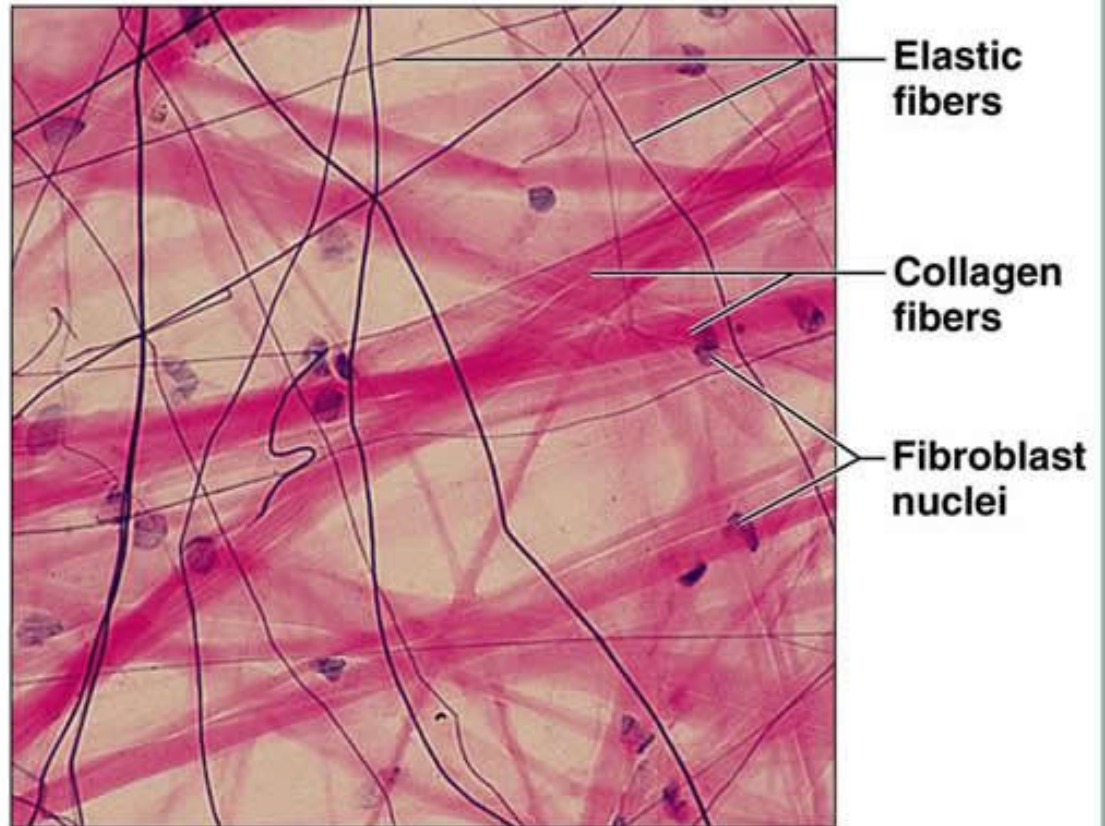
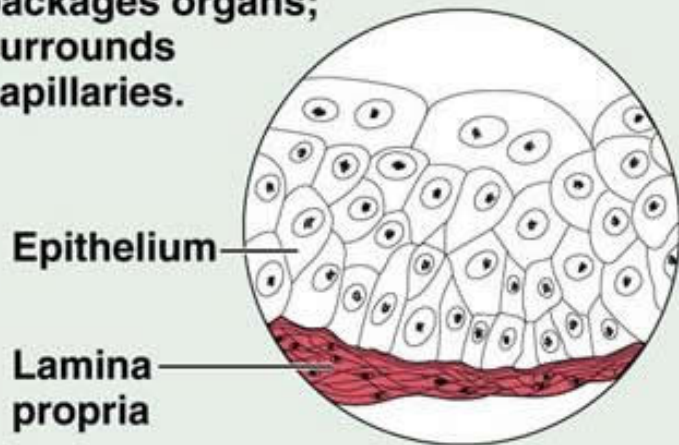


(a) Connective tissue proper: loose connective tissue, areolar

Description: Gel-like matrix with all three fiber types; cells: fibroblasts, macrophages, mast cells, and some white blood cells.

Function: Wraps and cushions organs; its macrophages phagocytize bacteria; plays important role in inflammation; holds and conveys tissue fluid.

Location: Widely distributed under epithelia of body, e.g., forms lamina propria of mucous membranes; packages organs; surrounds capillaries.



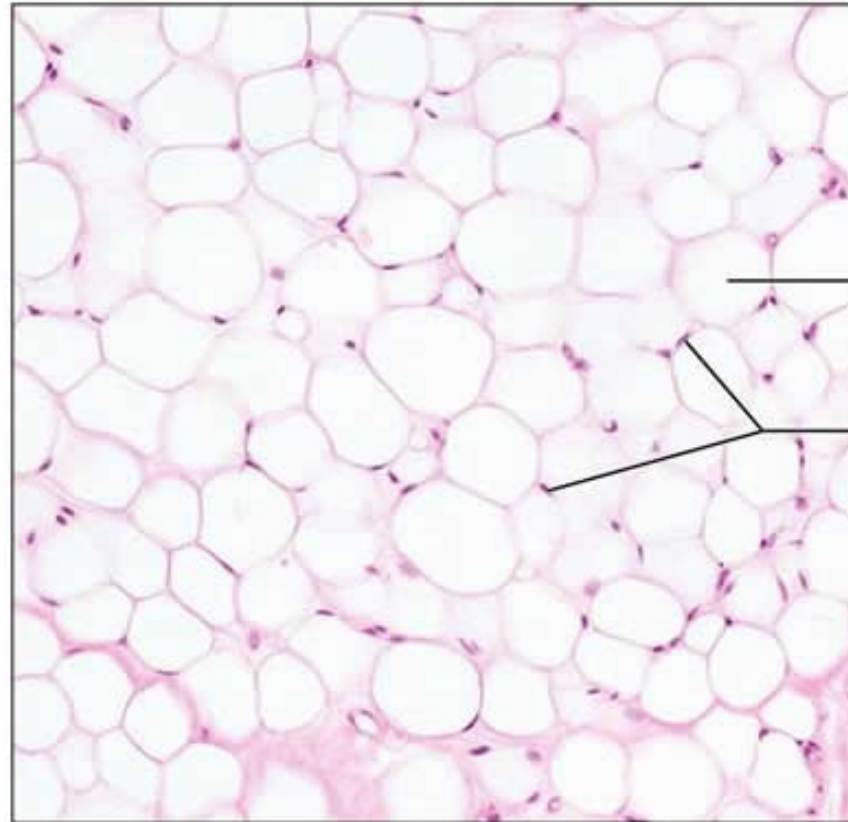
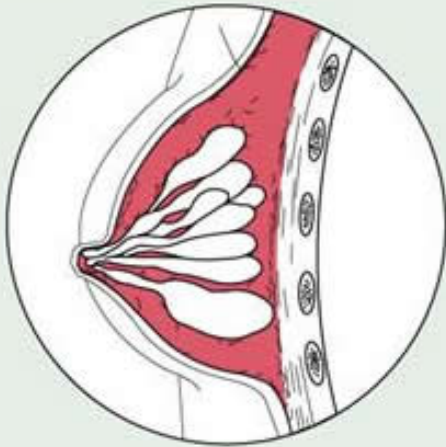
Photomicrograph: Areolar connective tissue, a soft packaging tissue of the body (400 \times).

(b) Connective tissue proper: loose connective tissue, adipose

Description: Matrix as in areolar, but very sparse; closely packed adipocytes, or fat cells, have nucleus pushed to the side by large fat droplet.

