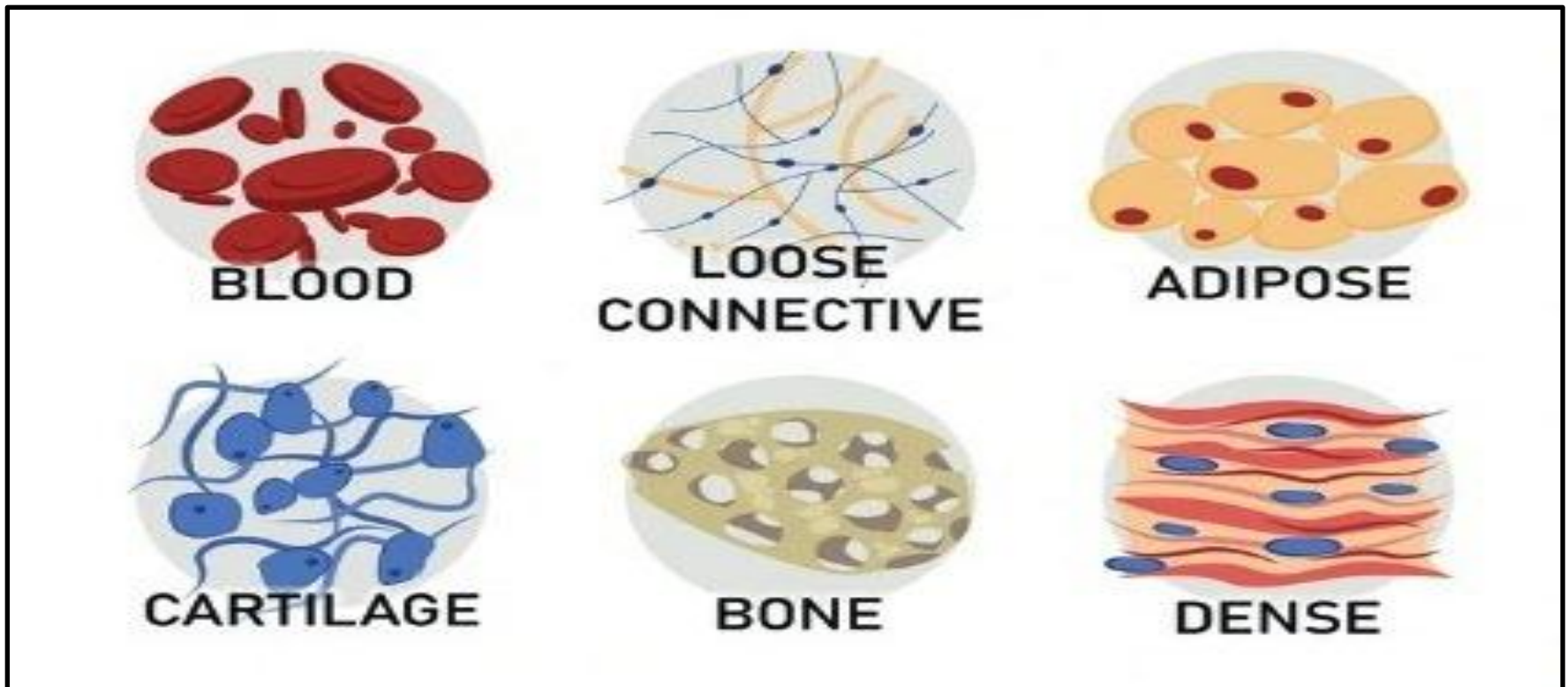


# Connective tissue (Lab)



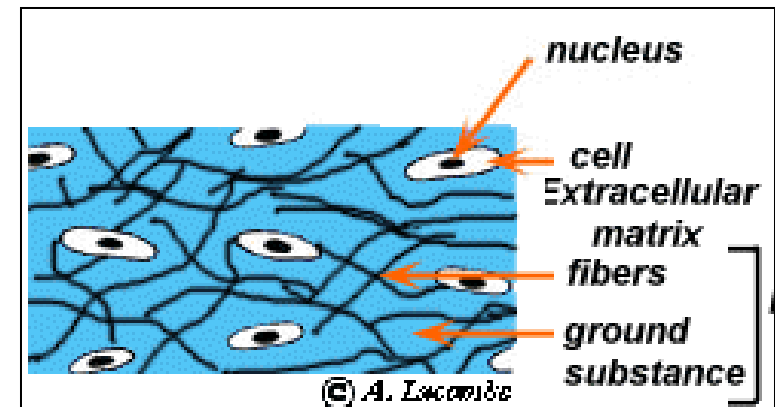
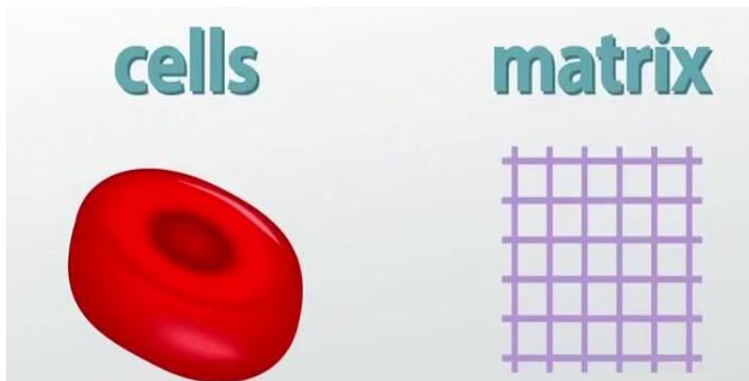
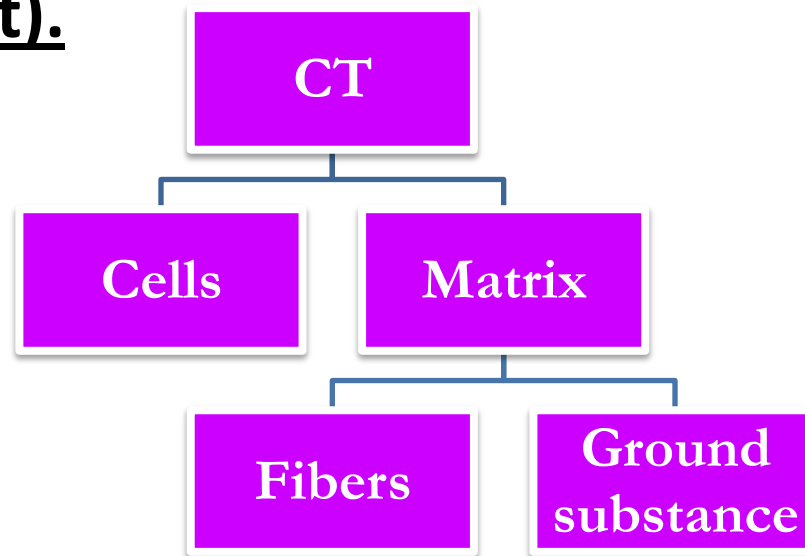
By

**Dr. Heba Sharaf Eldin**

Associate Professor of Histology & Cell Biology

# Composition of C.T.

- Connective tissue cells (less-widely separated)
- Extracellular substance (Matrix) (More- the major constituent).



# Connective tissue cells

A hierarchical flowchart starting with 'Connective tissue cells' at the top. Two arrows point down to 'A- Fixed cells' and 'B- Transient cells'. Under 'A- Fixed cells' are three boxes: 'UMC', 'Fibroblasts', and 'Adipocytes'. Under 'B- Transient cells' are three boxes: 'Macrophage', 'Mast cells', and 'Plasma cells'.

## A- Fixed cells

UMC

Fibroblasts

Adipocytes

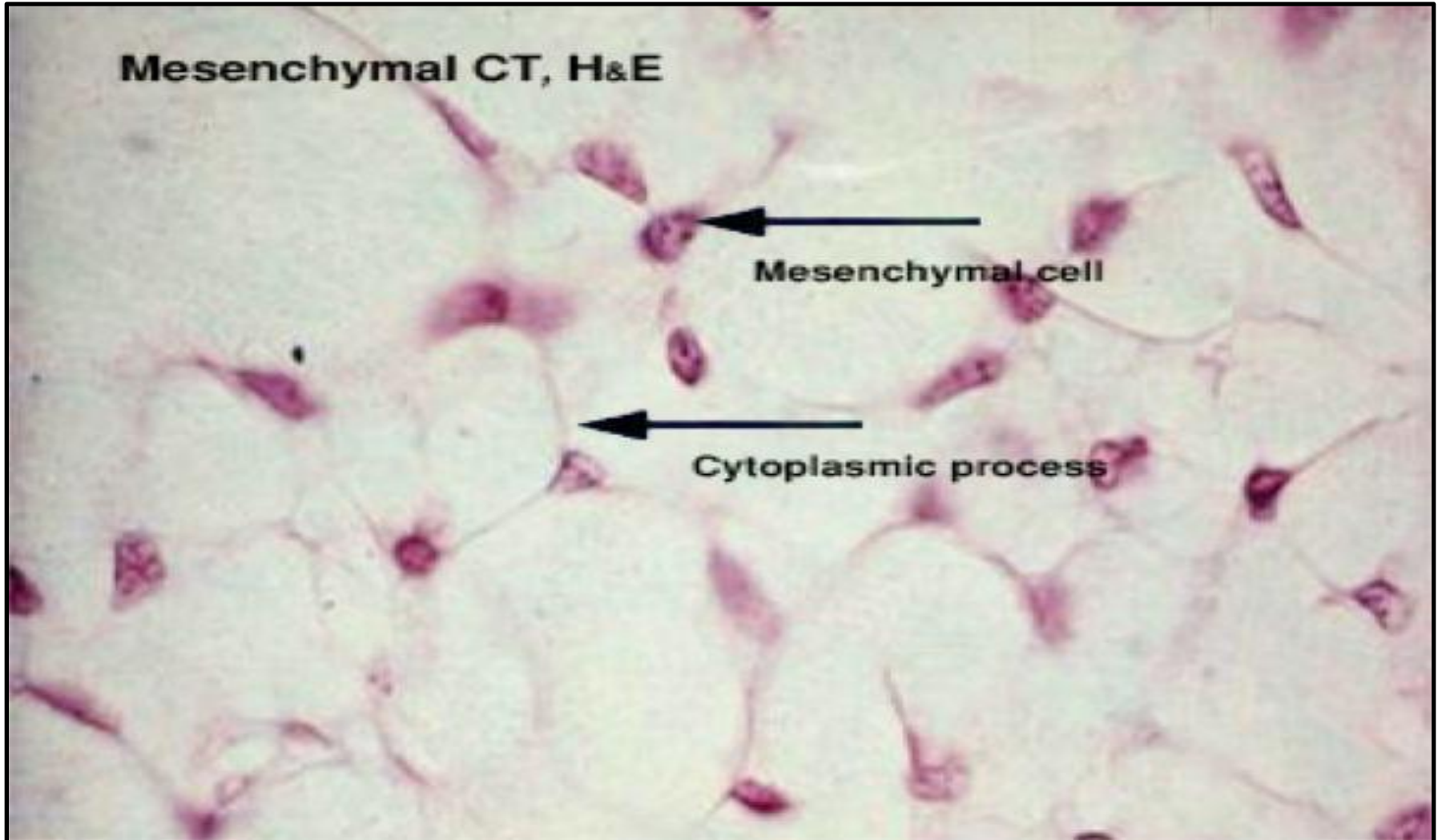
## B- Transient cells

Macrophage

Mast cells

Plasma cells

# Mesenchyme (UMC)



# Fibroblast

NIH/3T3 Mouse Embryo  
Fibroblast



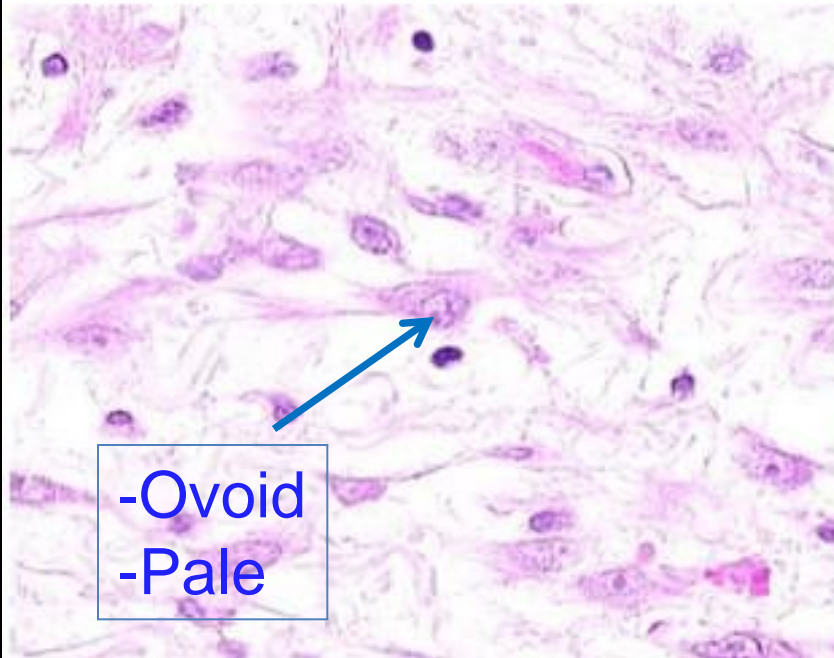
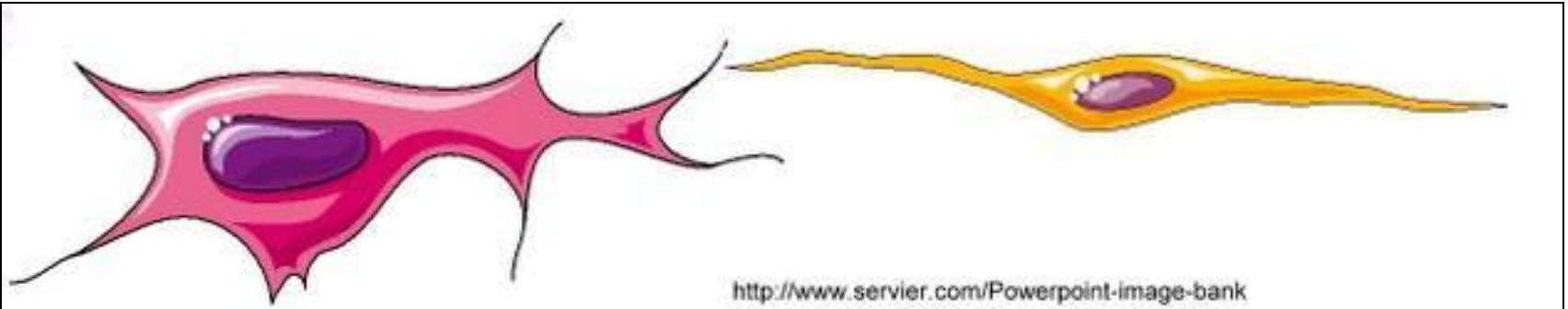
Tissue culture-Phase contrast microscopy



