



lab 5
Histology
connective tissue

BY

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Connective tissue

Connective tissue is composed of cells, fibers and ground substances (matrix).

General functions of the connective tissues:-

- 1-** Supporting, so some of the connective tissues called supporting tissues.
- 2-** Serving as medium of exchange.
- 3-** Binding the organs to others.
- 4-** Aiding in the defense and protection of the body.
- 5-** Forming a site for storage of fat.

Connective tissues fibers:

1- Collagenous fibers:

- White fibers
- Are tough, flexible and they resist stretching (inelastic).
- Appearance: wavy unbranched bundles.



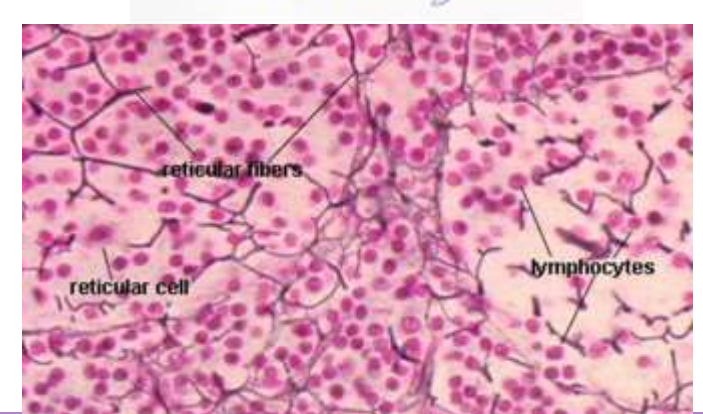
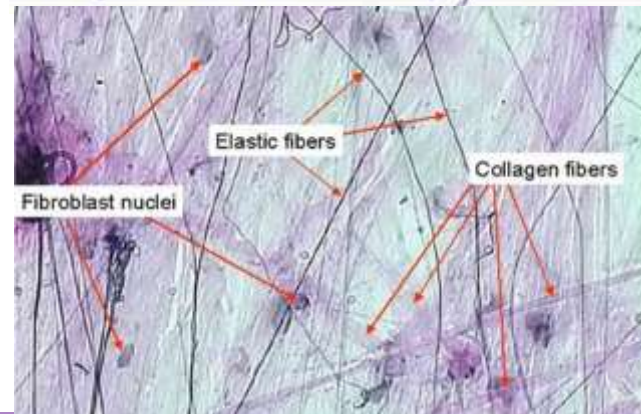
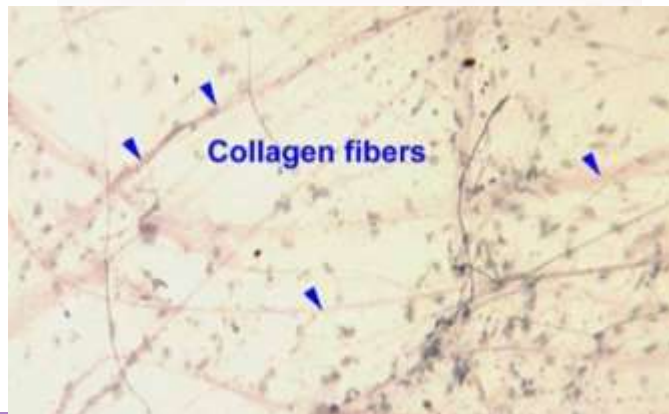
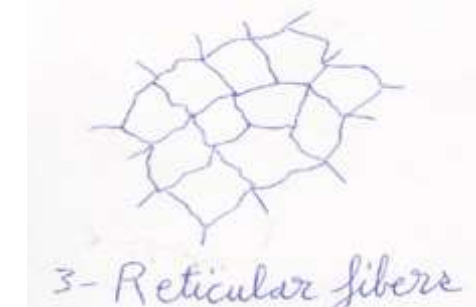
2- Elastic fibers:

- Yellow fibers.
- Are thinner than collagenous fibers and they are highly elastic.
- Composed of branched tubular fibers of protein (elastin).



3- Reticular fibers:

- They are made of thin co-protein.
- Appearance: net of branched fibers.
- They provide a supporting system for cells of delicate organs.



