



Histology lab : 4

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The second type of tissue that we'll be taking this semester is the connective tissue

Part 2: Connective Tissue

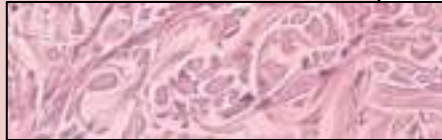

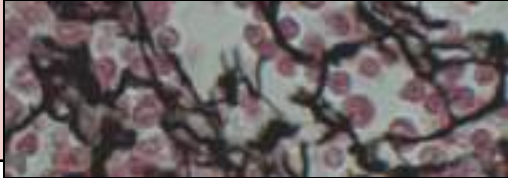
What is the only thick fiber?
 ⇒ Collagen fibers

In connective tissue, we see:

- The cells are dispersed. [في ال microscope رح نشوف فقط ال nuclei وبيكونوا Black dots]
- Various types of fibers are present between the cells. [دشر ال Black dots بيكونوا بعد عن بعضنا [epithelium او [عكس ال [epithelium]

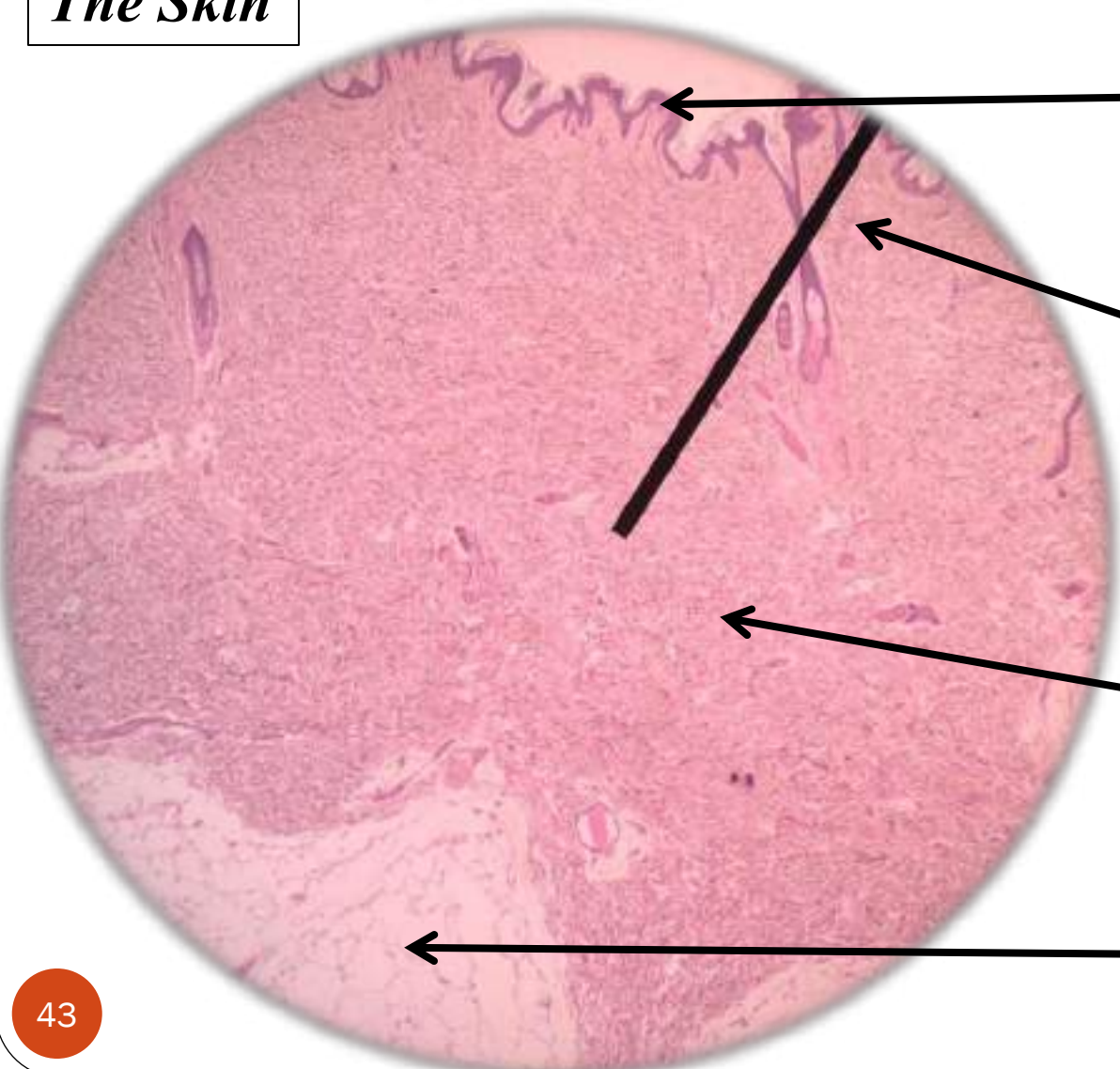
3 أنواع
 Collagen
 elastic
 Reticular

extra cellular matrix is abundant in the connective tissue
 بما انه ال fibers تكون أوضح

Fiber	Appearance	
Collagen خفوط لونها أحمر عريضة	<u>Thick</u> <u>acidophilic</u> structures ①	
Elastic نضاج صبغة (Stain) خالٍ خفوط رفيعة لونها غامق	<u>Thin</u> darkly stained wavy lines ②	
Reticular network of fibers أبها رفيعة ولونها غامق	<u>Thin</u> darkly stained net ③	