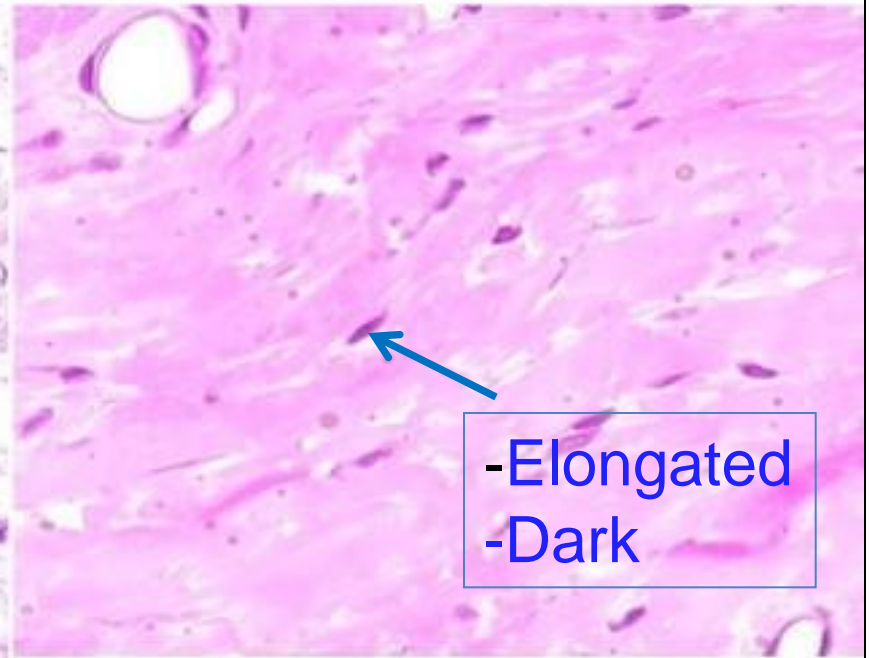
**Fibroblast**

**(H&E)**

**Fibrocyte**

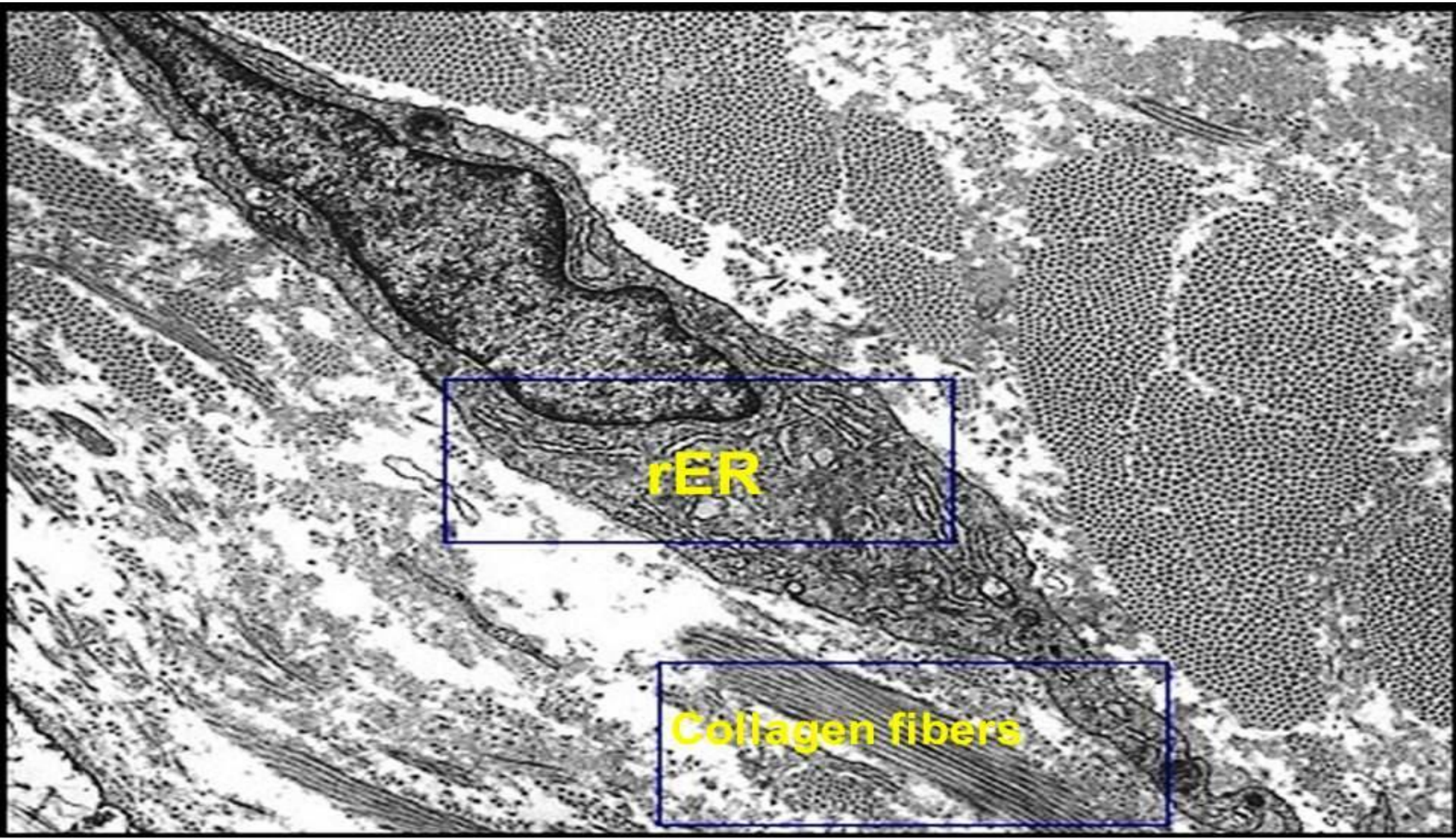


-Ovoid  
-Pale



-Elongated  
-Dark

# Fibroblast (EM)

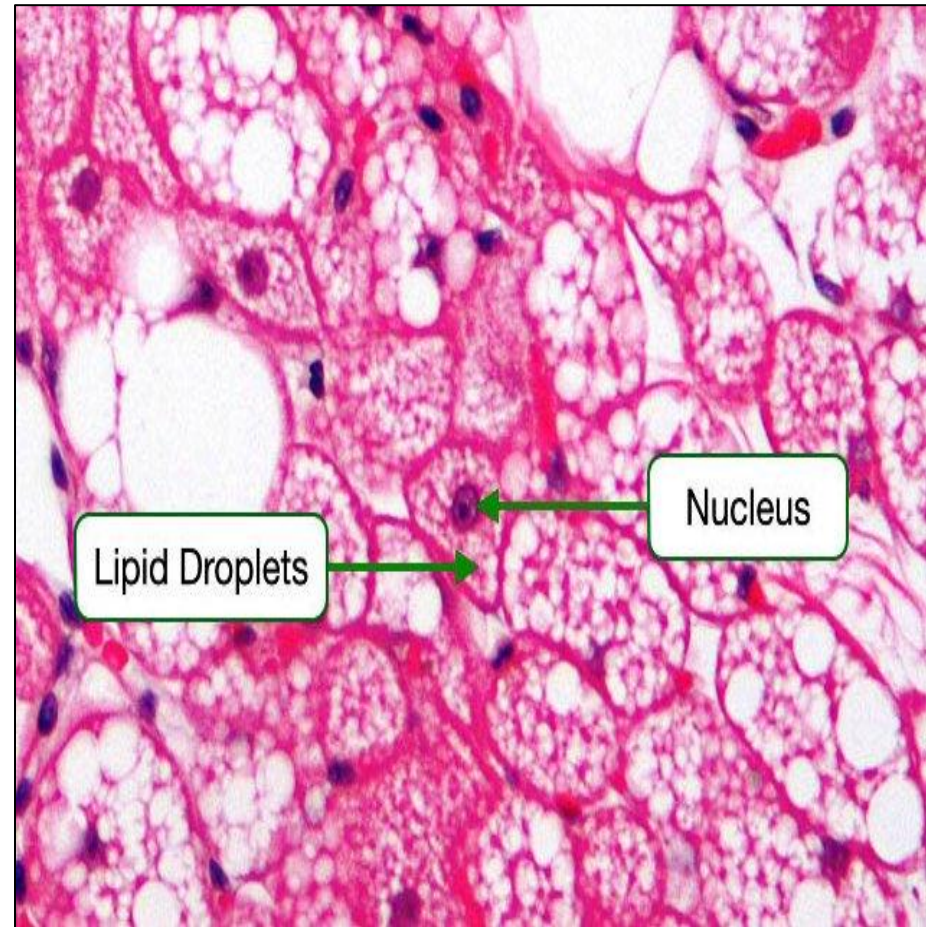
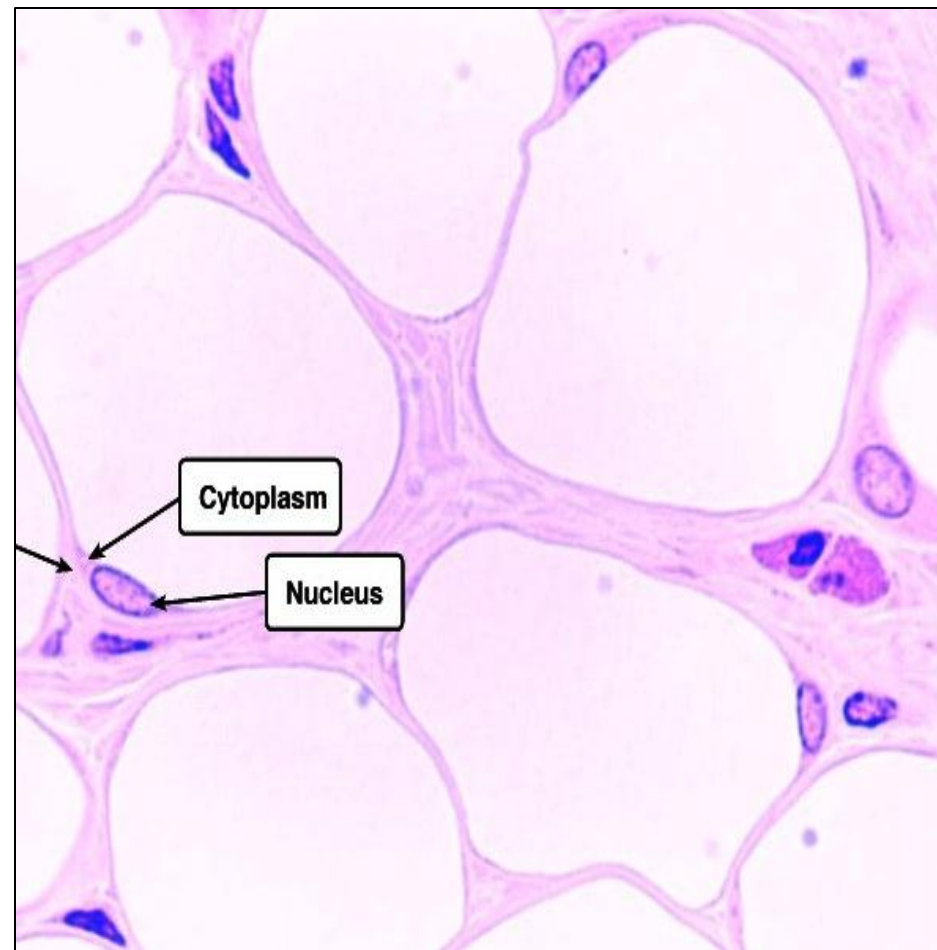




# Adipocytes (H&E)

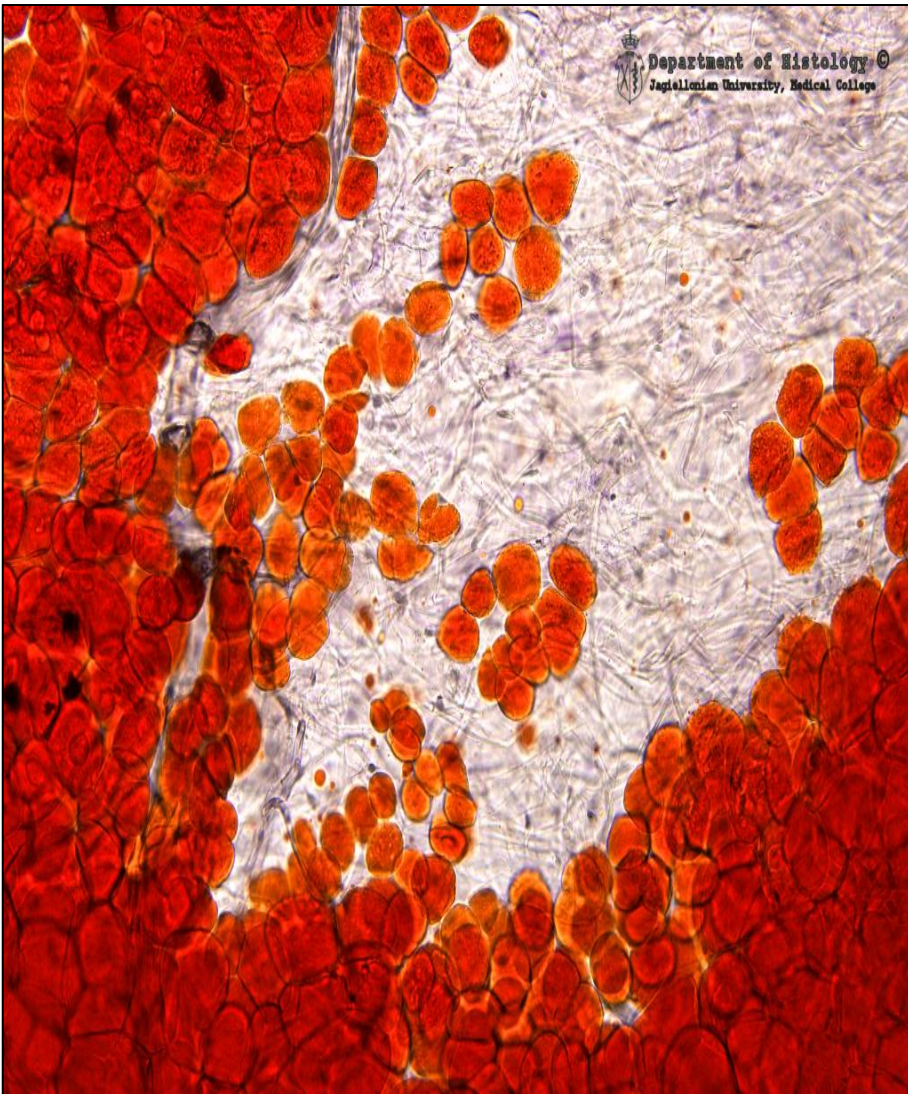
Unilocular

Multilocular





# Adipocytes (Sudan III)

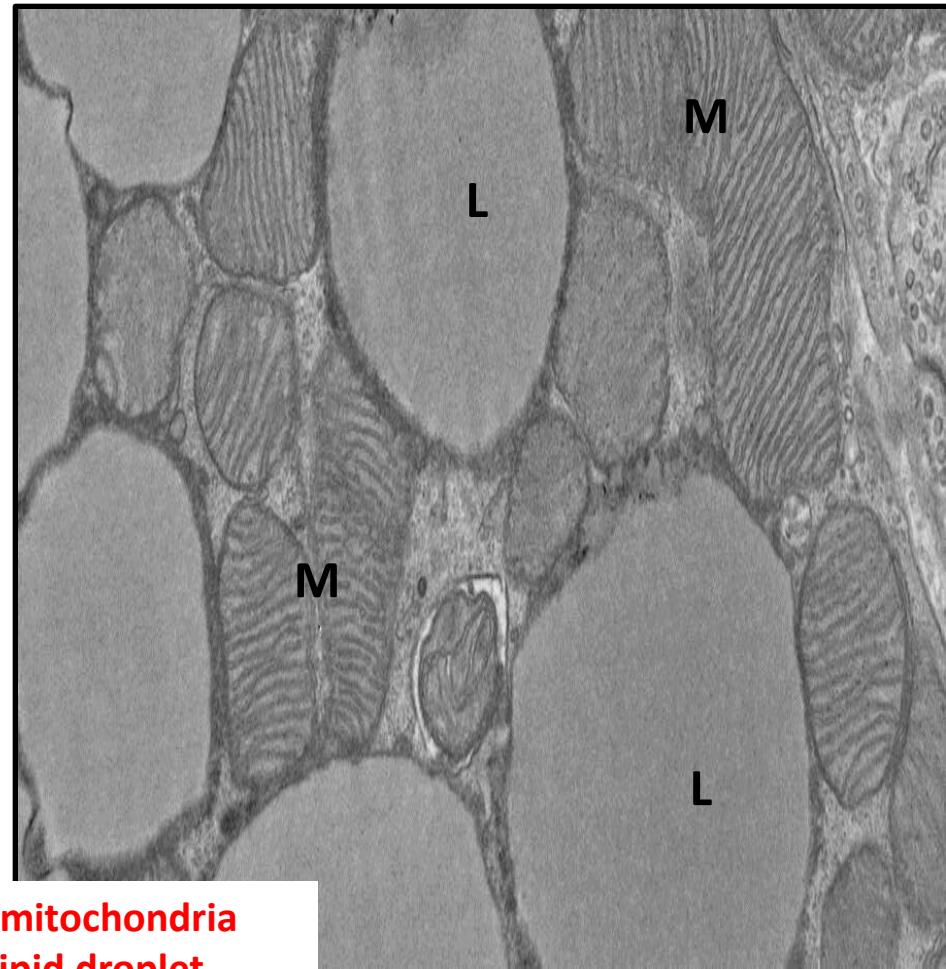
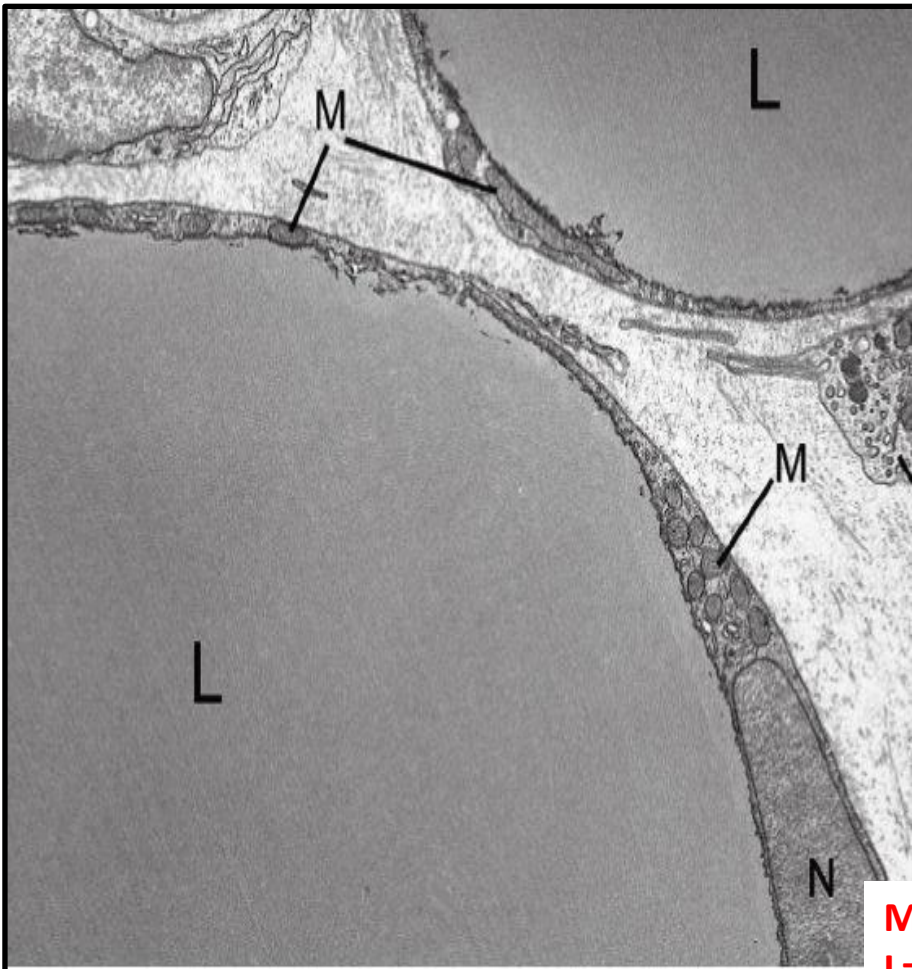




