Practical exam revision

Nucleus

Q1- Identify :

! Nucleus

Q2- Location of :

- Heterochromatin

المناطق الداكنة الصغيره في النواة

- Euchromatin

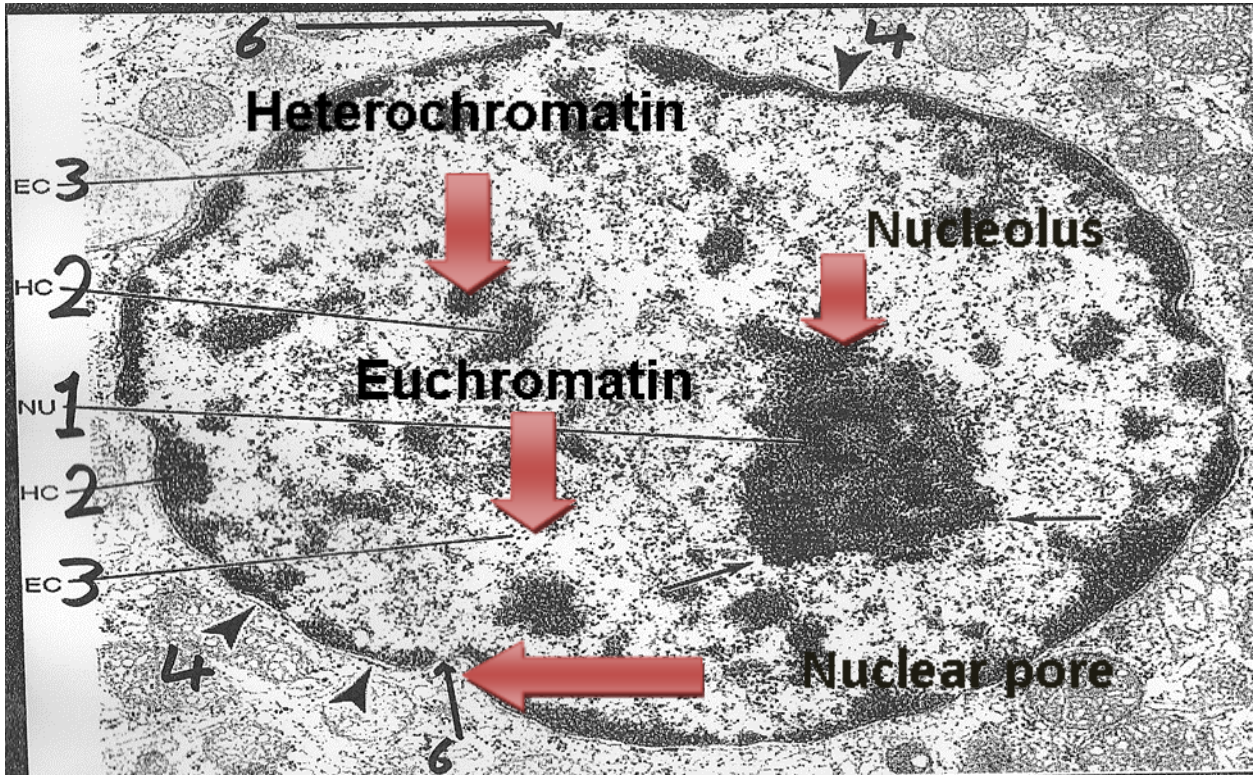
(المناطق الغير داكنة بالنواة)

- Nuclear pore

(ففتحات في غلاف النواة)

- Nucleolus

(اكبر بقعه داخل النواة)



Q3- What is the function of **Nucleolus** ?

formation of ribosomal RNA (rRNA), which is responsible for protein synthesis in the cytoplasm

Q4- what is the function of the nucleus?

•It is the site of formation of the three types of RNA.