Function: Provides reserve food fuel; insulates against heat loss; supports and protects organs.

Location: Under skin; around kidneys and eyeballs; within abdomen; in breasts.



Vacuole containing fat droplet
Nuclei of fat cells

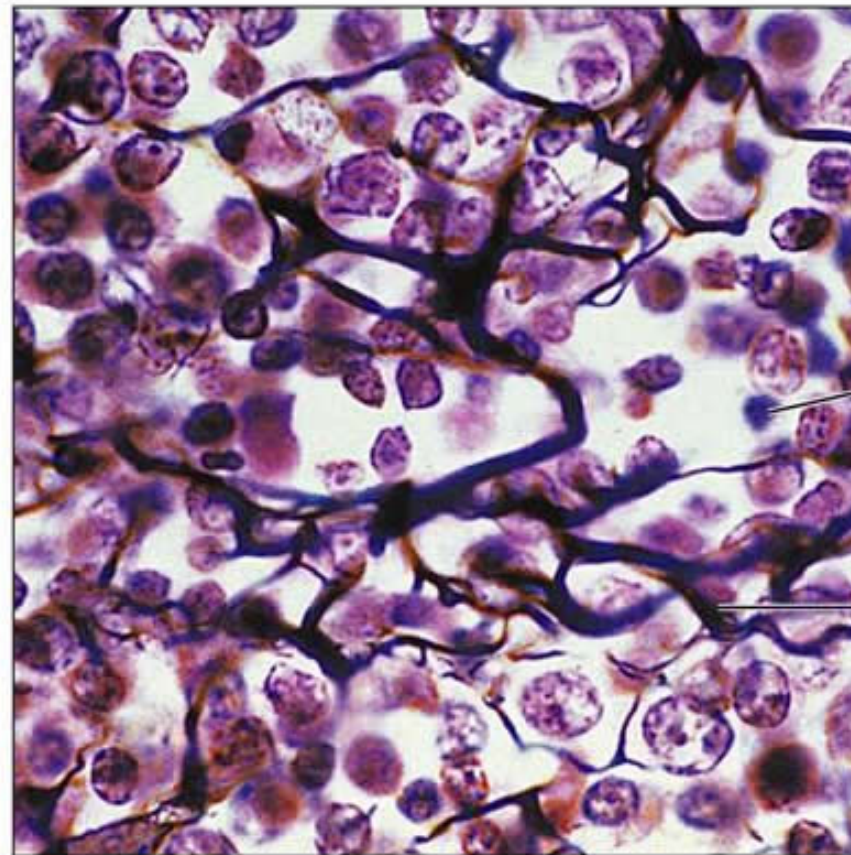
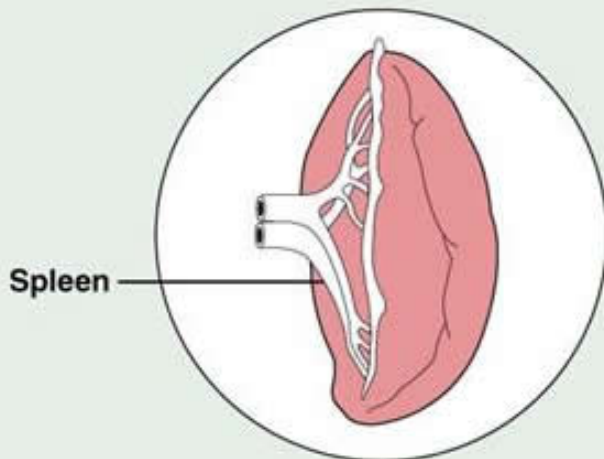
Photomicrograph: Adipose tissue from the subcutaneous layer under the skin (450 \times).

(c) Connective tissue proper: loose connective tissue, reticular

Description: Network of reticular fibers in a typical loose ground substance; reticular cells lie on the network.

Function: Fibers form a soft internal skeleton (stroma) that supports other cell types including white blood cells, mast cells, and macrophages.

Location: Lymphoid organs (lymph nodes, bone marrow, and spleen).



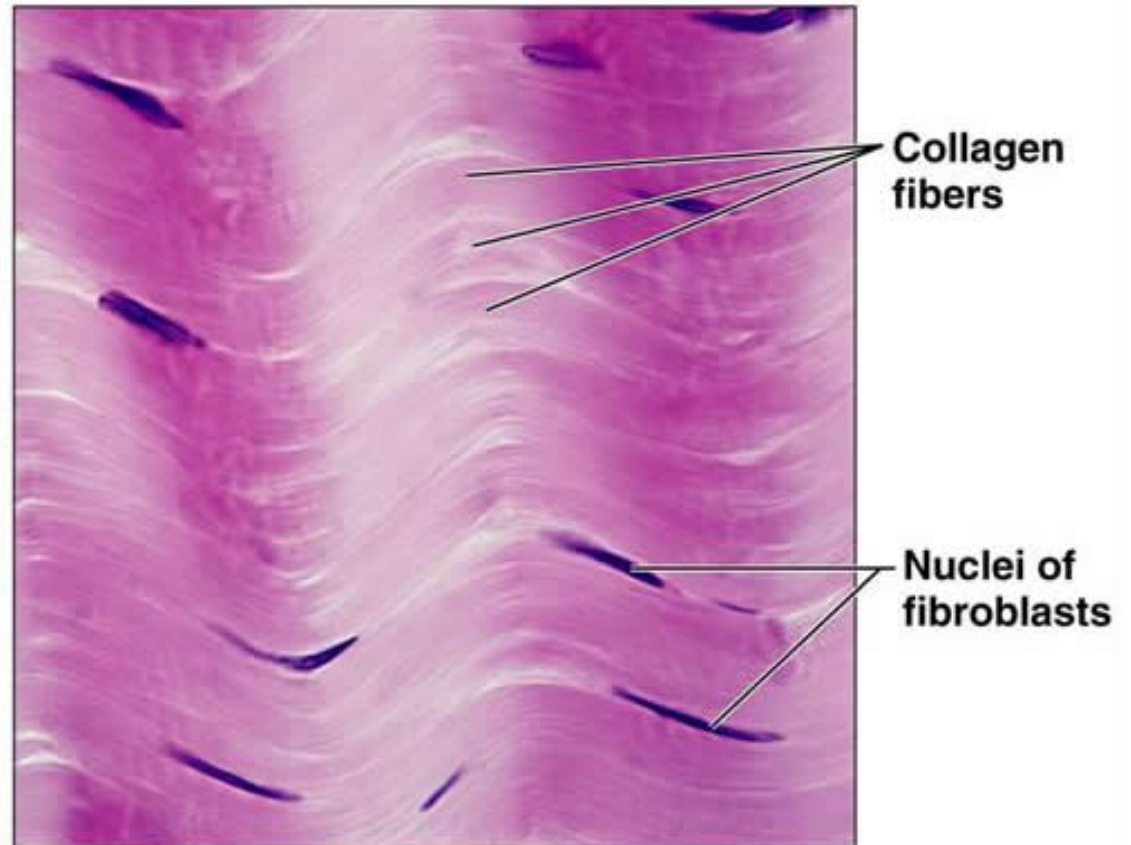
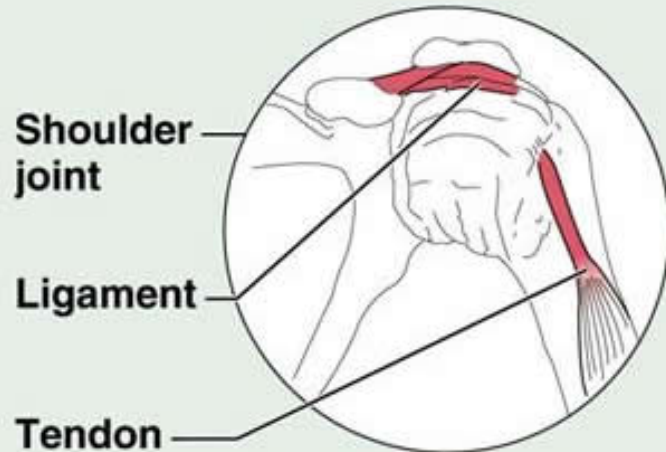
Photomicrograph: Dark-staining network of reticular connective tissue fibers forming the internal skeleton of the spleen (350 \times).