# Adipocytes (EM)

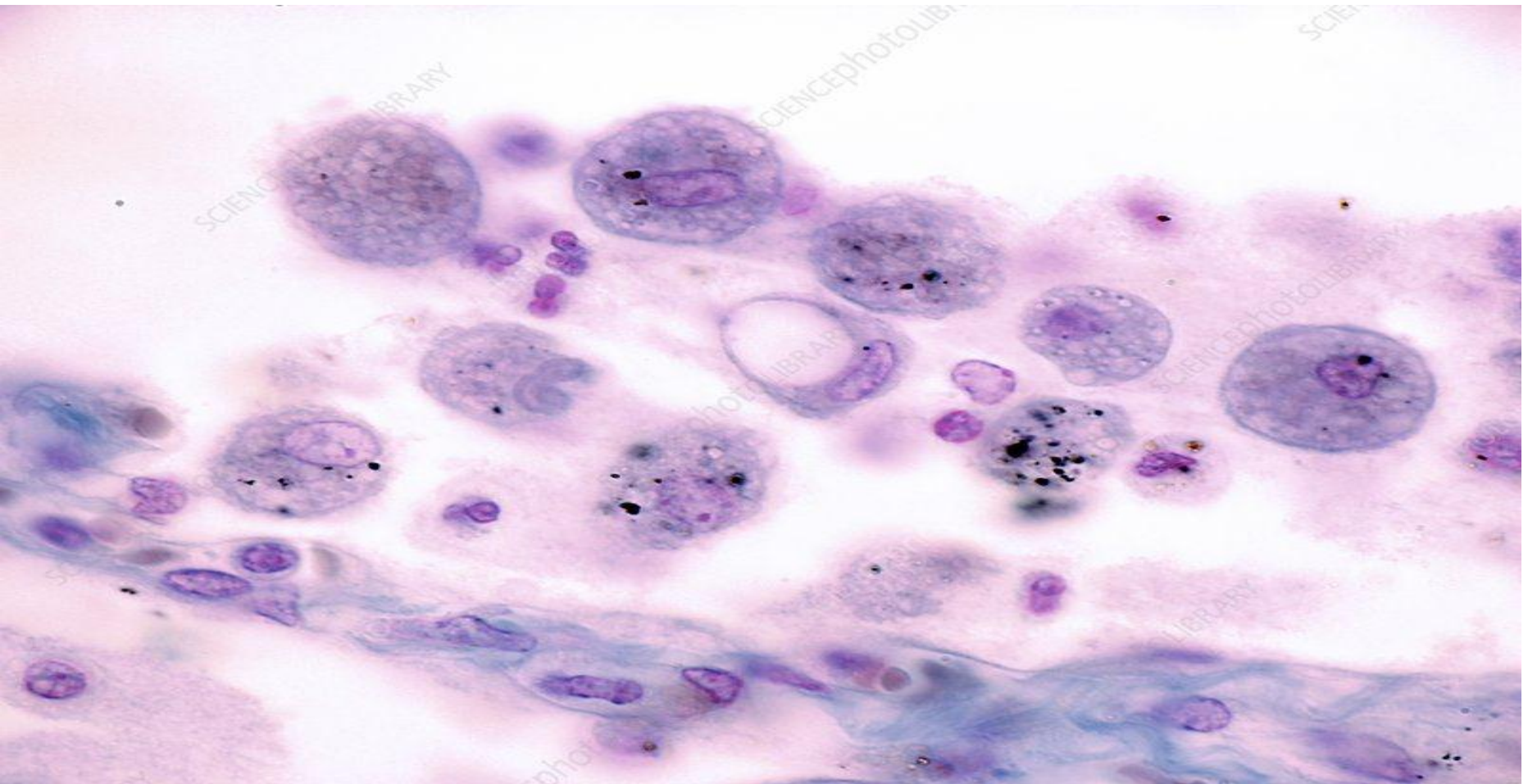
White fat

Brown fat



M=mitochondria  
L=Lipid droplet

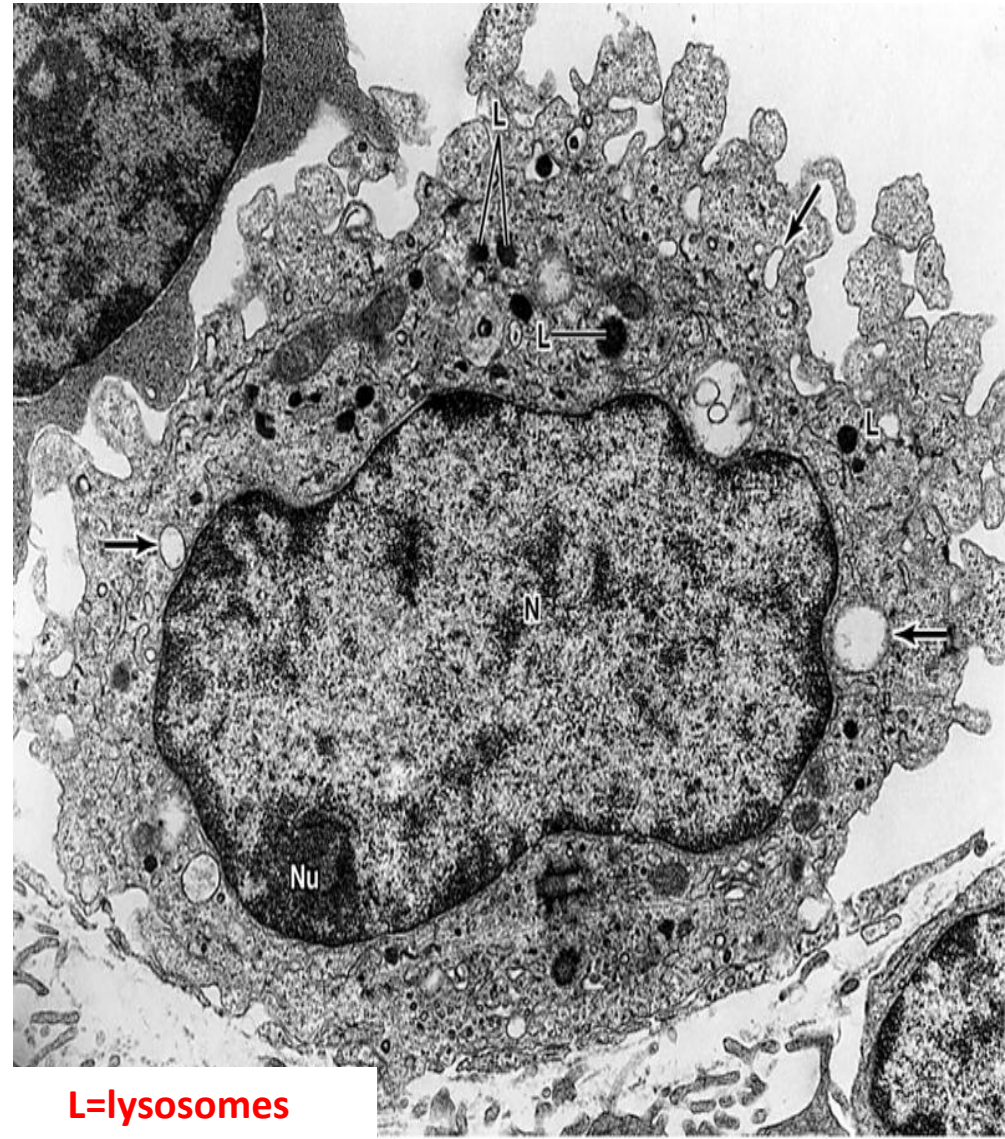
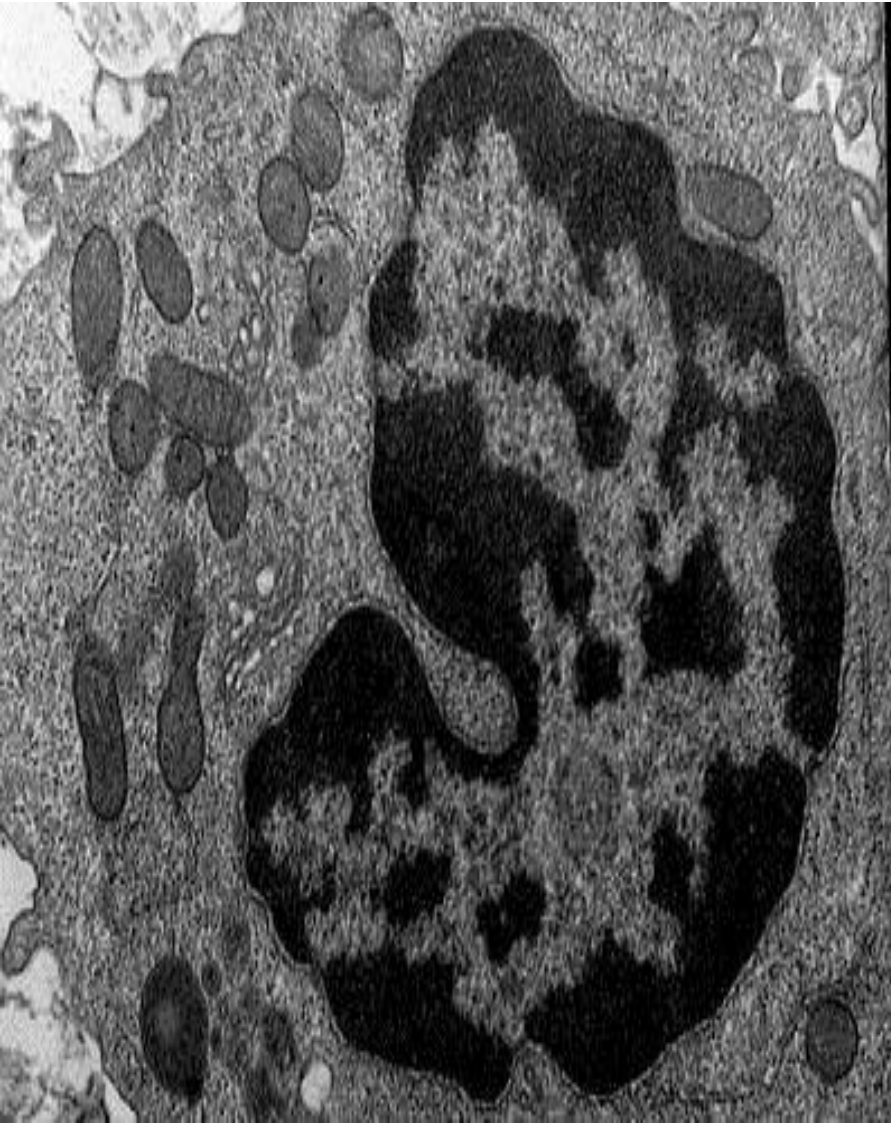
# Macrophage (LM)



Alveolar macrophages( Dust cells-Lung)

