CT lecture

for 1st class students

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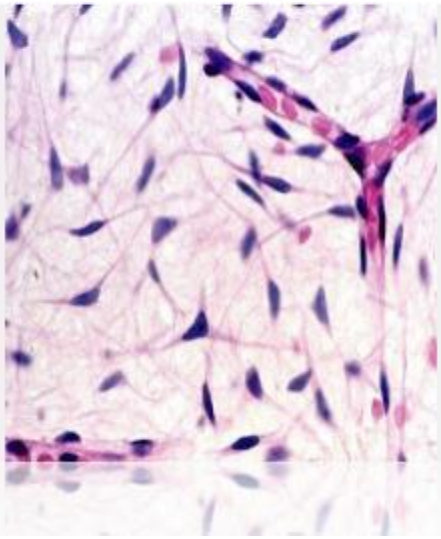
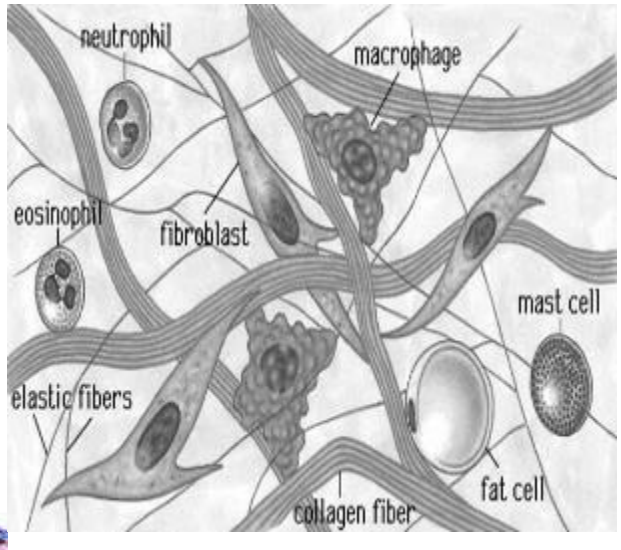
Types of CT