(d) Connective tissue proper: dense connective tissue, dense regular

Description: Primarily parallel collagen fibers; a few elastin fibers; major cell type is the fibroblast.

Function: Attaches muscles to bones or to muscles; attaches bones to bones; withstands great tensile stress when pulling force is applied in one direction.

Location: Tendons, most ligaments, aponeuroses.



Photomicrograph: Dense regular connective tissue from a tendon (1000 \times).

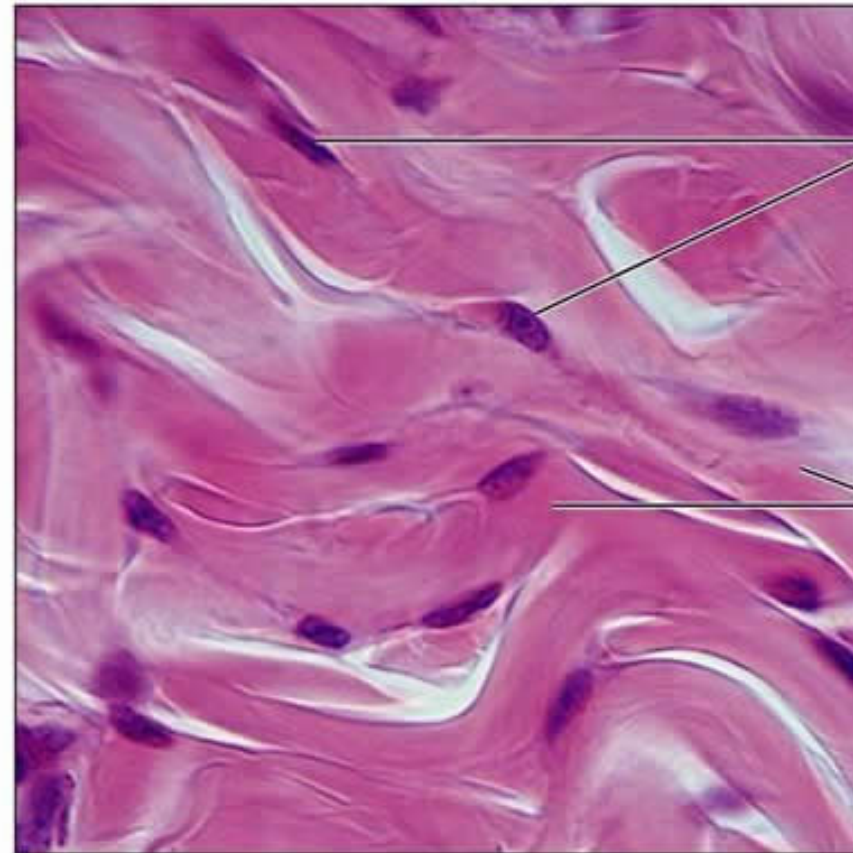
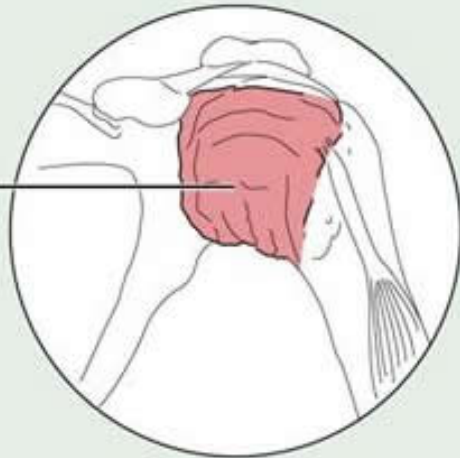
(e) Connective tissue proper: dense connective tissue, dense irregular

Description: Primarily irregularly arranged collagen fibers; some elastic fibers; major cell type is the fibroblast.

Function: Able to withstand tension exerted in many directions; provides structural strength.

Location: Dermis of the skin; submucosa of digestive tract; fibrous capsules of organs and of joints.

Fibrous joint capsule



Nuclei of fibroblasts

Collagen fibers

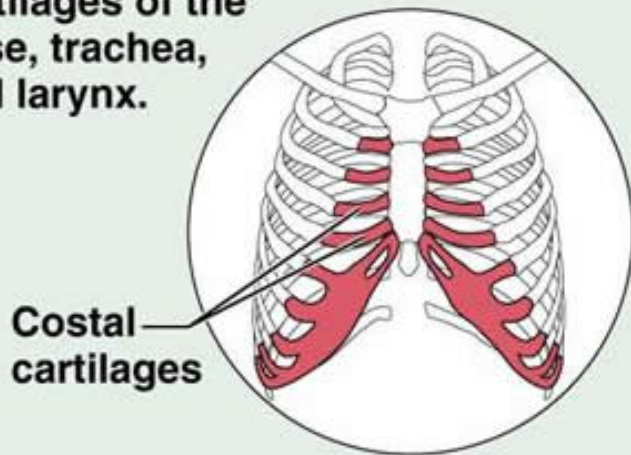
Photomicrograph: Dense irregular connective tissue from the dermis of the skin (400 \times).

(f) Cartilage: hyaline

Description: Amorphous but firm matrix; collagen fibers form an imperceptible network; chondroblasts produce the matrix and when mature (chondrocytes) lie in lacunae.

Function: Supports and reinforces; has resilient cushioning properties; resists compressive stress.

Location: Forms most of the embryonic skeleton; covers the ends of long bones in joint cavities; forms costal cartilages of the ribs; cartilages of the nose, trachea, and larynx.



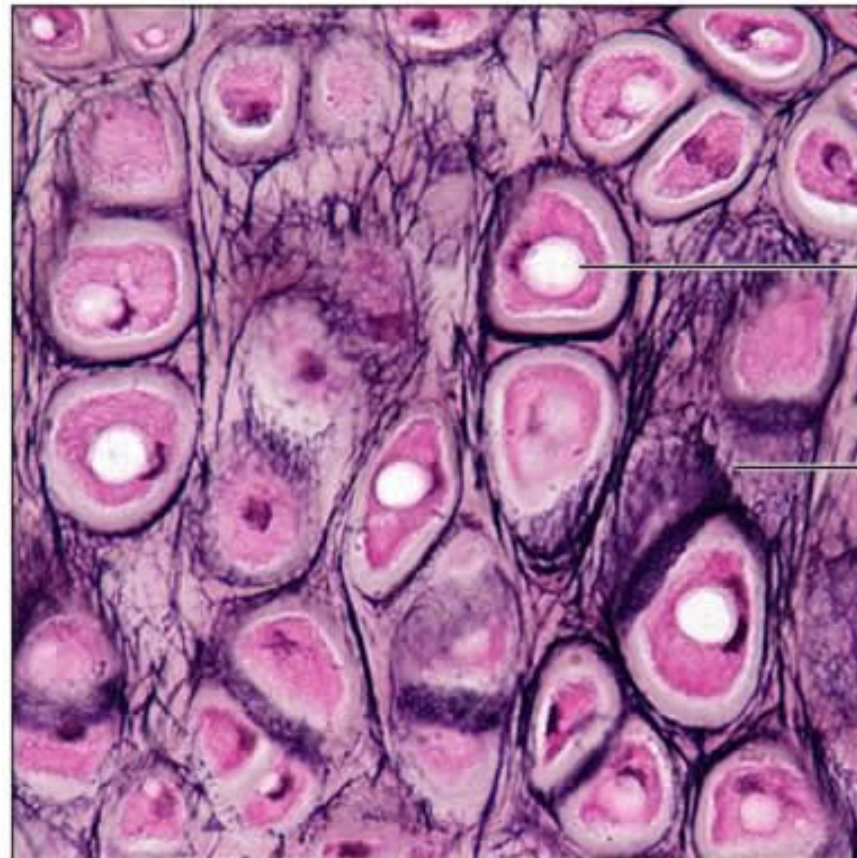
Photomicrograph: Hyaline cartilage from the trachea (300 \times).

