CONNECTIVE TISSUE

Connective Tissue

- These tissues connect and support other tissues of the body
- **Functions :**
- Mechanical support
- Medium for exchange of nutrients & waste products
- Energy store and thermal insulation
- Defensive functions

  a) Barrier b) Engulf bacteria

  c) Antibodies

COMPOSITION OF CONNECTIVE TISSUE

- **Collagen Fibers:** Large fibers made of the protein collagen and are typically the most abundant fibers. Promote tissue flexibility.
- **Elastic Fibers:** Intermediate fibers made of the protein elastin. Branching fibers that allow for stretch and recoil
- **Reticular Fibers:** Small delicate, branched fibers that have same chemical composition of collagen. Forms structural framework for organs such as spleen and lymph nodes.

CLASSIFICATION OF CONNECTIVE TISSUE

1) **Loose connective tissue :**
   a) Areolar connective tissue
   b) Adipose connective tissue
   c) Reticular connective tissue
2) **Dense connective tissue:**
   a) Dense regular connective tissue
   b) Dense irregular connective tissue
   c) Elastic connective tissue

CLASSIFICATION OF CONNECTIVE TISSUE

3) **Cartilage:**

a) Hyaline cartilage

b) Fibro cartilage

c) Elastic cartilage

4) Bone tissue

Liquid connective tissue

a) Blood tissue

b) Lymph

Loose connective tissue

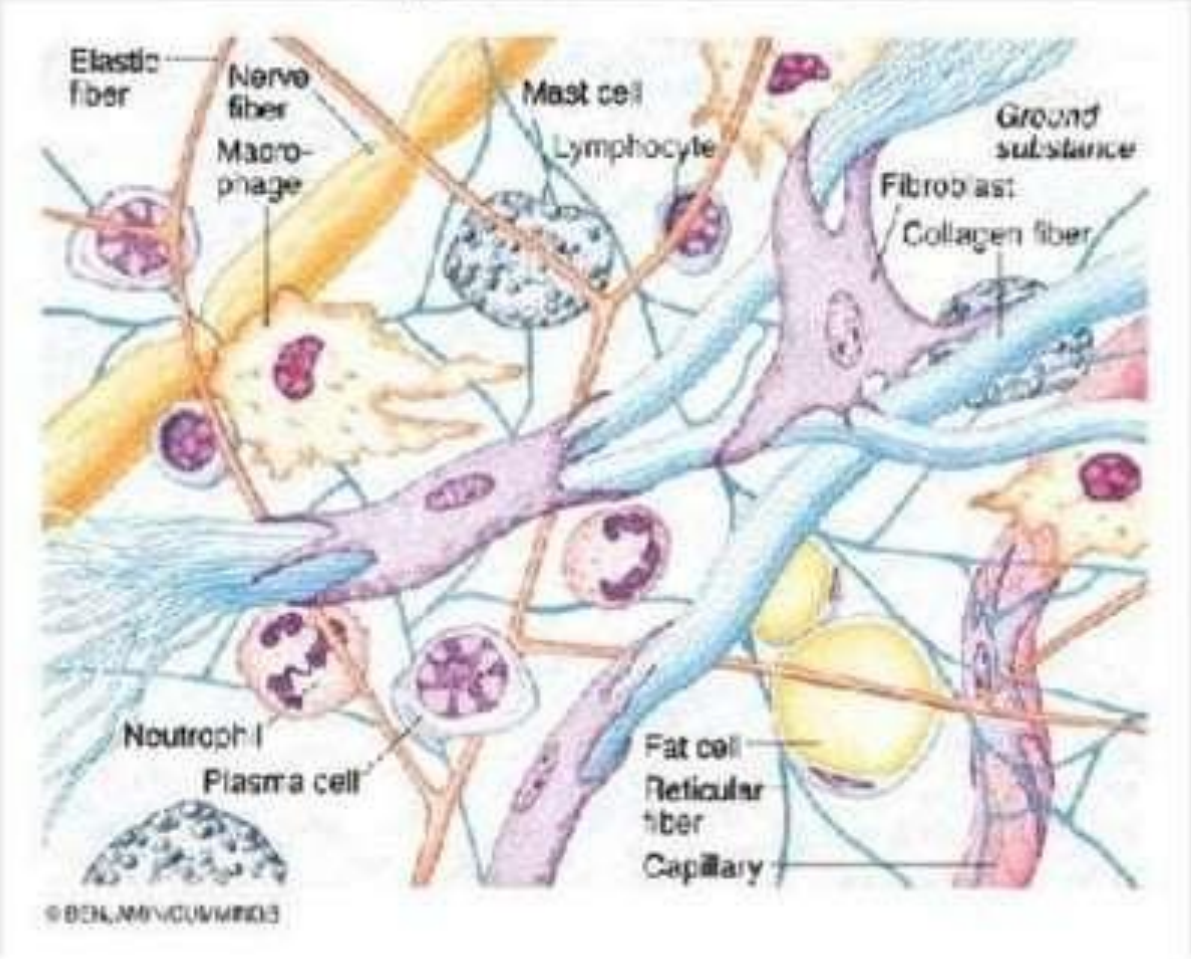
Areolar Connective tissue:

1) They forms a loose network in intracellular material .
2) It consists of collagen, elastic fibers, reticular fibers and several kinds of cells.