❖ collagen is a protein in the form of fiber (BODY GLUE)

❖ Fibers and ground substance are the extracellular matrix

Connective tissue cells

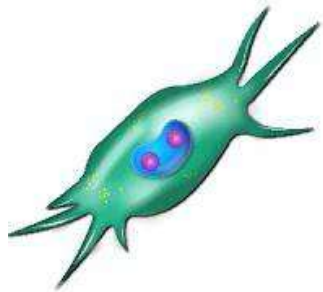
Connective Tissue



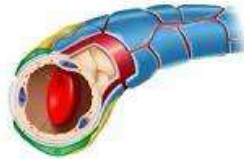
Many types with different functions

Originate locally & remain in the connective tissue - **Fixed cells**

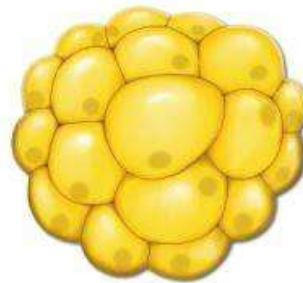
Originate elsewhere & remain only temporarily in connective tissue - **Transient cells**



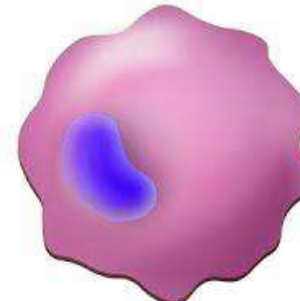
Fibroblasts



Pericytes



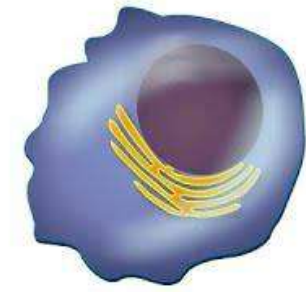
Adipose cells



Macrophages



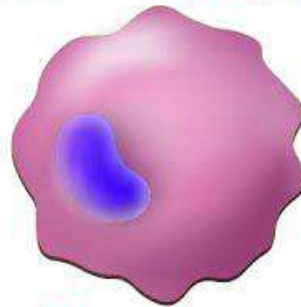
Lymphocytes



Plasma cells



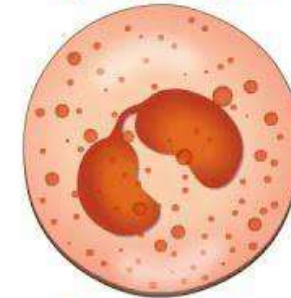
Mast cells



Macrophages



Neutrophils



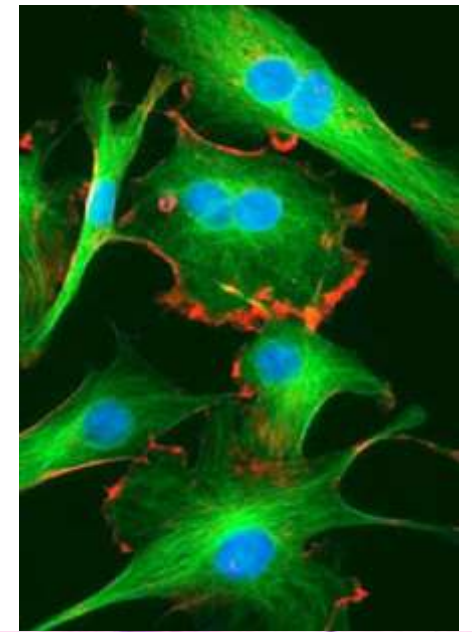
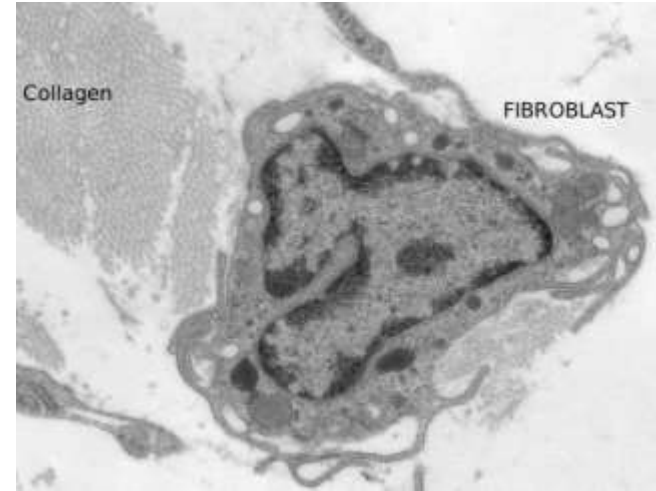
Eosinophils