(g) Cartilage: elastic

Description: Similar to hyaline cartilage, but more elastic fibers in matrix.

Function: Maintains the shape of a structure while allowing great flexibility.

Location: Supports the external ear (pinna); epiglottis.



Chondrocyte
in lacuna

Matrix

Photomicrograph: Elastic cartilage from the human ear pinna; forms the flexible skeleton of the ear (640 \times).

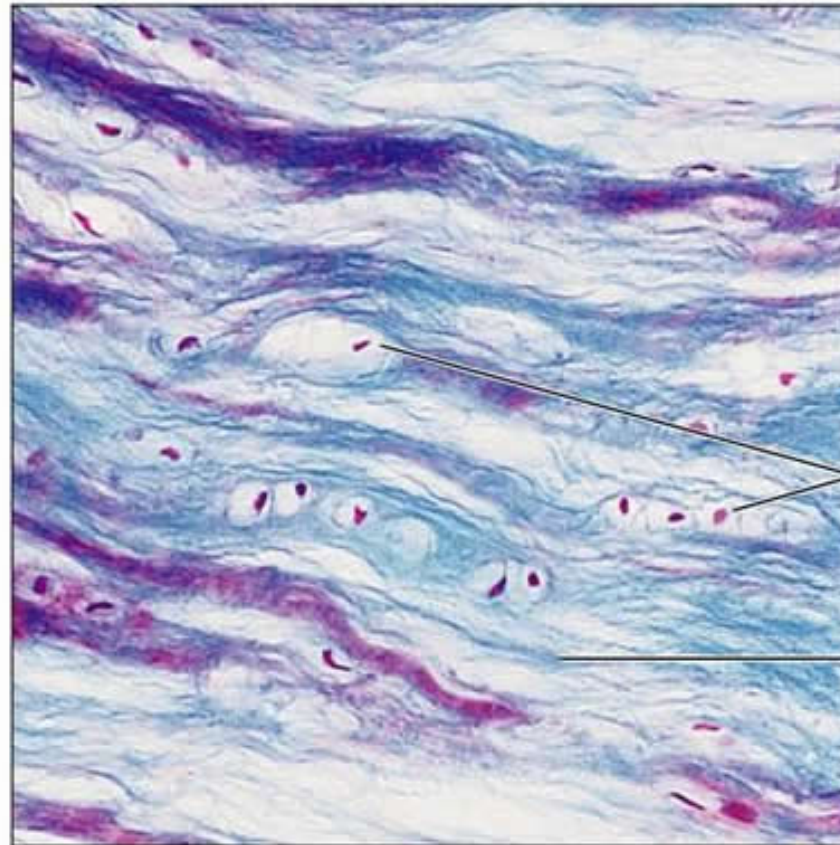
(h) Cartilage: fibrocartilage

Description: Matrix similar to but less firm than that in hyaline cartilage; thick collagen fibers predominate.

Function: Tensile strength with the ability to absorb compressive shock.

Location: Intervertebral discs; pubic symphysis; discs of knee joint.

Intervertebral discs



Chondrocytes
in lacunae

Collagen
fiber

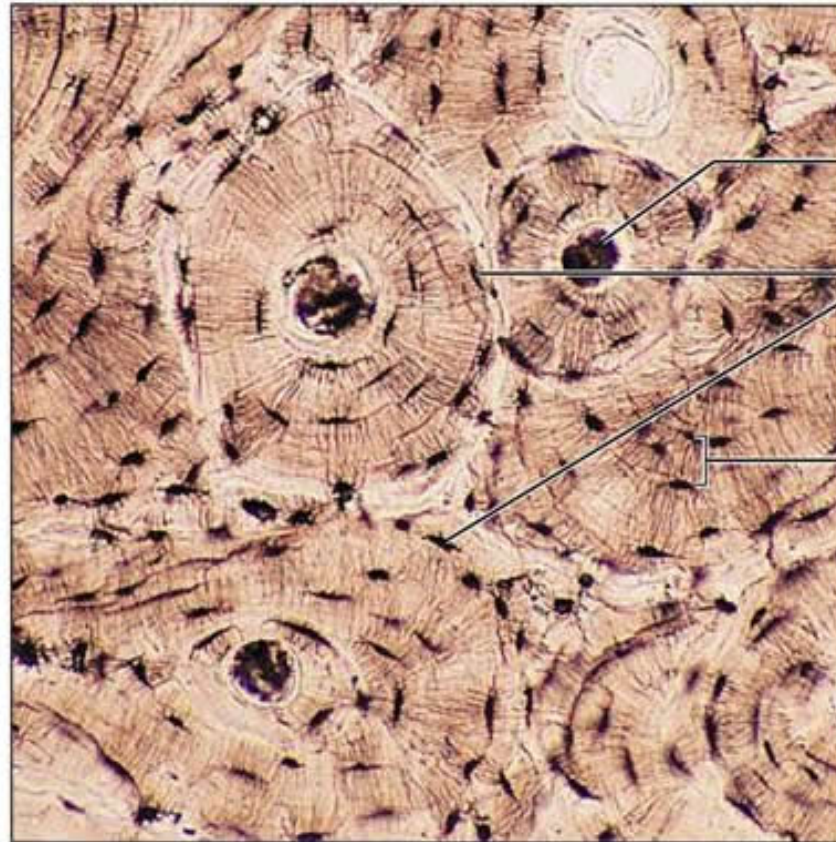
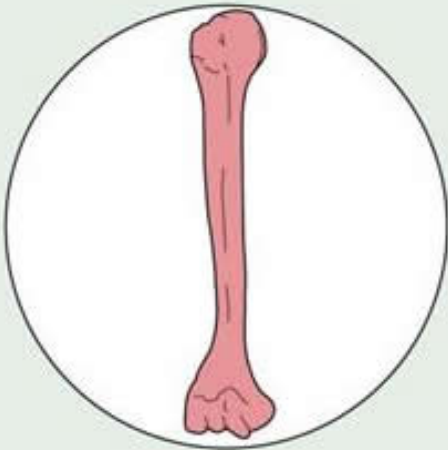
Photomicrograph: Fibrocartilage of an intervertebral disc (200 \times). Special staining produced the blue color seen.

(i) Others: bone (osseous tissue)

Description: Hard, calcified matrix containing many collagen fibers; osteocytes lie in lacunae. Very well vascularized.

Function: Bone supports and protects (by enclosing); provides levers for the muscles to act on; stores calcium and other minerals and fat; marrow inside bones is the site for blood cell formation (hematopoiesis).

