



# ***Practic Connective Tissue***

**Curriculum : Phase 1/Semester2/TOB /Session 6/Practic**

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**Lecturer : Dr. Rajaa Ali Al- Tae**

**Msc. PhD. Histology      G.mail: [dr.rajaaali@gmail.com](mailto:dr.rajaaali@gmail.com)**

**Hammurabi Medical Collage / Babylon University**

# Connective Tissues

## Objectives:

Having revised this practical you should be able to:

- ✓ recognise the following fibres and connective tissues in photomicrographs, discussing their anatomical locations and salient histological features in relation to their function:
  - *Elastic fibres (e.g. in lung)*
  - *Reticular fibres (e.g. in lymph node)*
  - *Mucous connective tissue (e.g. in umbilical cord)*
  - *Areolar connective tissue*
  - *Adipose tissue*
  - *Dermis (as an example of dense irregular connective tissue)*
  - *Tendons (as an example of dense regular connective tissue)*

# Connective Tissues

## References:

- Histology Textbooks 'Basic Histology', Junqueira, 13 th Edition
- Colour Atlas of Histology' Gartner and Hiatt 5 th Edition
- <http://www.histologyguide.com/>
- Atlas of Histology with Functional & Clinical Correlation, Dongmei Cui, 1<sup>st</sup> Edition, 2011

**Connective Tissue:** is composed of:

***A. Cells:***

Undifferentiated (mesenchymal cells), Fibroblasts, Adipocytes  
, Macrophages , Mast Cells , Plasma cells , Blood cells (specialised  
connective tissue)

***B. Fibers:***

Collagen , Elastin , Reticulin ,

***C. Ground substance :***

Protein , Glycoprotein , Glycosaminoglycans (GAG's) , Lipid , Water

# *Classification of Connective Tissues*

## *A: Proper C.T*

### *I. Loose Connective Tissue (support, cushioning)*

1. Areolar - cushions organs
2. Reticular - liver, spleen
3. Adipose – fat
4. Mesenchymal \_ umbilical cord

## ***II. Dense Connective Tissue (fibrous)***

***1. Dense regular :tendons***

***2. Dense irregular :dermis of skin***

## ***B. Specialized C.T***

***I. Cartilage (flexible, strong support)***

***II. Bone (structure, support)***

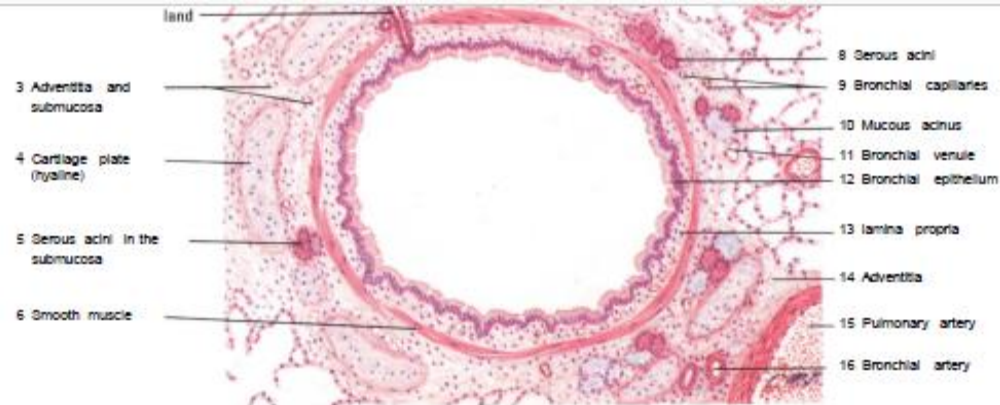
***III. Liquid Connective Tissue (fluid):***

***1. Blood (erythrocytes – white blood cells, platelets)***

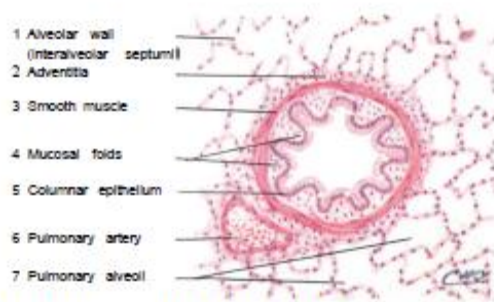
***2. Lymph (leukocytes)***



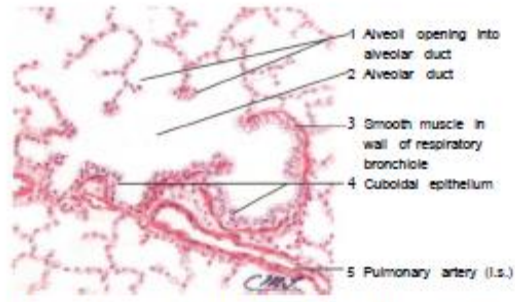
- *Elastic fibres (e.g. in lung)*



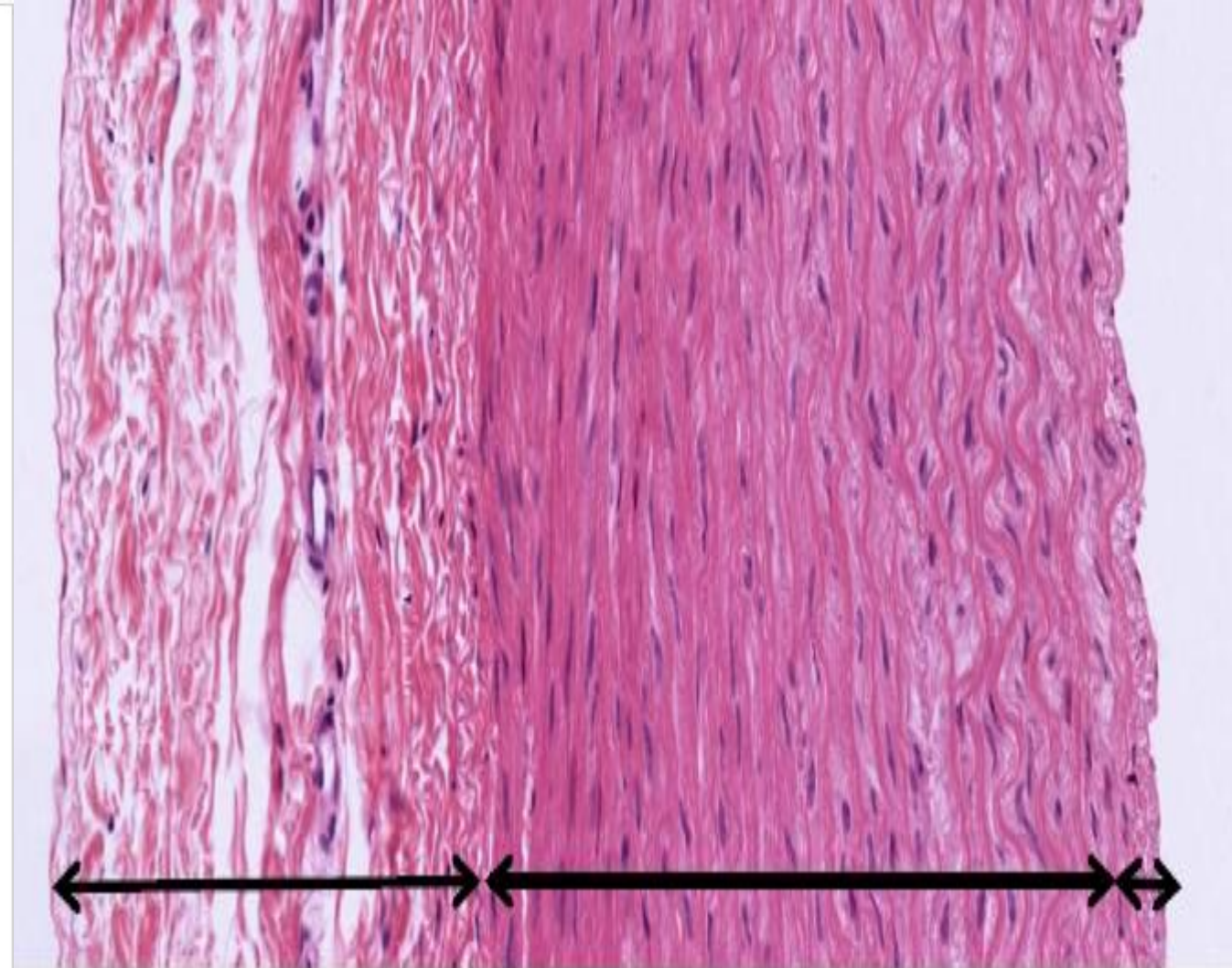
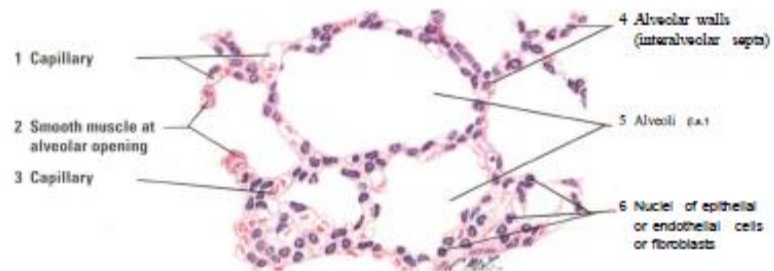
**Fig. 15-9 Intrapulmonary Bronchus.** Stain: hematoxylin-eosin. Low magnification