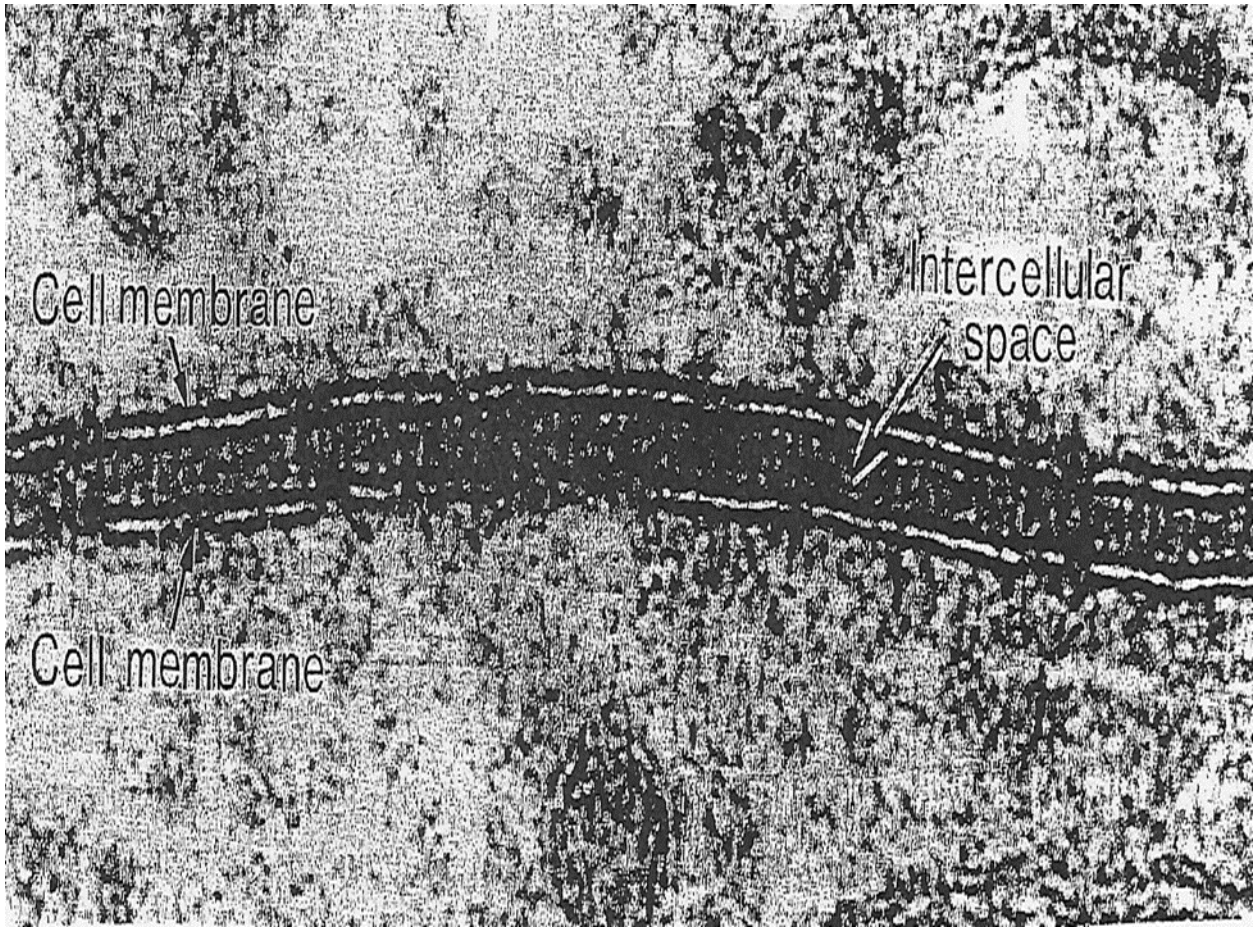
•It is essential for the vitality and division of the cell.

•It is the site of storage of genetic information

Cell membrane (trilaminarappearance)