(1) Connective Tissues Related To The Skin

The Skin



Epidermis
(Epithelium)

نذكر: إنه الـ epidermis عبارة عن

Stratified squamous keratinized epithelium

most superficial

Loose Areolar
Connective Tissue

Dermis

The dermis is formed of two types of connective tissue

loose areolar

Dense collagenous

Dense Irregular
Connective Tissue

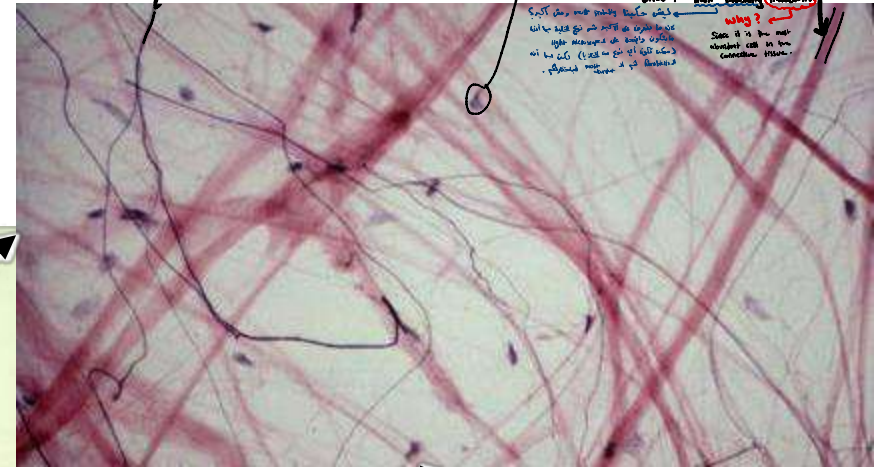
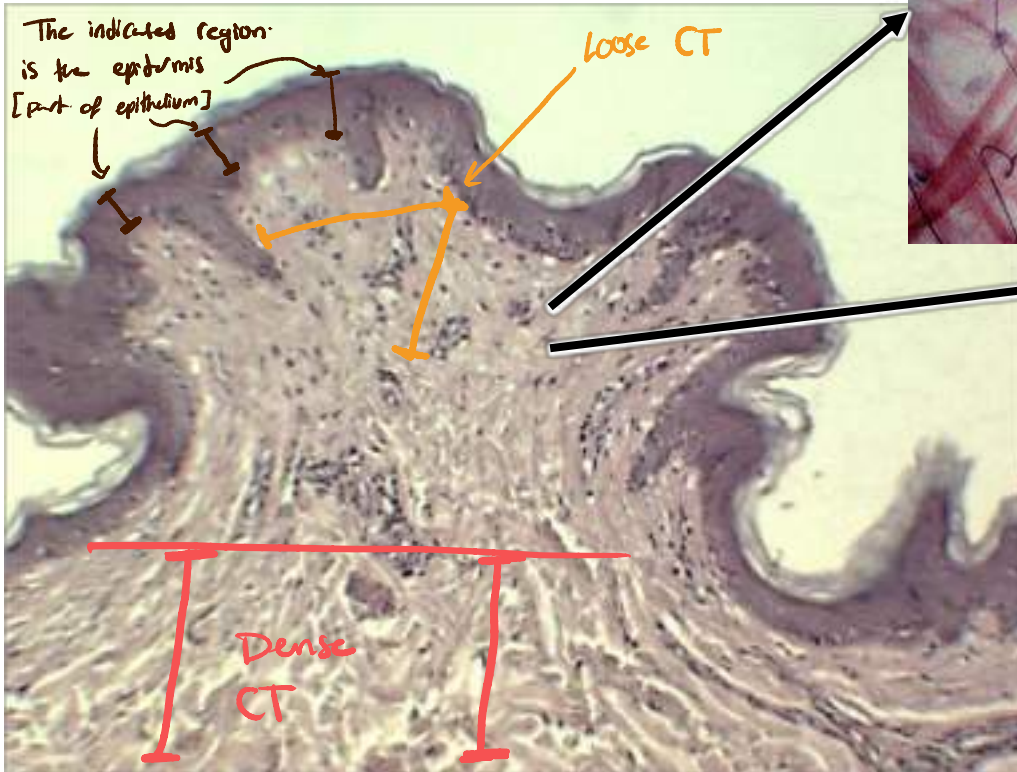
Subcutaneous Fatty
tissue

note: this subcutaneous fatty tissue (hypodermis) is related to skin, BUT not part of it

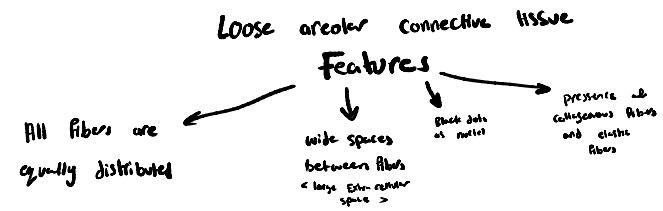
This slide is a magnification of the loose collagenous connective tissue from the slide before.

→ Where do we find loose areolar connective tissue?