**Fig. 15-10 Terminal Bronchiole.** Stain: hematoxylin-eosin. Low magnification.



**Fig. 15-11 Respiratory Bronchiole.** Stain: hematoxylin-eosin. Low magnification.



Tunica adventitia

tunica media

Tunica intima

***Histological sections through lung***

***Large artery: Elastic fiber***



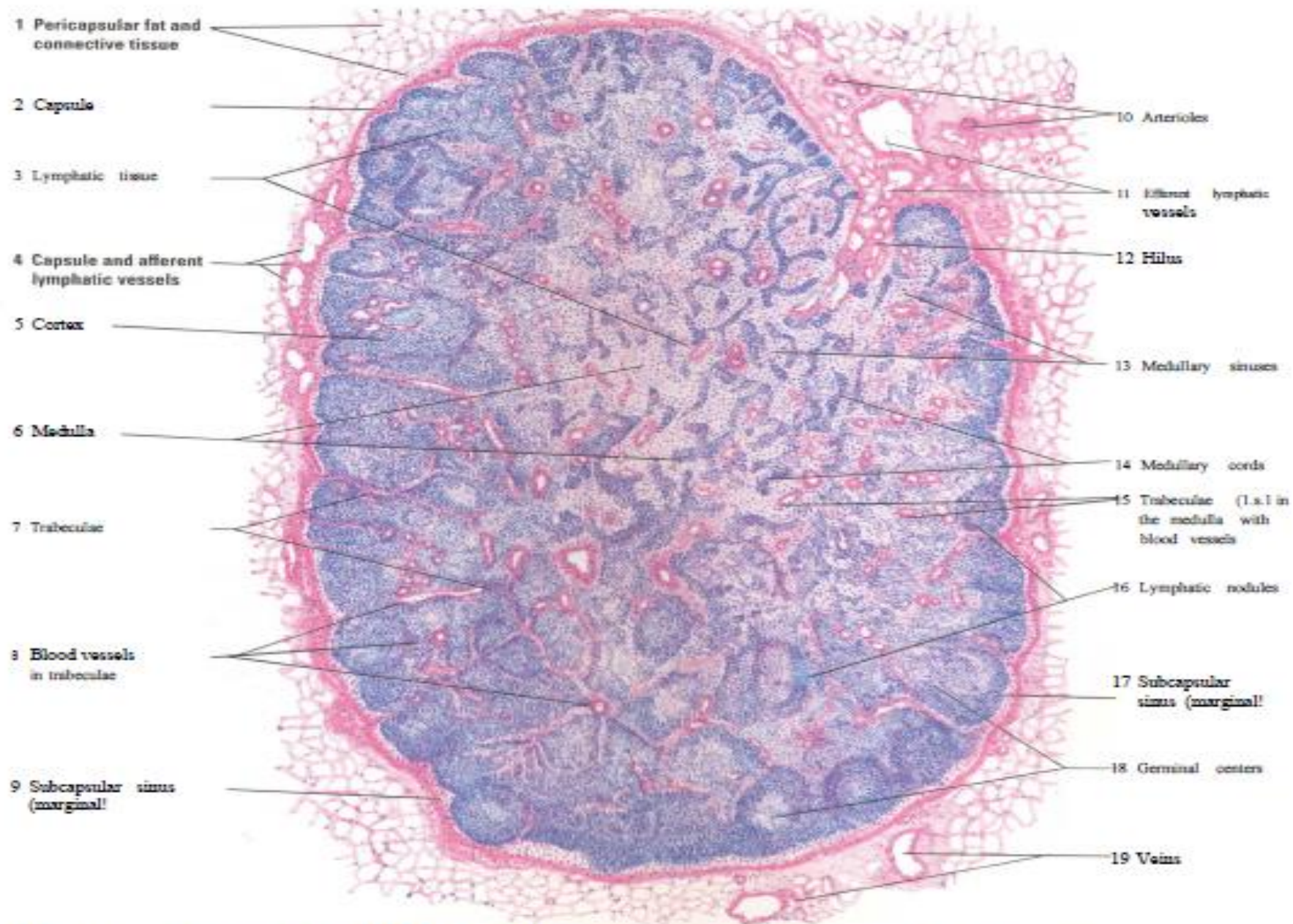
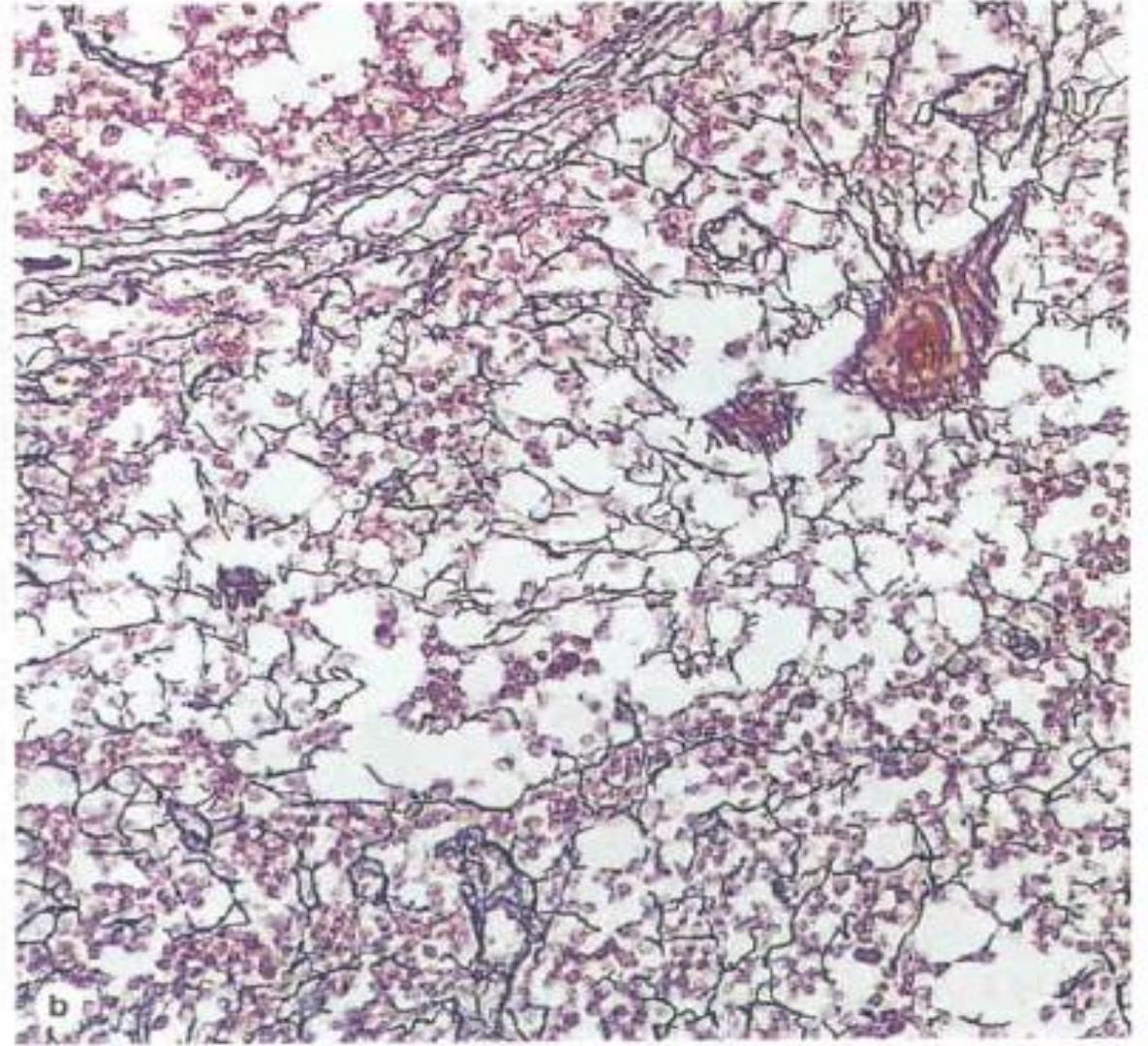
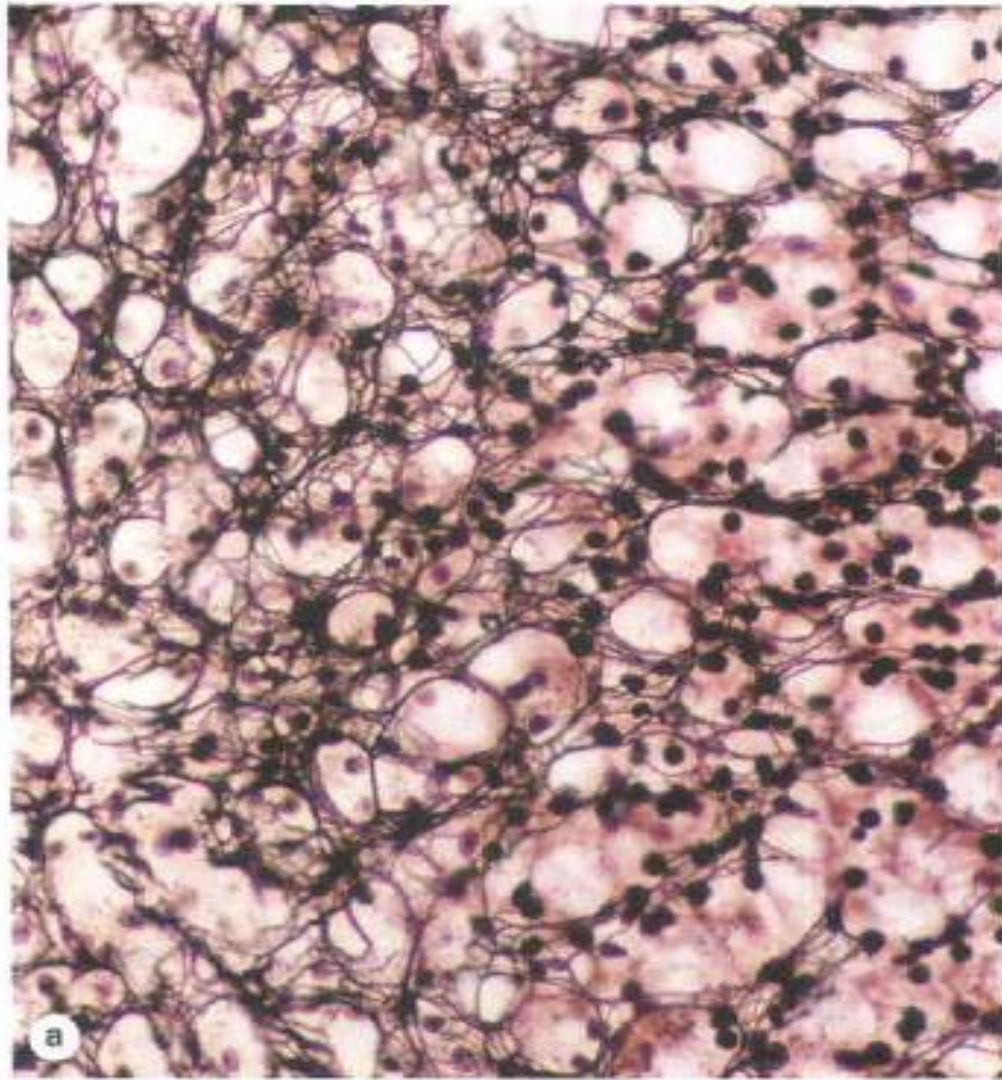


Fig. 9-1 Lymph Node (panoramic view). Stain: hematoxylin-eosin. Low magnification.

