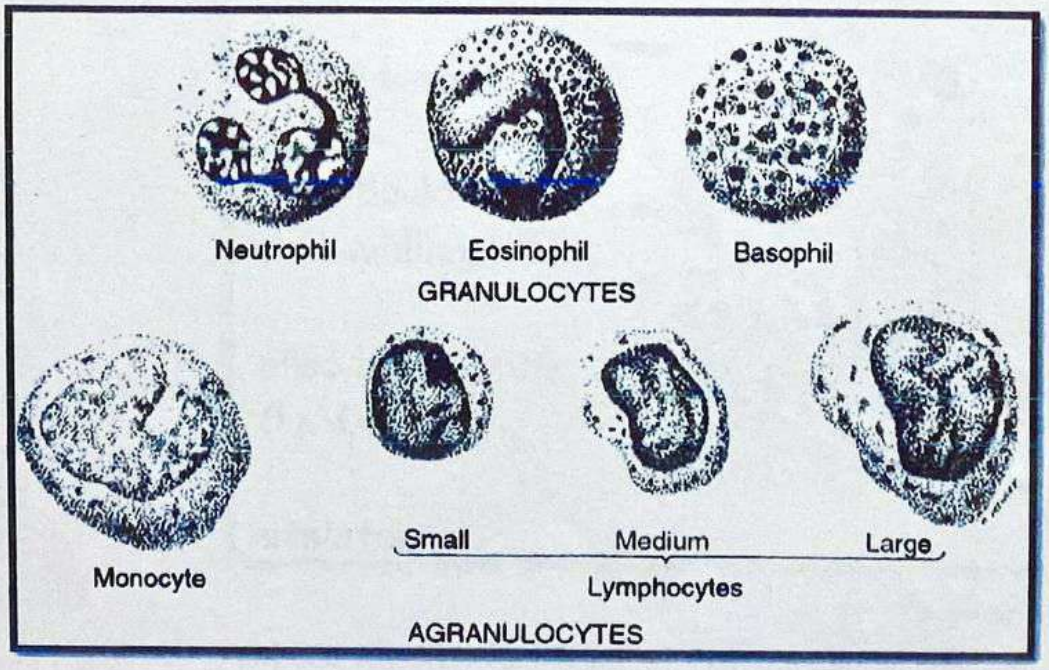
Leukocytes

1. **Granular leukocytes.**

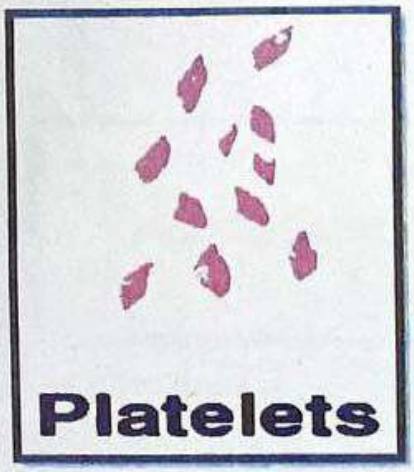
Include: eosinophils, basophils & neutrophils

2. **Agranular leukocytes.**

Include: lymphocytes & monocytes



Platelets (thrombocytes): Are smallest of formed elements, lack nucleus



Lab: 5

Muscle tissue

Classification of Muscle tissues

a. **Skeletal muscle**
   1) Striated and voluntary
   2) Found mostly attached to the skeleton
   3) Nuclei are peripherally located

b. **Cardiac muscle**
   1) Striated and involuntary
   2) Composes the majority of the heart wall (myocardium)
   3) One central nucleus

c. **Smooth muscle**
   1) Non striated and involuntary