- 1- under epithelium
- 2- around blood vessels
- 3- Between muscles & nerve fibers



* notice the wide spaces between the fibers

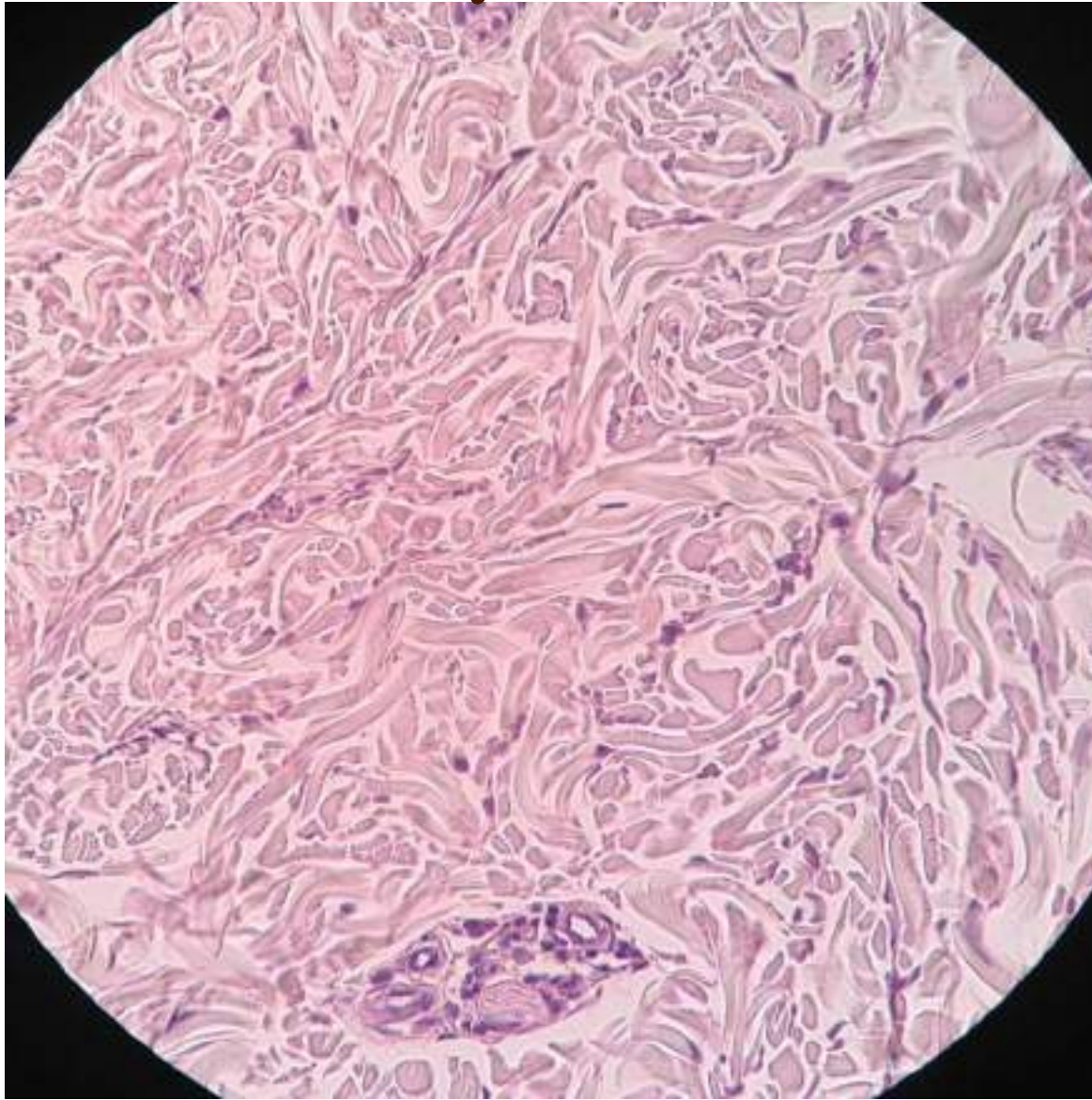


* اسهل طريقة للتعرف على ال loose connective tissue ← الموقع [directly under epithelium]

* لا يوجد فصل فعلي بين ال loose & Dense areolar collagenous بالتحقیقة لكن متداخلين مع بعضنا

Loose connective tissue. It's located immediately under the epithelium.

This slide is a magnification of the dense CT from the skin.



Dense collagenous
irregular connective
tissue. Note the abundance of collagen fibers. Note also how the fibers pass in different directions.

The most abundant structure in the Dense collagenous is \Rightarrow Collagen fibers
Remember: collagen fibers appear as thick acidophilic structures

more abundant than dense CT \Rightarrow Collagen fibers \leftarrow

* Fibers in the Dense Connective tissue are irregular & fibers run in different directions
< Do not have a specific orientation >

direction \Rightarrow \leftarrow nuclei \leftarrow

typical appearance of
a fatty tissue under the
light microscope.