- **Reticular fibres**  
(e.g. in lymph node)

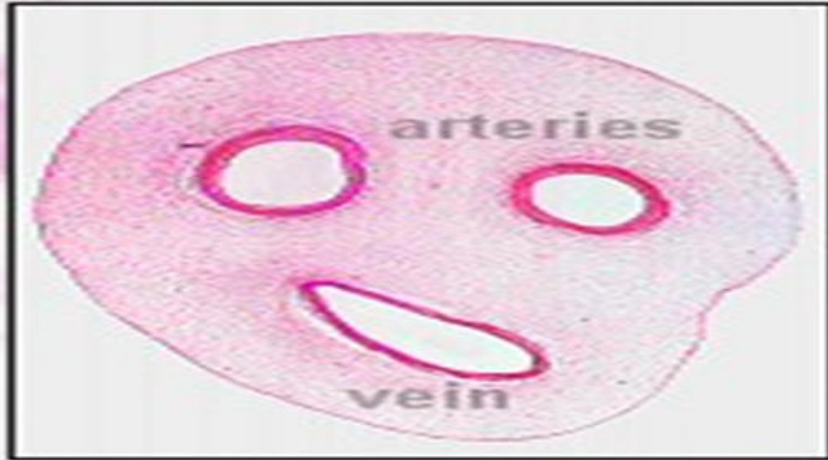




**Figure 5-12. Reticular fibers.** In these silver-stained sections of both adrenal cortex (a) and lymph node (b), the prominent feature is a network of reticular fibers which provides a framework for cell attachment. Reticular fibers contain type III collagen that is heavily glycosylated, which produces the argyrophilia. Cell nuclei are also dark but cytoplasm is unstained. X100.