FUNCTION of The CM: -

Selective barrier

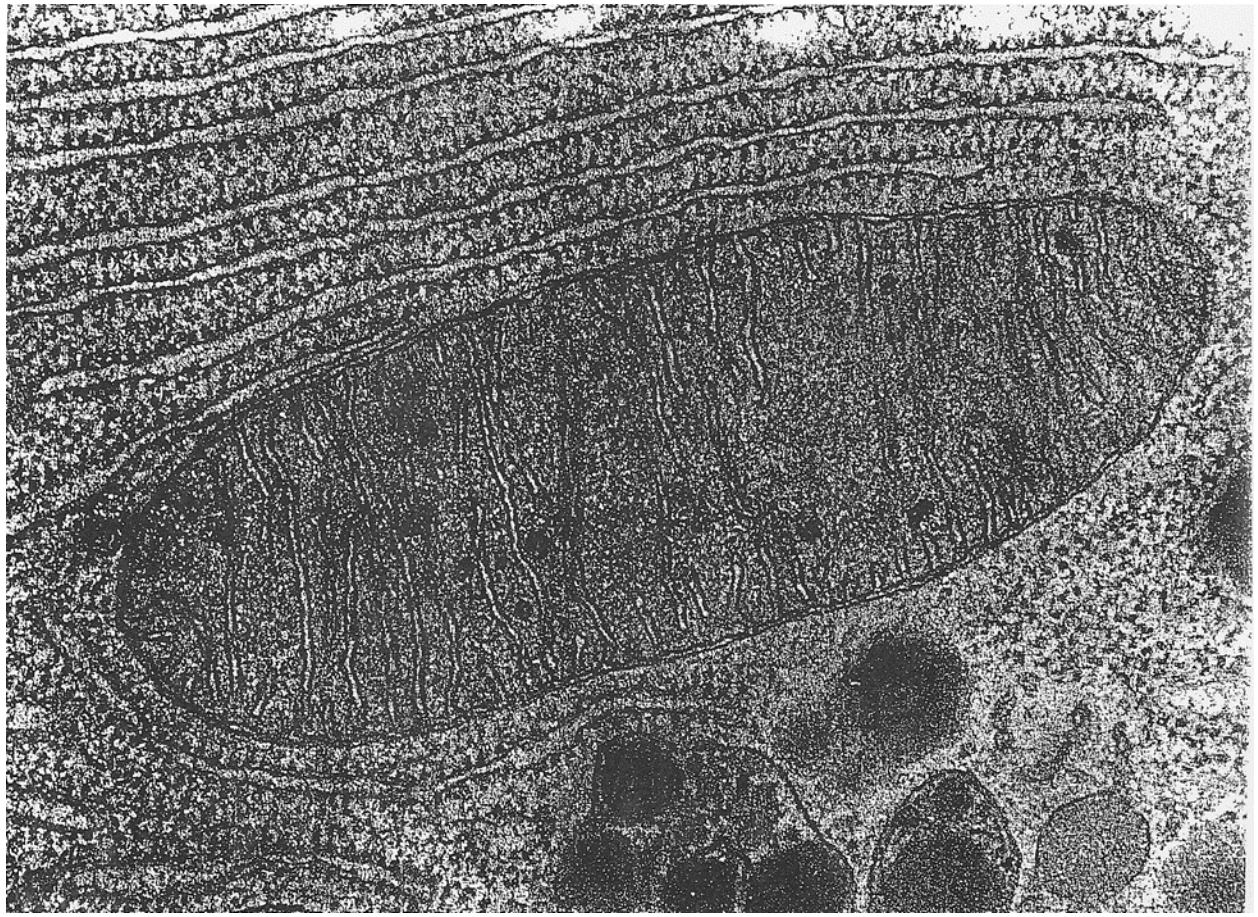


Mitochondria

Q1- Identify :

Mitochondria

Rod-shaped. Its wall is composed of 2 membranes



Q2- What is the function ?

1) Generation of ATP

" they are called the power house "

2) They can form their own proteins and undergo self replication.