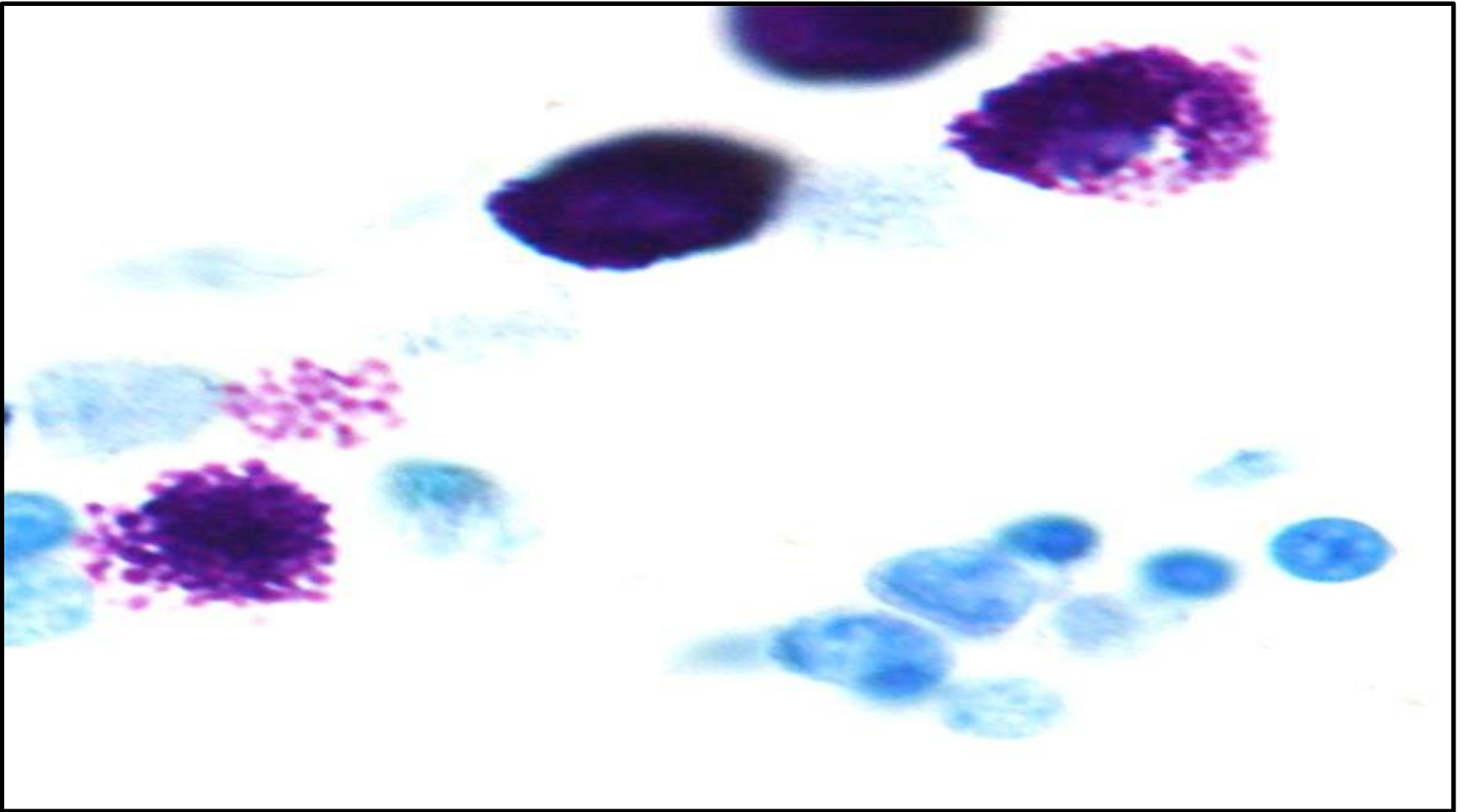


# Macrophage (EM)



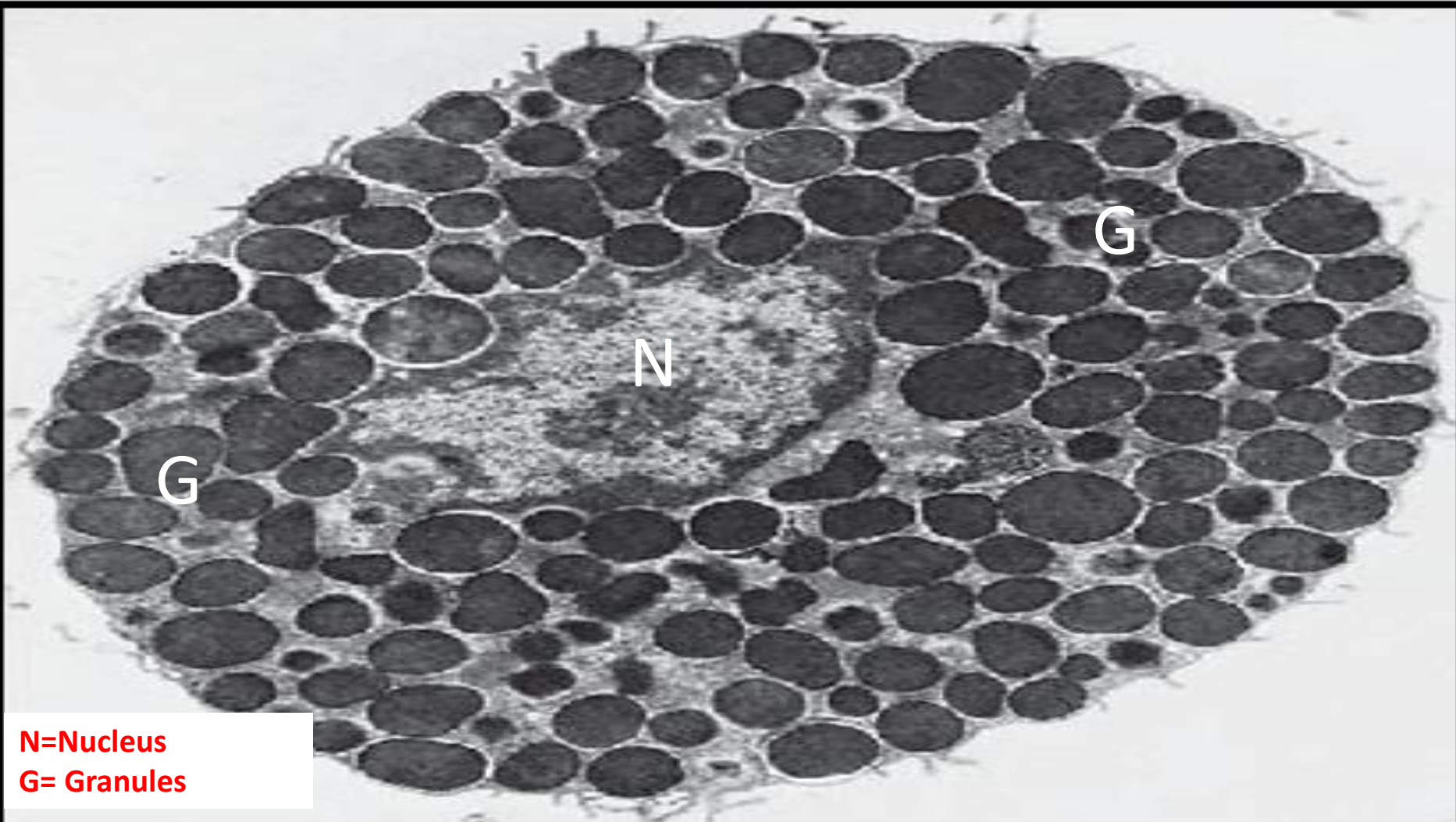
L=lysosomes

# Mast cell (Toluidine Blue)





# Mast cell (EM)

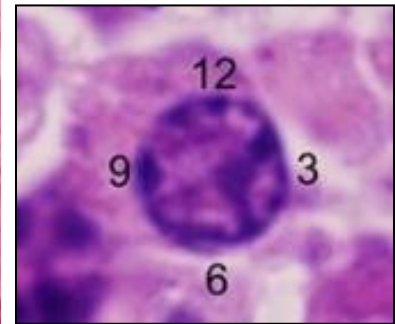
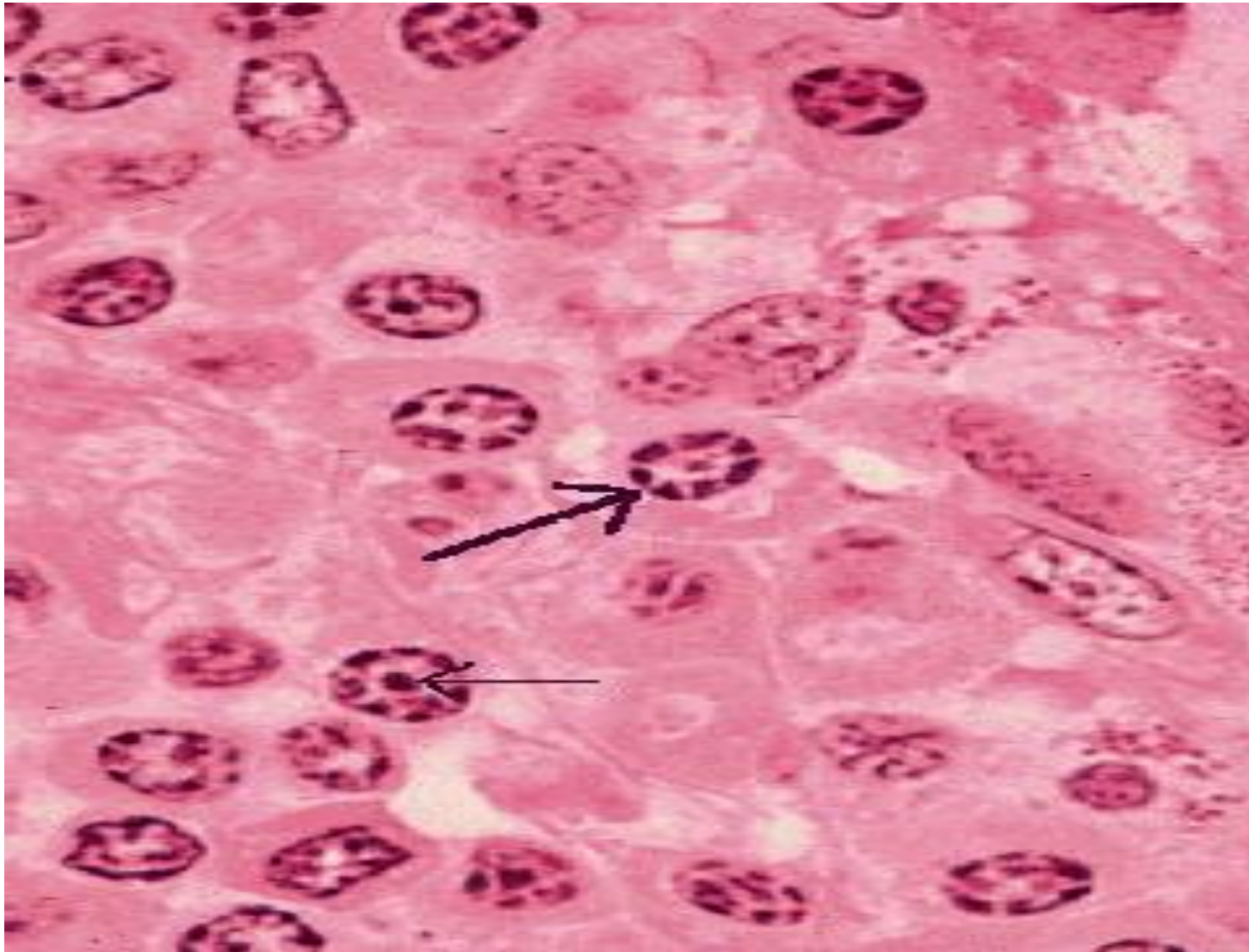


**N=Nucleus**  
**G= Granules**

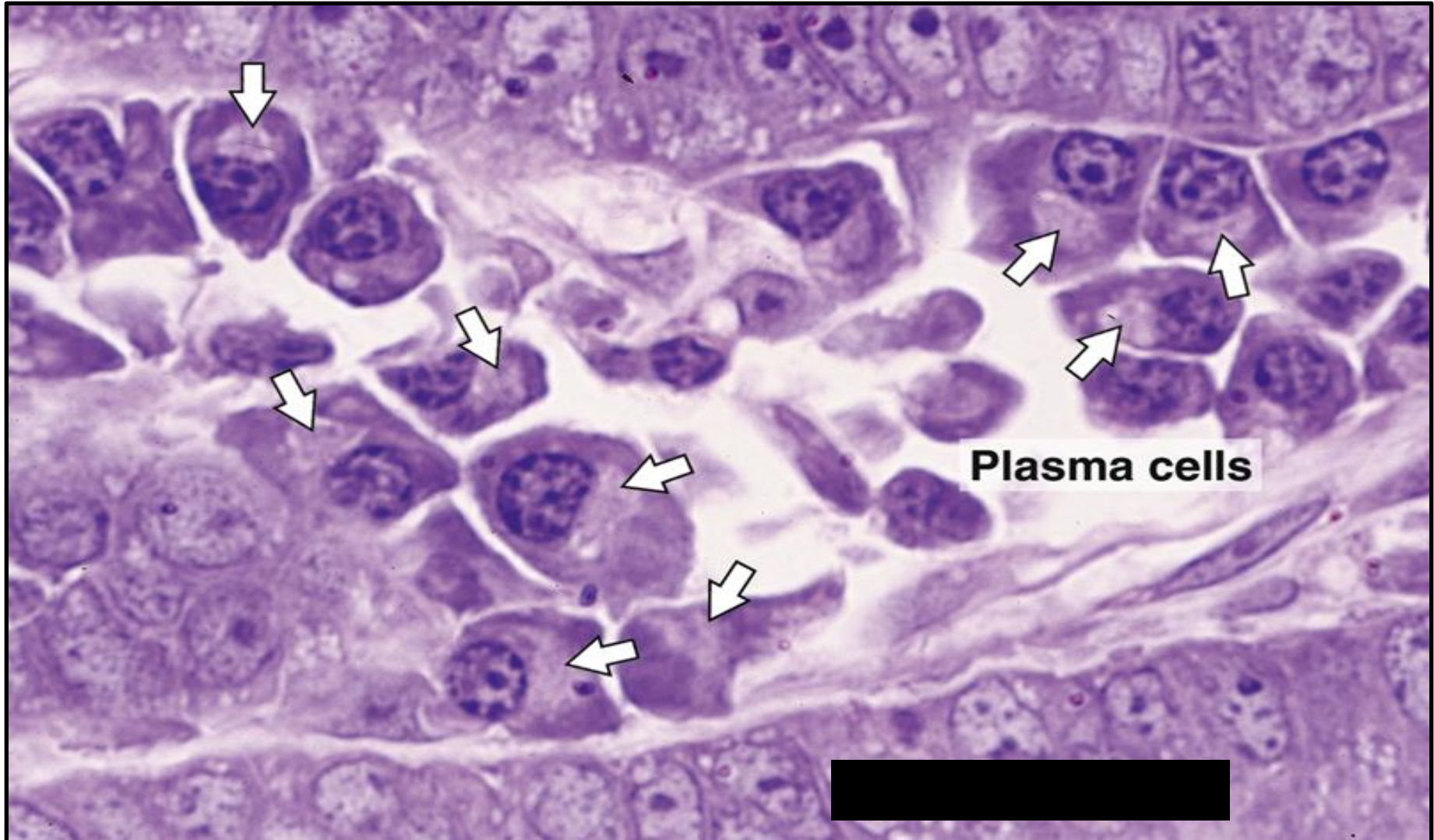


# Plasma cell (LM)

(Clock-face appearance) or (cartwheel)

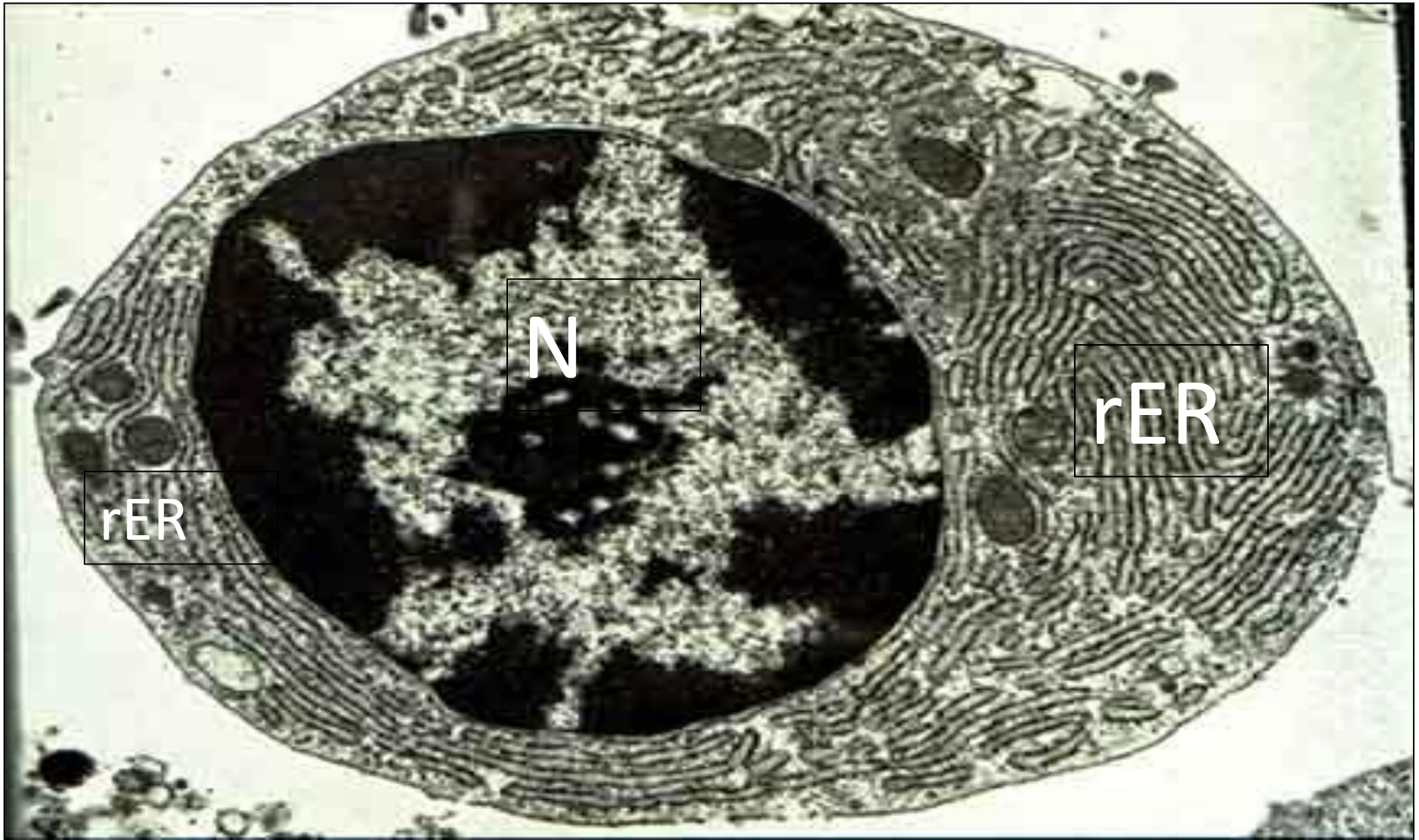


# Plasma cell (LM-Negative Golgi image)





# Plasma cell (EM)





The background of the slide is a microscopic image of connective tissue. It shows a dense network of fibers in shades of pink and purple. Some fibers are thick and wavy, while others are thin and delicate. There are also several small, dark purple, oval-shaped structures scattered throughout the network, which are likely nuclei of cells.