## Umbilical Cord H&E



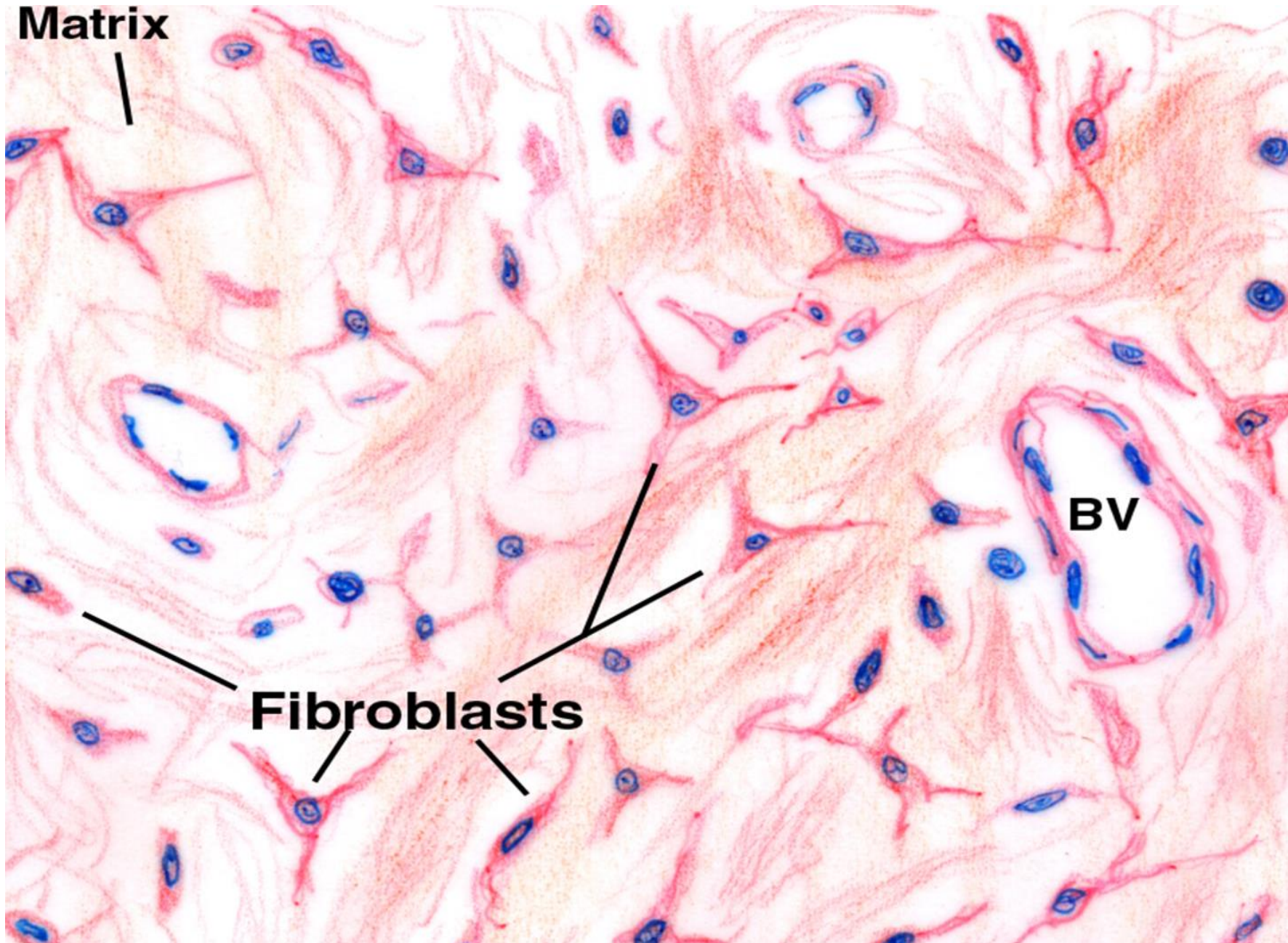
cell  
process

mesenchymal  
cells

collagen  
fibres

- *Mucous connective tissue  
(e.g. in umbilical cord)*





*In the umbilical cord mucous connective tissue contains cells are large , prominent cytoplasm processes and branching fibroblasts The ground substance is soft and jelly-like with fine collagen fibres.*