Location: Bones



Central canal
Lacunae
Lamella

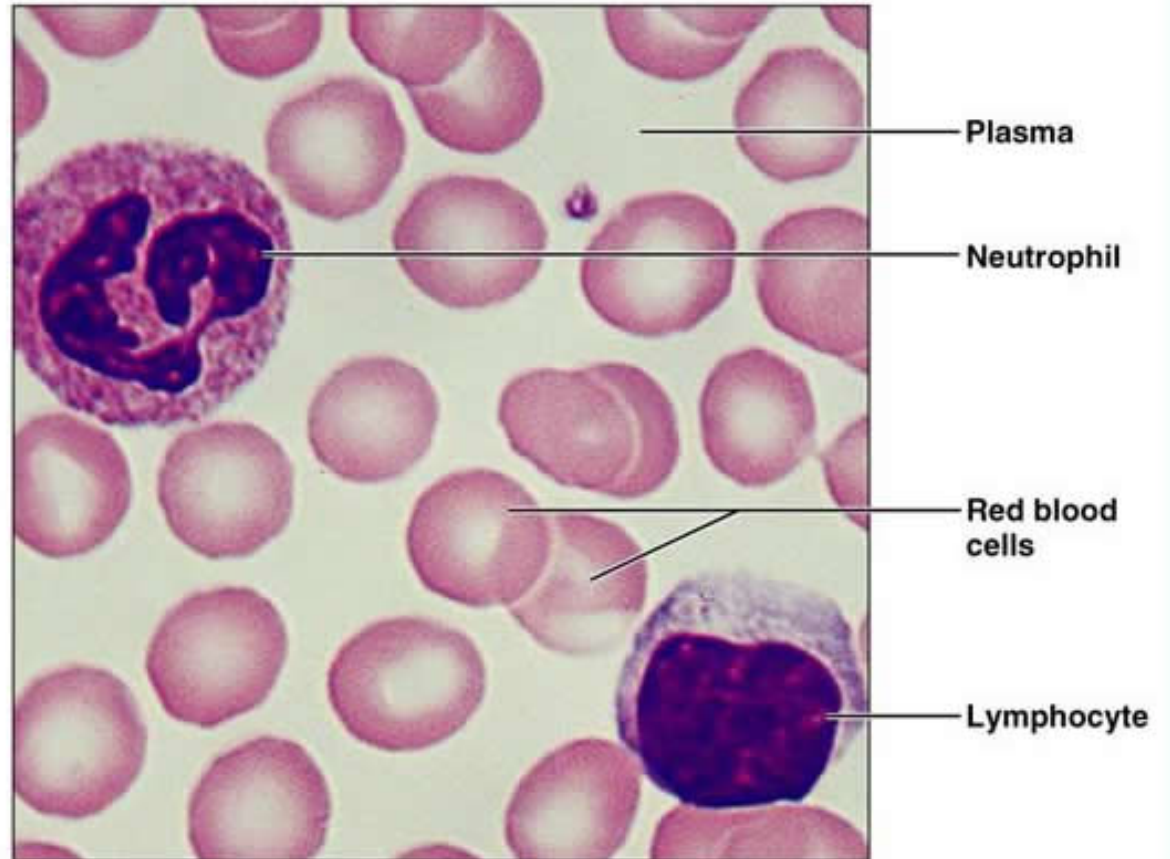
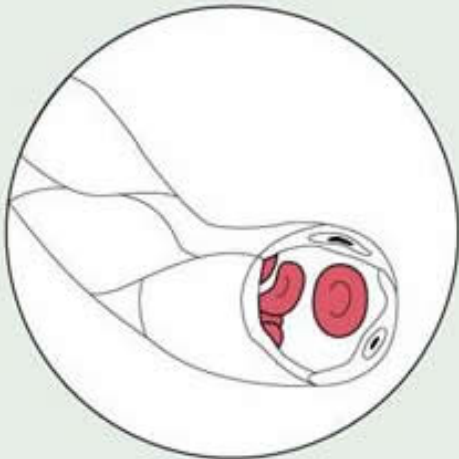
Photomicrograph: Cross-sectional view of bone (70 \times).

(j) Others: blood

Description: Red and white blood cells in a fluid matrix (plasma).

Function: Transport of respiratory gases, nutrients, wastes, and other substances.

Location: Contained within blood vessels.



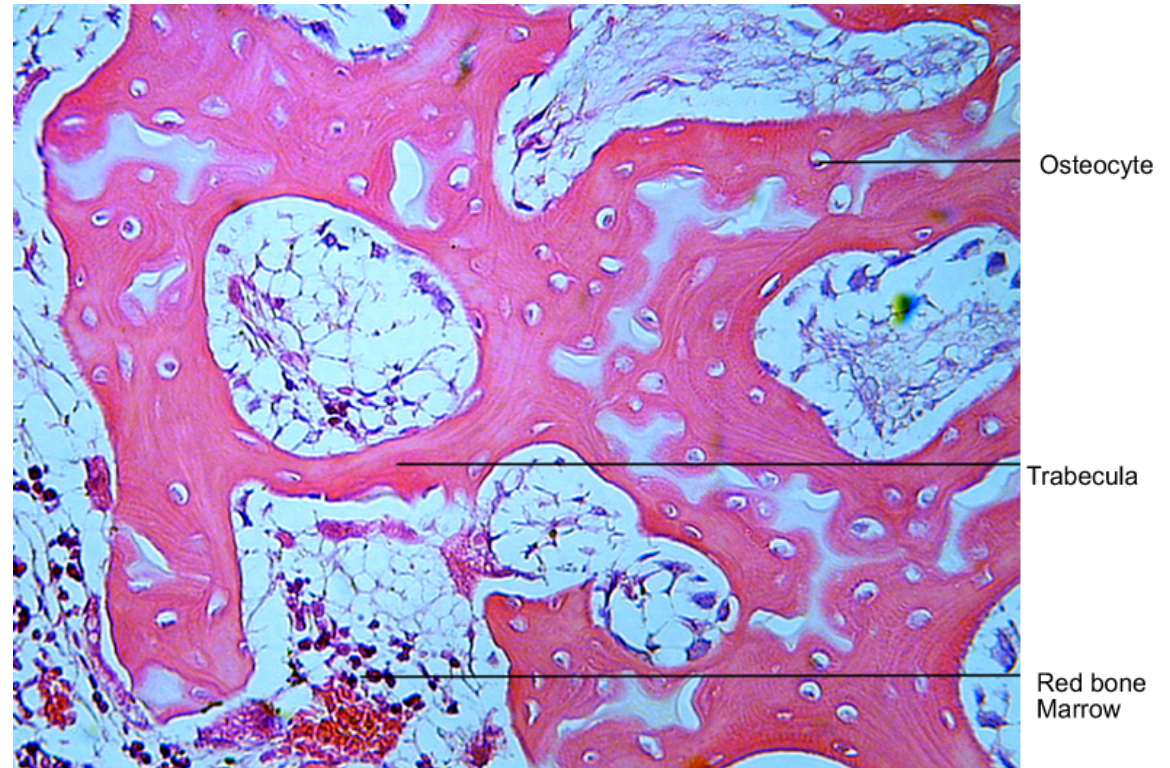
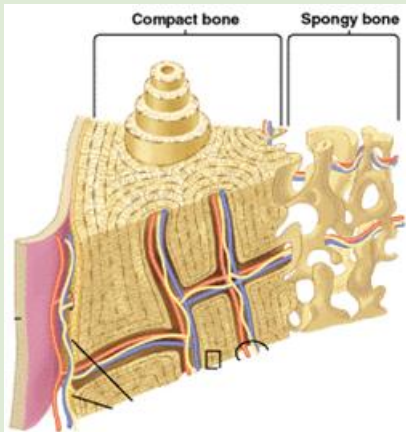
Photomicrograph: Smear of human blood (1500 \times); two white blood cells (neutrophil in upper left and lymphocyte in lower right) are seen surrounded by red blood cells.