Appearance :

- thin ring of cytoplasm
- peripheral nucleus

< Signet ring appearance >

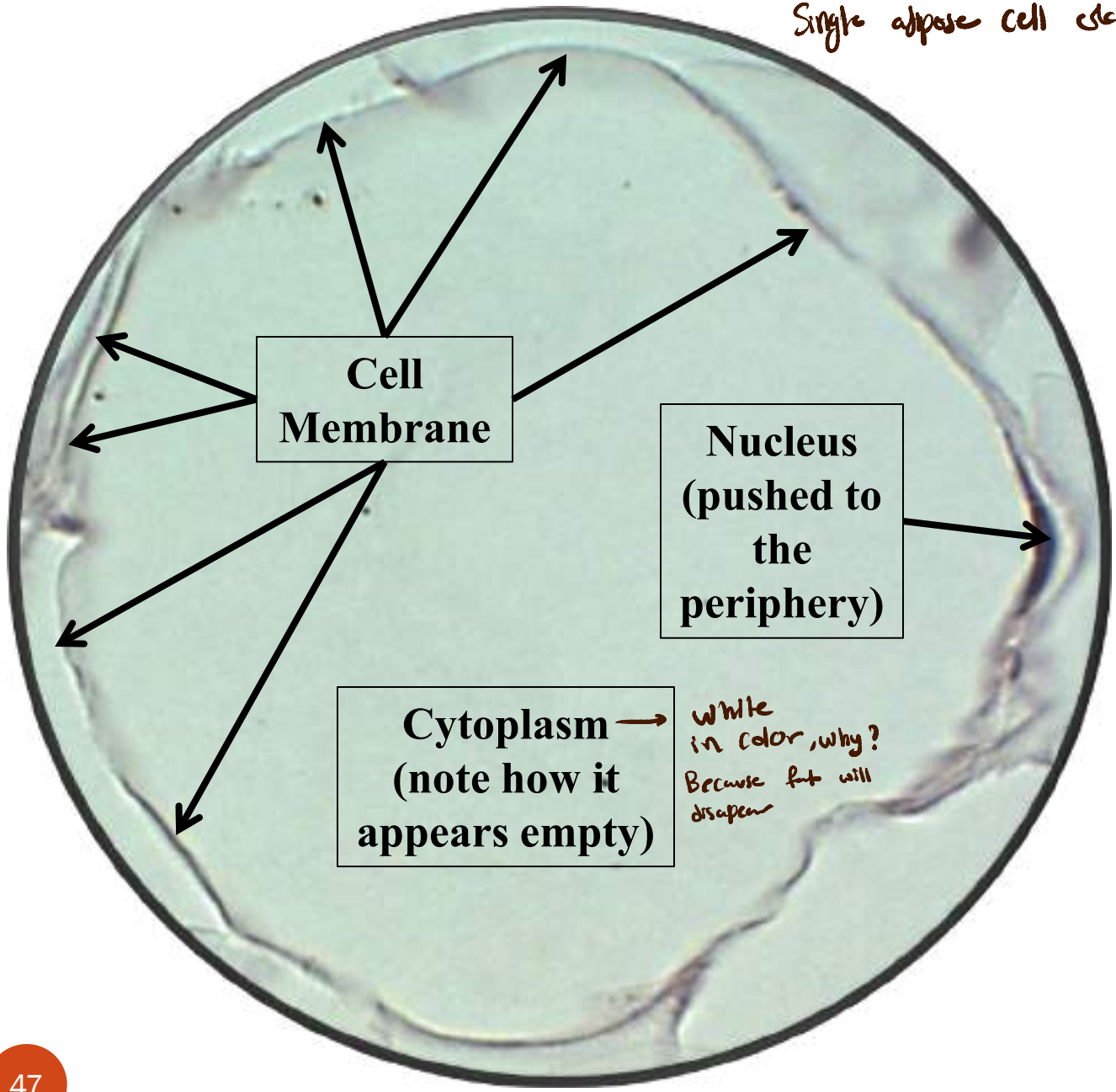
Adipose cell شكل دائرية شبي

Subcutaneous
fatty tissue

Fatty tissue. Each of the large round structures is an adipocyte.

Remember : Fatty tissue is related to skin,
but NOT a part of it.

لغون سوپنا مغنification cell عده adipose single



Cell Membrane

Nucleus (pushed to the periphery)

Cytoplasm (note how it appears empty)

white in color, why? Because fat will disappear

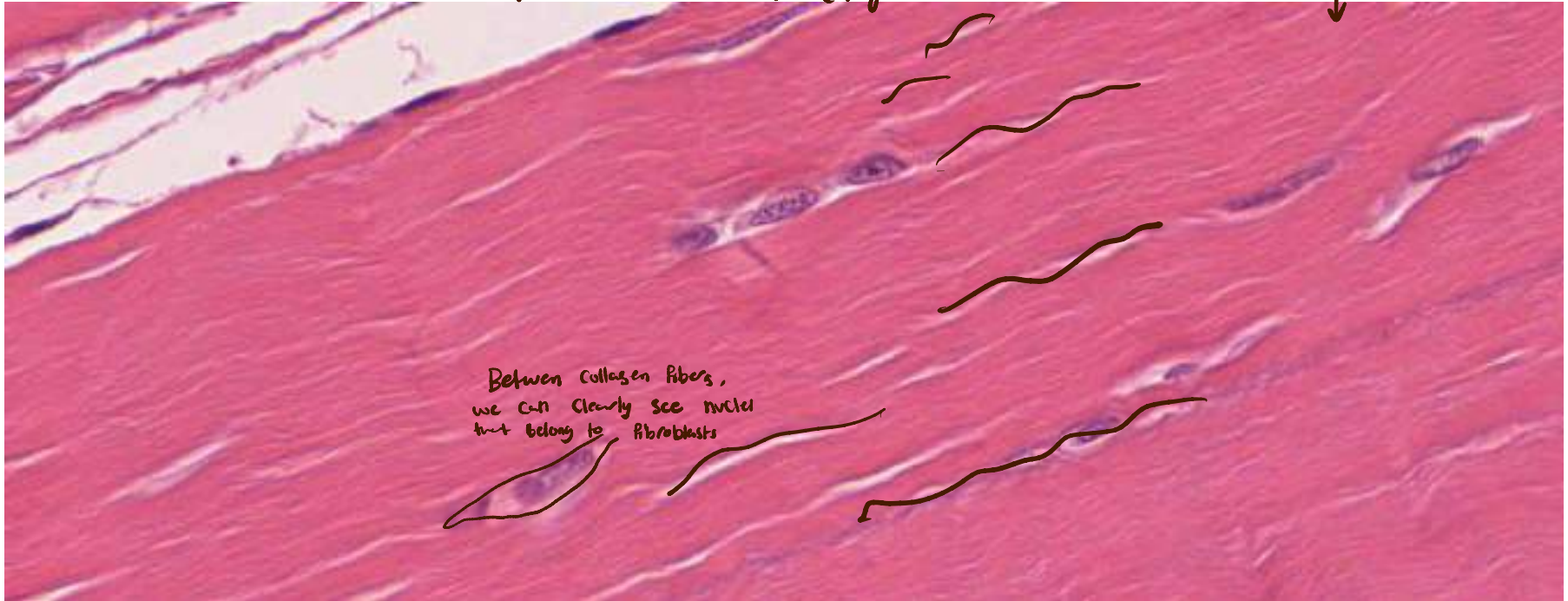
Adipocyte. Note the typical *signet-ring* appearance.