Location: Below the skin, fill space between muscles, supports blood vessels and nerves in alimentary canal.

Functions: It gives strength, elasticity and support to tissue.

Areolar Connective tissue:



ADIPOSE CONNECTIVE TISSUE

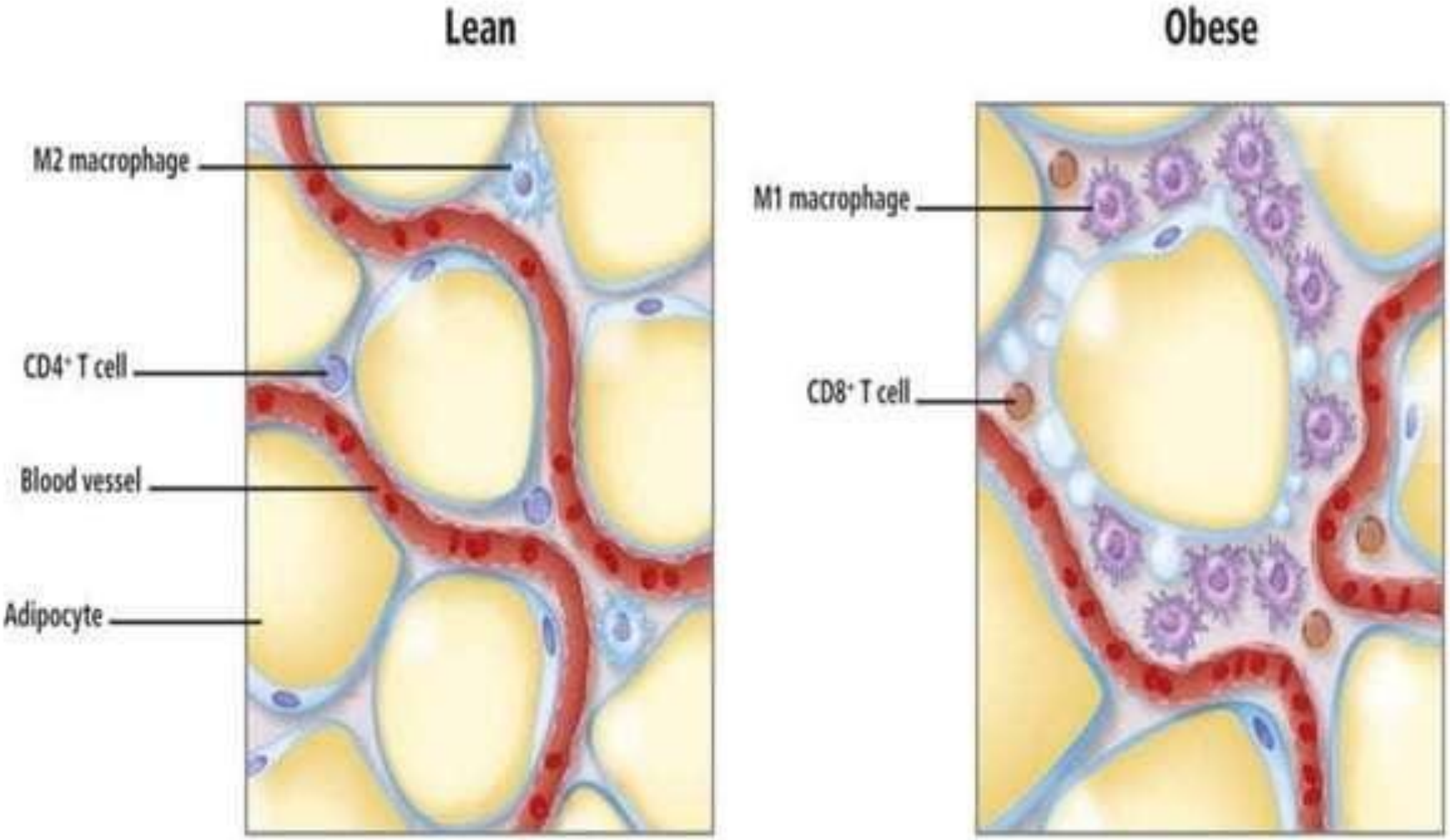
- It consists of adipocytes which stores fat.

Location: It is present in subcutaneous layer deep in the skin, around the heart and kidneys

Functions :

- Prevents heat loose from body.
- Act as reservoir of energy.
- It give shape to the limbs and body.
- It protects underlying organ from injury.