## 2-Connective tissue fibers

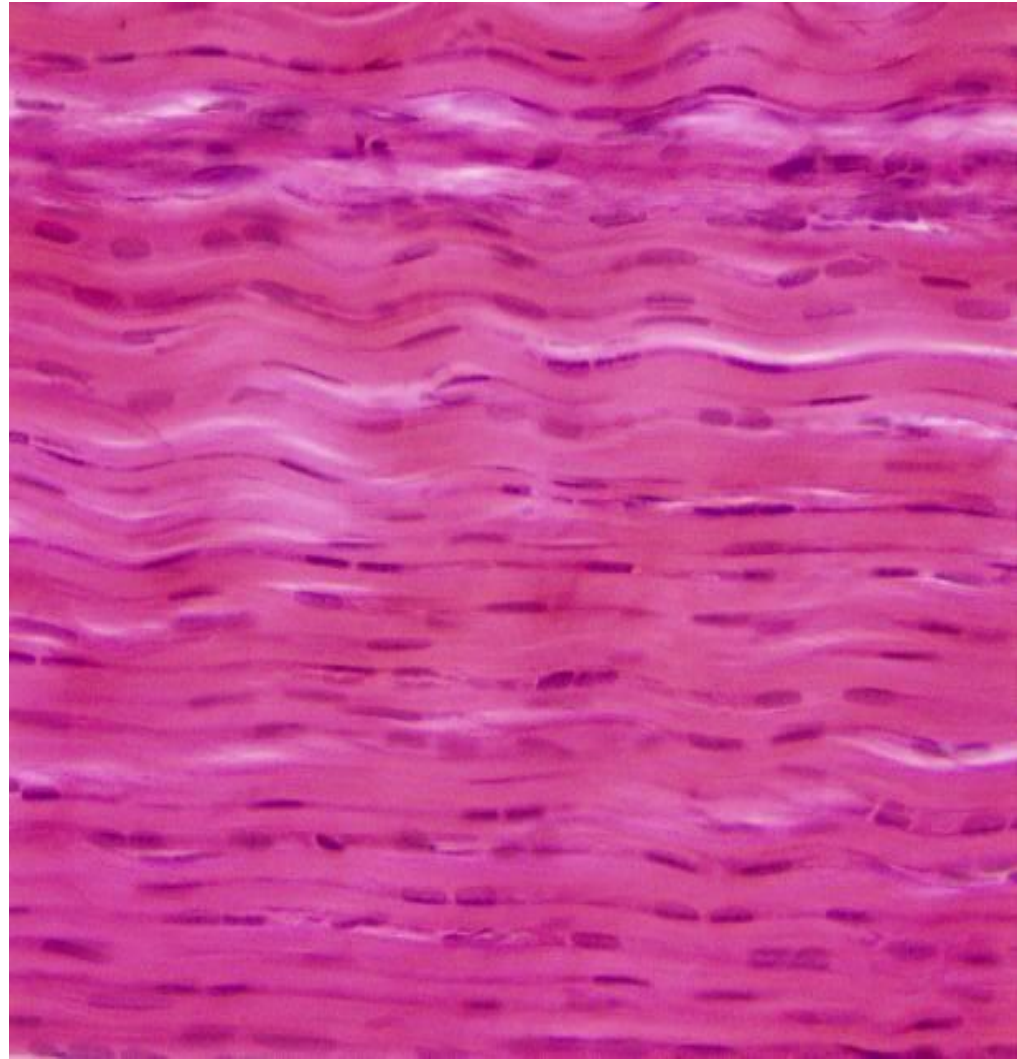
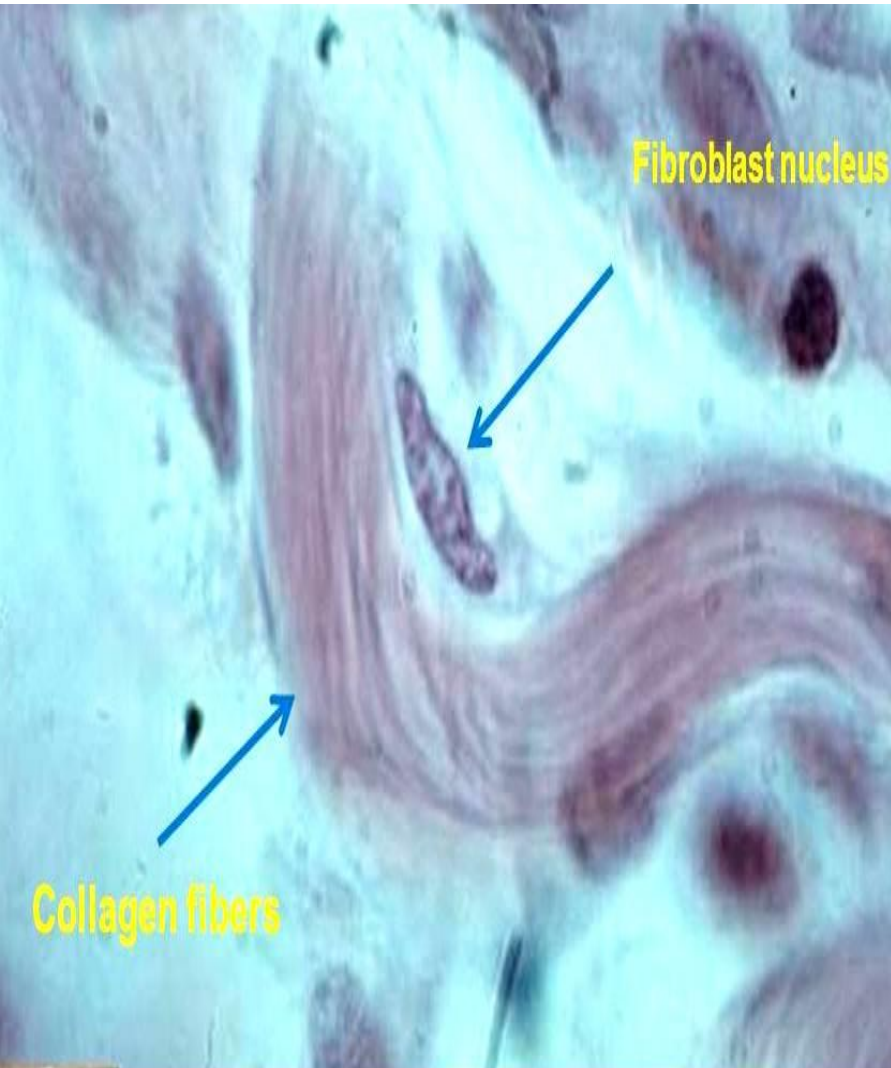
**C.T. fibers**

**Collagen fibers**

**Reticular fibers**

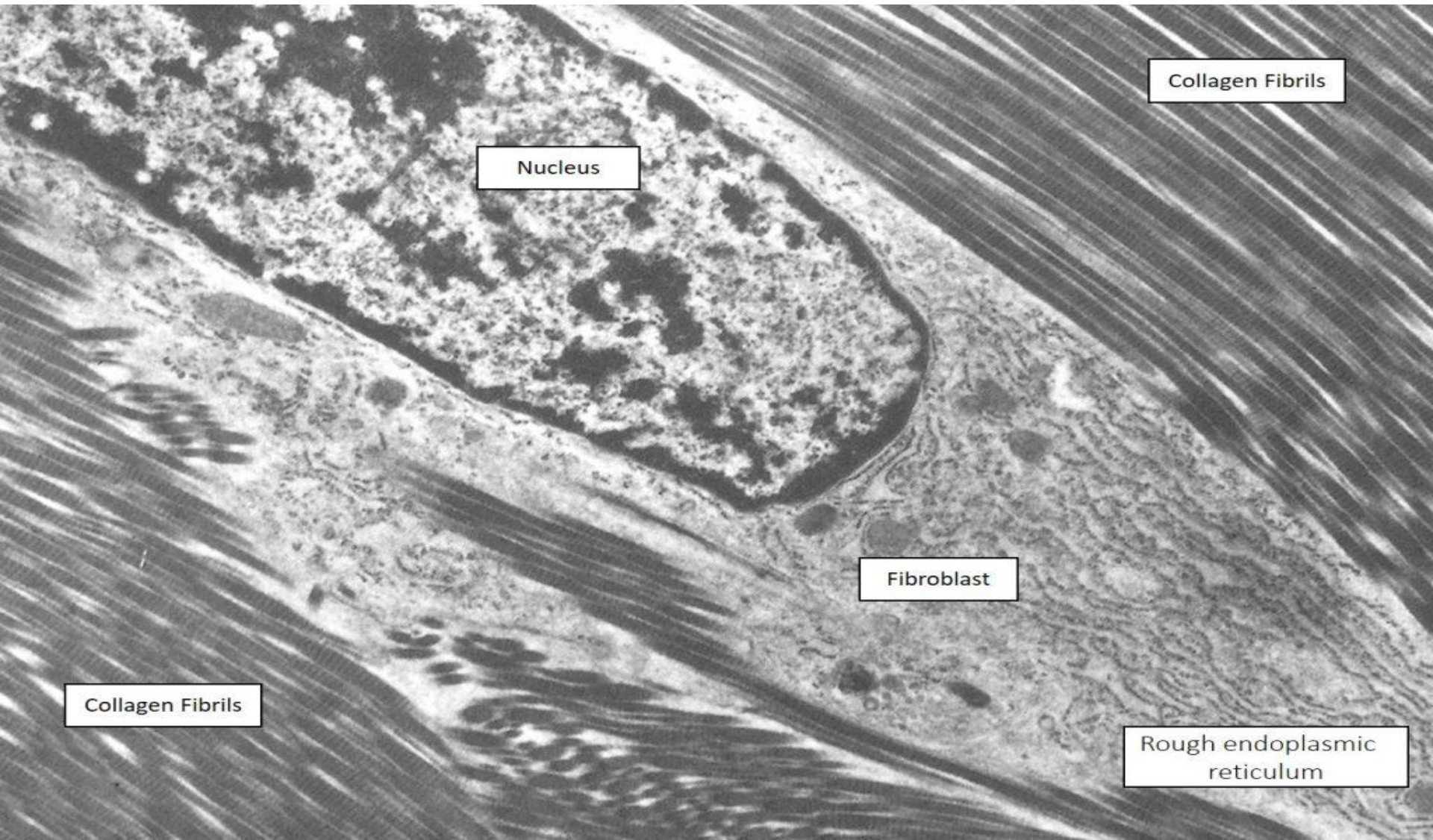
**Elastic fibers**

# Collagen fibers (LM)



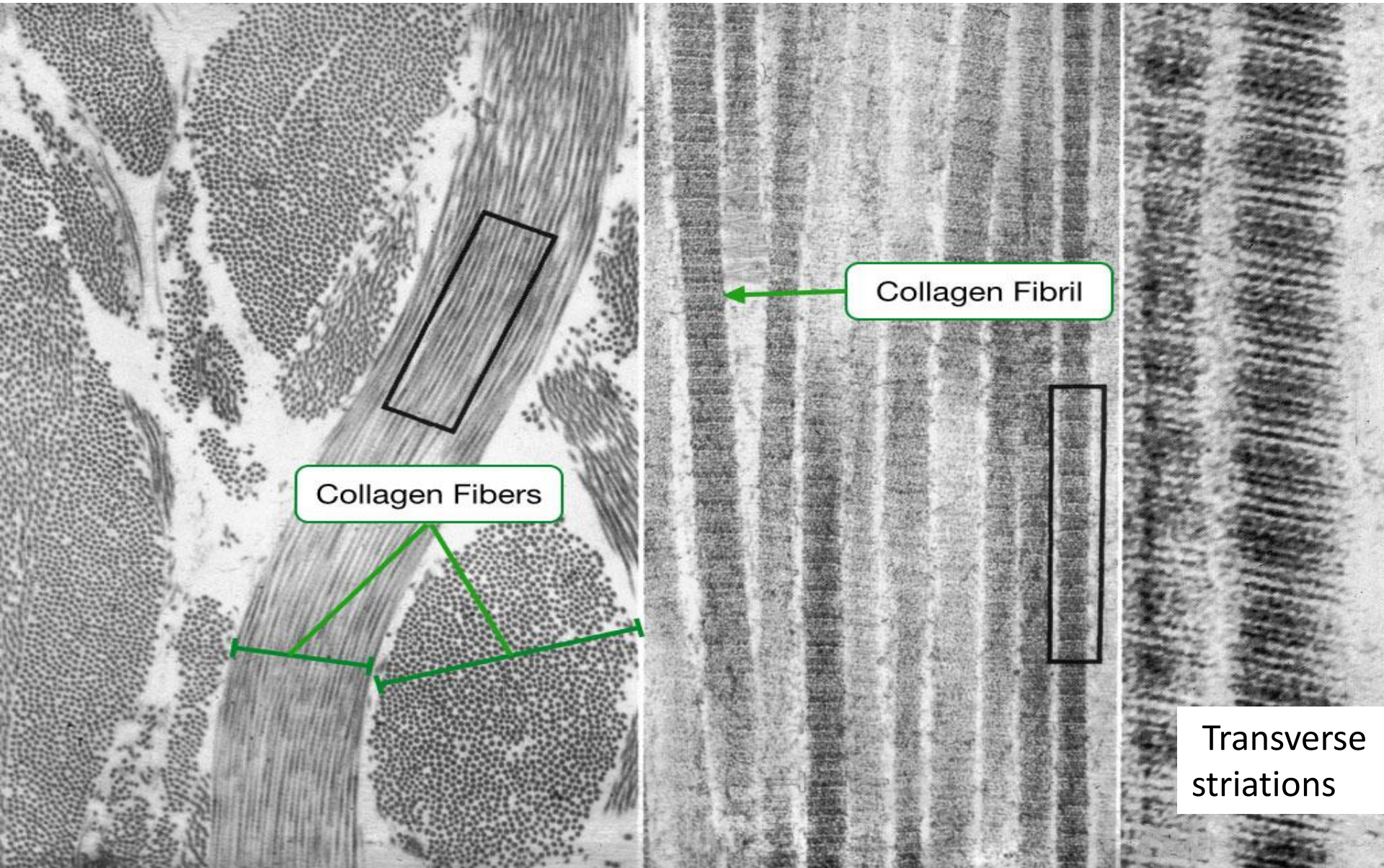


# Fibroblast & Collagen fibers (EM)





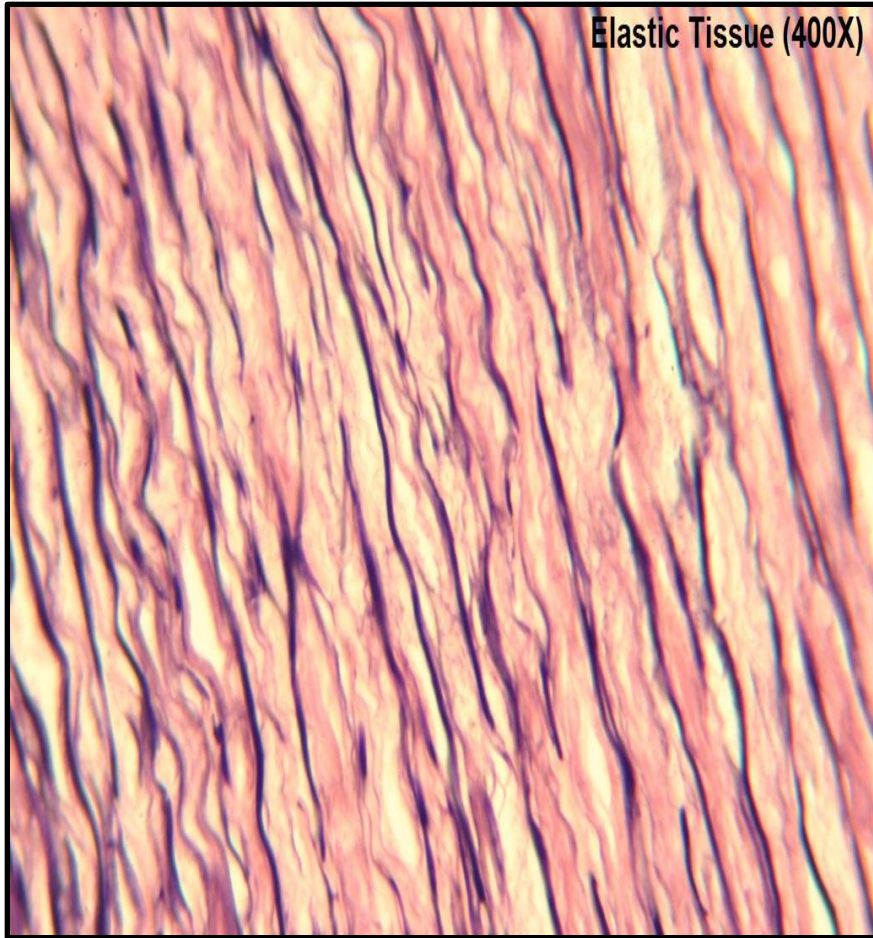
# Collagen fibers (EM)