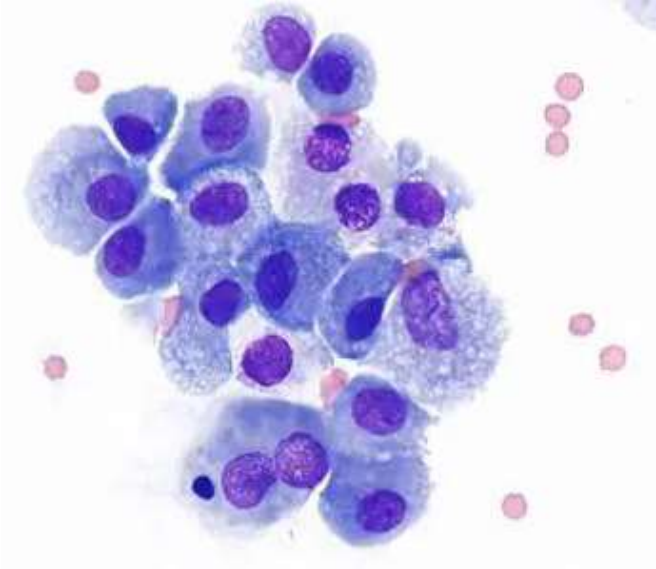
Basophils

Cells of the connective Tissues:

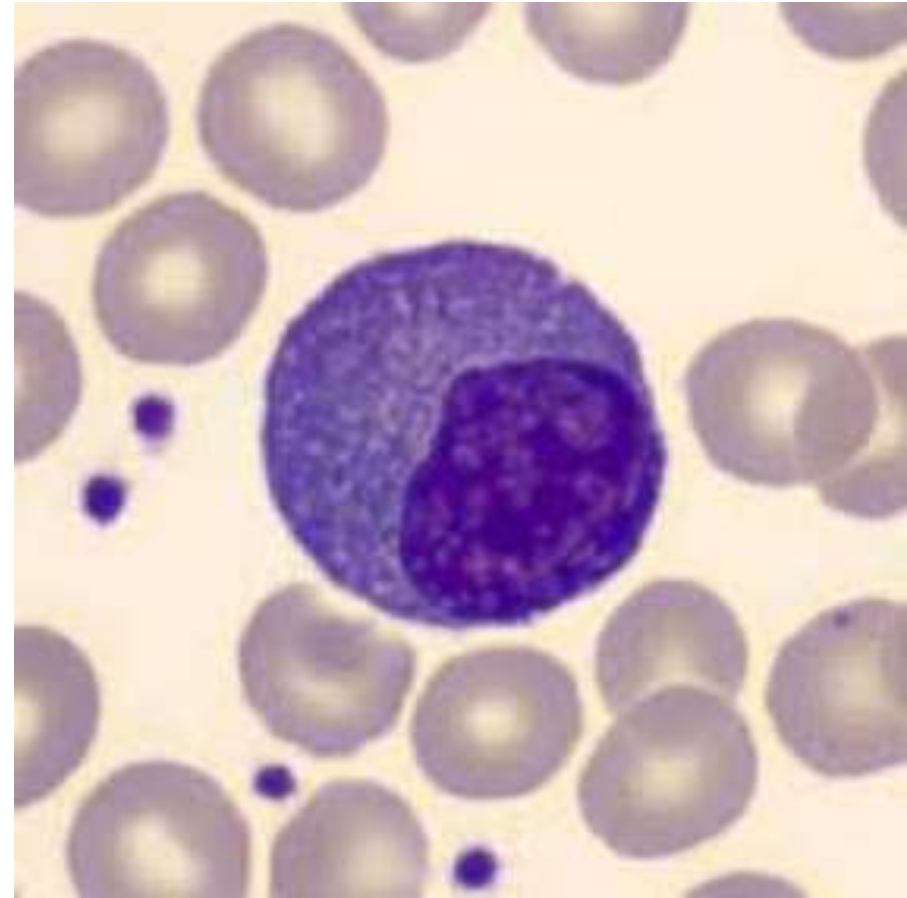
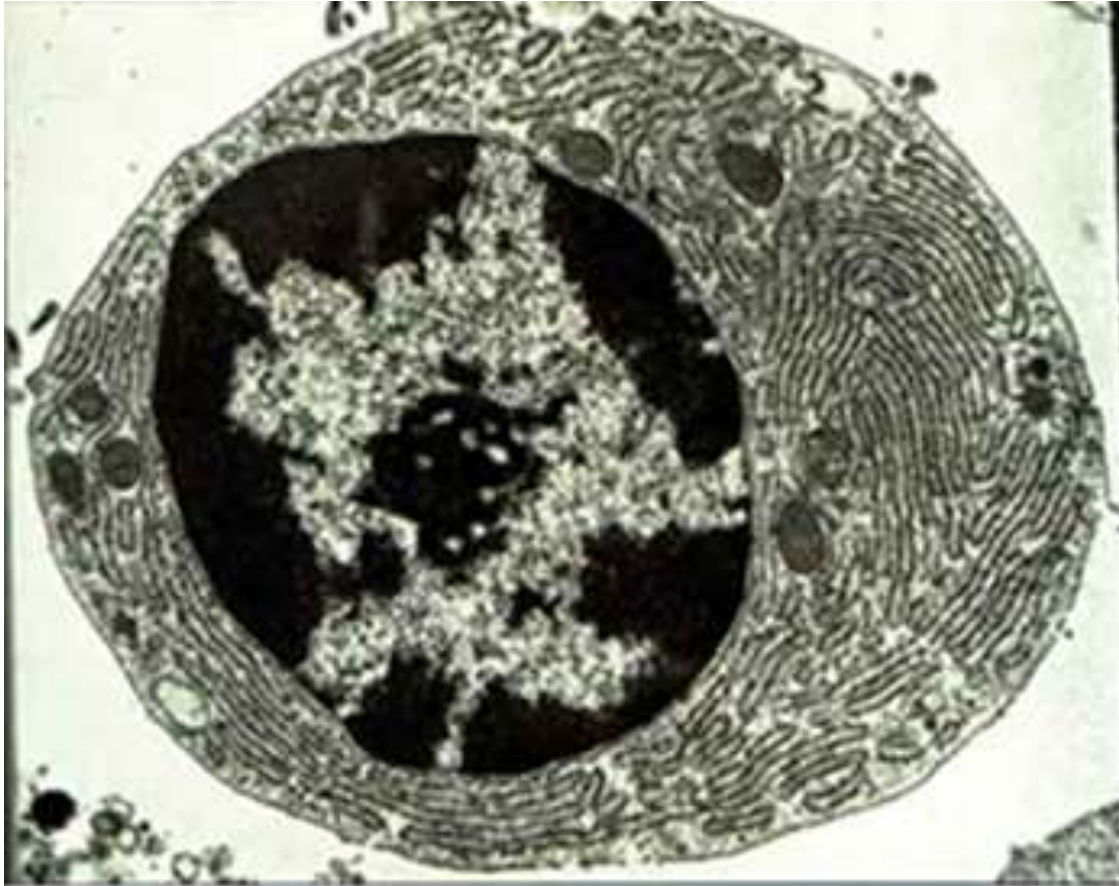
1- Fibroblasts: They are large ovoid in shape with cytoplasmic processes; they produce the fibers and ground substance.