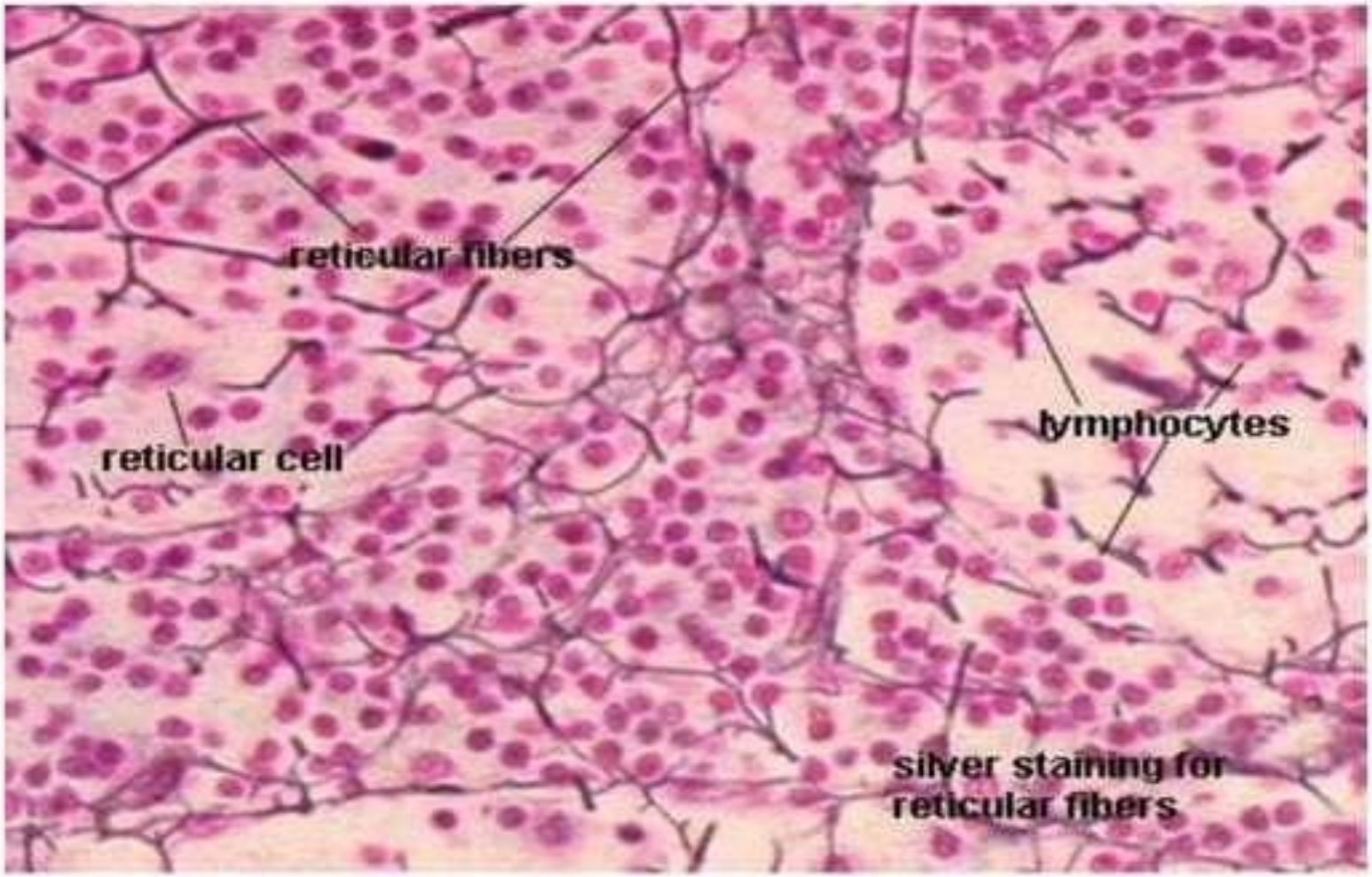
ADIPOSE CONNECTIVE TISSUE



RETICULAR CONNECTIVE TISSUE

- It contains reticular fibers and reticular cells.
- **Location:** It is present in the supporting framework of liver, spleen, lymph nodes, red bone marrow and it is also found around blood vessels and muscles.
- **Functions:** It binds together smooth muscle tissue cells, filters and removes microbes in the lymph node.

RETICULAR CONNECTIVE TISSUE



DENSE CONNECTIVE TISSUE

- In this tissue, fibers are densely packed.
- The fiber content is higher.
- Cell content is lower as compared to loose connective tissue.