(2) Dense Regular Connective Tissue

All fibers are in the
↑ same direction

كيفية تفرقة! إنه كثاد
+ لا تشبه إنه ر
Collagen fibers → شكل
Regular ← parallel ألياف

Red in color due to the abundance of collagen fibers.



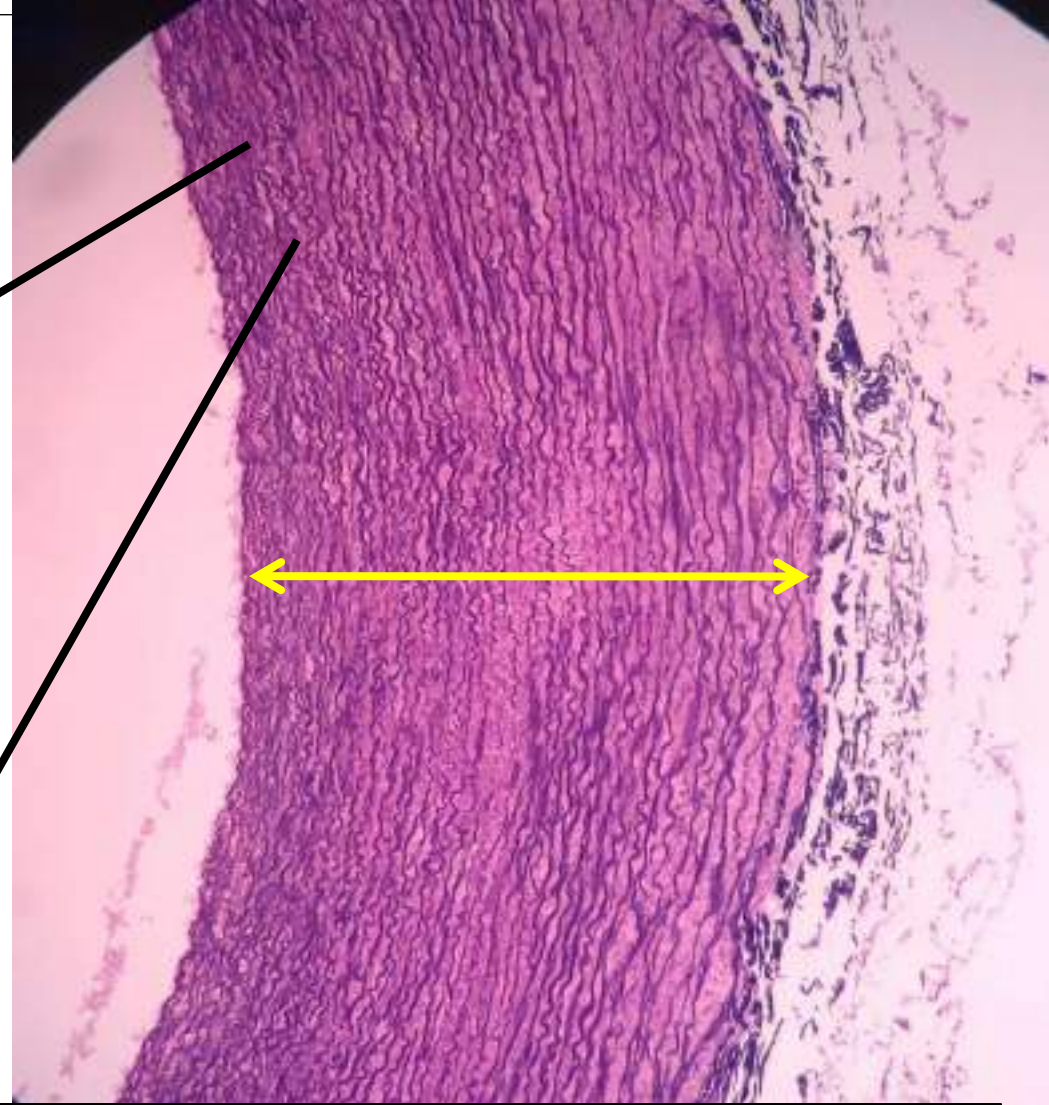
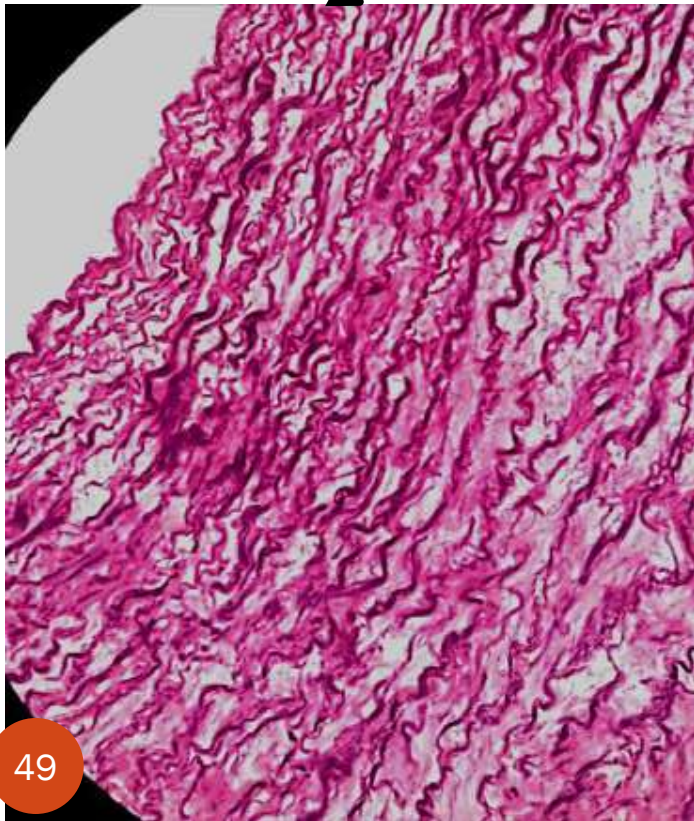
Dense regular collagenous connective tissue in the tendon. Note the abundance of collagen fibers. Note also how all the collagen fibers are running in the same direction. The darkly stained structures are the nuclei of fibroblasts.