because the have their own DNA

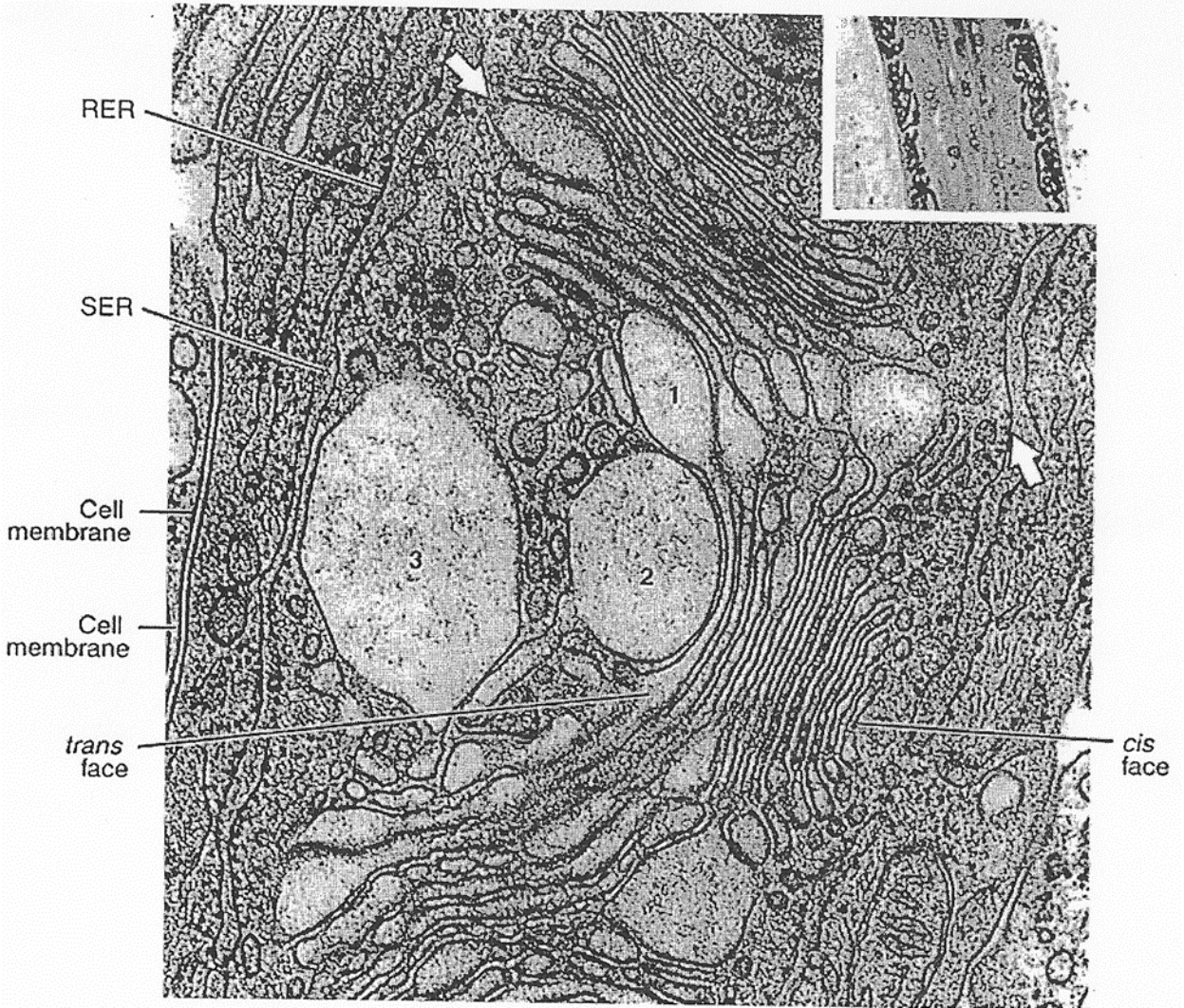
Golgi Apparatus

Q1- Identify :

Golgi apparatus

Q2- What is the function ?

1. **Sorting, modification & packaging** of proteins.
2. **Secretory vesicles** formation.