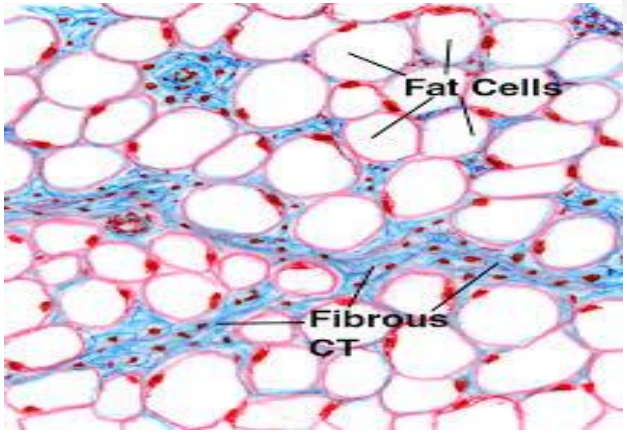
Embryonic CT: Mucous CT



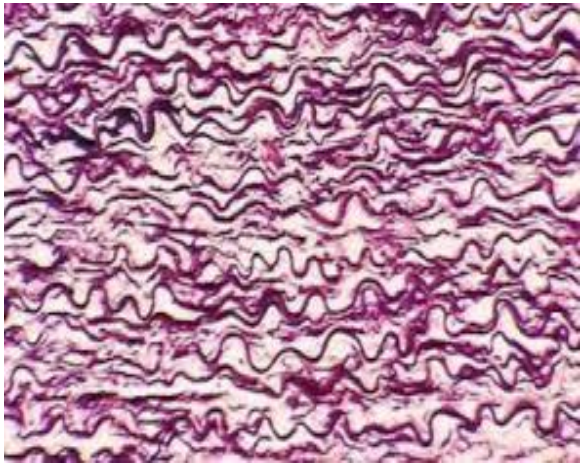


Loose CT

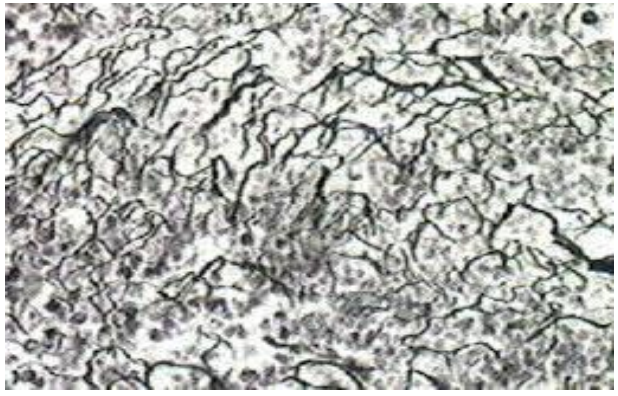
Adipose CT



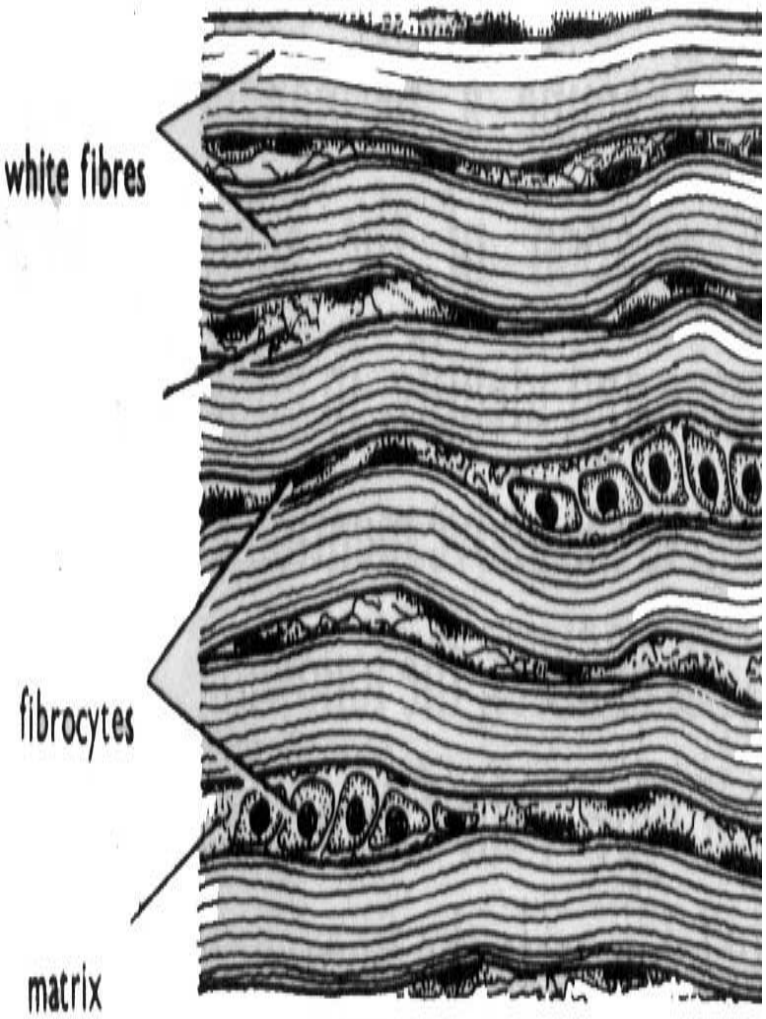
Dense regular elastic CT



Reticular CT

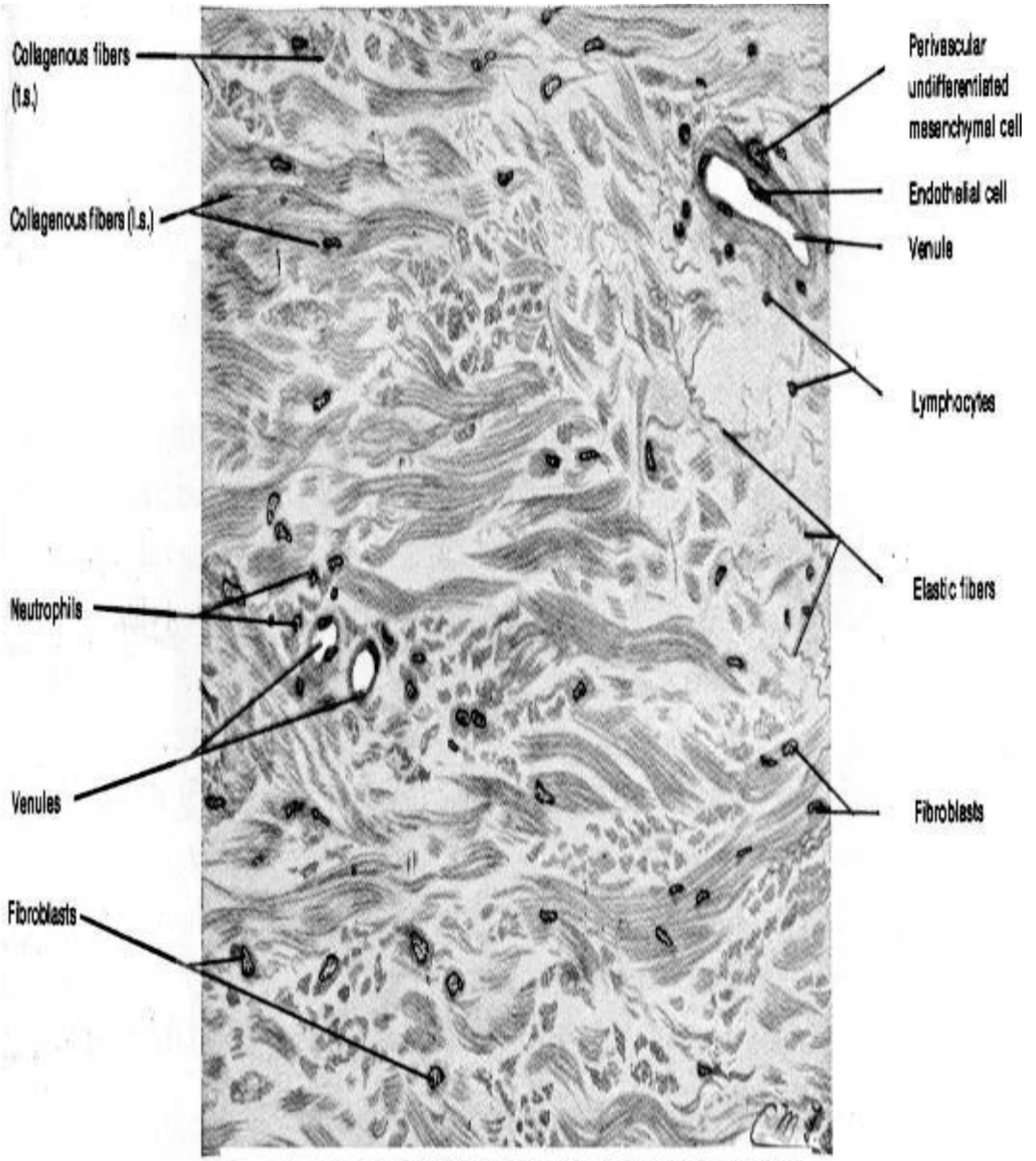


Dense fibrous CT (Dense Regular)



Tendon

and Dense Irregular



Dense irregular connective tissue (dense fibroelastic connective tissue).