(3) Dense Elastic Connective Tissue

↳ section through Aorta

→ Dense elastic ⇒ Abundance of elastic fibers

الخيطوط للاحماقة هي الـ elastic وتكون على شكل
wavy lines



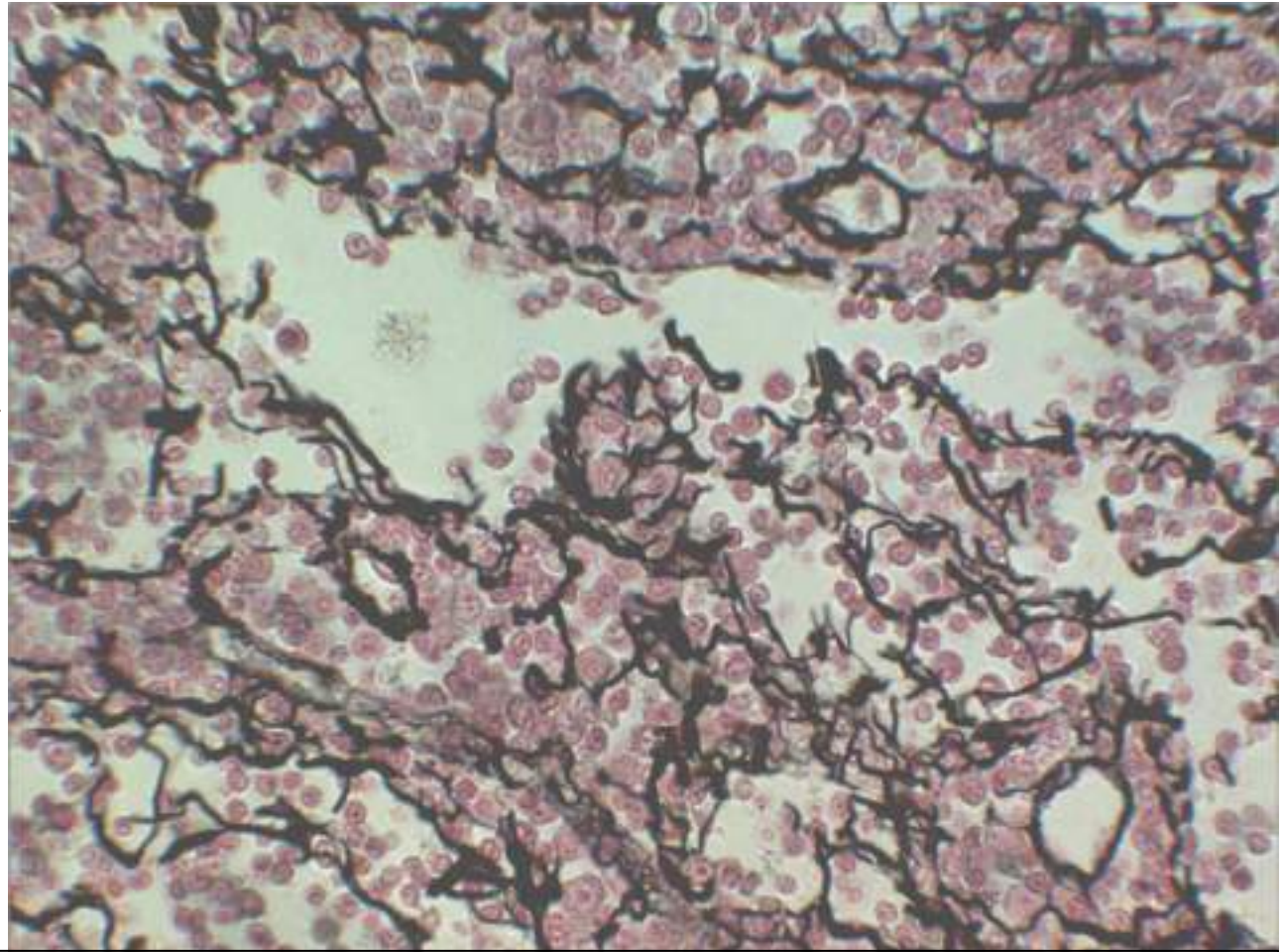
Elastic tissue in the aorta (the double-headed yellow arrow). Under higher magnification, the wavy appearance of the elastic fibers is clear.