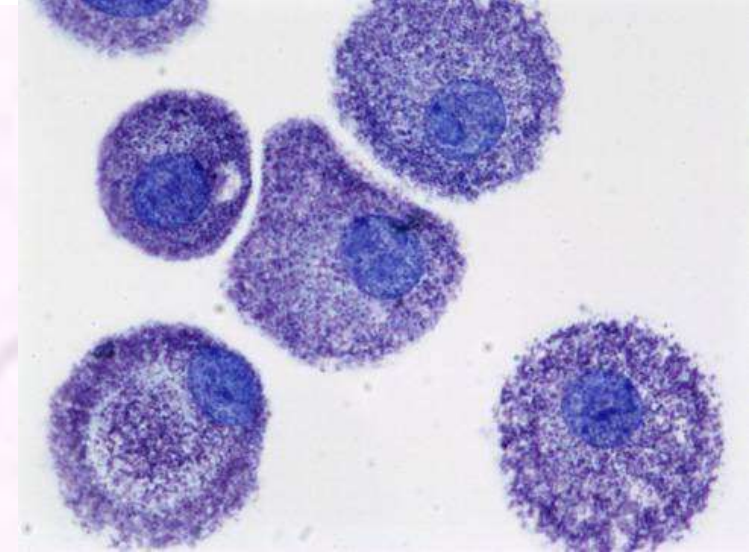
2- Macrophages (Histocytes): Are irregular shaped cells, the cytoplasm is granular vacuolated with large number of lysozymes. The function of these cells is to remove cellular debris and protection the body against foreign invaders.



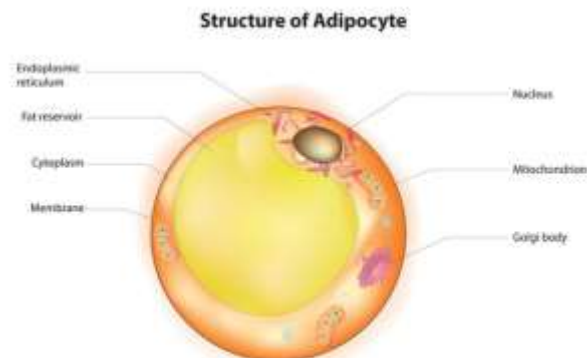
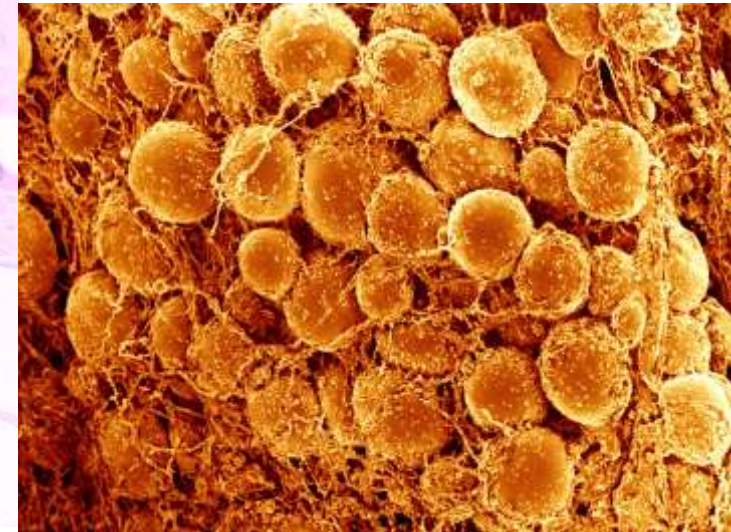
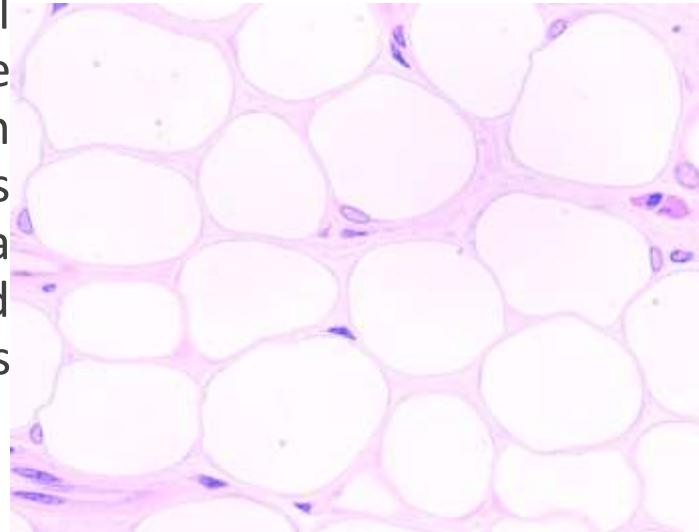
3- Plasma cell: Ovoid to spherical cell. The cytoplasm is intensely basophilic, the nucleus is spherical eccentrically placed which posses heterochromatin radiating out from the center giving it characteristic of **clock face** appearance. They produce antibodies and found in the inflamed tissue.