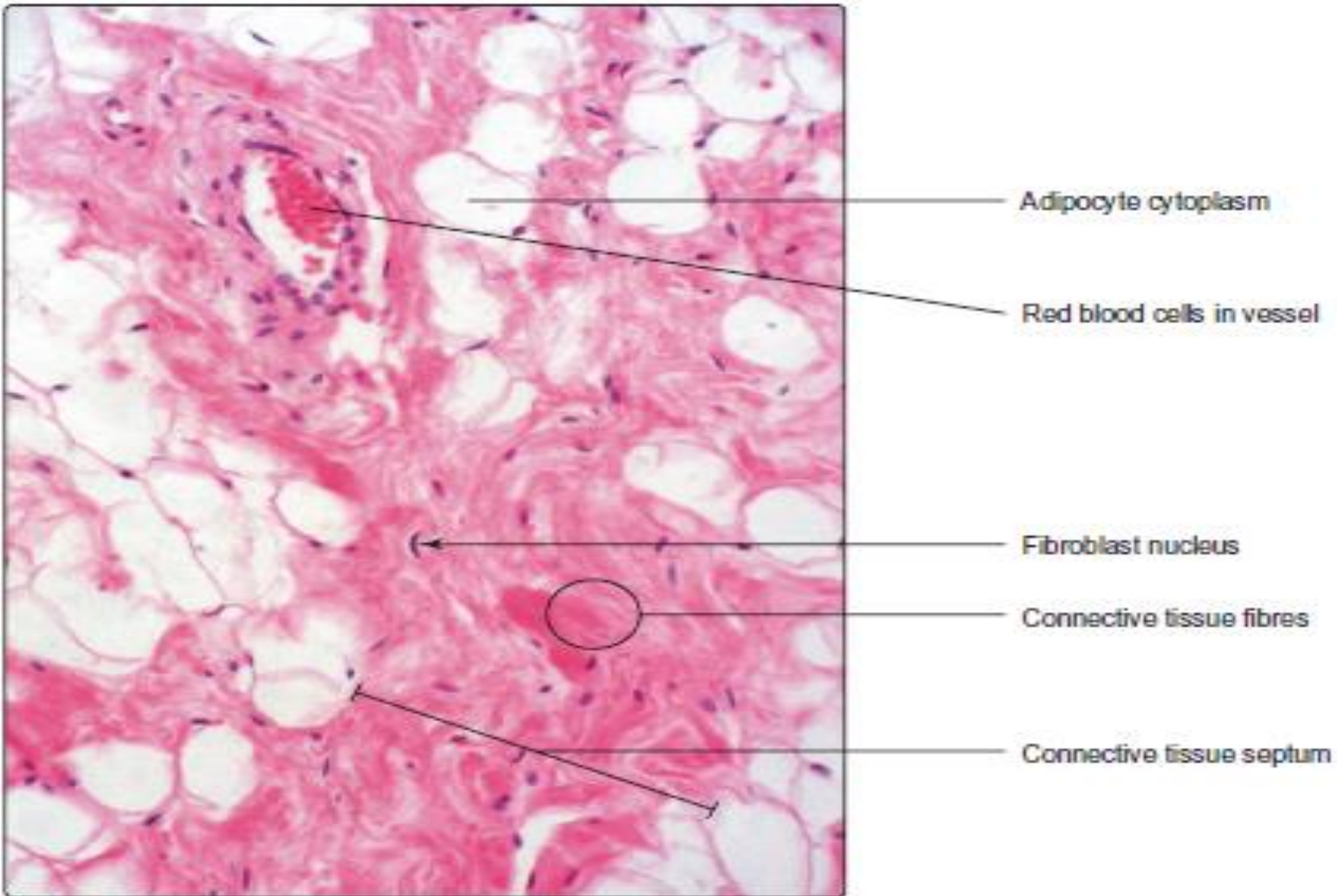


Fig. 4.1 **Connective tissue, fibroblasts, fibres and adipocytes.** Protein fibres, fibroblasts and extracellular matrix form septa between clusters of white adipocytes. The adipocytes appear empty as lipid which filled the cytoplasm has been extracted during histological processing. Red blood cells are present in an endothelium-lined blood vessel. Medium magnification.

***Adipose tissue***

- *Dermis (as an example of dense irregular connective tissue)*

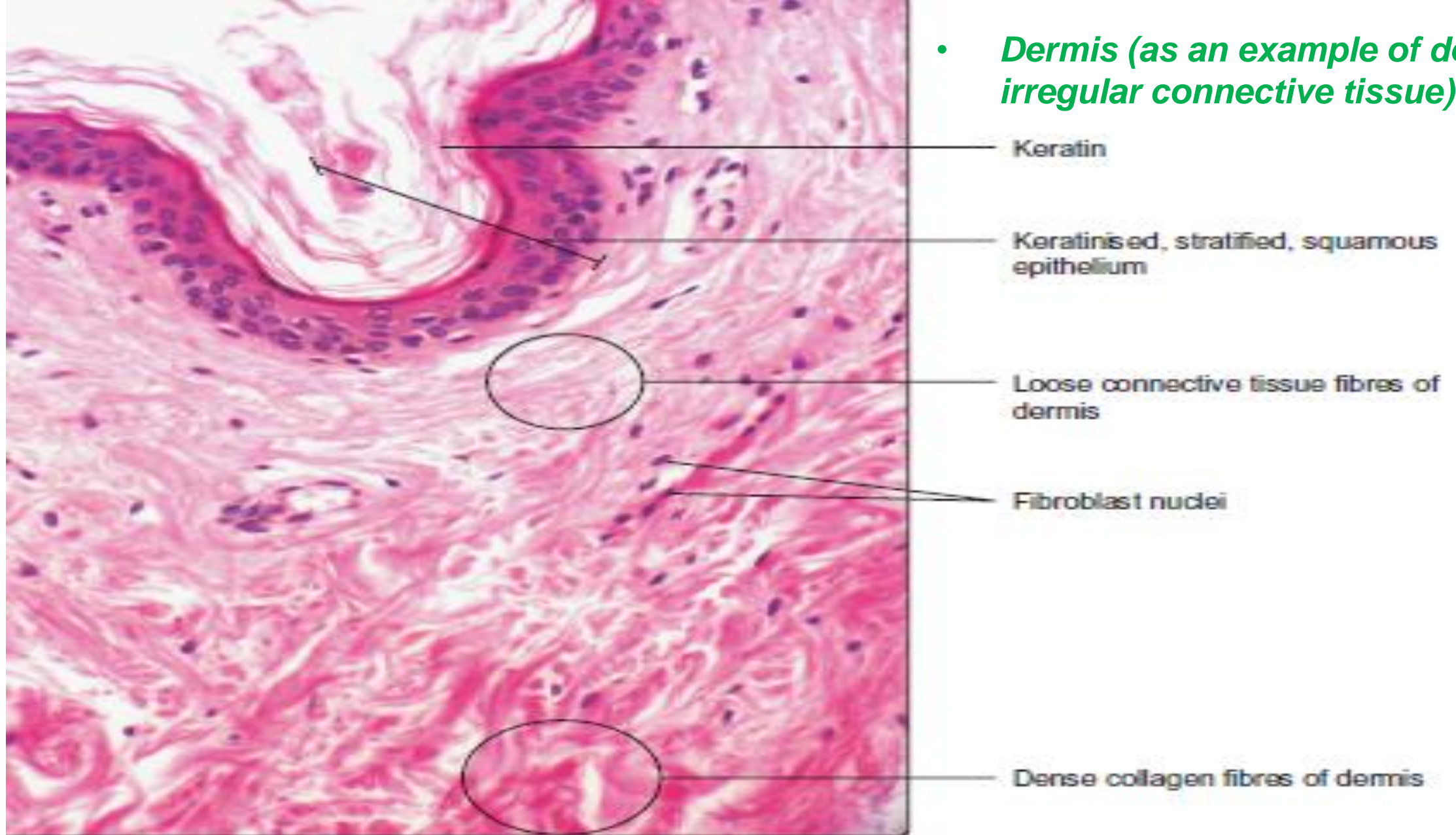


fig. 4.2 **Connective tissue, fibroblasts and fibres of skin.** Fibroblasts are widely dispersed in the extracellular matrix of the dermis. In the deeper region, densely packed collagen fibres are predominant. Medium magnification.