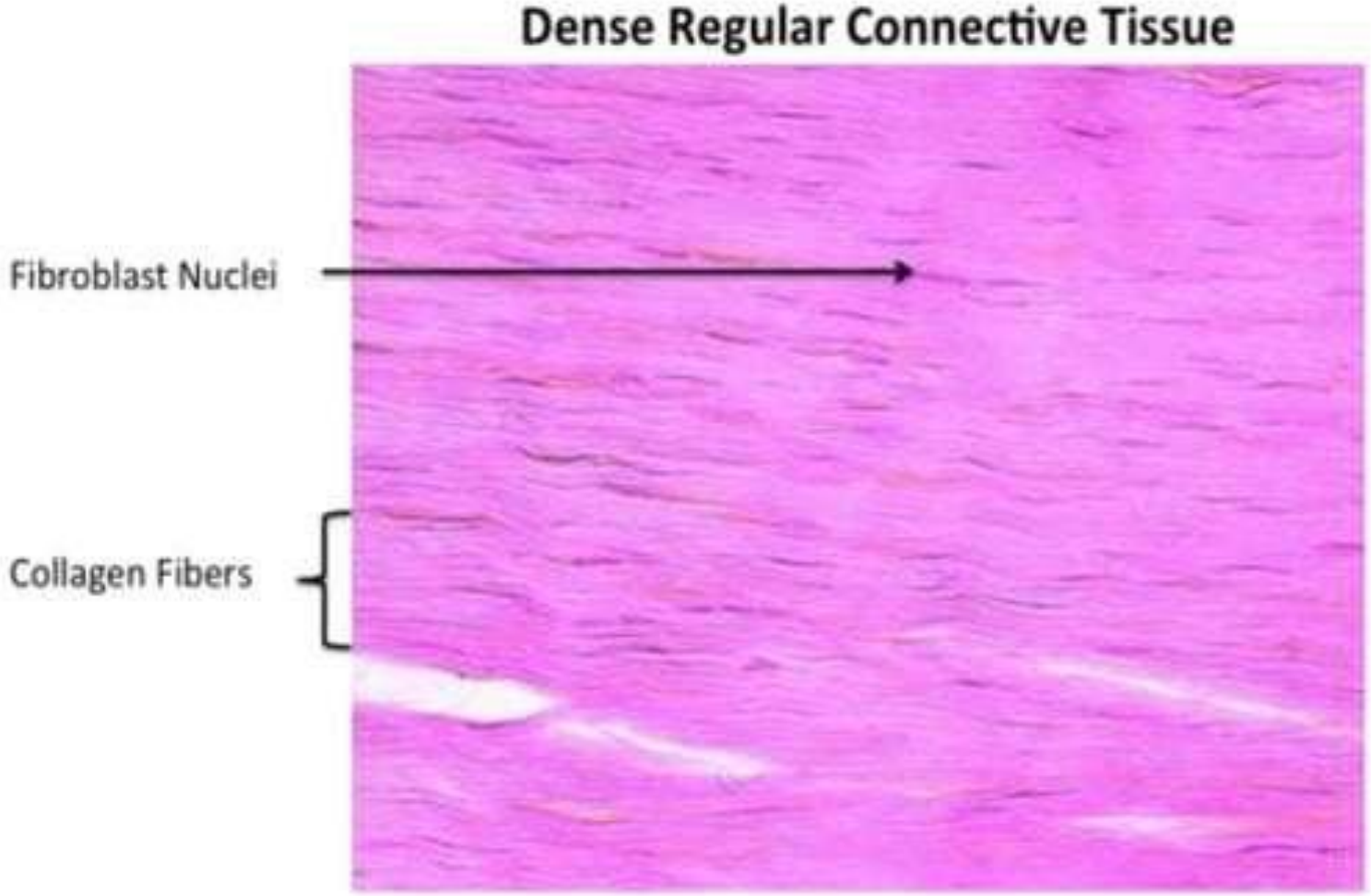
DENSE REGULAR CONNECTIVE TISSUE

- Bundles of collagen fibers are arranged in parallel patterns to provide strength to tissue.
- Fibroblast are appear in rows between the fibers.
- It is tough in nature.

Location: It forms tendons (attach muscle bone) and ligaments(attach bone to bone).

Functions: It provides strong attachment to structure.