TYPES OF BLOOD CELLS

1. Red Blood Cells
(Erythrocytes)

Helps in O_2 and CO_2 exchange

3. Platelets
(Thrombocytes)

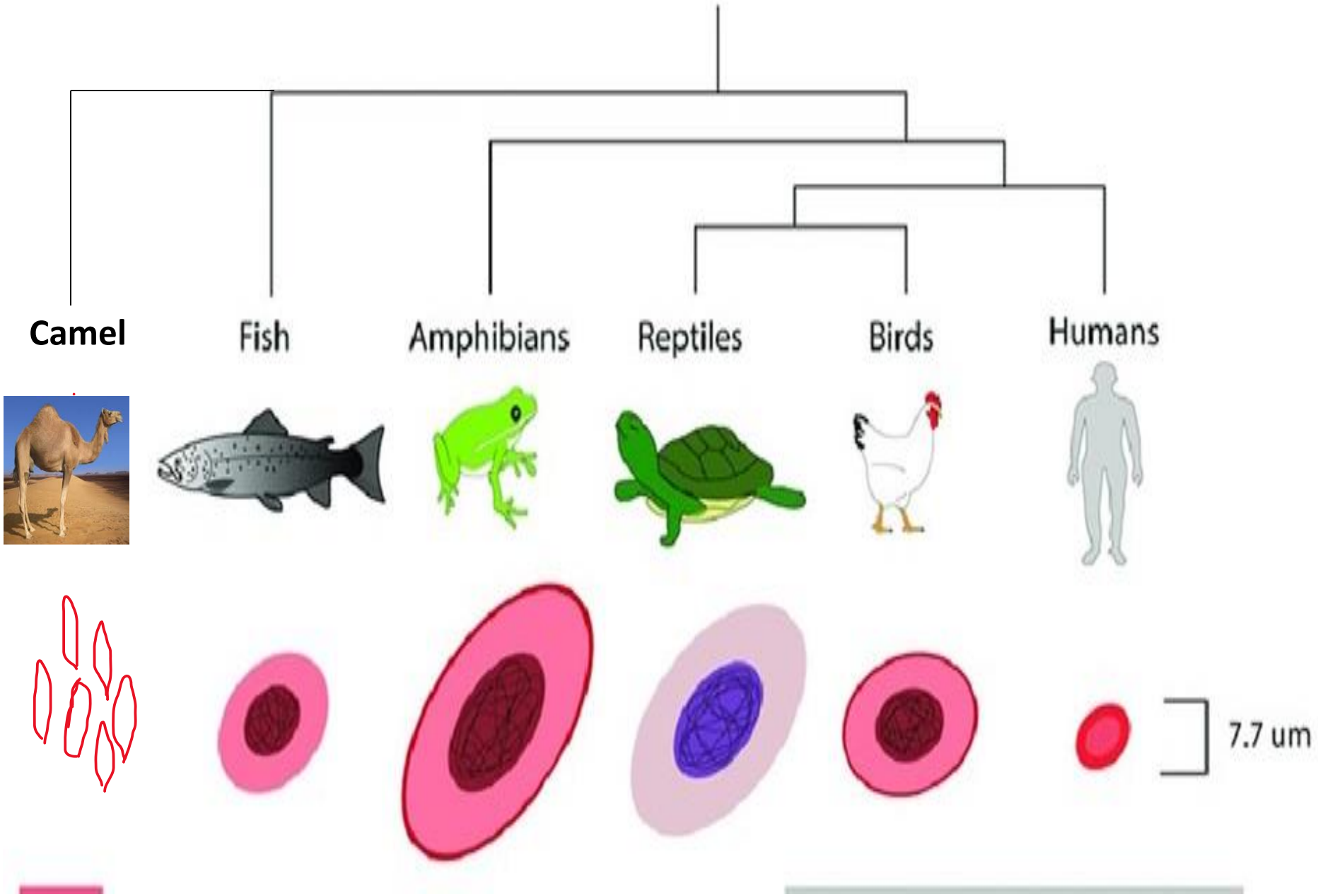
Helps in blood clotting

2. White Blood Cells
(Leukocytes)

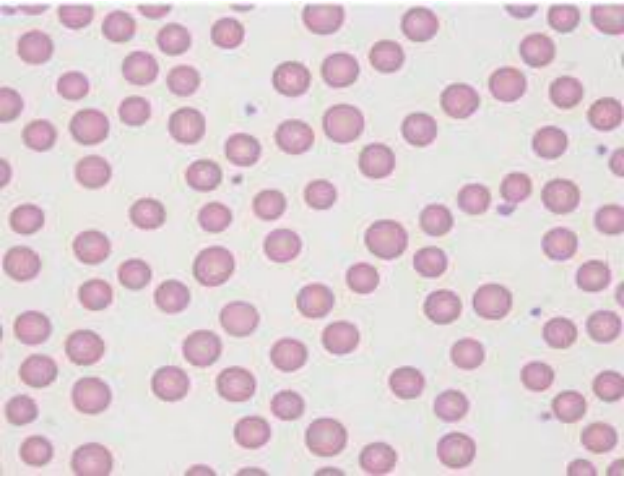
Neutrophil | Eosinophil | Basophil | Lymphocyte | Monocyte