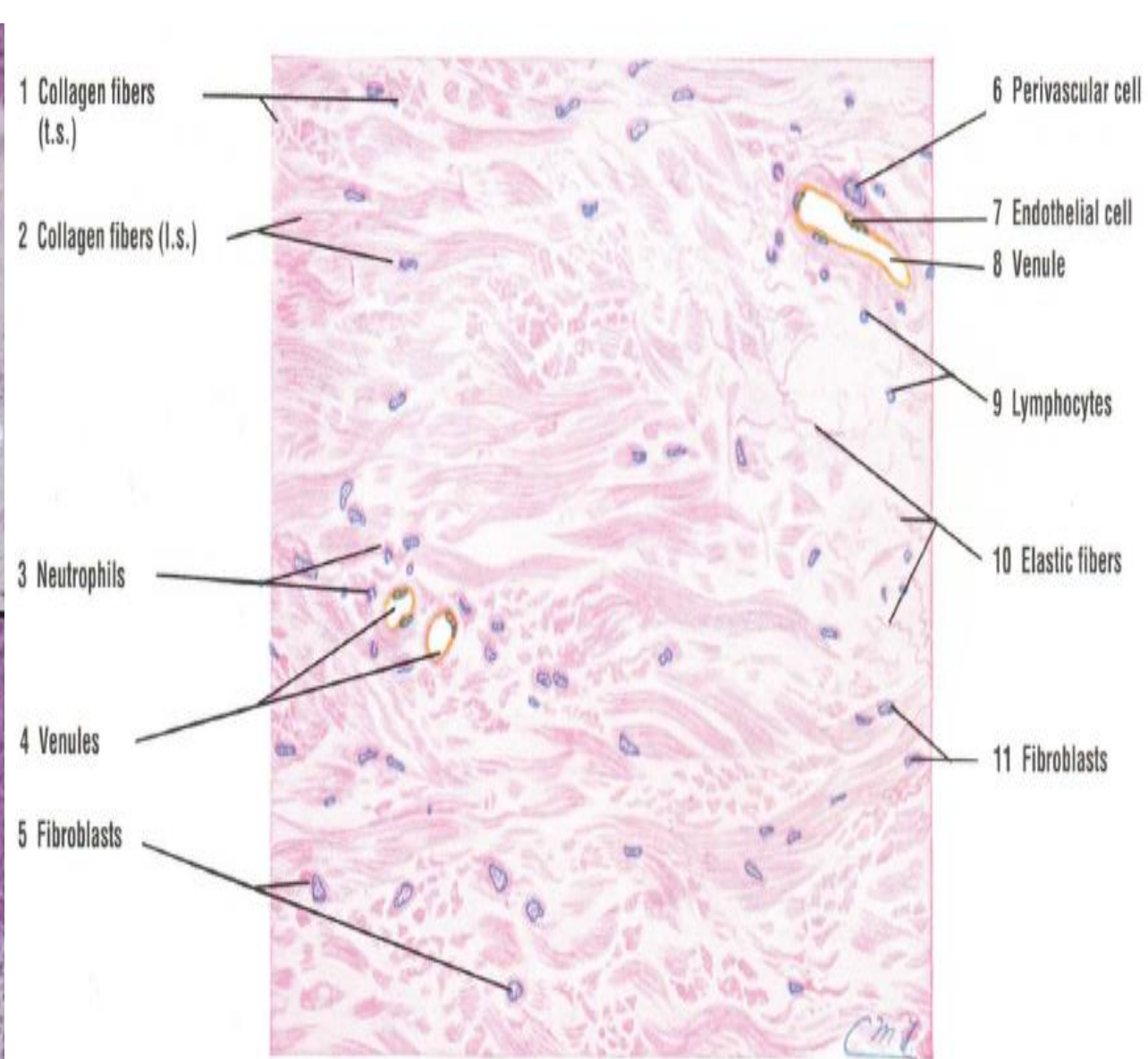
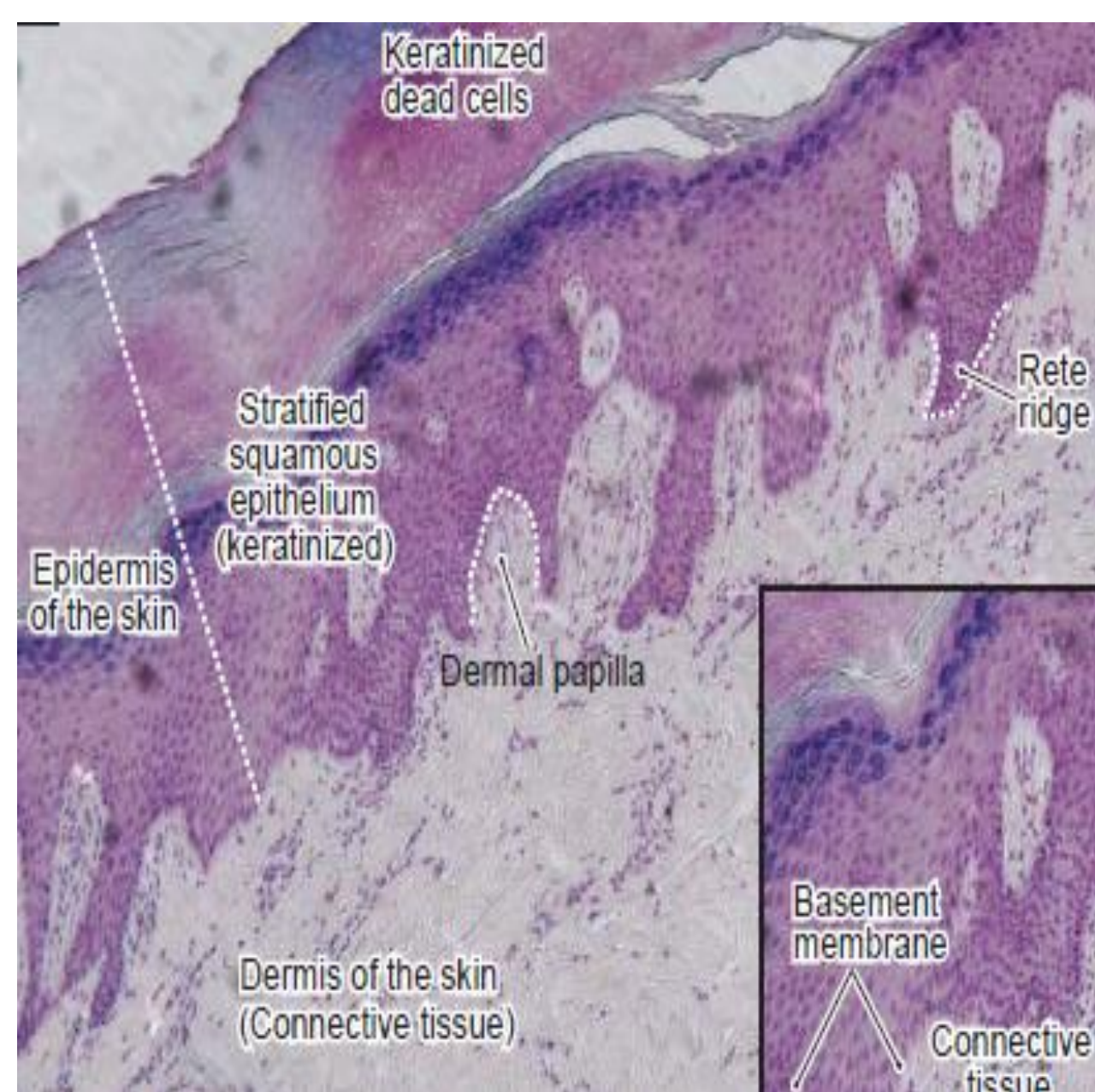
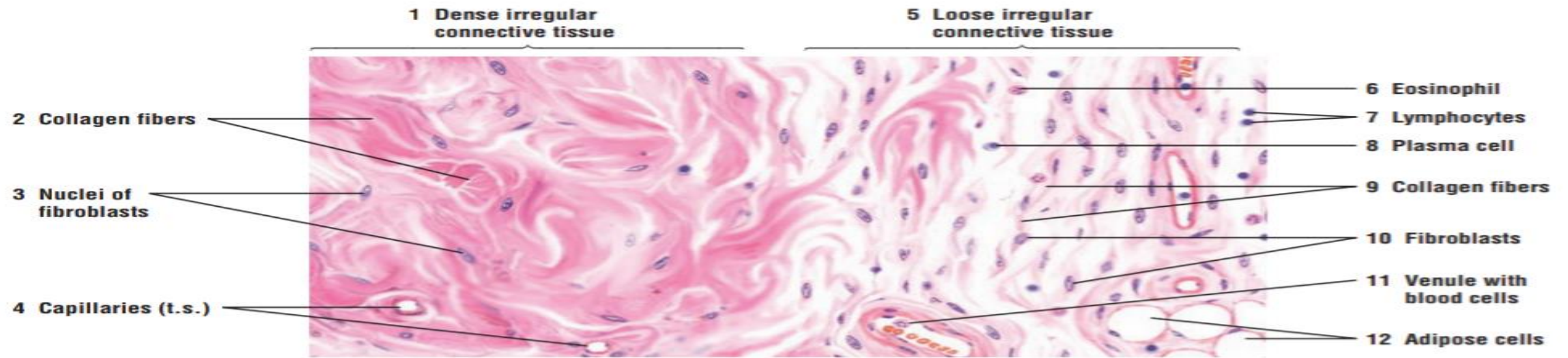