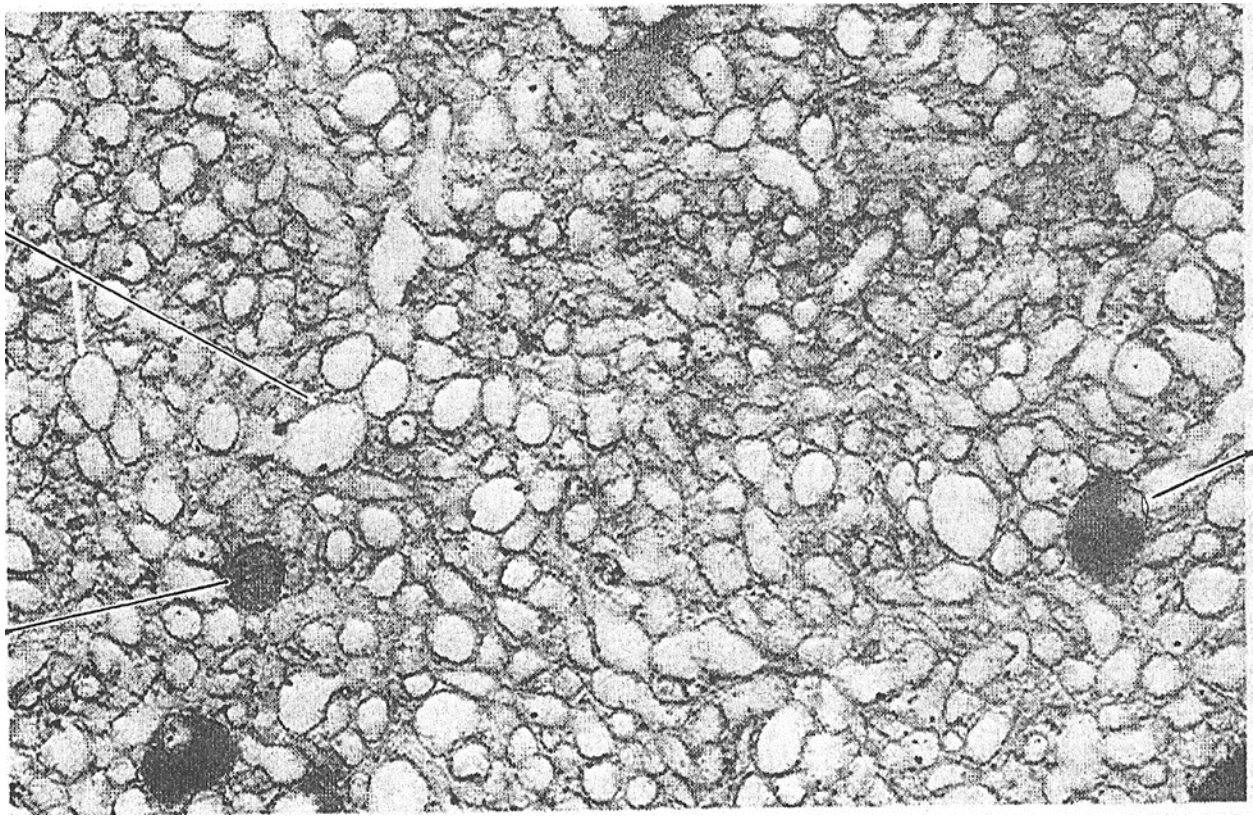
Smooth Endoplasmic Reticulum

Q1- Identify :

Smooth Endoplasmic Reticulum

(تتميز بوجود الدهون)

Charachteristics: **Membranous tubules and vesicles, with no ribosomes on the surface**