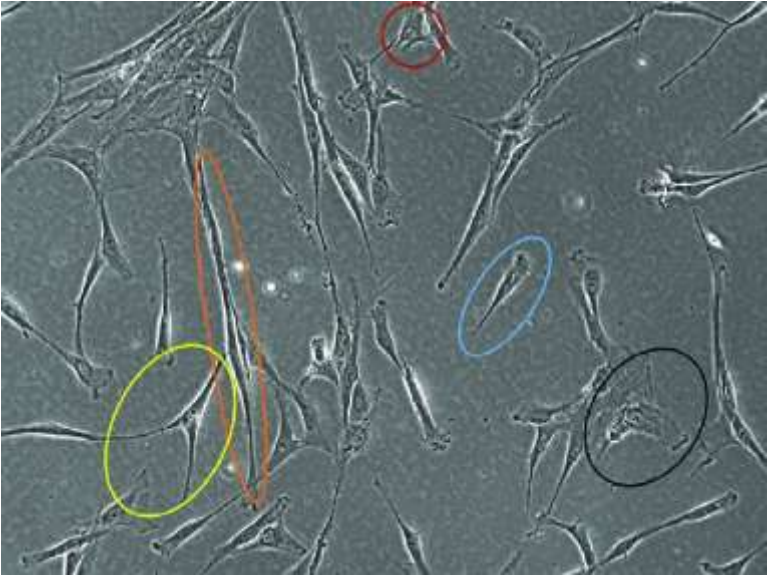
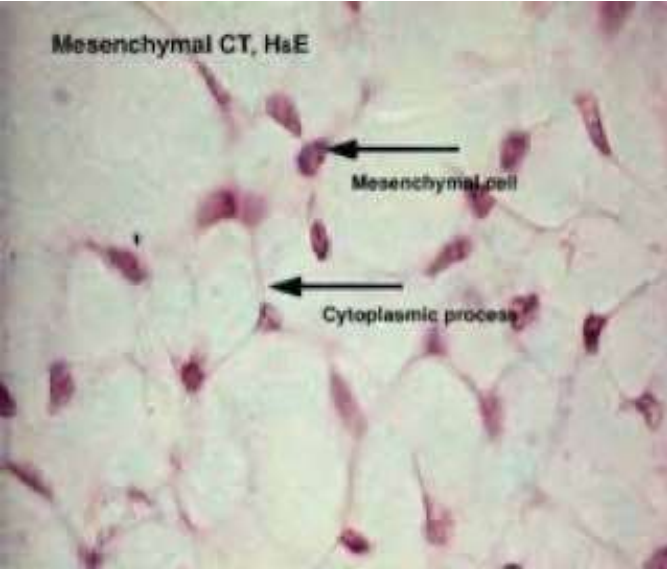
4. Mast cells: Small, ovoid cells with central small nucleus. The presence of numerous granules in the cytoplasm is the identifying characteristic of mast cells. These cells produce heparin and histamine.