DENSE REGULAR CONNECTIVE TISSUE



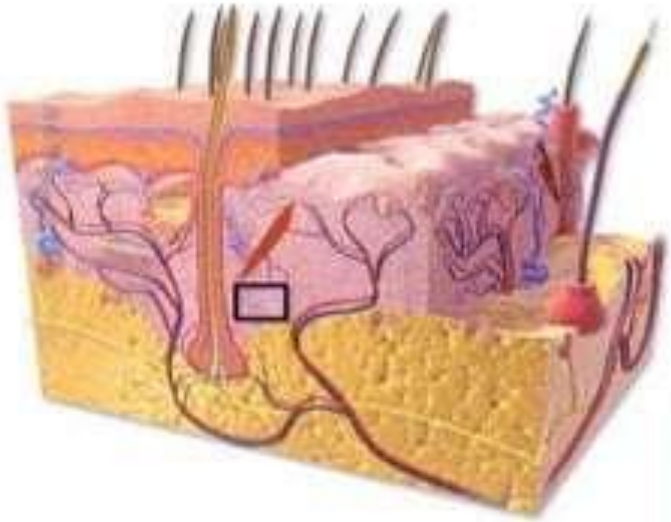
DENSE IRREGULAR CONNECTIVE TISSUE

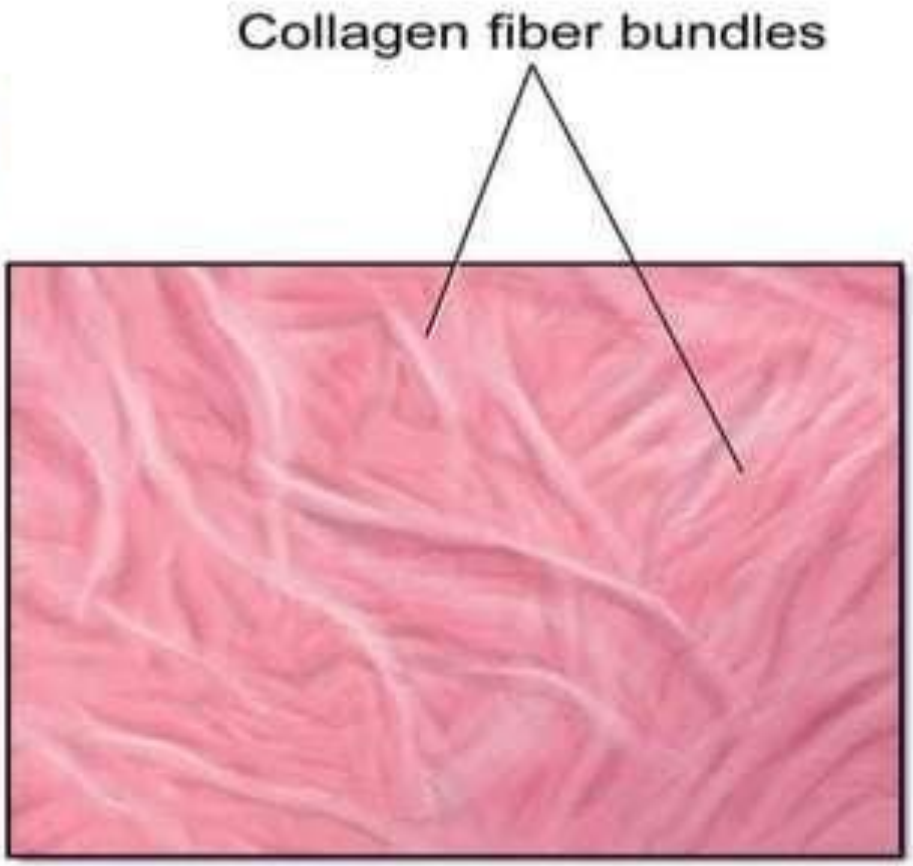
- It contains collagen fibers which are irregular arranged and a few fibroblasts are appear in rows between the fibers.

Location: It present in dermis layer of skin, membrane capsules around kidneys, liver, testes and lymph node, heart valves.

Functions: It provides strength to different organs.