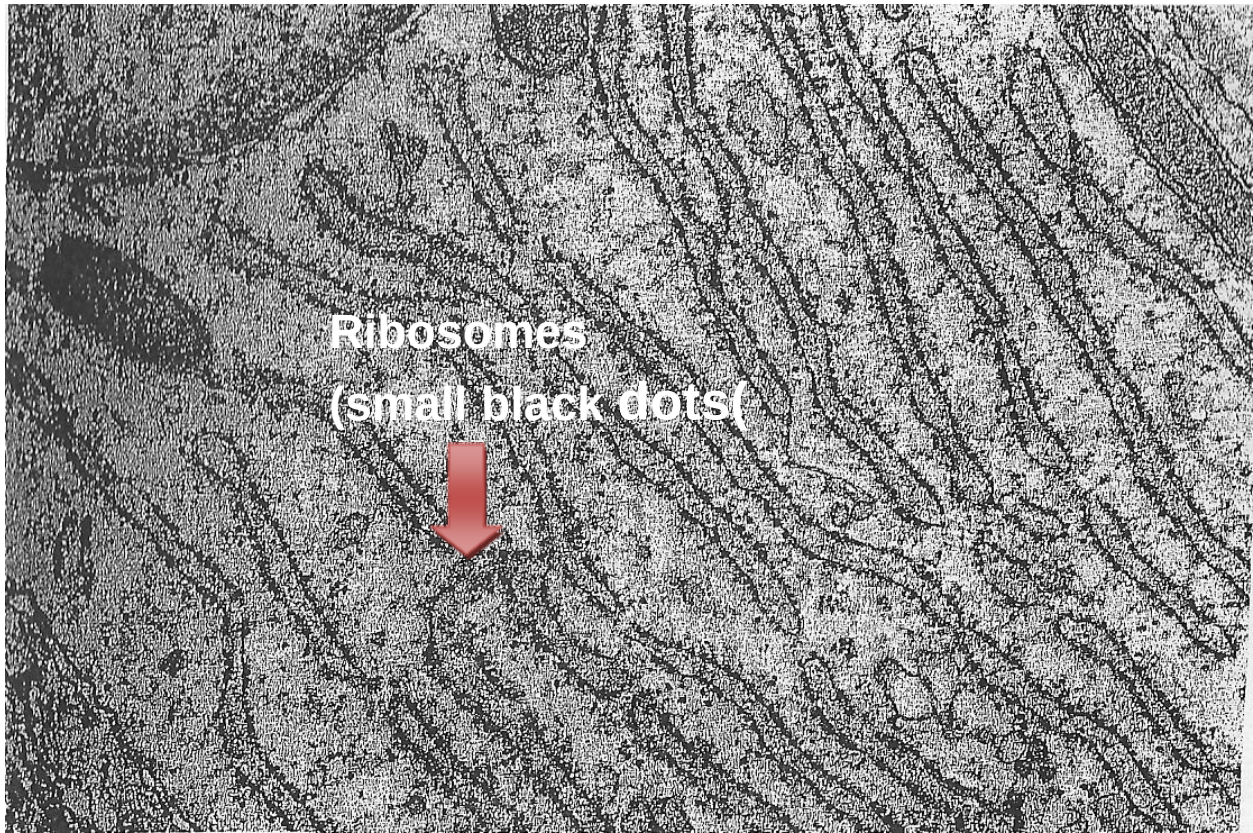
Q2- What is the function ?

- Synthesis of lipids & cholestrol
- Detoxification from drugs and toxins

Rough Endoplasmic Reticulum

Q1- Identify :

Rough Endoplasmic Reticulum: Membranous sheets of flattened tubules &Vesicles with ribosomes on the surface.



Q2- What is the function ?

- Synthesis of Proteins By ribosomes on its outer surface.

Centrioles

Q1- Identify :

Centrioles:

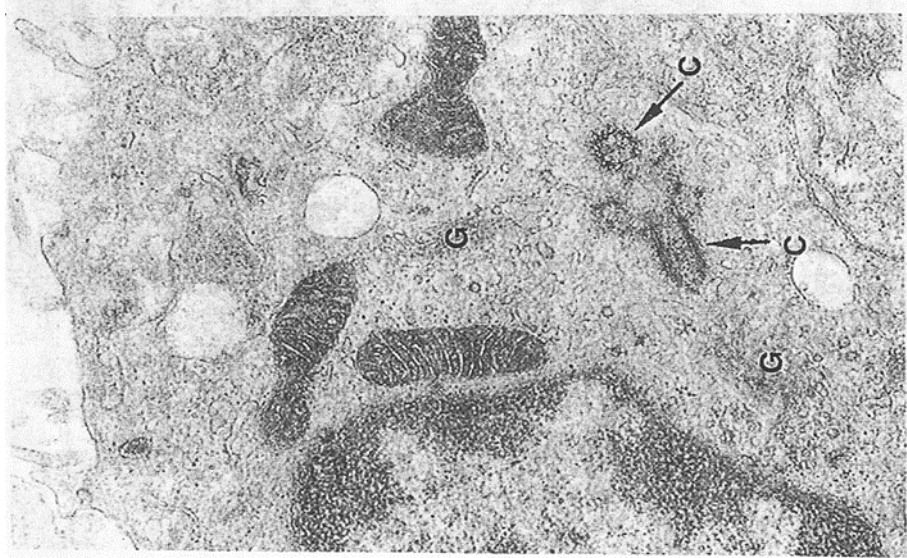
2 cylinders which are perpendicular to each other

Q2- What is the function ?