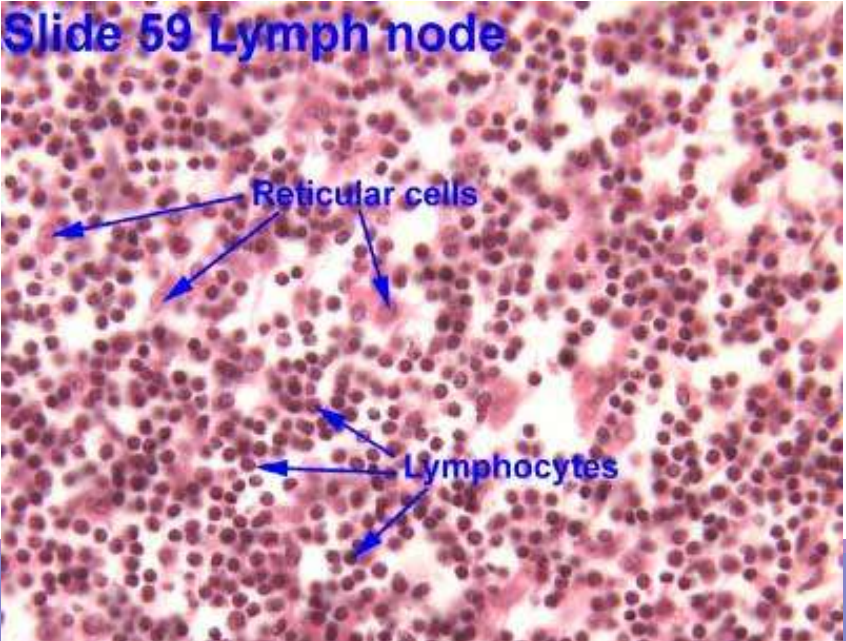
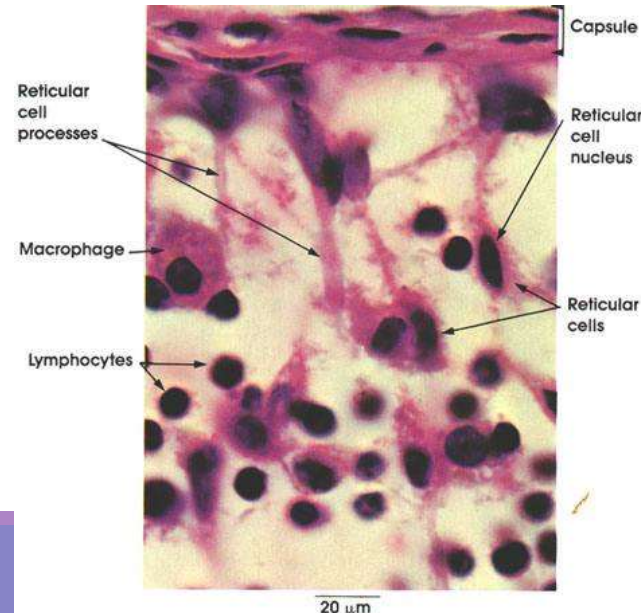
5- Adipocytes (fat cells): Large spherical cells that become polyhedral when crowded in small clusters in the adipose tissue. Each adipocyte contains a large triglyceride droplet (their function is storage of triglyceride) that pushes the nucleus to the edge of the cell adjacent to plasma membrane and the cytoplasm displaced peripherally against the plasma membrane, thus giving the cell the ring shape.



6- Mesenchymal cell: looks like fibroblast but smaller, present in the embryo.



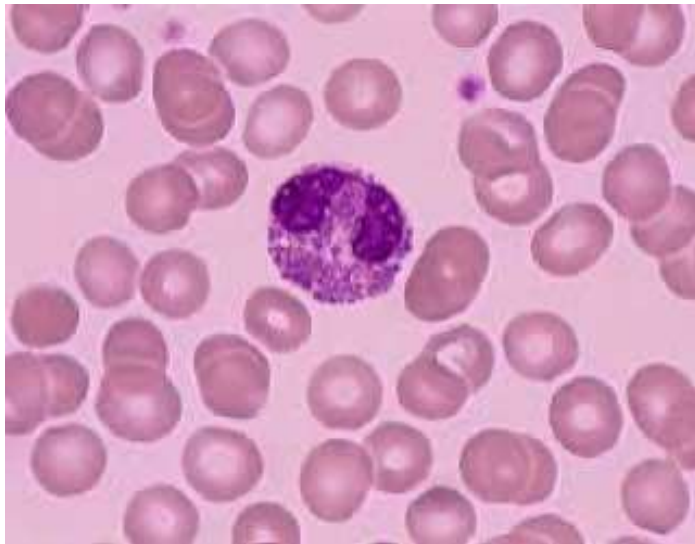
7- Reticular cell: looks like mesenchymal cell but the dendrites is branched and contact with the branches of the other cells.



8- Pigment cell: The cytoplasm has melanin granules which cover the nucleus.