k) Others: spongy bone

Description: also known as cancellous bone; lattice-shaped and highly vascular; contains red bone marrow

Function: Location where blood cells are produced (hematopoiesis)

Location: Proximal to joints, ends of long bones, and vertebra



Photomicrograph: Cancellous (spongy) bone (400x)

<http://kcfac.kilgore.edu/kcap1/images/cancellous%20bone%20100x%20b%20fireworks.jpg>

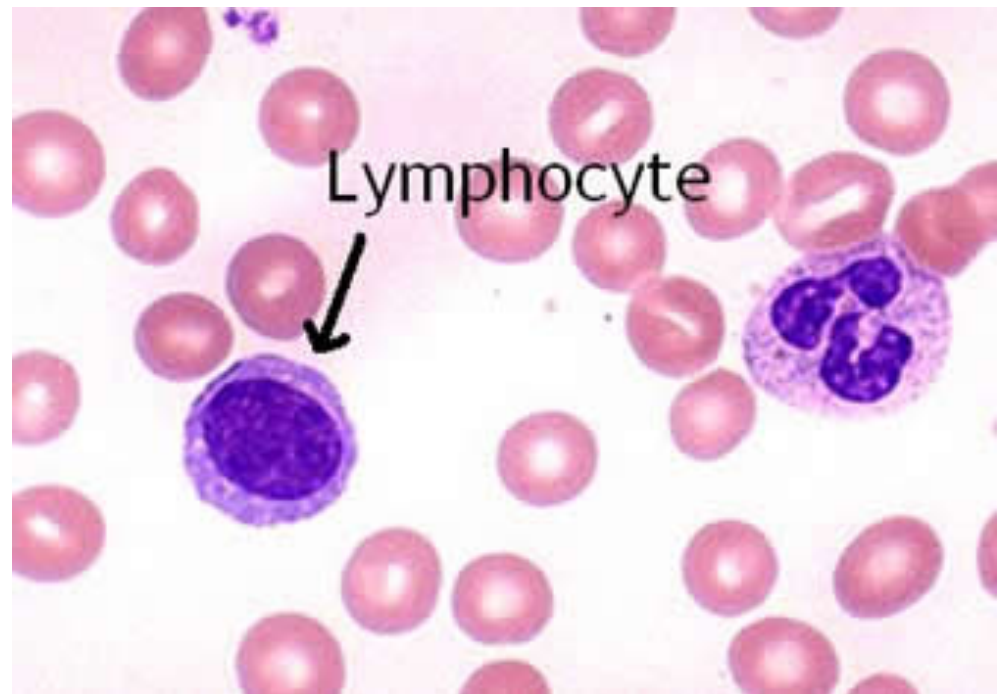
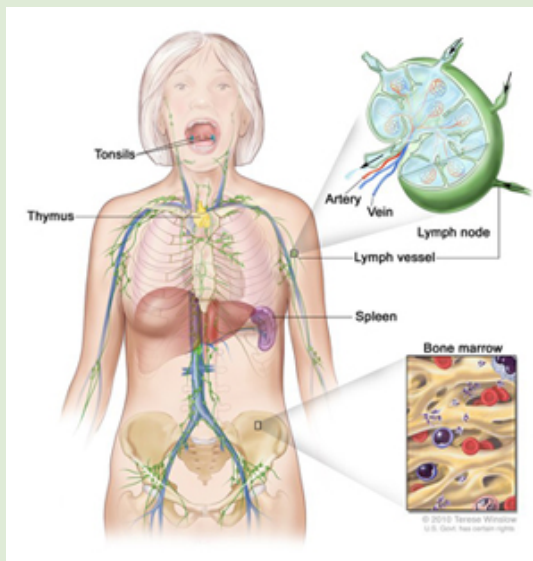
http://fau.pearlashes.com/anatomy/Chapter%209/Chapter%209_files/image002.jpg

I) Others: lymph

Description: White blood cells; include three major types – T cells, B cells, and natural killer cells.

Function: Immunity

Location: Develop in the bone marrow, found in lymphatic system and in blood vessels.



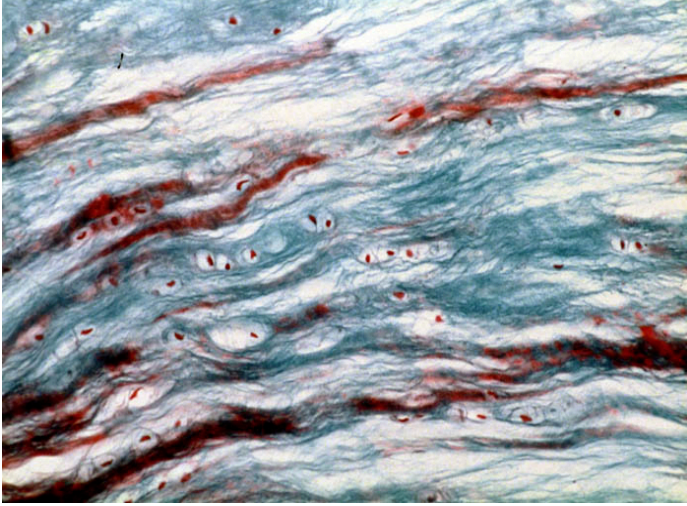
Photomicrograph: Bone marrow smear (400x)

<http://ww2.valdosta.edu/~dodrobin/2652/Bloodlab/Lymphocyte.JPG>

<http://www.cancer.gov/PublishedContent/Images/cancertopics/factsheet/detection/nci-vol-9091-72.jpg>

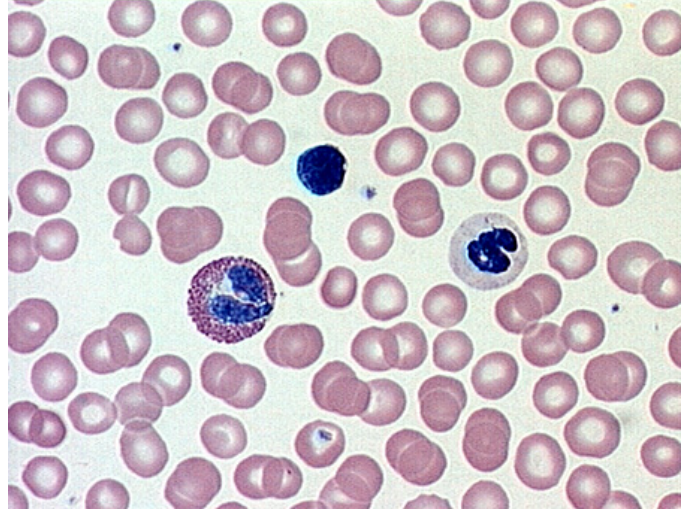
Lab 4b, Part B: Color Images

A.