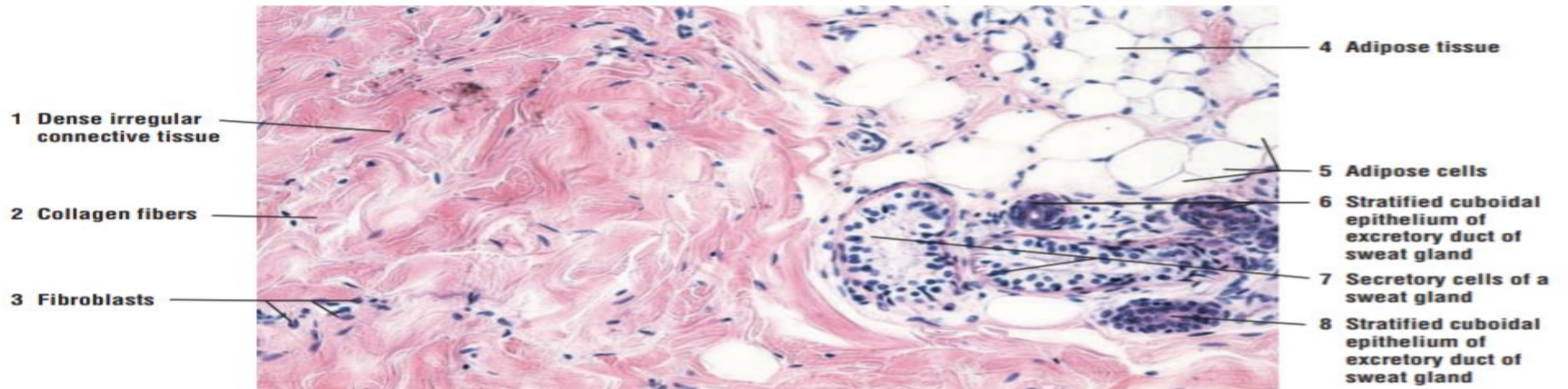
Fig. 2-4 Dense Irregular Connective Tissue. Stain: hematoxylin-eosin. High magnification.