DENSE IRREGULAR CONNECTIVE TISSUE





Dense Irregular Connective Tissue

Deep Dermis

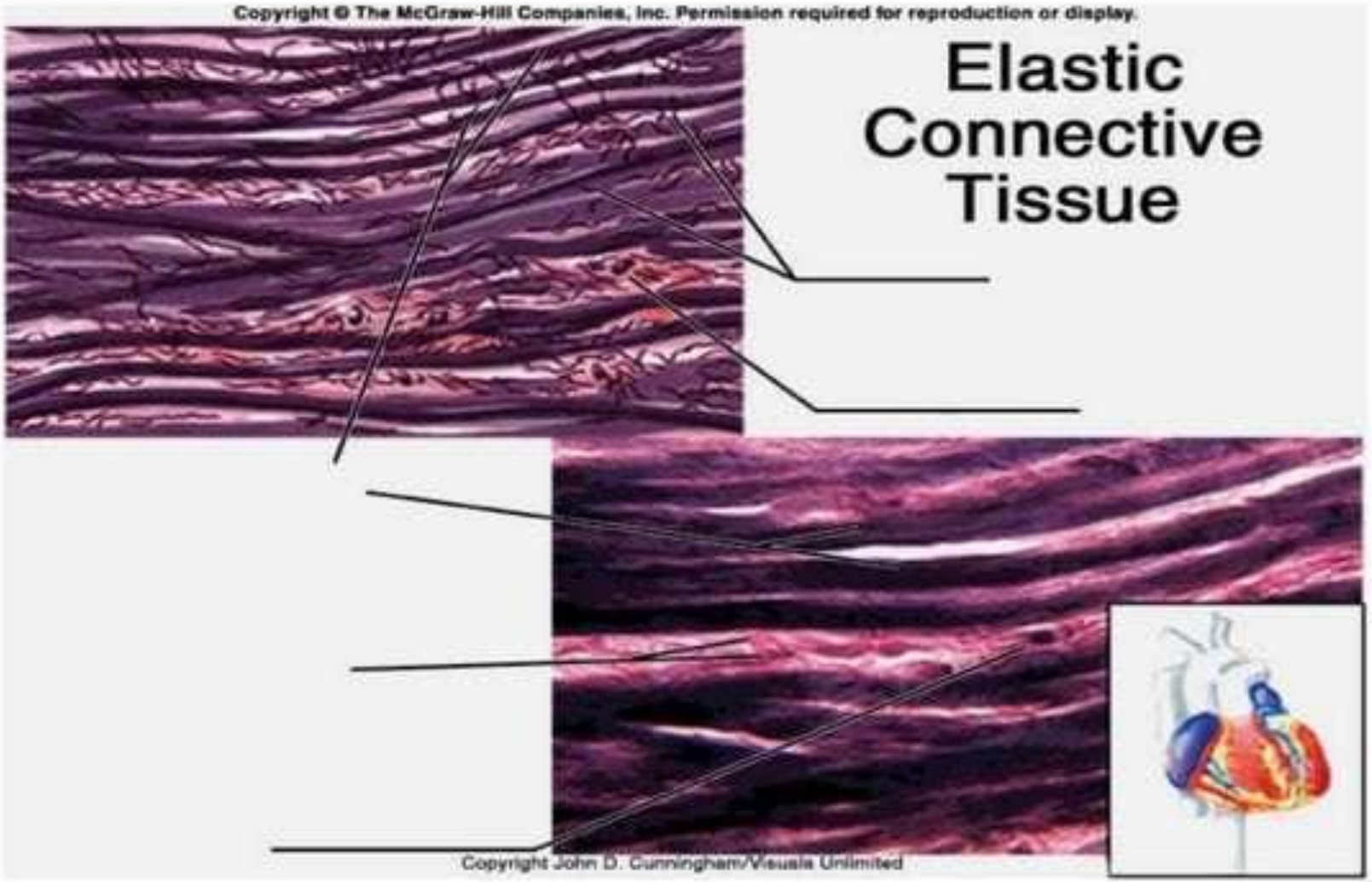
ELASTIC CONNECTIVE TISSUE

- It consists of freely branching elastic fibers.
- Fibroblast are present in space between fibers.
- It is yellowish in colour.

Location: It is present in tissues , walls of elastic arteries, trachea, bronchial tubes and vocal cords.

Functions: It allows stretching of various organs.

ELASTIC CONNECTIVE TISSUE



CARTILAGE

- It consist of network of closely packed collagen fibers and elastic fibers.
- The cells of mature cartilage called as chondrocytes.