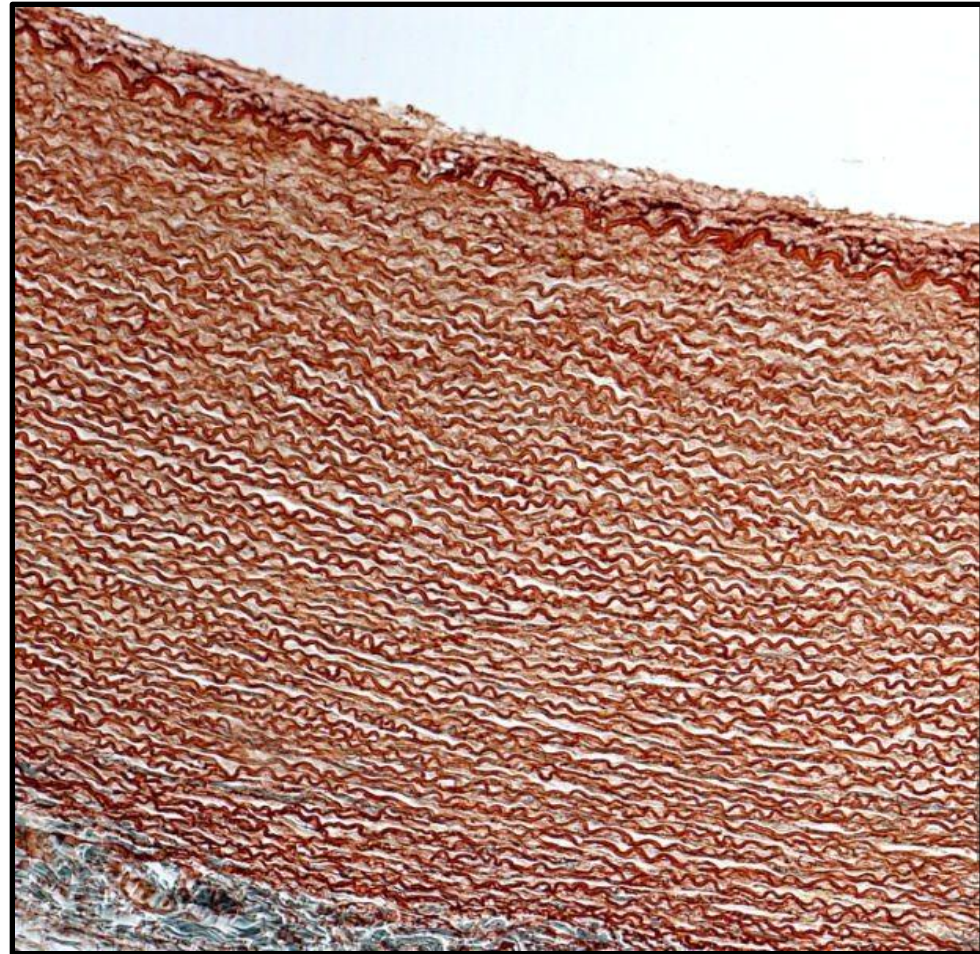


# Elastic fibers(LM)

Elastic Tissue (400X)



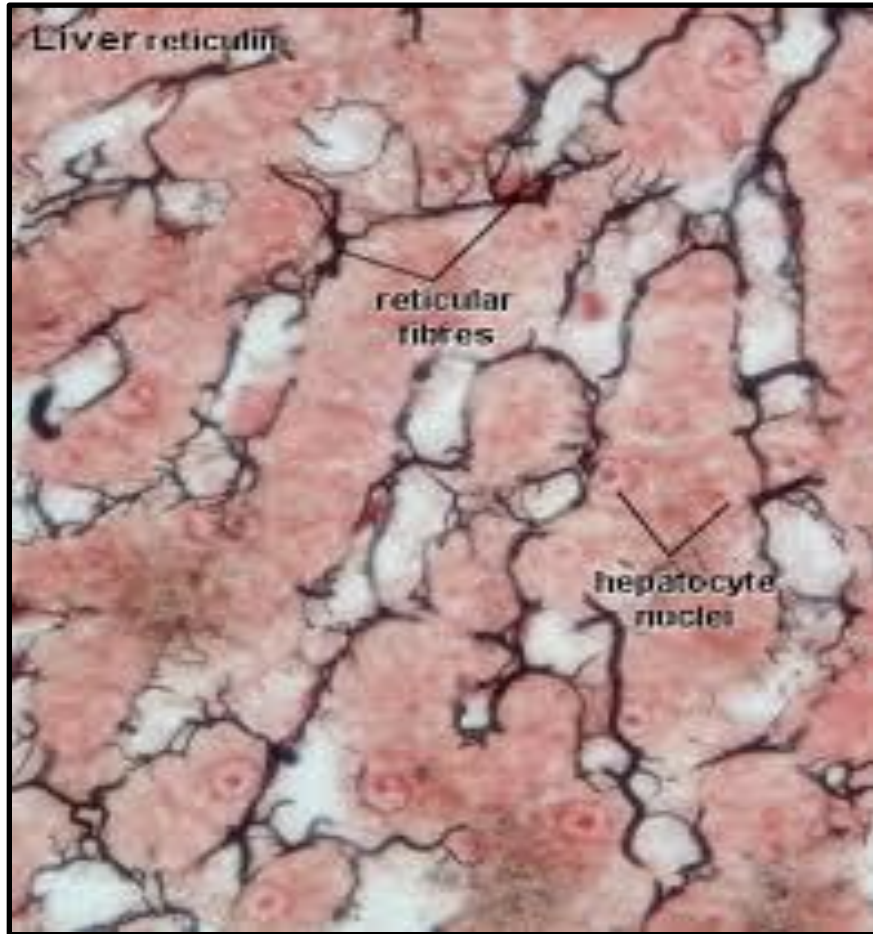
**(H&E)**



**Aorta (orcein)**



# Reticular fibers(LM)



(H&E)



silver)



# Classification of C.T.

```
graph TD; A[Classification of C.T.] --> B[C.T. proper]; A --> C[Specialized C.T.]; A --> D[Supporting C.T.]; B --> B1[-Loose C.T.]; B --> B2[-Dense C.T.]; C --> C1[-Adipose]; C --> C2[-Reticular]; C --> C3[-Mucous]; C --> C4[-Elastic]; D --> D1[-Bone]; D --> D2[-Cartilage];
```

## C.T. proper

- Loose C.T.
- Dense C.T.

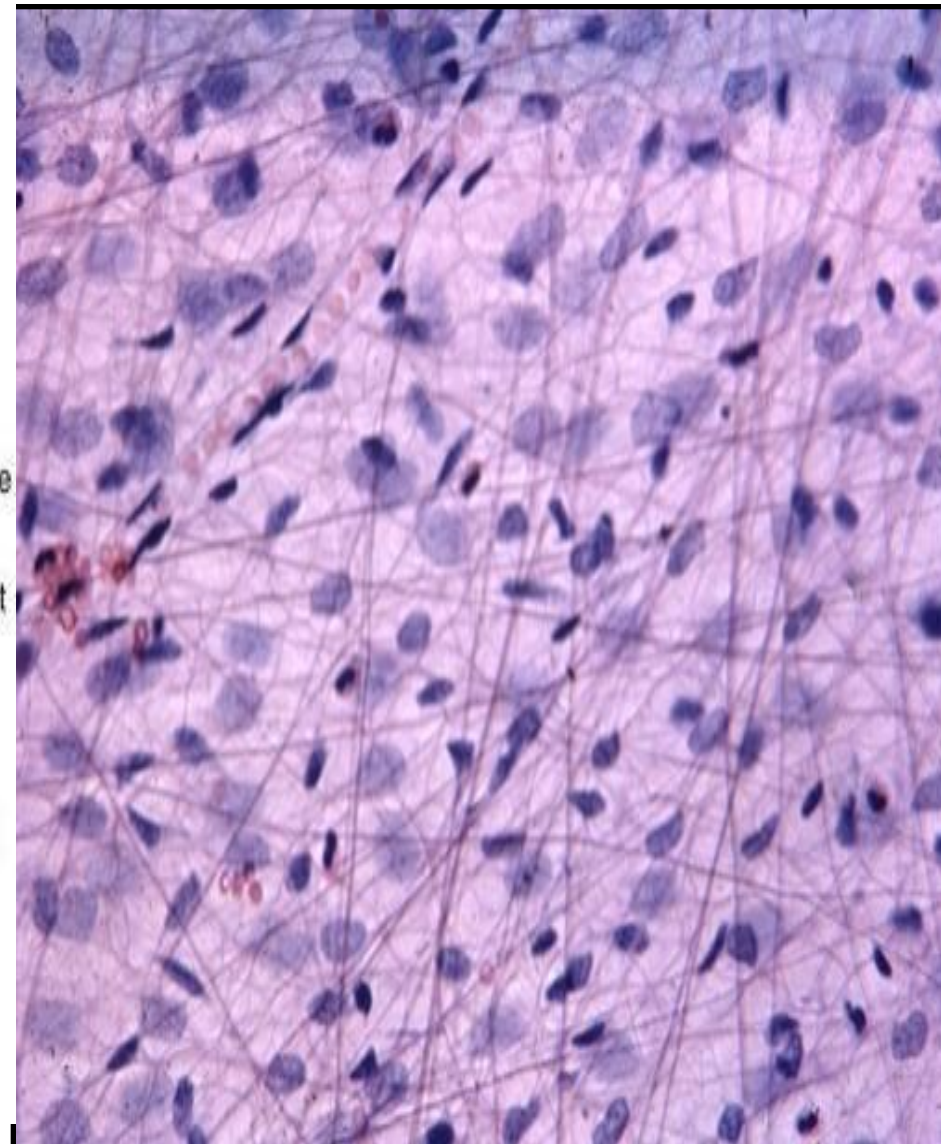
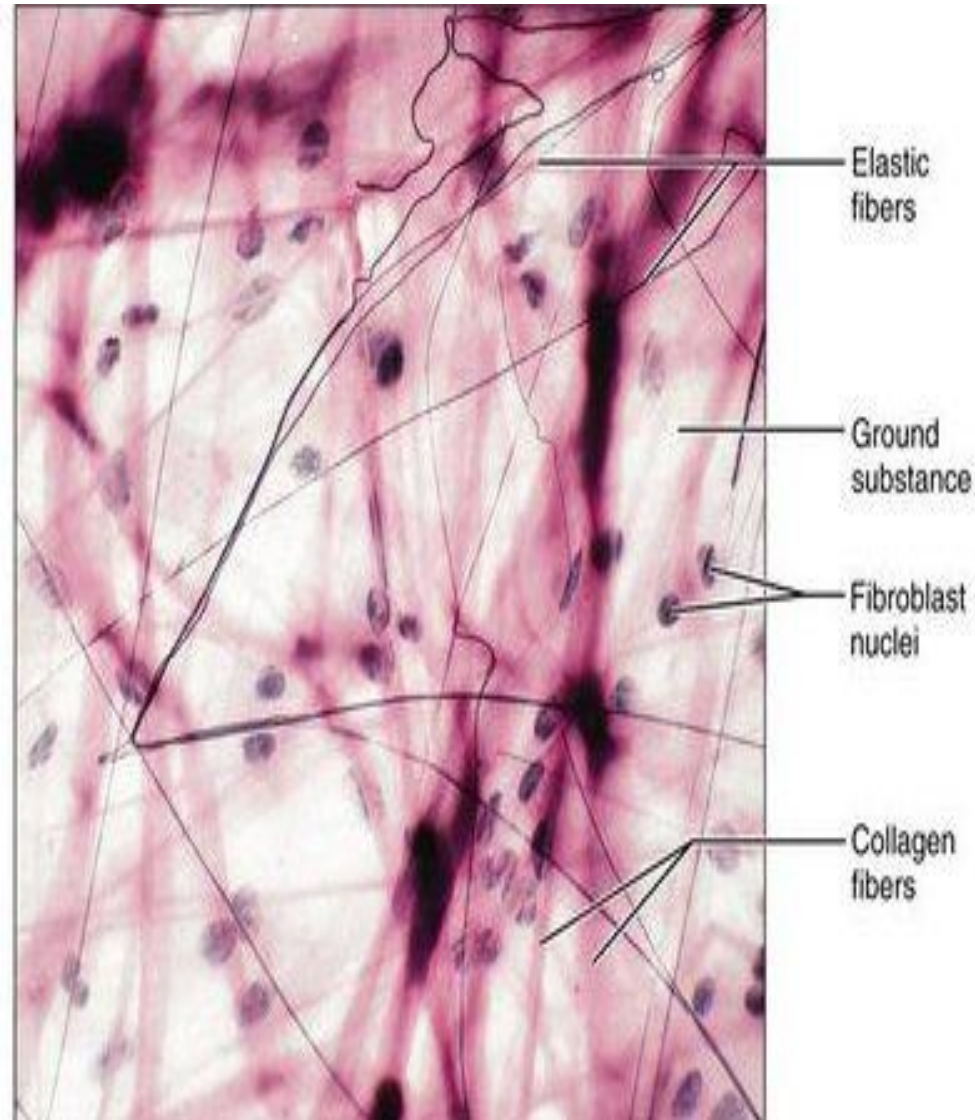
## Specialized C.T.