(4) Reticular Connective Tissue

↓
loose type of
connective tissue

→ Abundance of reticular
fibers, that look like
networks

Reticular
connective tissue بين ال
** الفراغات
تكون عبارة عن ال
parenchyma
of the organ



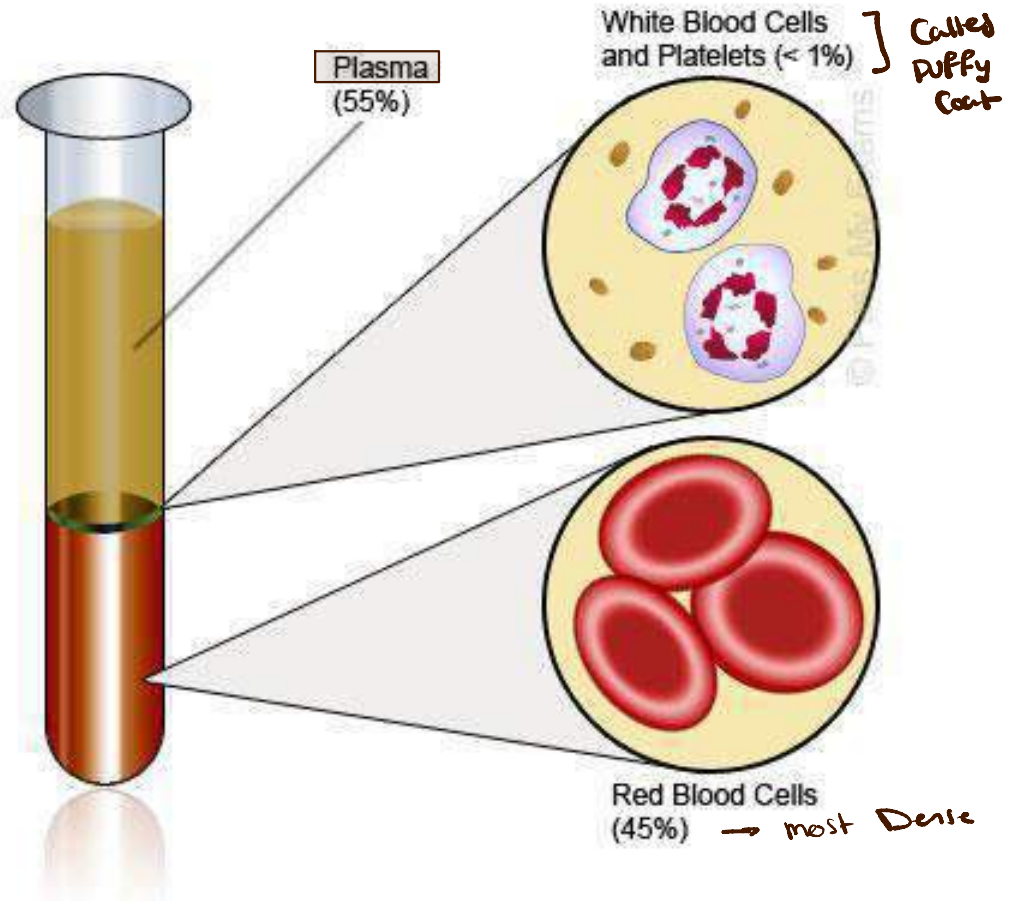
Reticular tissue in the lymph node. The reticular fibers (abundant in this tissue) require a special stain that gives them a black color. Note how the fibers form a network.

الفراغات بين ال
تكون lymphocytes
بشكل
رئيسي .

(5) Blood

↳ fluid type of connective tissue.

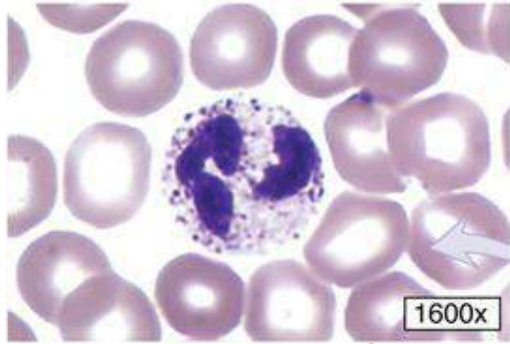
- Take a sample of blood
- Put it in a tube
- Put tube in centrifuge device
- Spin
- Blood components will be separated