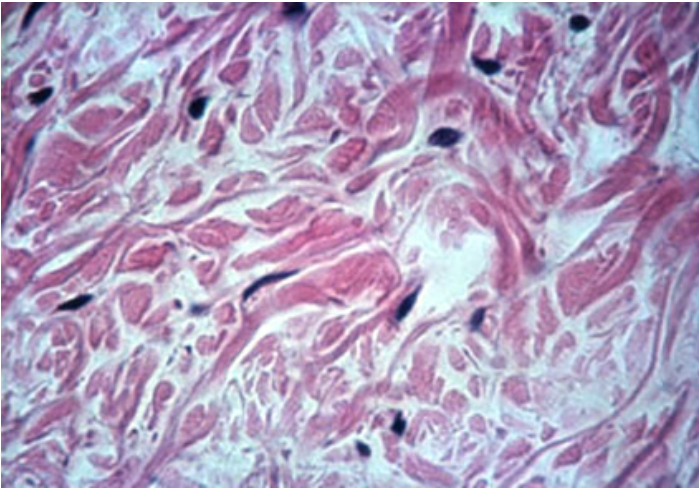
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B.



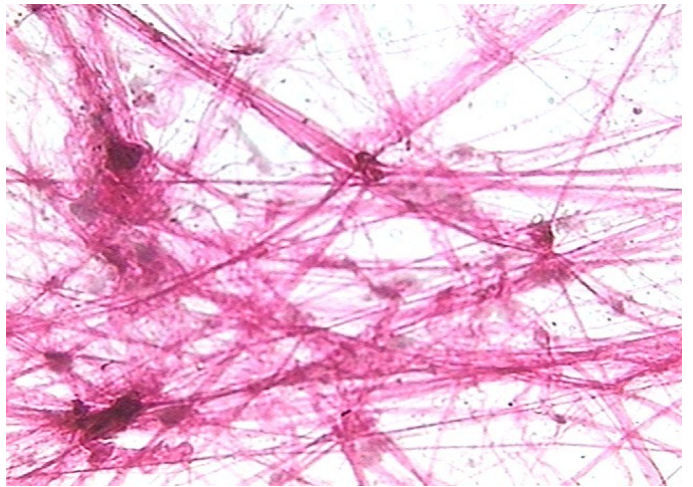
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C.



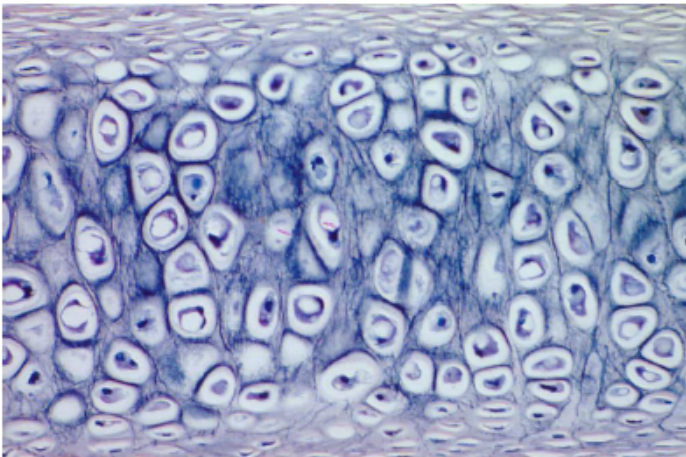
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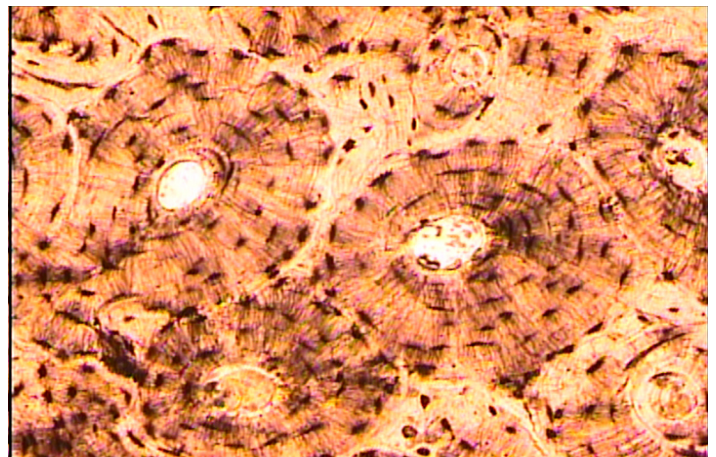
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E.

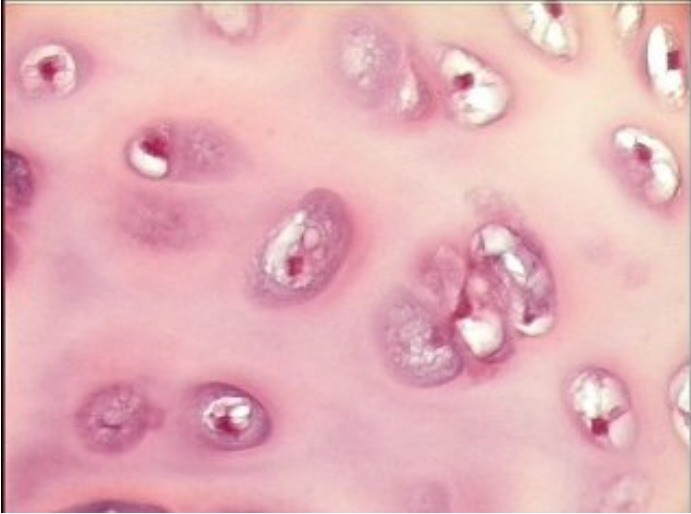


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F.

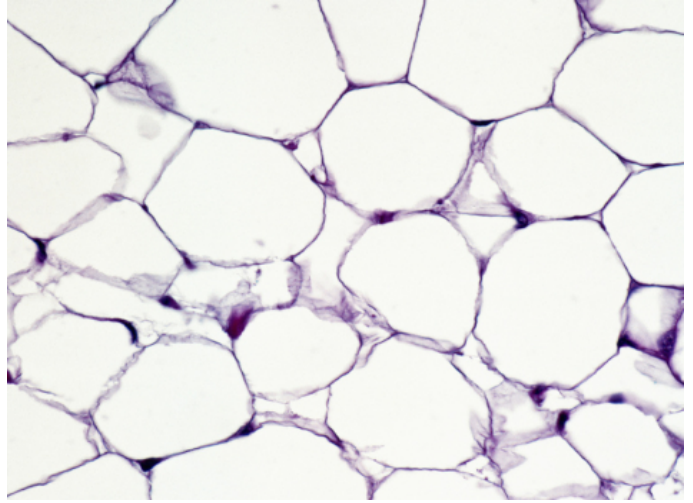


G.

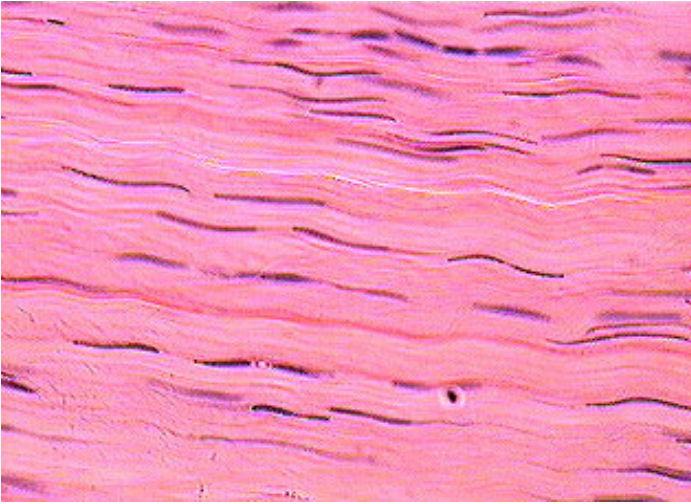


<http://academics.eckerd.edu/instructor/denisosh/hyalinecart.jpg>
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H.