***Dense irregular connective tissue proper***



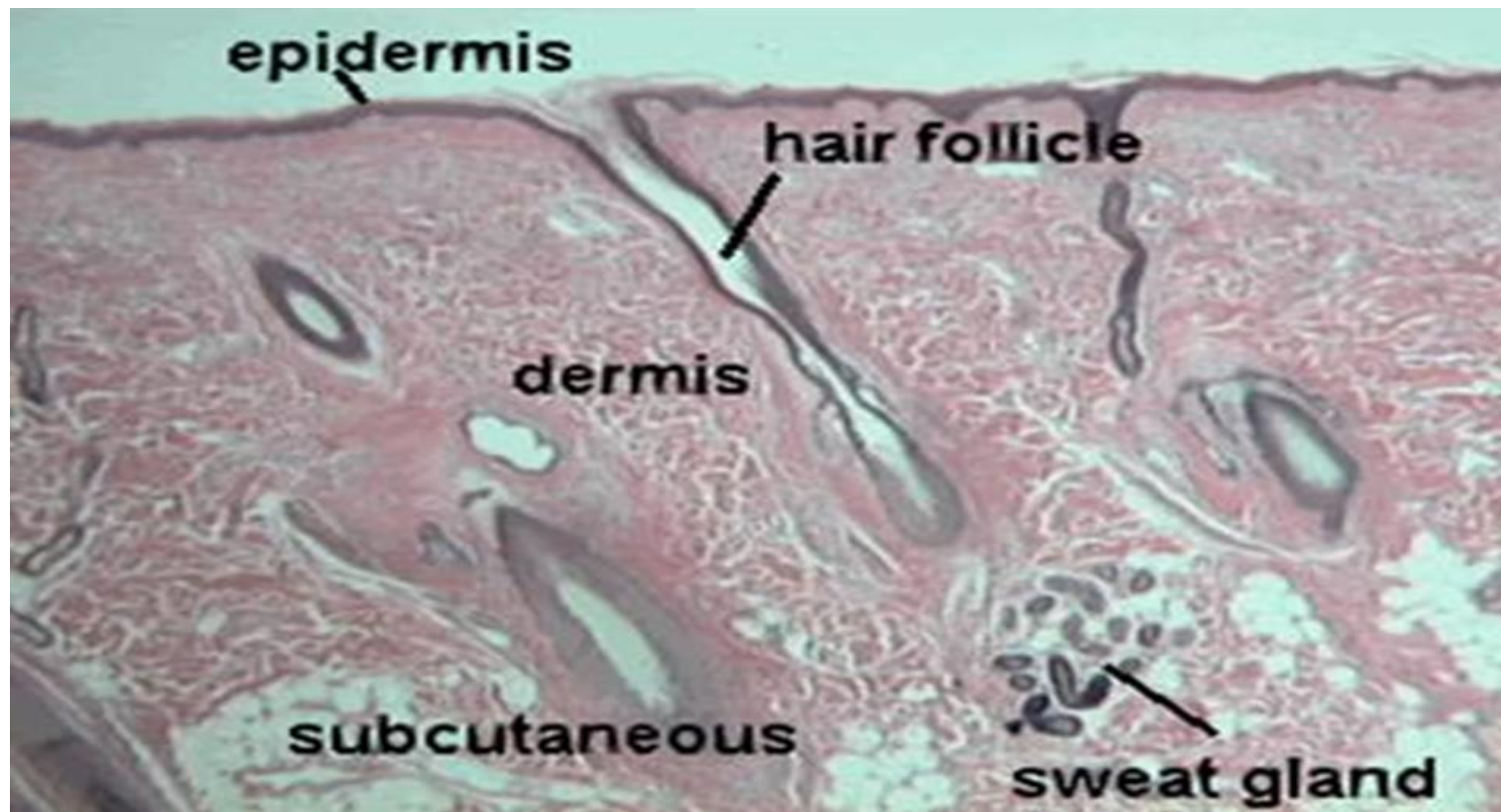


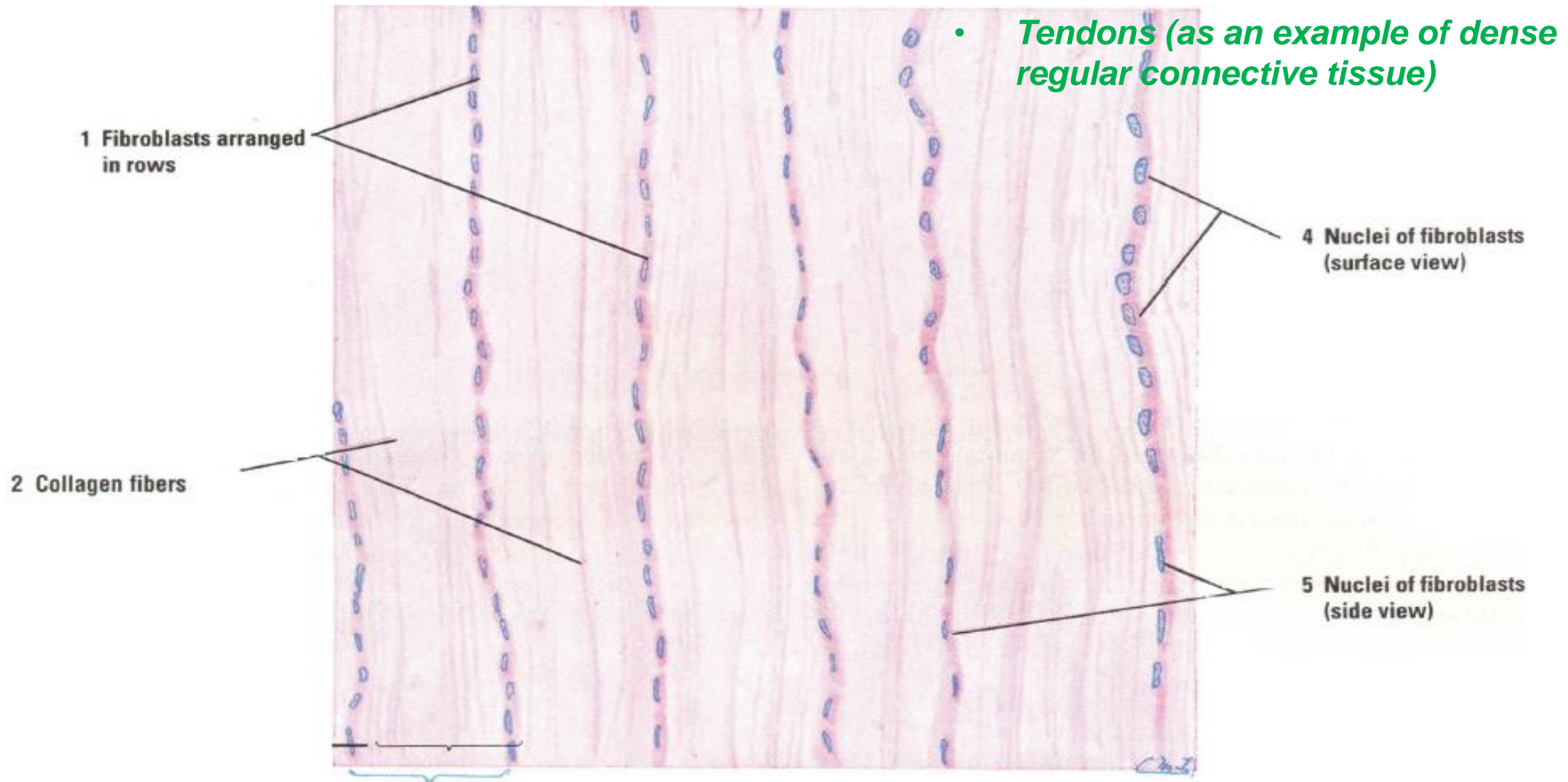
**FIGURE 3.6** ■ Dense irregular and loose irregular connective tissue. Stain: hematoxylin and eosin. High magnification.



**FIGURE 3.7** ■ Dense irregular connective tissue and adipose tissue. Stain: hematoxylin and eosin.  $\times 64$ .

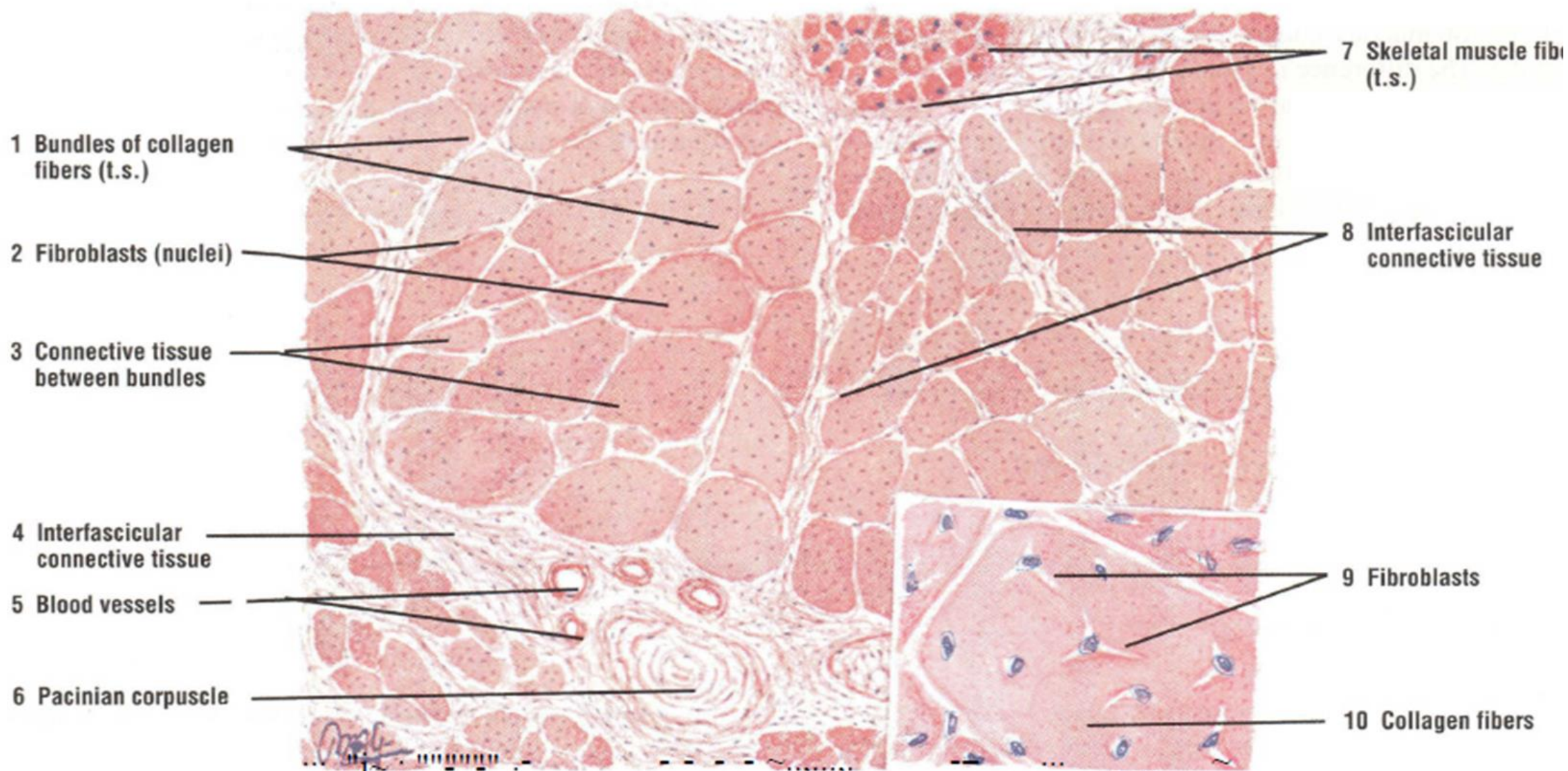






**Fig. 2-5 Dense Regular Connective Tissue: Tendon (longitudinal section). Stain: hematoxylin-eosin. Medium magnification.**





**Fig. 2-6 Dense Regular Connective Tissue: Tendon (transverse section).** Stain: hematoxylin-eosin.  
 Low magnification (inset: high magnification).