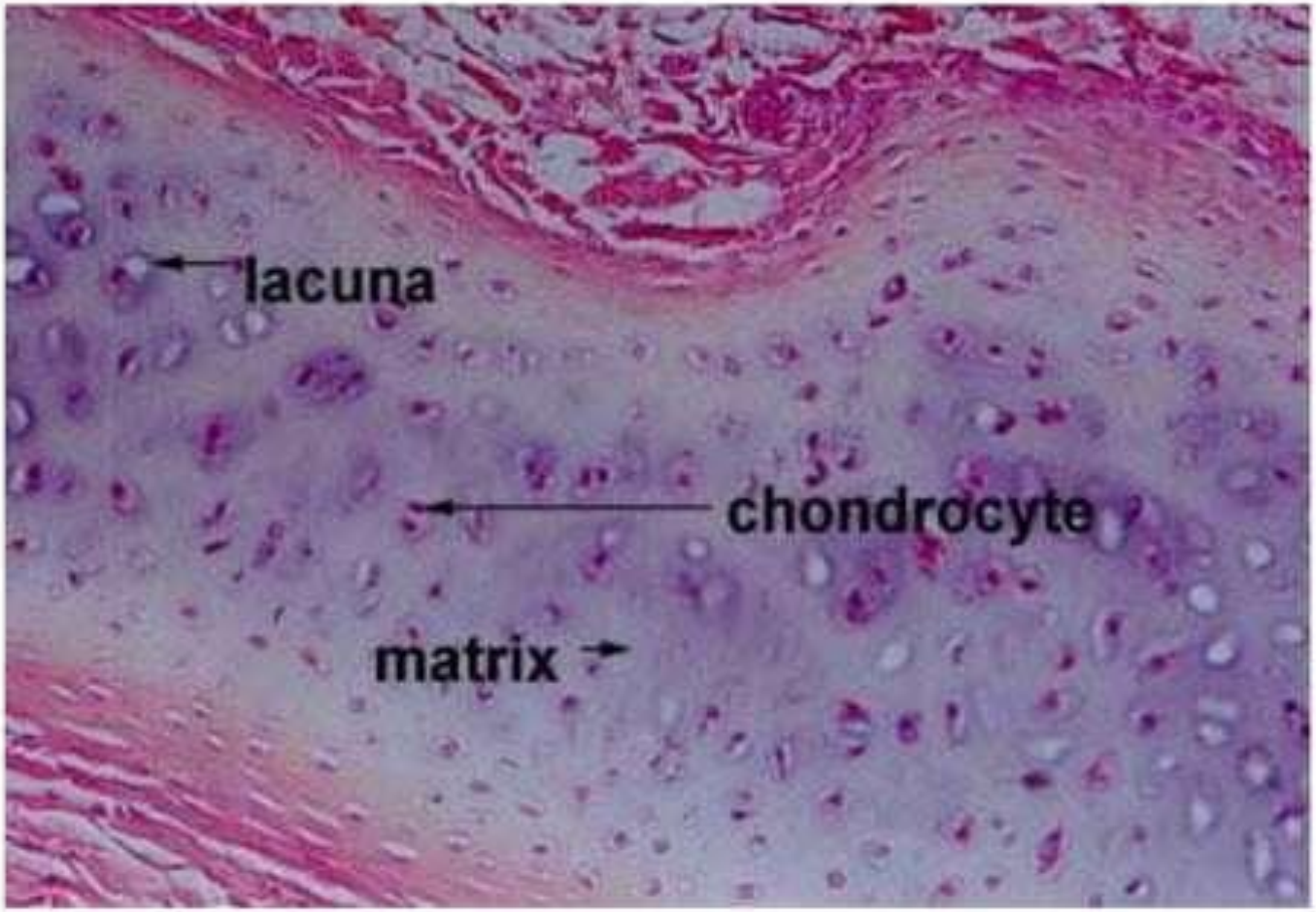
HYALINE CARTILAGE

- It is bluish white in color.
- It consists of fine collagen fibers and many chondrocytes.

Location: It is present at the end of long bones, anterior ends of ribs, nose and parts of larynx, trachea, bronchi, bronchial tubes.

Function: It provides small surface for movement at joints, flexibility and support.

HYALINE CARTILAGE



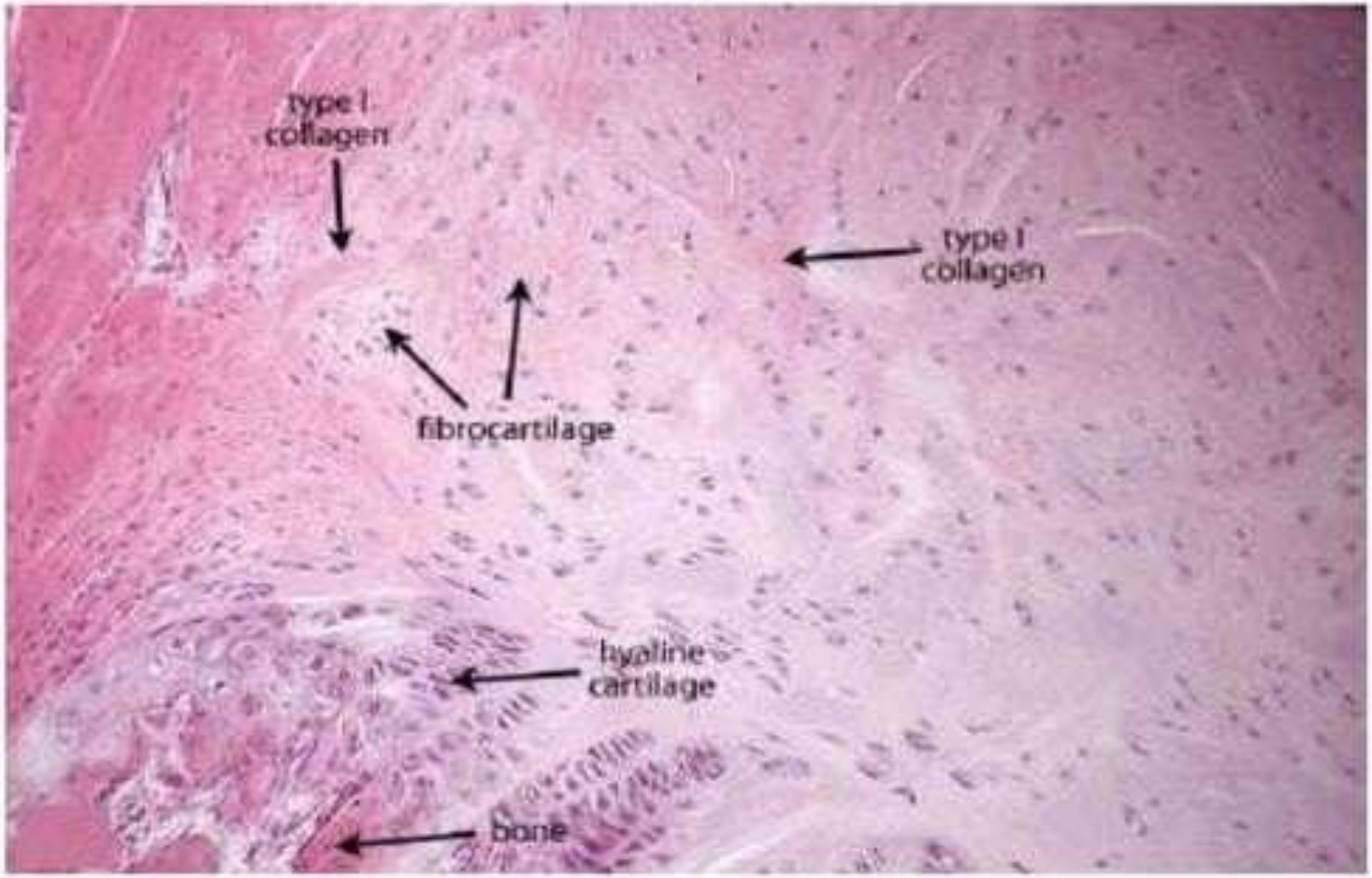
FIBRO CARTILAGE

- It is strongest form of cartilage.
- The chondrocytes are scattered among the bundle collagen fibers within the extracellular matrix.