- Adipose
- Reticular
- Mucous
- Elastic

## Supporting C.T.

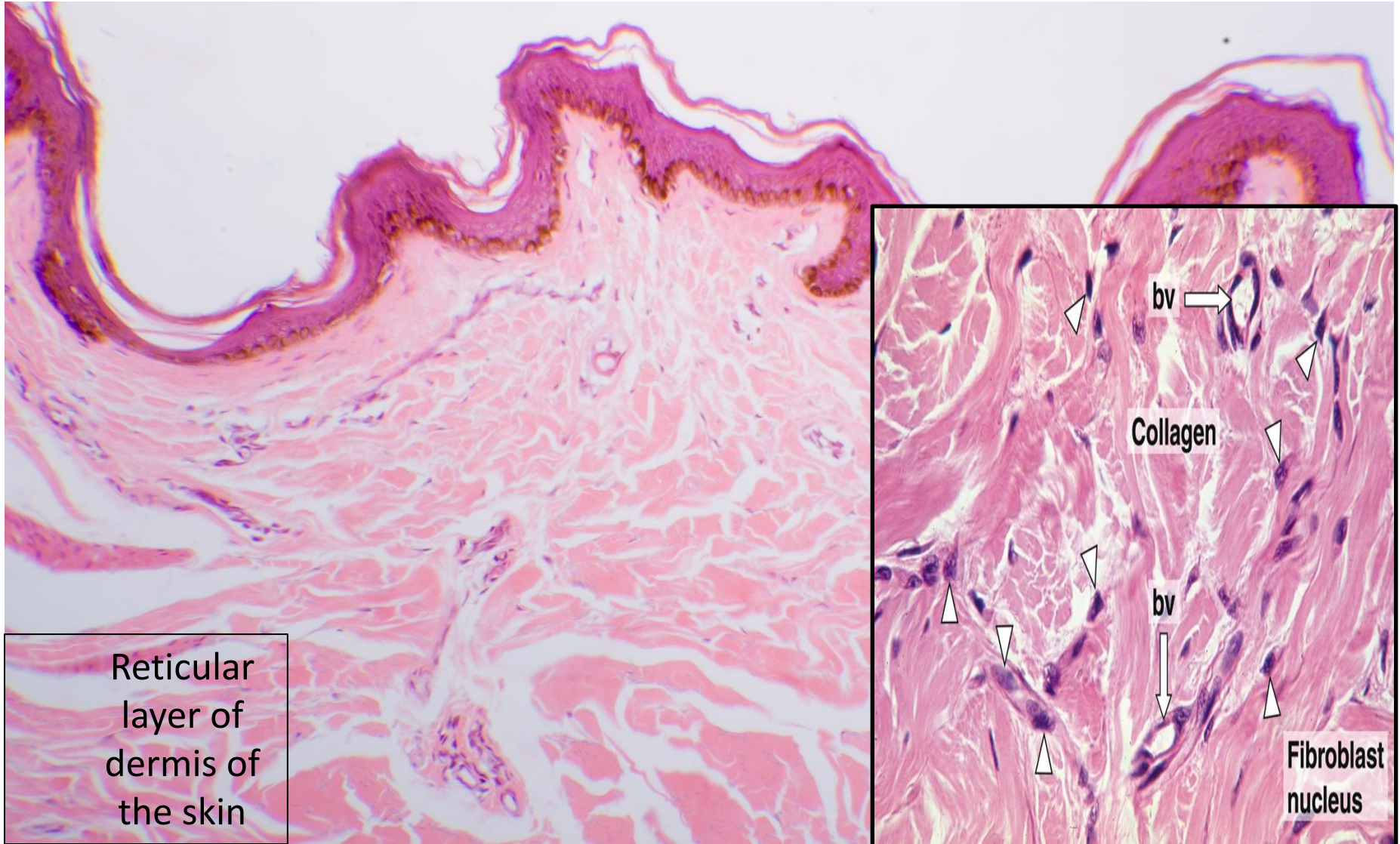
- Bone
- Cartilage

# Loose (areolar) connective tissue



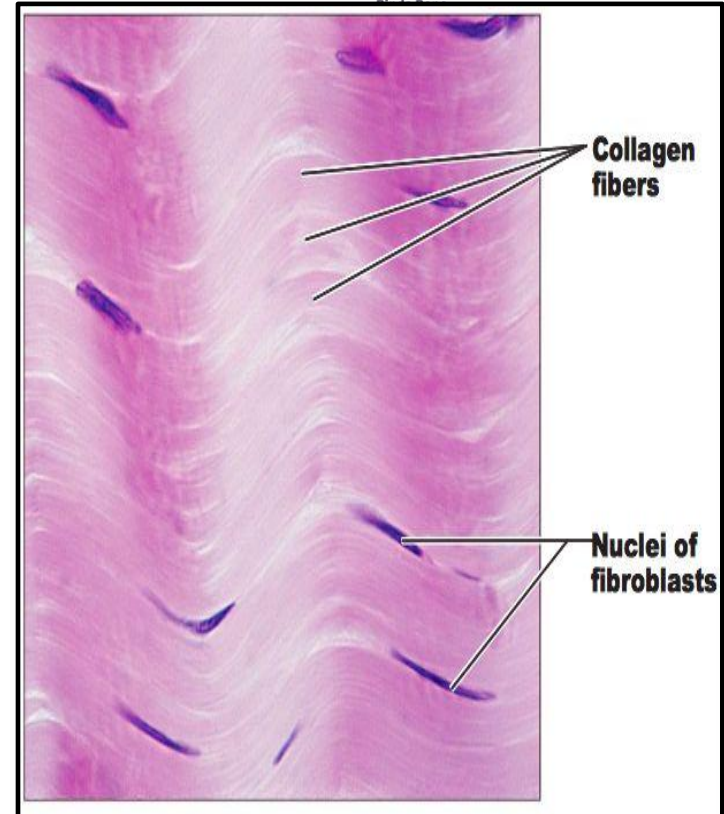
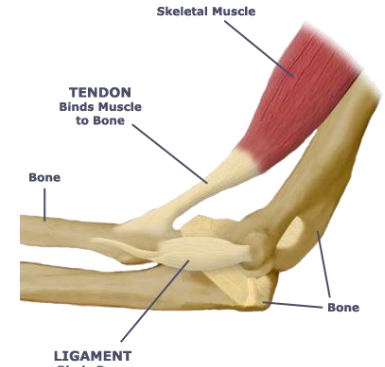
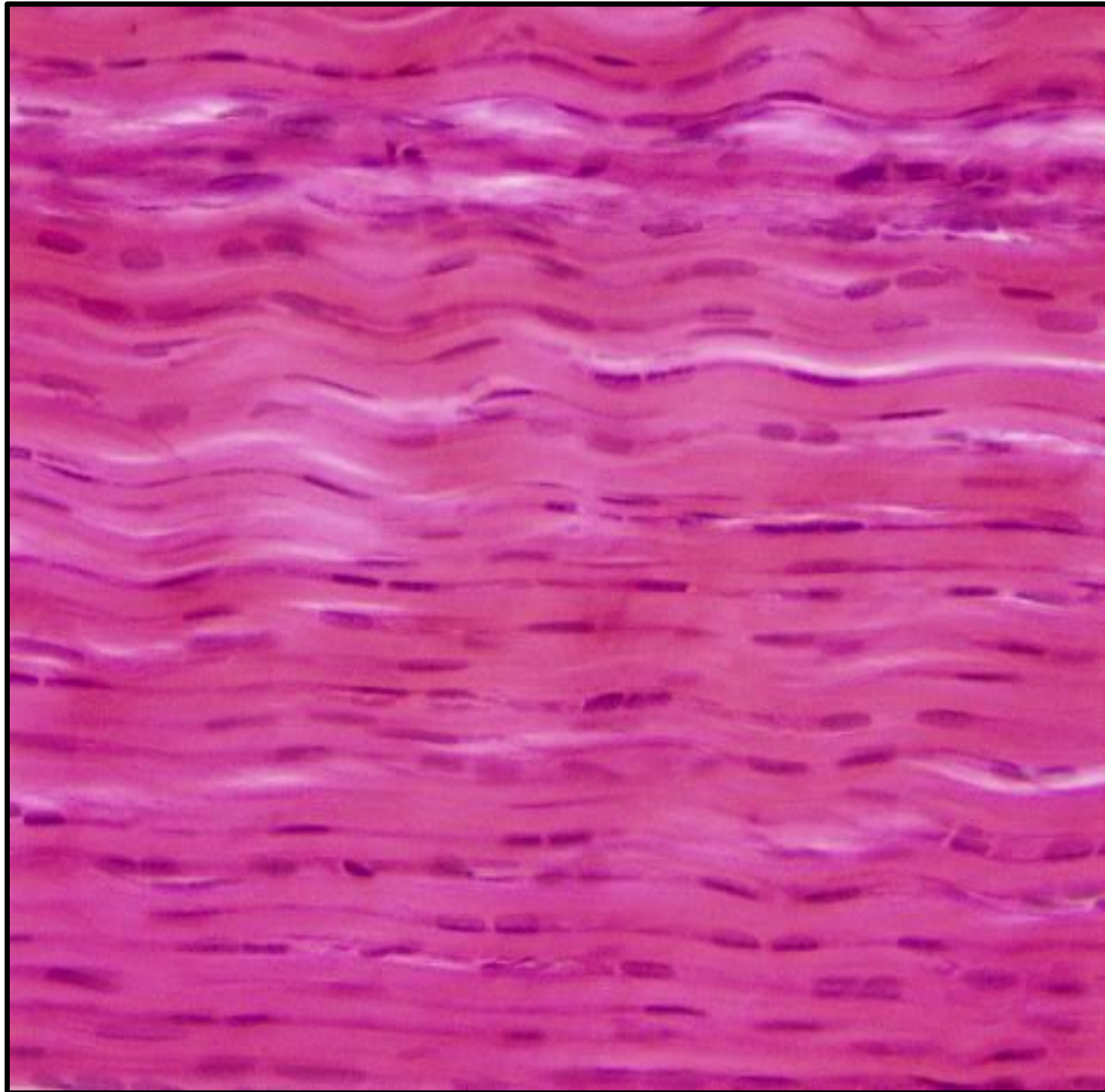