Fights against infections

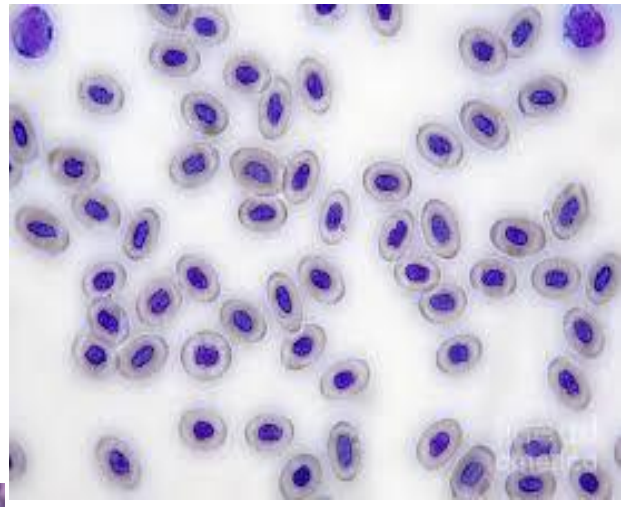
RBCS of different animals and human



RBCS



Cow blood



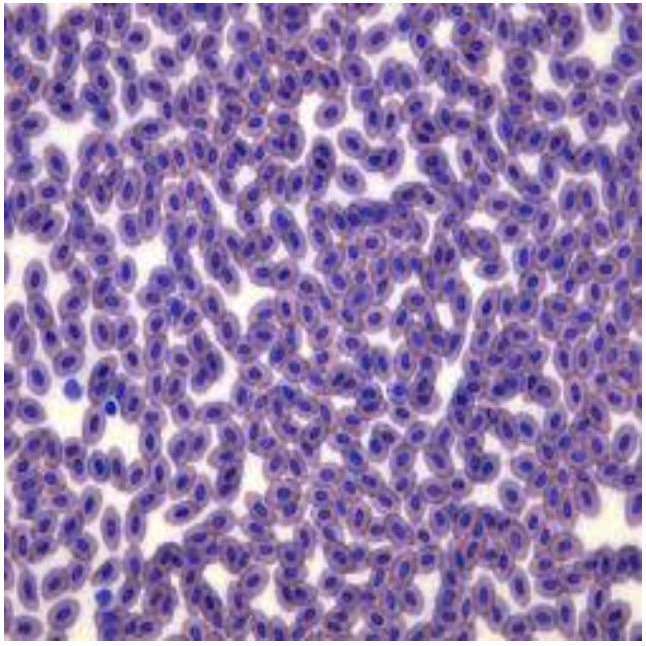
Reptiles RBCS

Biconcave, small elliptical

Camel blood

Biconvex, medium size, oval

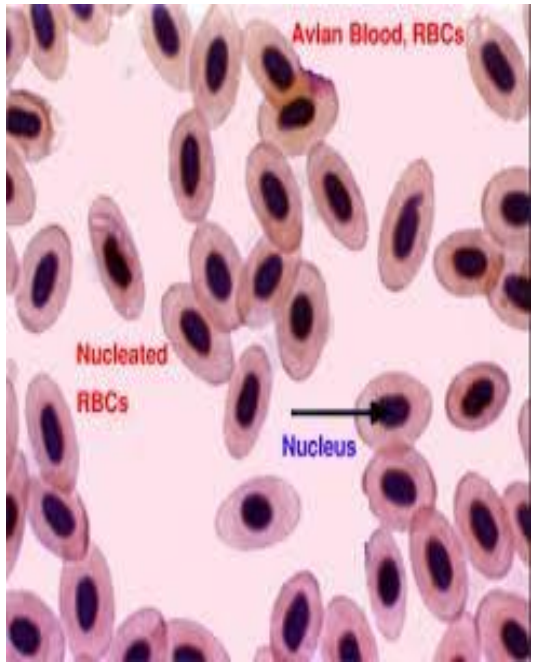
Fish blood

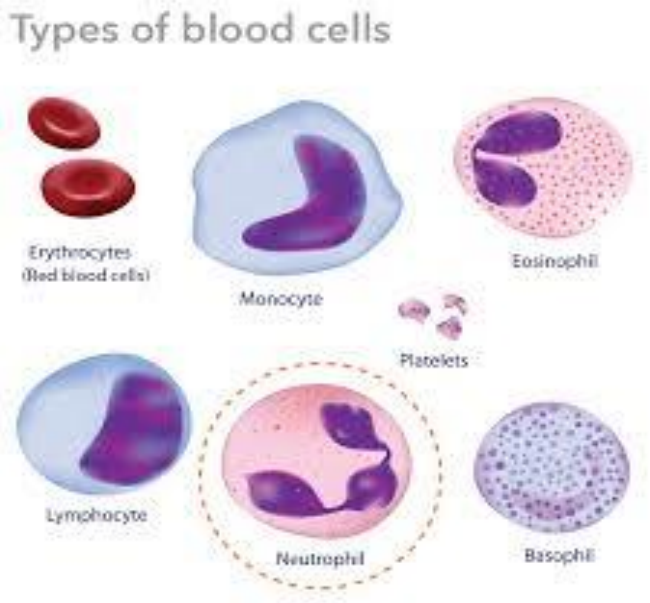


Biconvex, medium size, oval

Poultry blood

Amphibian blood



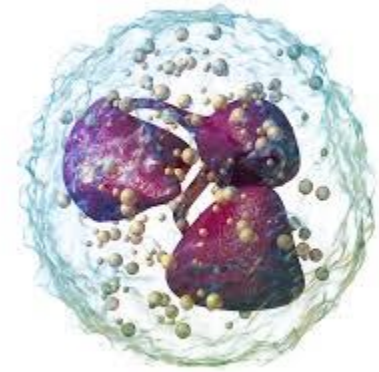


WBCs

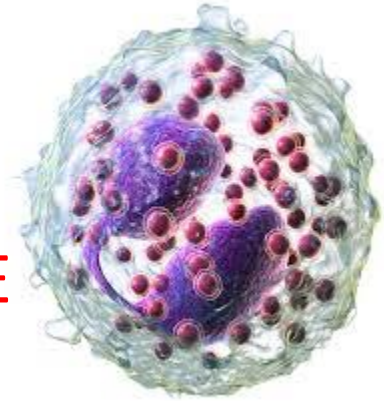
granulated

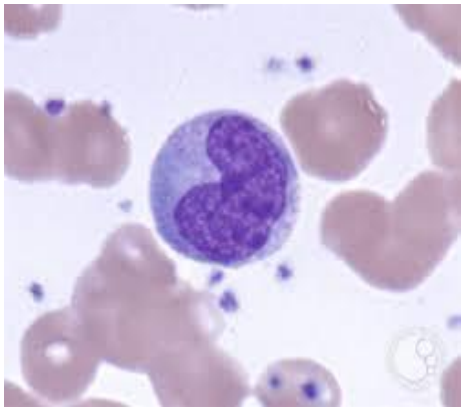
Non granulated

N

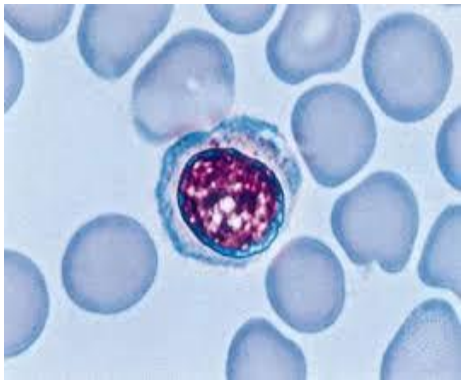


E



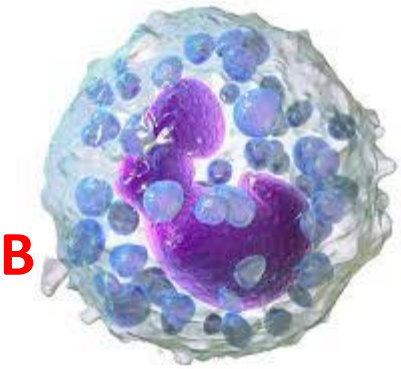


Monocyte



Lymphocyte

B



Hyaline cartilage

- Wall of respiratory passage
- Ventral end of ribs.

In articular cartilage

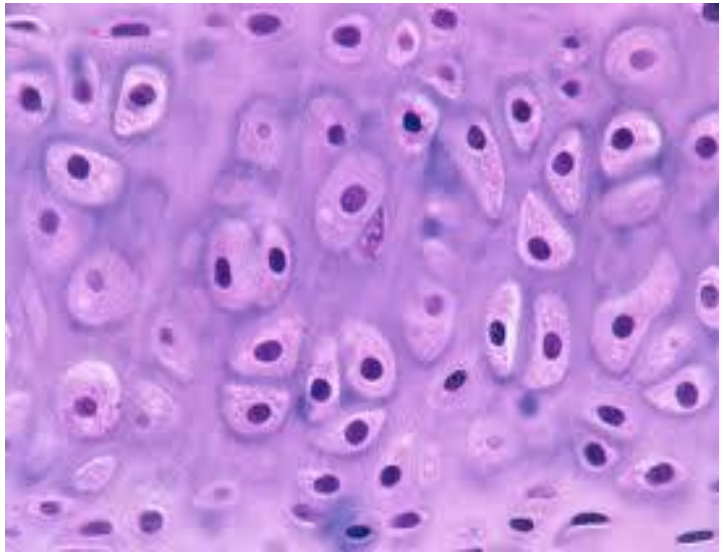
Chondroblast

Chondrocyte →

It present in the periphery of the cartilage.