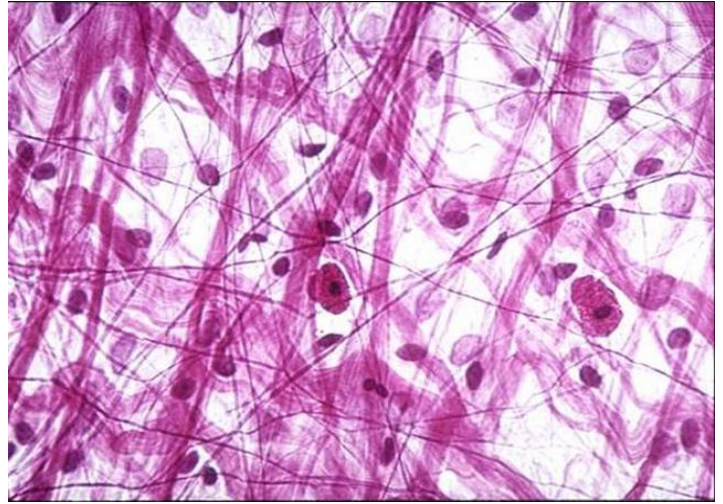


I.



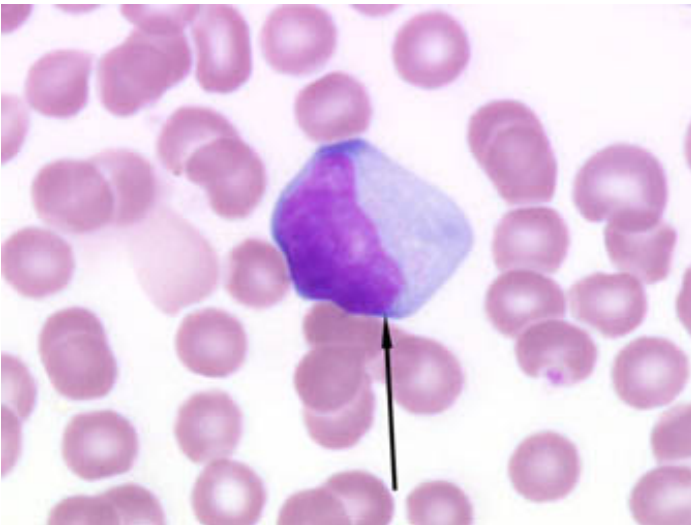
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J.



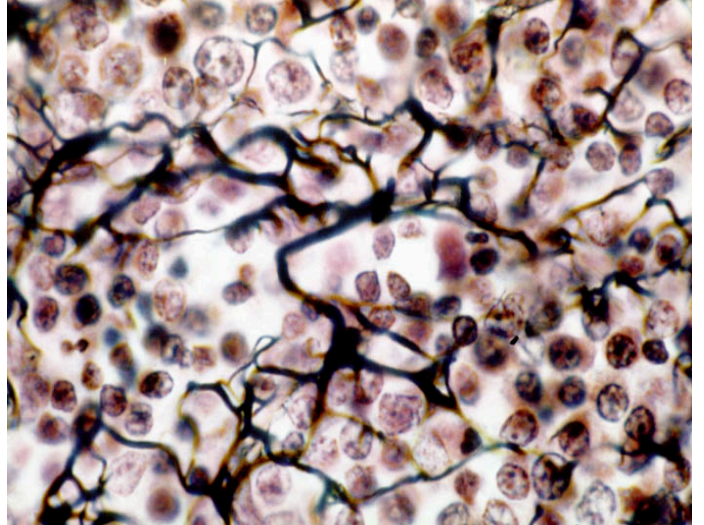
<http://www.newarkcolleges.com/kponto/AreolarConnectiveTissueSkin.jpg>

K.



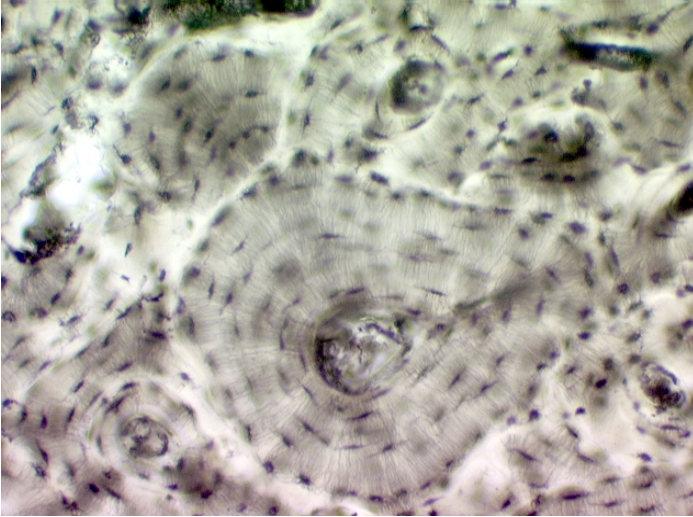
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L.



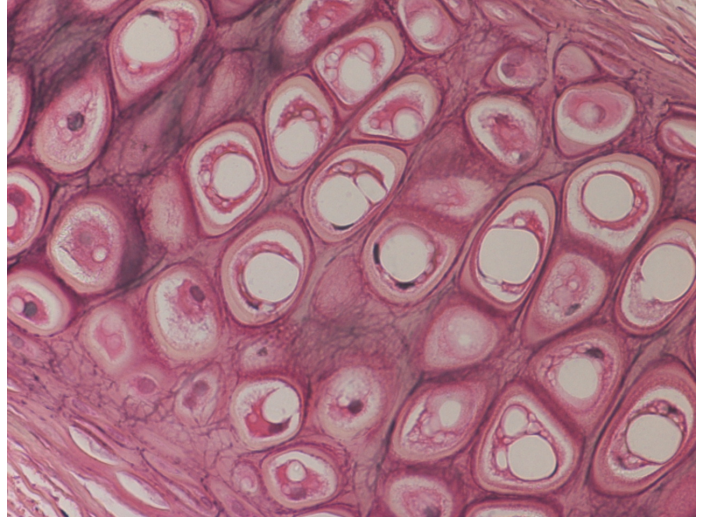
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M.

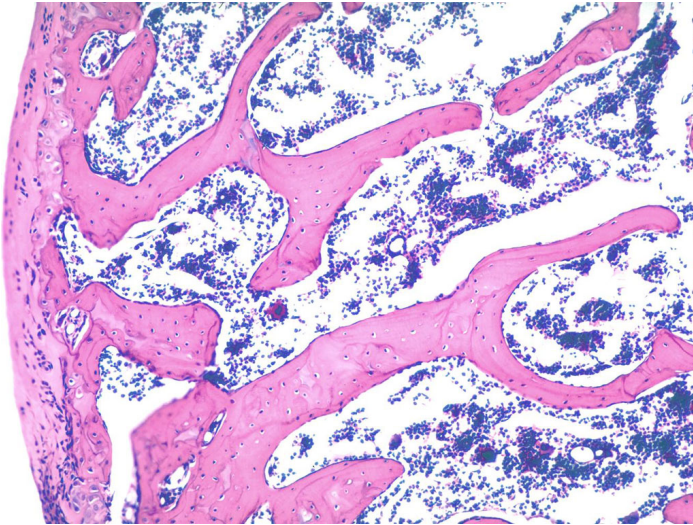


<http://www.vetmed.vt.edu/education/curriculum/vm8054/labs/lab8/IMAGES/OSTEON%20AND%20INTERSTITIAL%20SYSTEM.jpg>
<http://www2.sunysuffolk.edu/pickenc/Elastic%20Cartilage%20400X.JPG>

N.



O.



http://medcell.med.yale.edu/histology/bone_lab/images/trabecular_bone.jpg