Location: It is present in inter-verteblar disc.

Functions: It covers and protects bony structures of body.

FIBRO CARTILAGE



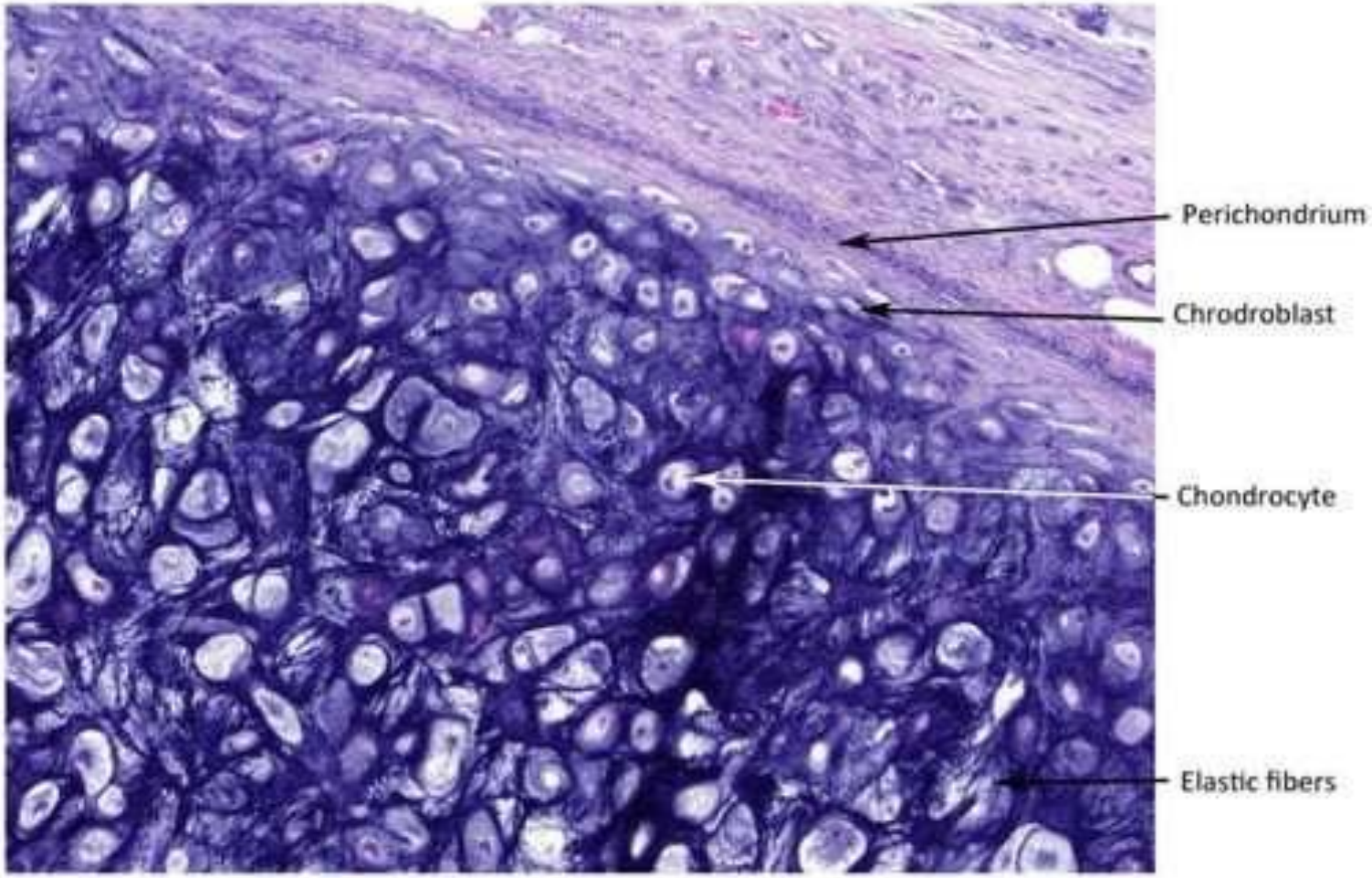
ELASTIC CARTILAGE

- The chondrocytes are located within a threadlike network of elastic fibers within extracellular matrix.

Location: It is present in pinna of ear and top of larynx.

Functions: It provides strength and elasticity and maintain the shape of certain organs such as the external ear.

ELASTIC CARTILAGE



THANK YOU