Round in adult, flat in young.

It may arranged in group of 8 cells from mitotic division of one chondrocyte" isogenous group"

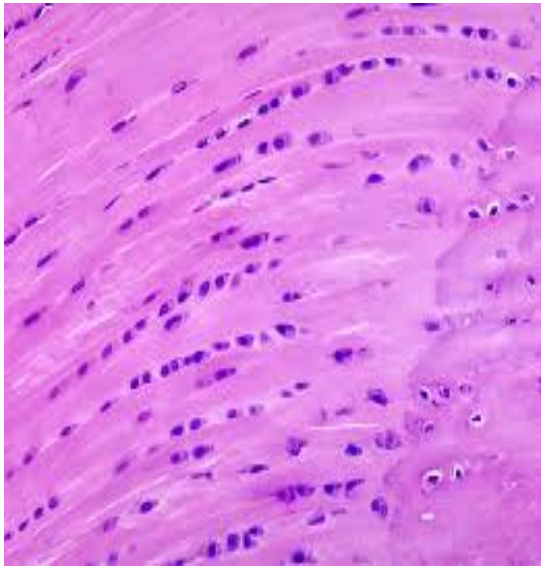


* Fibrocartilage

- Inter vertebral disk. Symphsis pubica.
- At attachment of certain ligament to bone.

This Type between Dense C.T & hyaline cartilage.

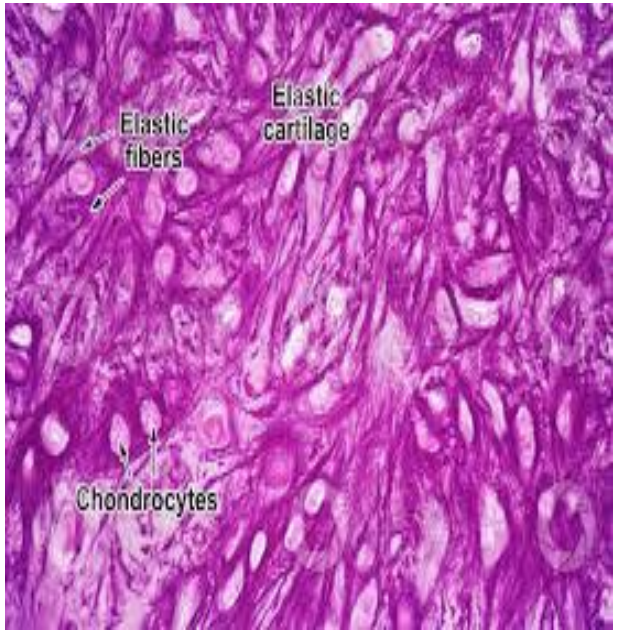
No Perichondrium observed in this type of cartilage



ELASTIC CARTILAGE

Site: -Auricle of ear – epiglottis- External auditory canal - cuneiform cartilage of larynx- Eustachian tube

Ground substance is obscured by net work of the elastic fibers.



Bone structure

BONE TISSUE

Bone tissue is classified

- **compact bone**
  - dense layer forms the outside of the bone
- **spongy bone (cancellous bone)**
  - spongelike meshwork consisting of trabeculae
  - The spaces within the meshwork are continuous and occupied by marrow and blood vessels.

CELLS OF BONE TISSUE

cell types

Differentiated form of the same basic cell type:

1. osteoprogenitor cells,
2. osteoblasts,
3. osteocytes,
4. bone-lining cells

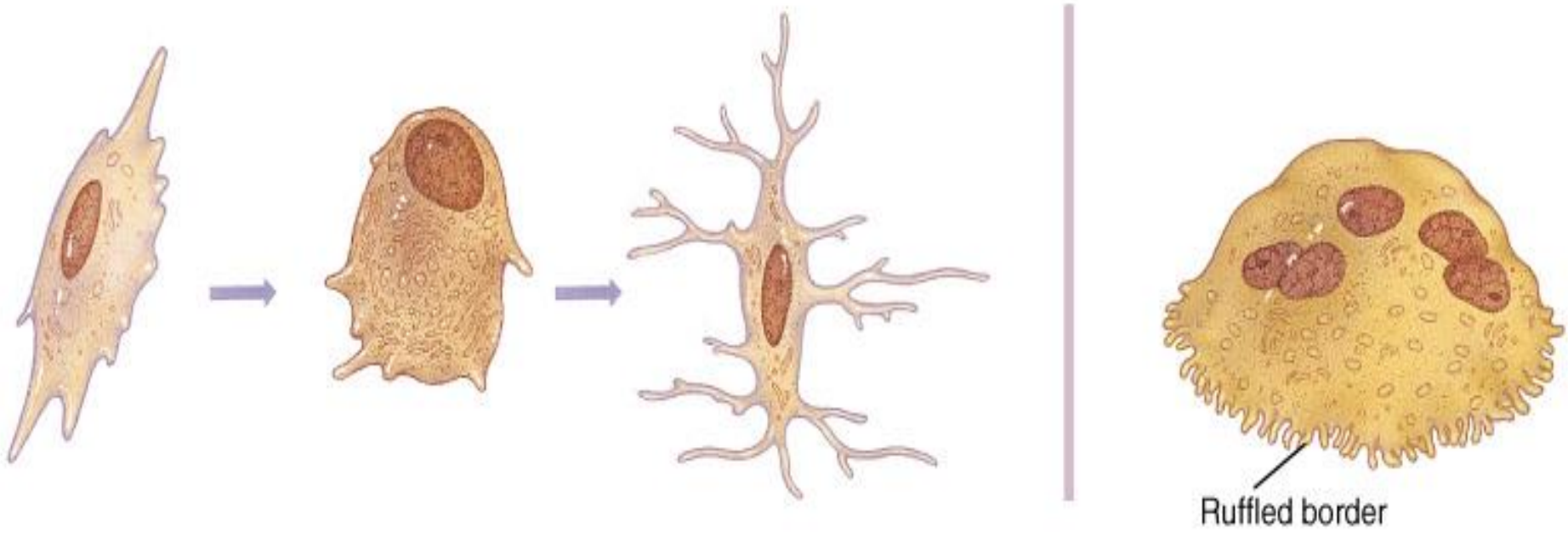
5. Osteoclasts

- bone tissue Cells are surrounded by matrix.
  - 25% water
  - 25% protein
  - 50% mineral salts