- Essential for cell division
- Formation of Cilia and Flagella

***Their wall is made of 9 triplets of microtubules**

(9x3 = 27 microtubules)



Cilia

Q1- Identify :

Cilia

hair like striations on the free surface of some cells.

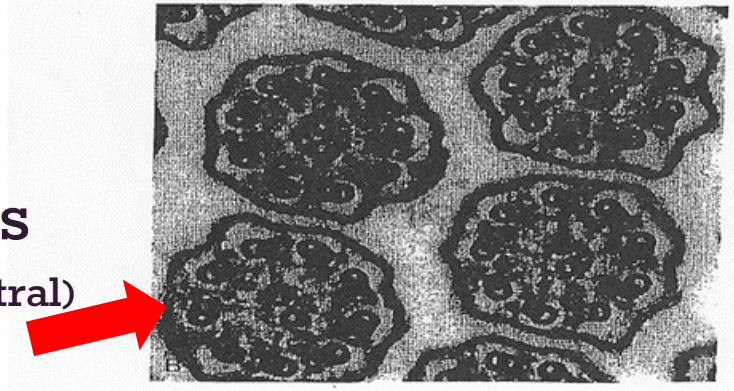
Q2- What is the function ?

movement of particles or fluids in one direction

***Shaft form of 9 doublets and 2 central singlets of microtubules (9x2 +2 = 20)**

***Their core is formed of microtubules**

L.S.



T.S.

Microtubules

(9 doublets and 2 central)

Microvilli

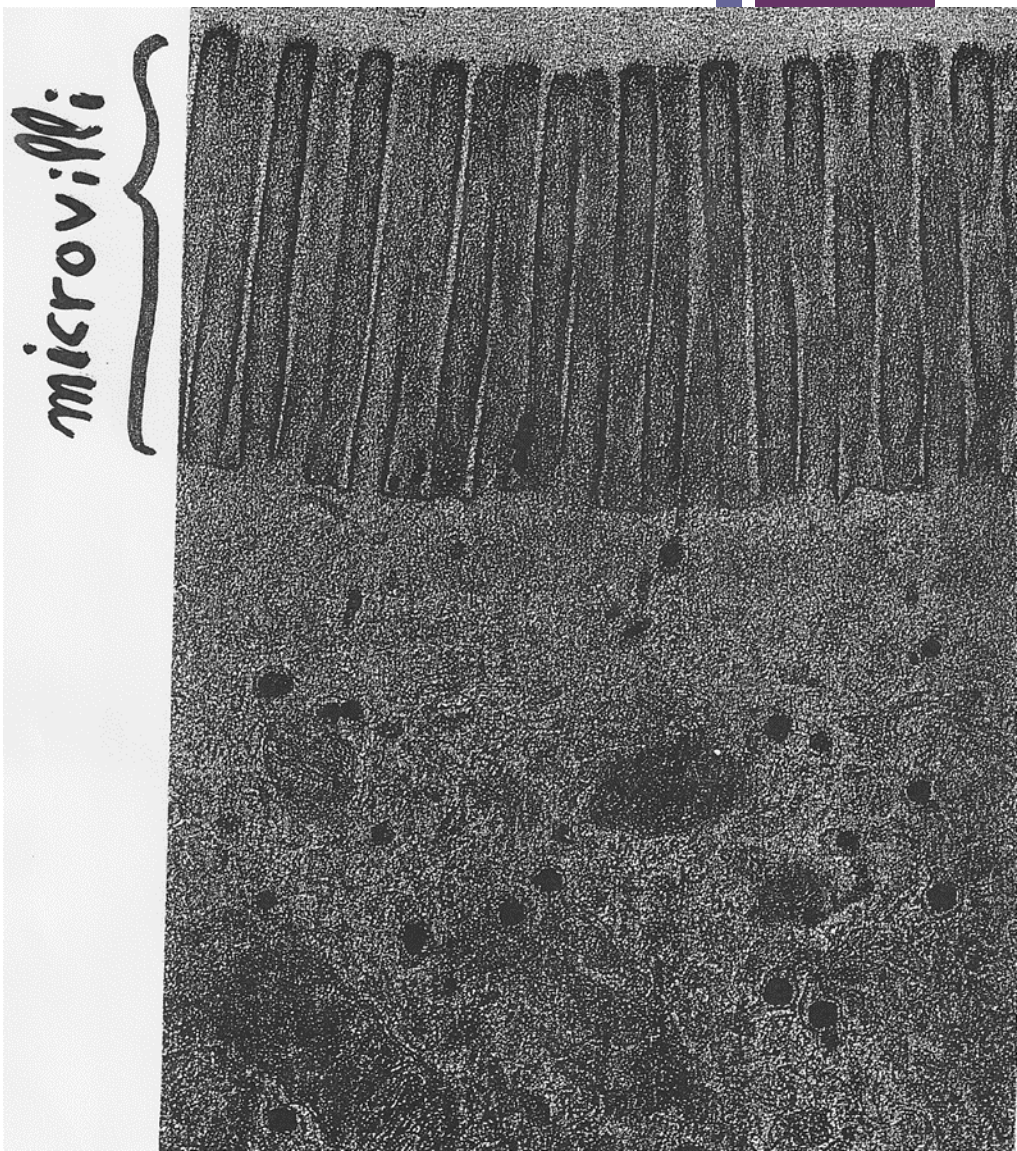
Q1- Identify :