# Dense irregular connective tissue





# Dense regular connective tissue

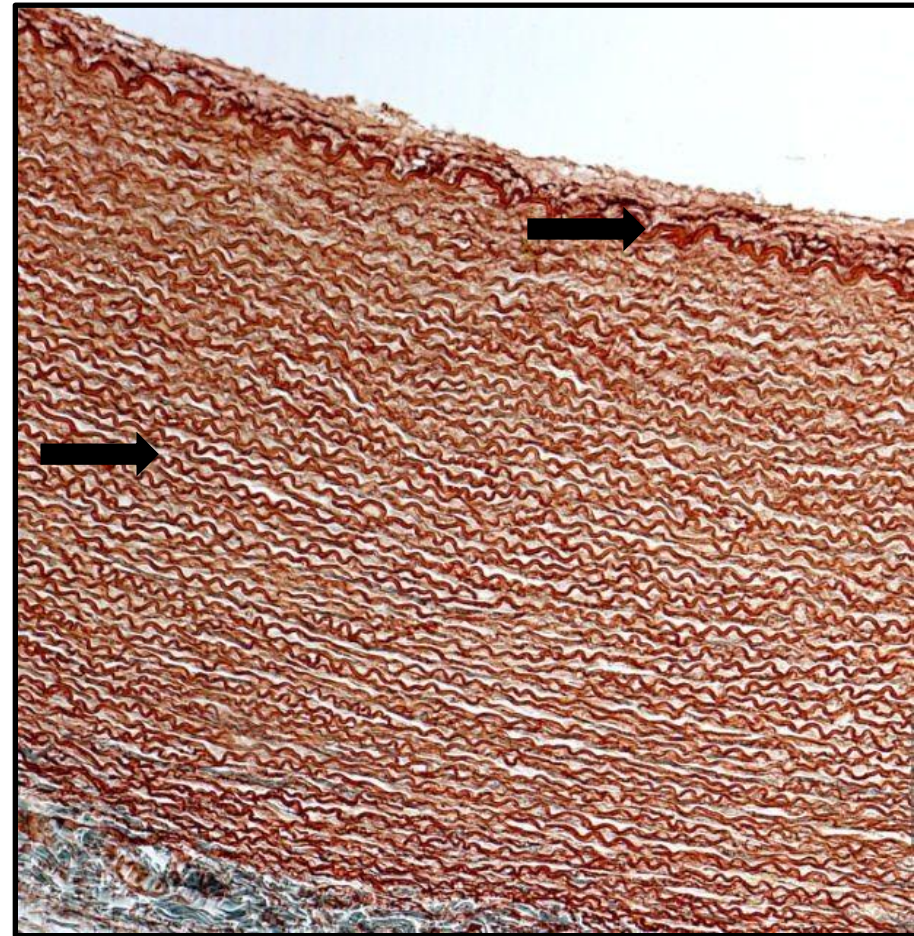




# Elastic C.T.



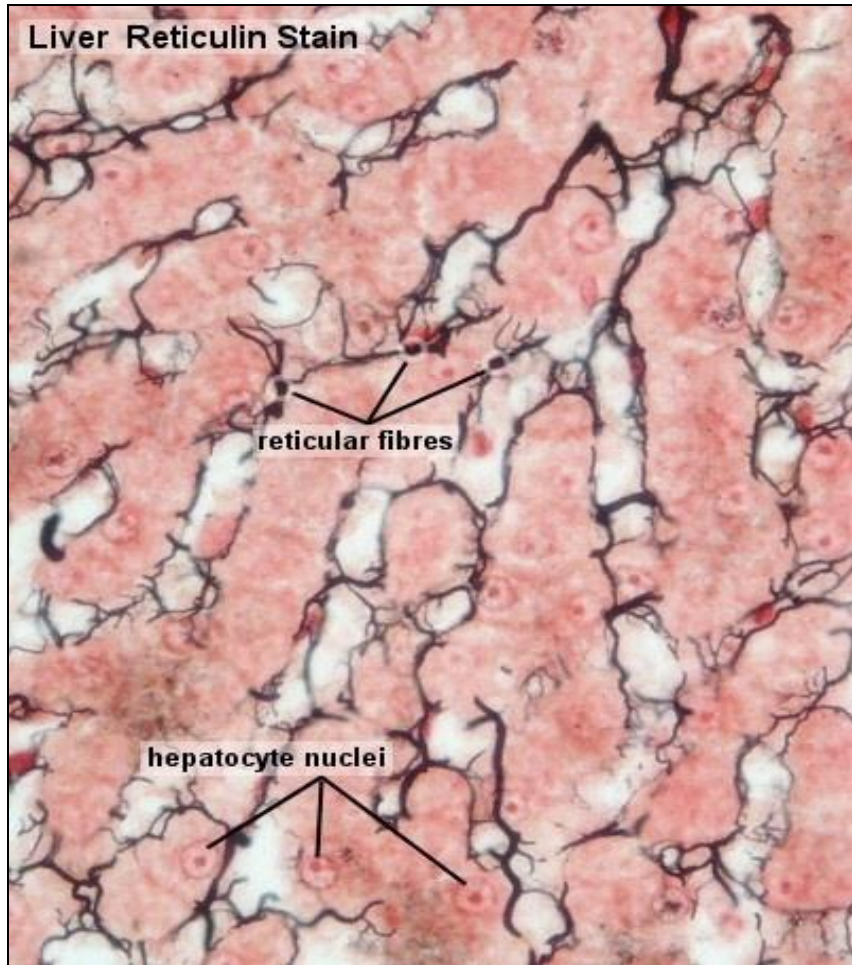
**Aorta (H&E)**



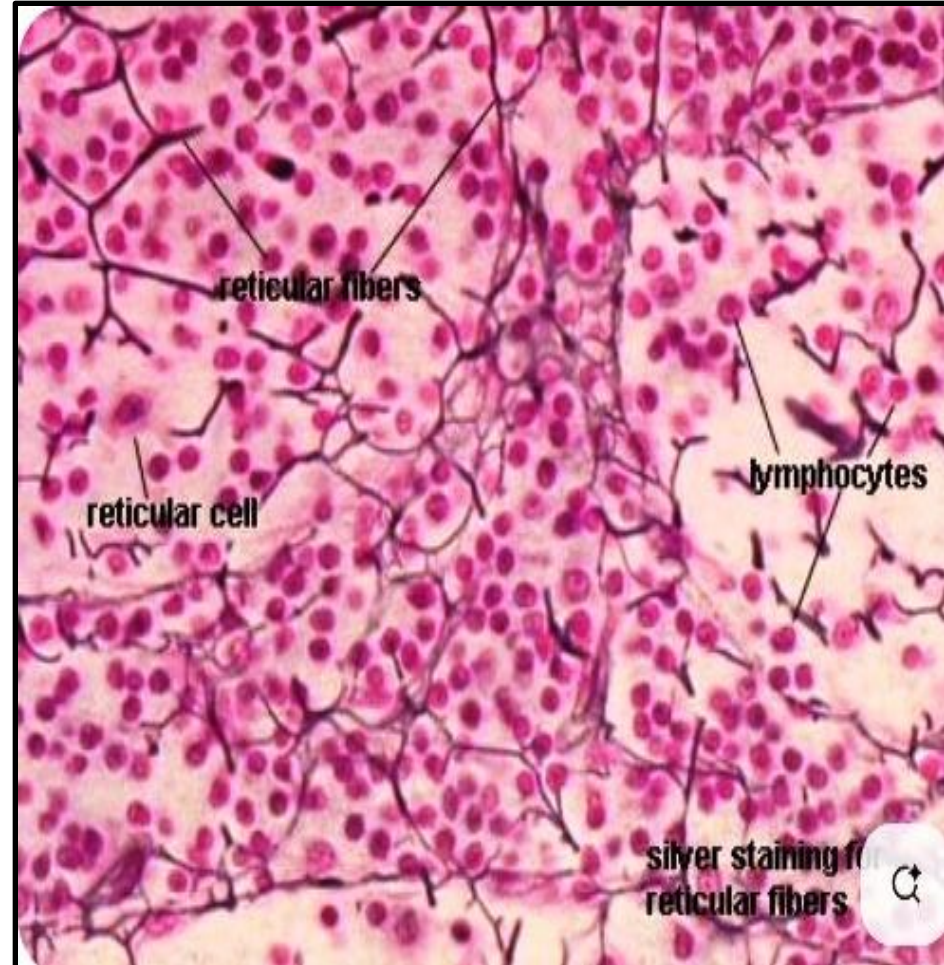
**Aorta (orcein)**



# Reticular C.T.

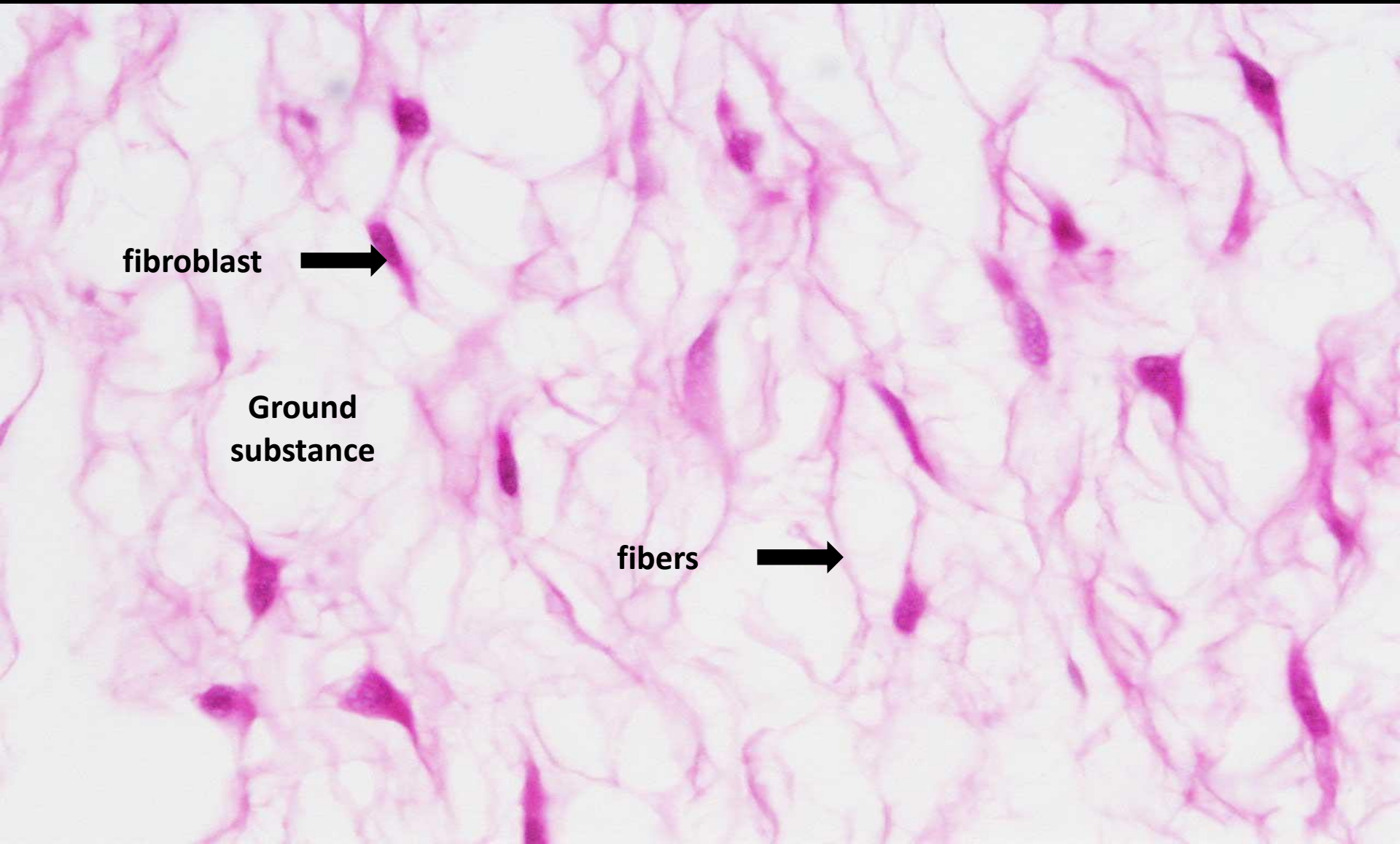


Liver

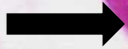


Lymph node-silver stain

# Muroid C.T.

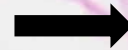


**fibroblast**



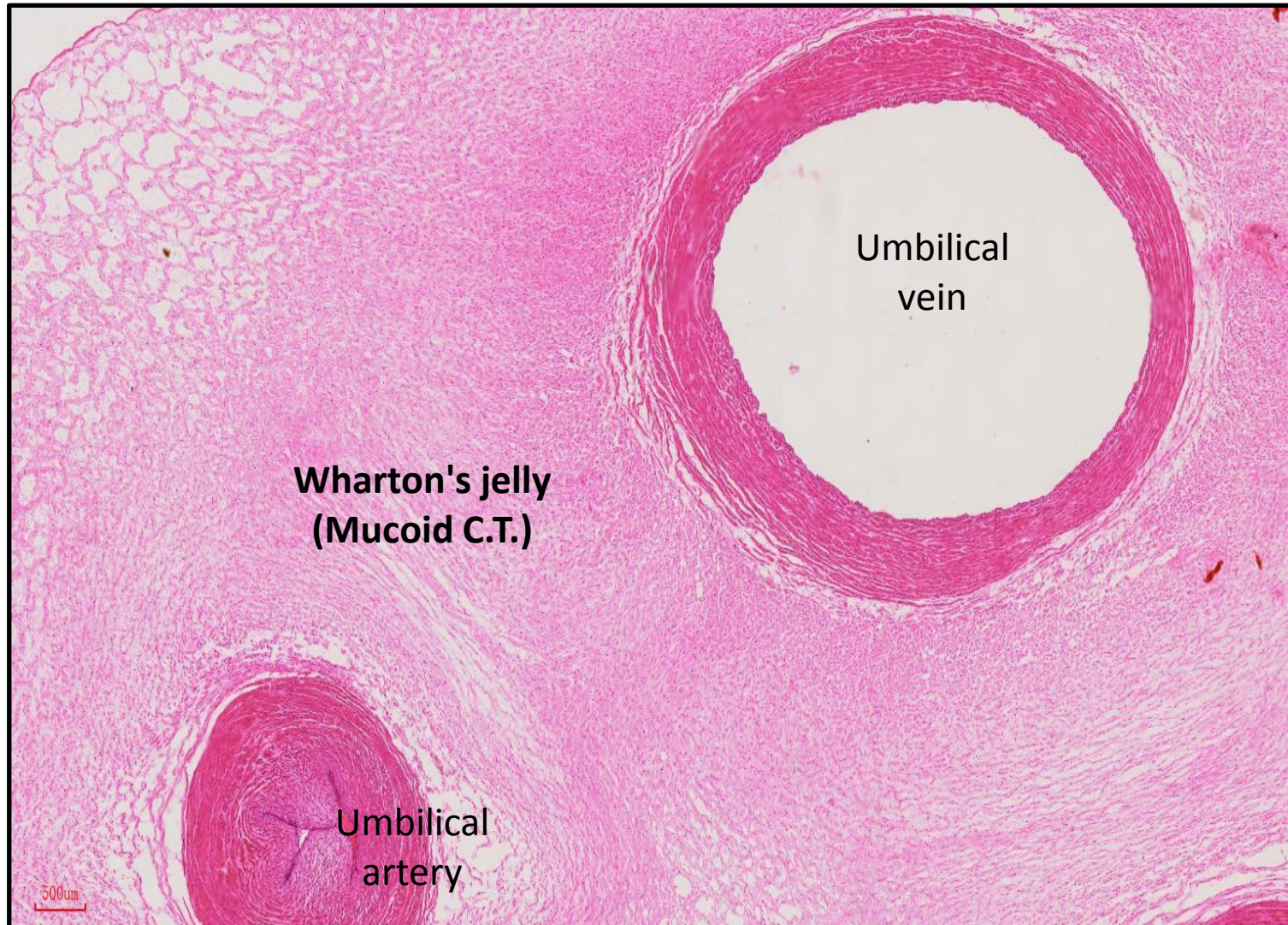
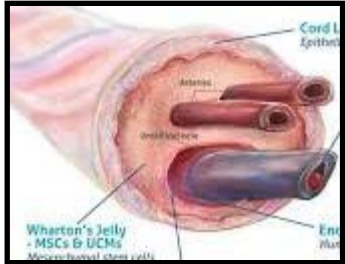
**Ground  
substance**

**fibers**





# Umbilical cord (Mucoïd C.T.)





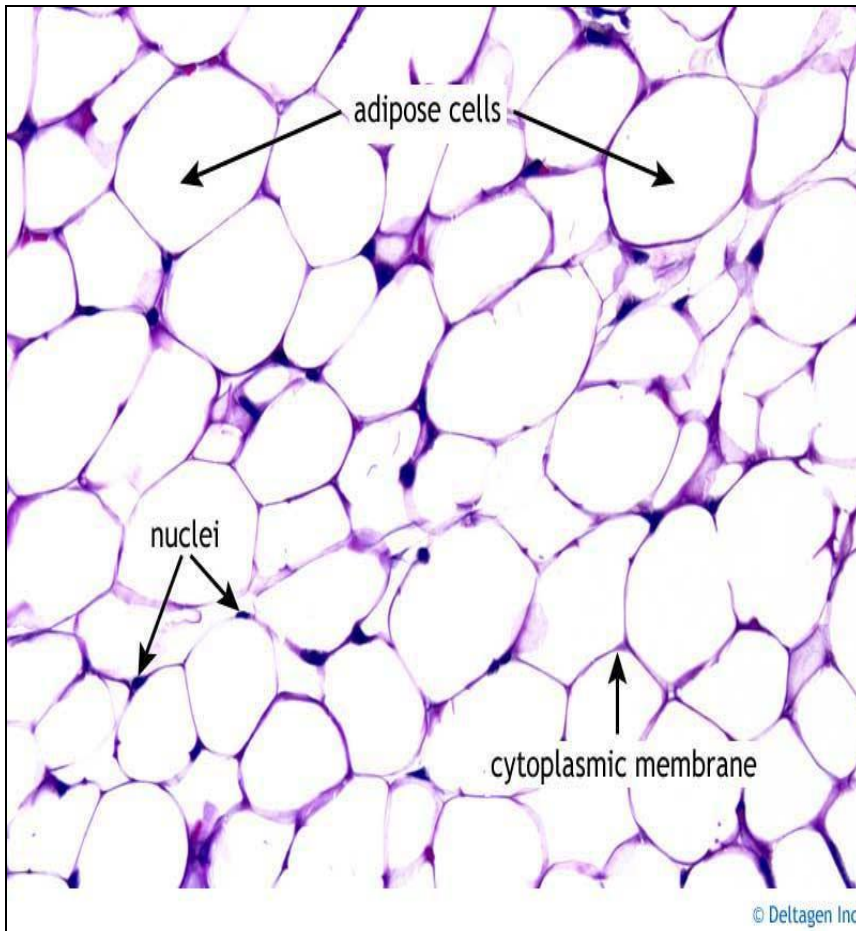
# Unilocular (white) adipose C.T.



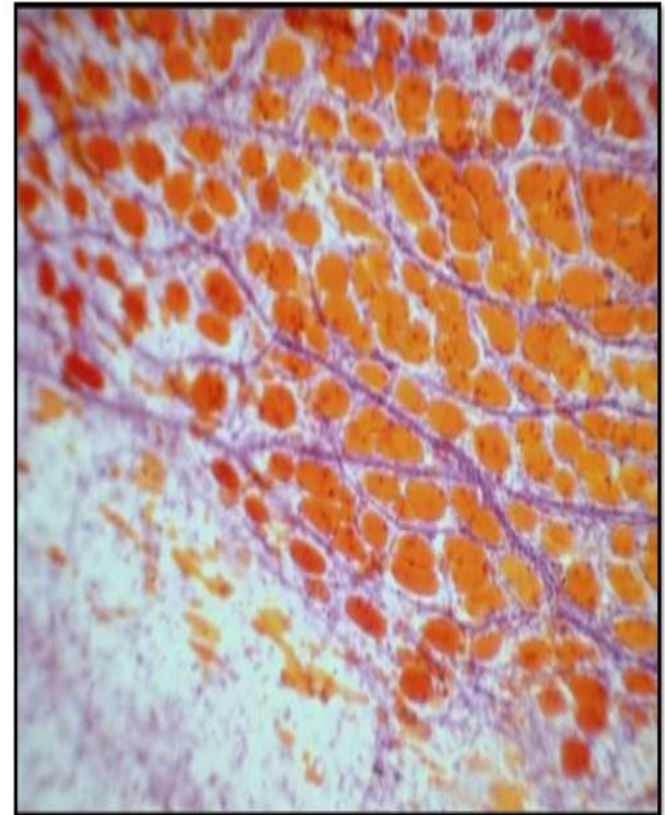


# Unilocular (white) adipose C.T.

H&E



L.M. Adipocytes stained with Sudan III



Histology Department / Faculty of Medicine / Cairo University

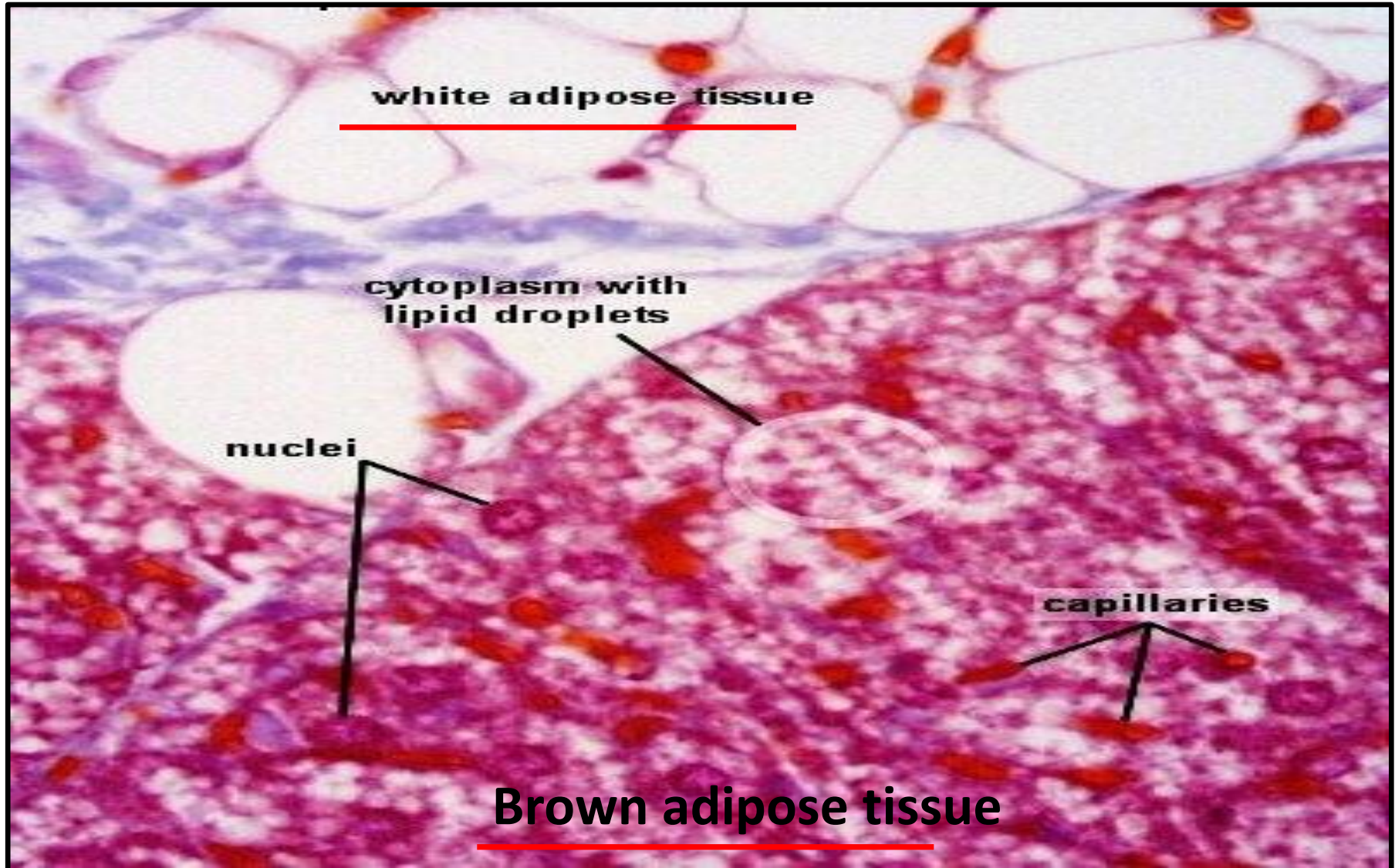


# Multilocular (Brown) adipose C.T.





# White & Brown adipose C.T.



*Thank you*