Endosteum: - Is the lining of the bone cavity. It consists of layer of osteogenic cells

Periosteum. It is CT capsule that cover the whole bone except articular surface. It consists of outer fibrous layer and inner osteogenic layer

Cells of Bone Tissue



Osteogenic cell (develops into an osteoblast)

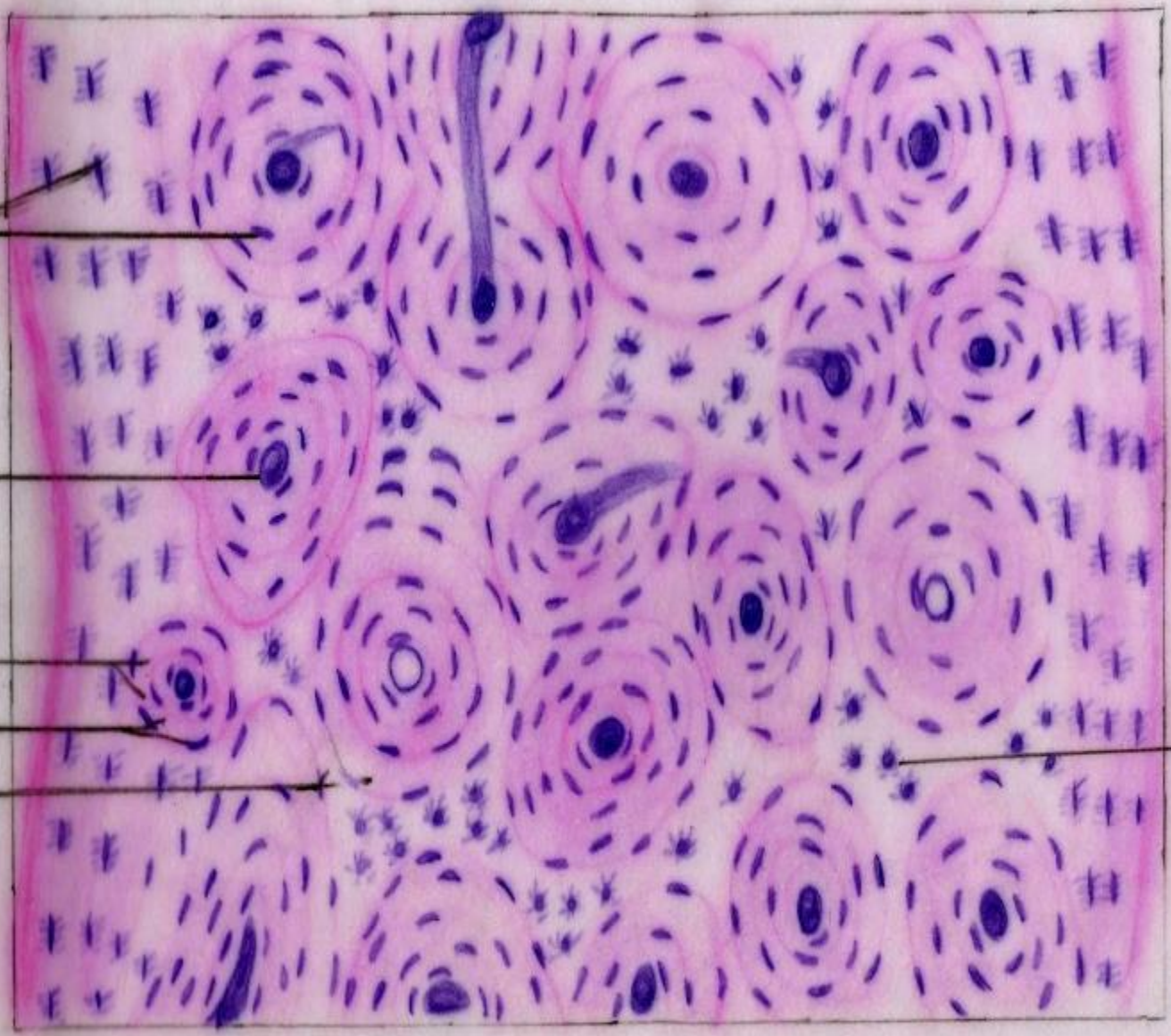
Osteoblast (forms bone tissue)

Osteocyte (maintains bone tissue)

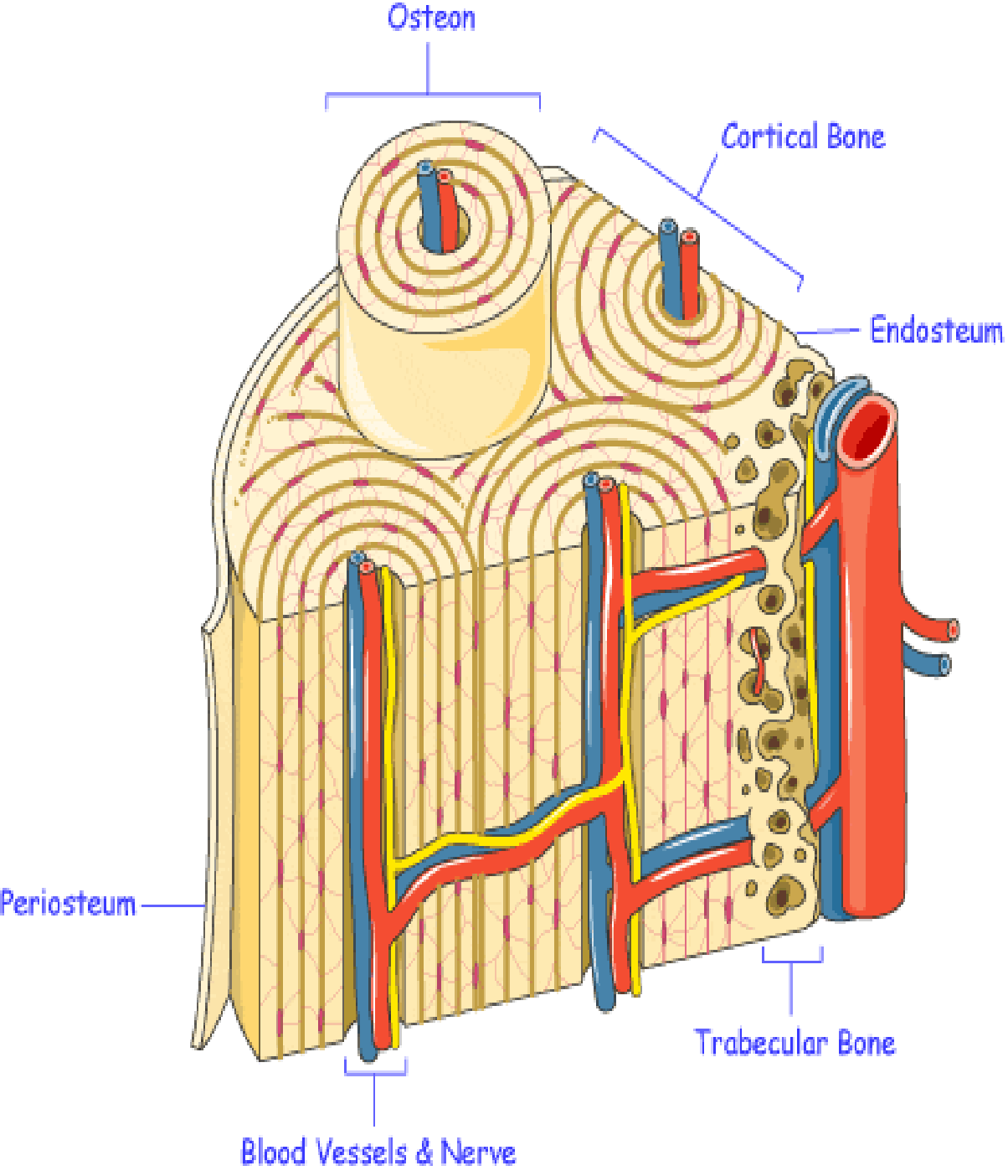
Osteoclast (functions in resorption, the destruction of bone matrix)