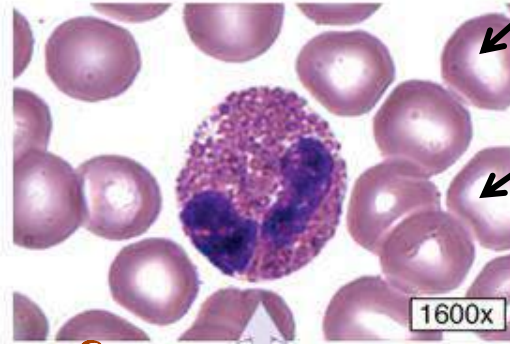
Red and White Blood Cells

RBCs with central pallor

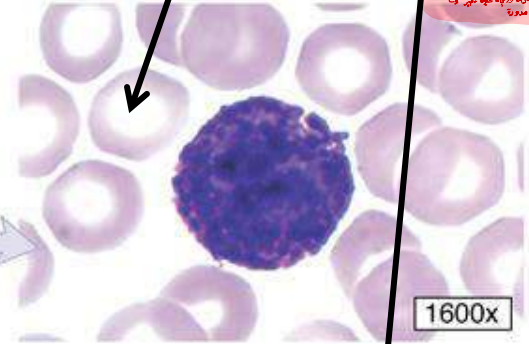
- * RBC
 - most abundant
 - disc in shape
 - acidophilic, due to the presence of the protein hemoglobin.
 - Biconcave in shape
- * The central pallor in RBC is due to the biconcavity & its structure



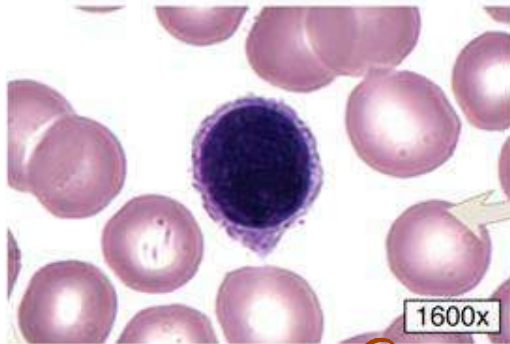
Neutrophil
easy to recognise



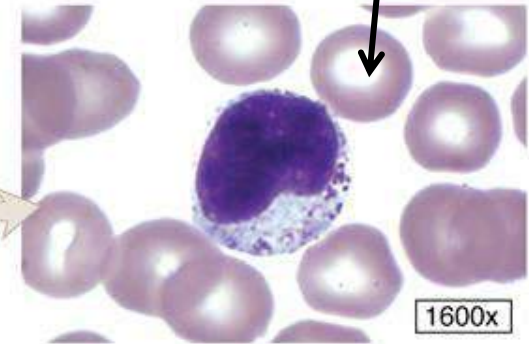
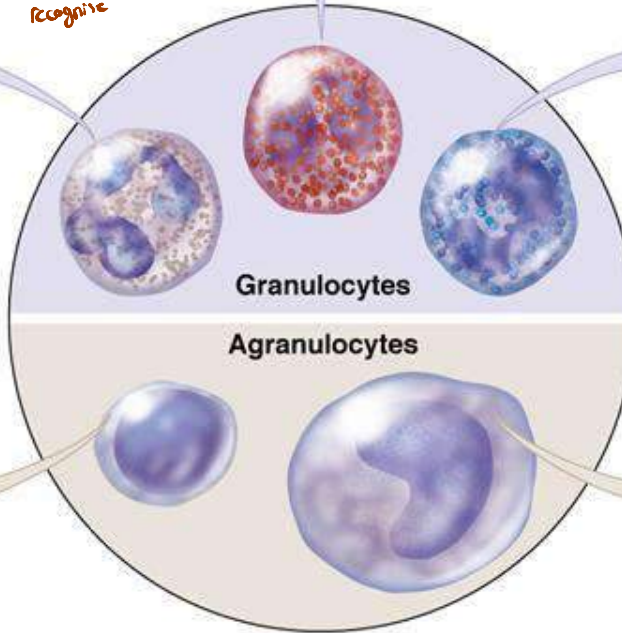
Eosinophil
easy to recognise



Basophil



Lymphocyte



Monocyte

بالدم لوننا ابيض
why, RBC لا
ممكن ان الوسط لا يستعمل
الصبغة زي الأخرى.
RBC شكله لا
Sphere ولا flat بل
بشبه قبة او
Central pallor
أسر دما رح يكون مع
دفاي حالة خويصة اسمها
Spherocytosis
منه انما يفتقر
موتة

لو كان ا وسط
كثيره
Central pallor
اسم خويصة اسمها
Spherocytosis
منه انما يفتقر
موتة

* By examining the
Central pallor & its size
we can identify some
Blood diseases.

WBC

إلما أكثر من نوع

Neutrophil ①

most numerous
multi lobed nucleus
النucleus مكونة من 3-5 اجزاء

Eosinophil ②

Acidophilic granules
Basophilic nucleus [Bi-lobed]
النucleus مكونة من جزئين
الcontrast بخلاف eosinophil، سهلة و easy to recognize

Basophil ③

Both granules & nucleus are basophilic, that's why its hard to distinguish nucleus
أحد WBC موجودة في الدم

المنطقة يتكون بينه لعدد النوعية.

Lymphocytes ④

nucleus occupies most of the cell, surrounded by a thin layer of cytoplasm.
no granules + (round nucleus)

Monocytes ⑤

kidney shaped nucleus
no granules, A larger section of the cytoplasm could be seen than lymphocytes.