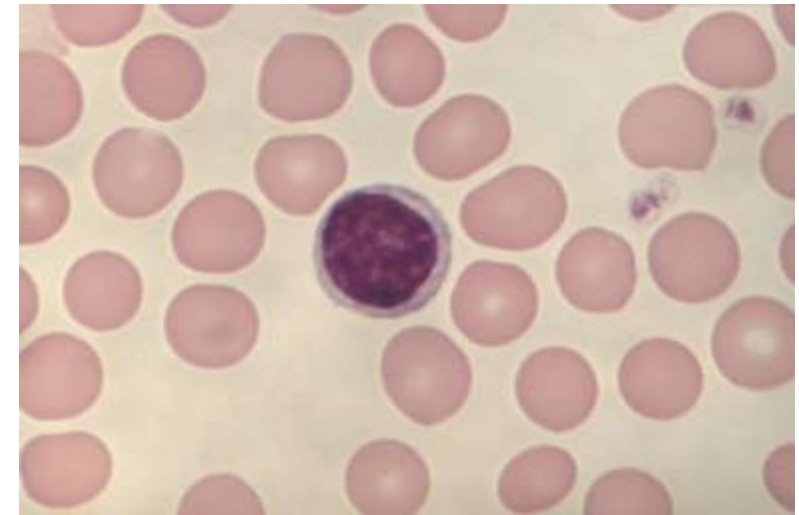
9- Eosinophil.



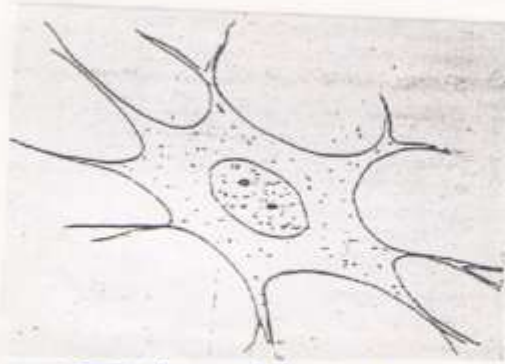
10- Neutrophil.



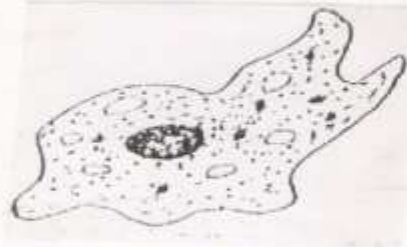
11- Lymphocyte.



Types of cells in connective tissues



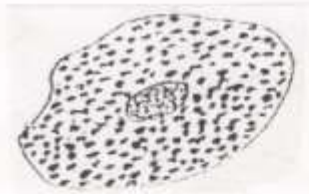
Fibroblast
-1-



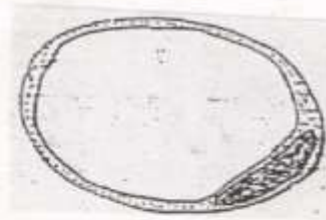
2 - Macrophage



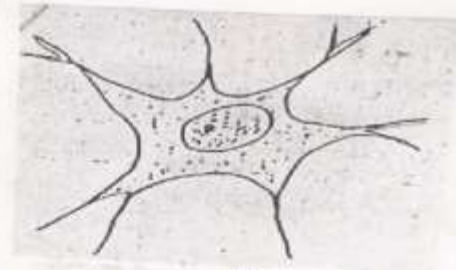
3 - Plasma cell



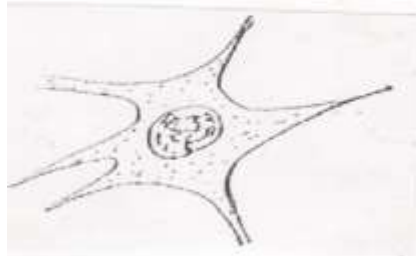
Mast cell
-4-



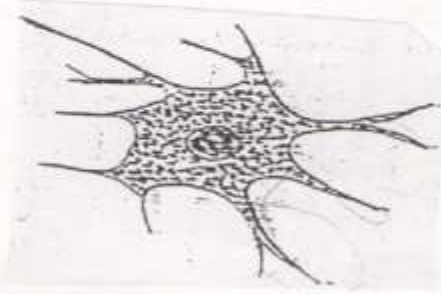
5 - Adipocyte



6 - Mesenchymal cell



Reticular cell
-7-



8 - Pigment cell