Compact bone:-

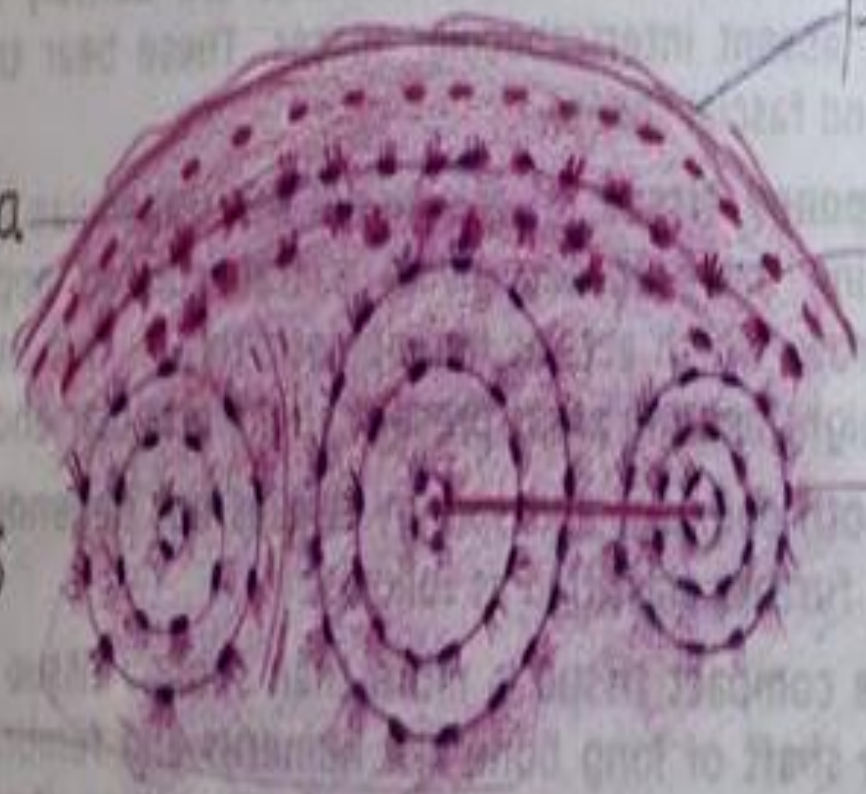
- Solid mass found in the long bone shaft
- It characterized by regular bone lamellae
- The bone lamellae consists of osteocyte inside lacunae and canaliculi embedded in the calcified collagen fibers
- The bone lamellae are concentrically arranged around vascular channel called Haversian canal
- This orientation form Haversian system (**osteon**)
- Haversian system consists of 5-20 bone lamellae
- The blood vessels in the Haversian system are connected to each other and to the periosteum and the bone marrow via transverse canal (**Volkmann's canal)**.



Bone ground section (T.S.)


Osteon
Cortical Bone
Endosteum
Periosteum
Trabecular Bone
Blood Vessels & Nerve

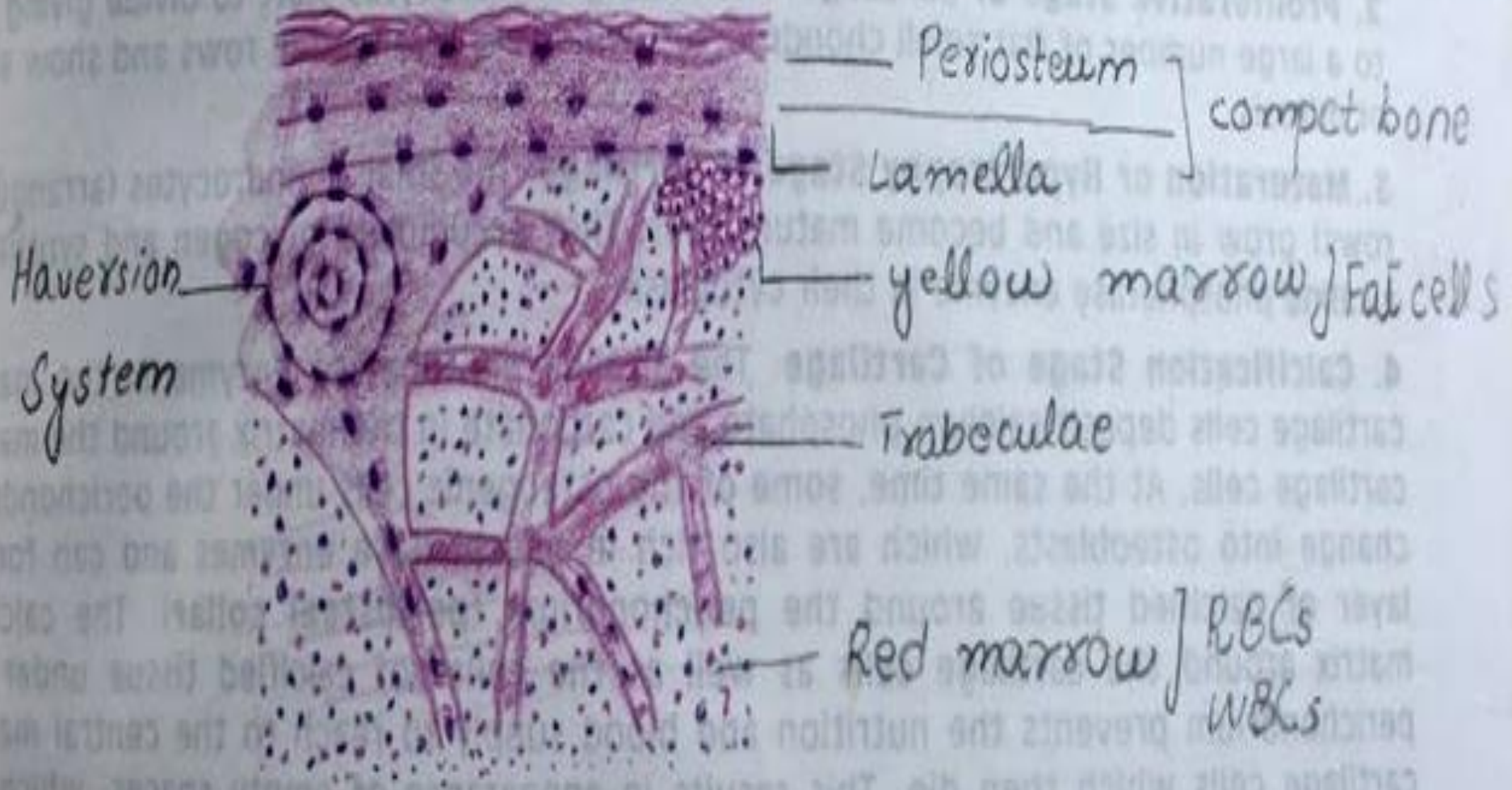

lamella
osteocytes
Haversian canal



Compact Bone

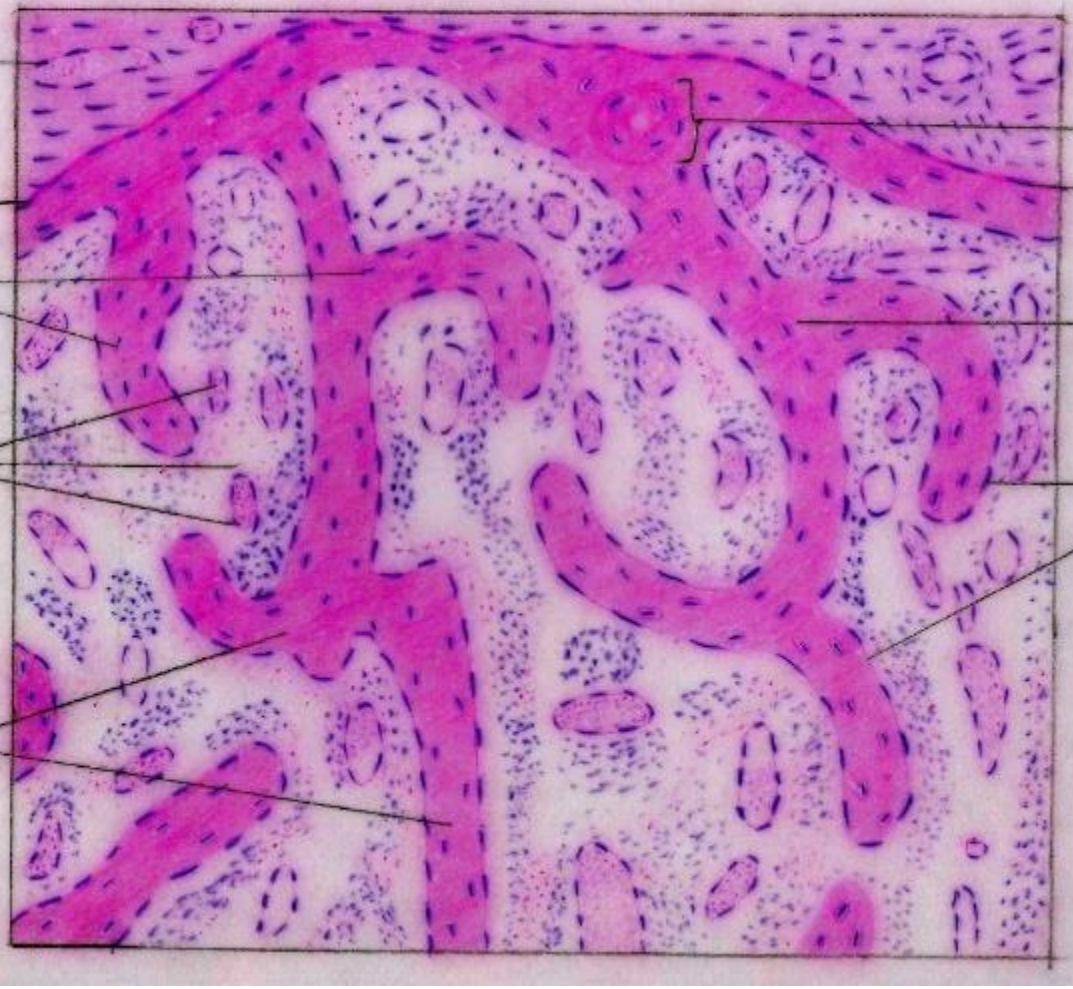
Spongy bone (cancellous)

- Found at the ends of the long bones, in the center of flat and irregular bone
- It is formed from branching irregular bone lamellae
- No Haversian system
- The nourishment of the osteocytes via the diffusion through the bone marrow
- The bone marrow appears as irregular cavities between bone trabecula.


Periosteum
compct bone
Lamella
Haversion System
yellow marrow / Fat cells
Trabeculae
Red marrow / RBCs WBCs

SPONGY BONE

SPONGY BONE



Connective tissue with blood vessels

Periosteum

Osteocytes in lacunae

Marrow cavities with blood vessels

Bony trabeculae

Osteon

Periosteum

Compact bone

Endosteum