Microvilli: Cylindrical cytoplasmic projections of apical surface to increase surface area

Q2- What is the function ?

Increase surface area

*Their contains actin flaments (Microfilaments)



Simple Squamous Epithelium

Q1- Identify the type of epithelium:

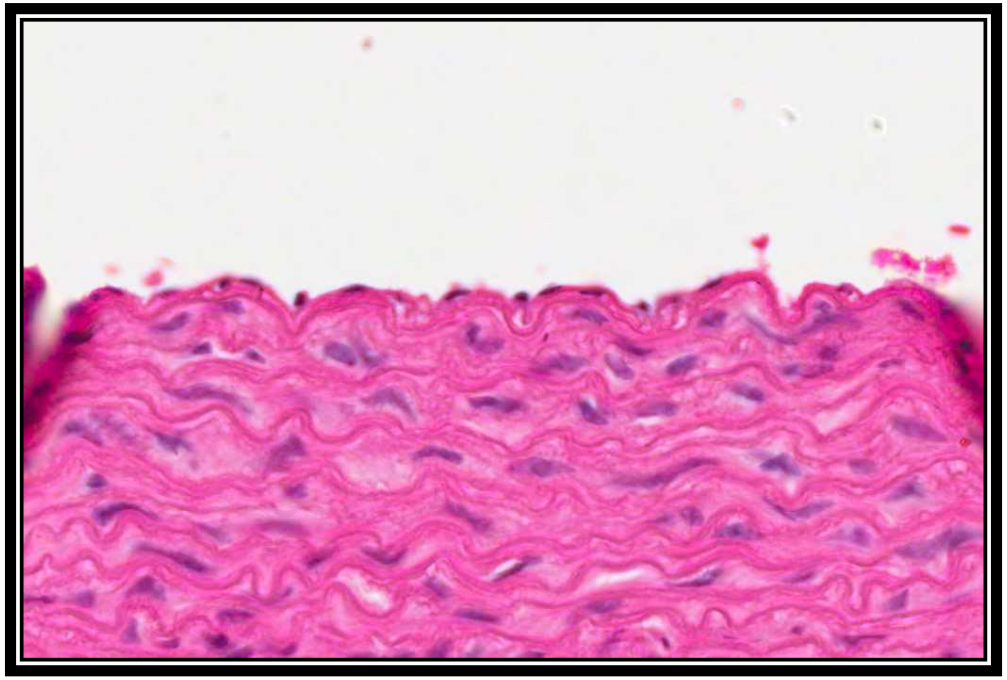
Simple squamous epithelium

Q2 – What is the type of connective tissue:

Elastic connective tissue

- One layer
- Flat cells
- Flat nuclei

Endothelium*:
البطانة الداخلية



Q3 – Mention the organ:

➢ Endothelium* of (Aorta)

➢ Alveoli of lungs.

Simple Cuboidal Epithelium

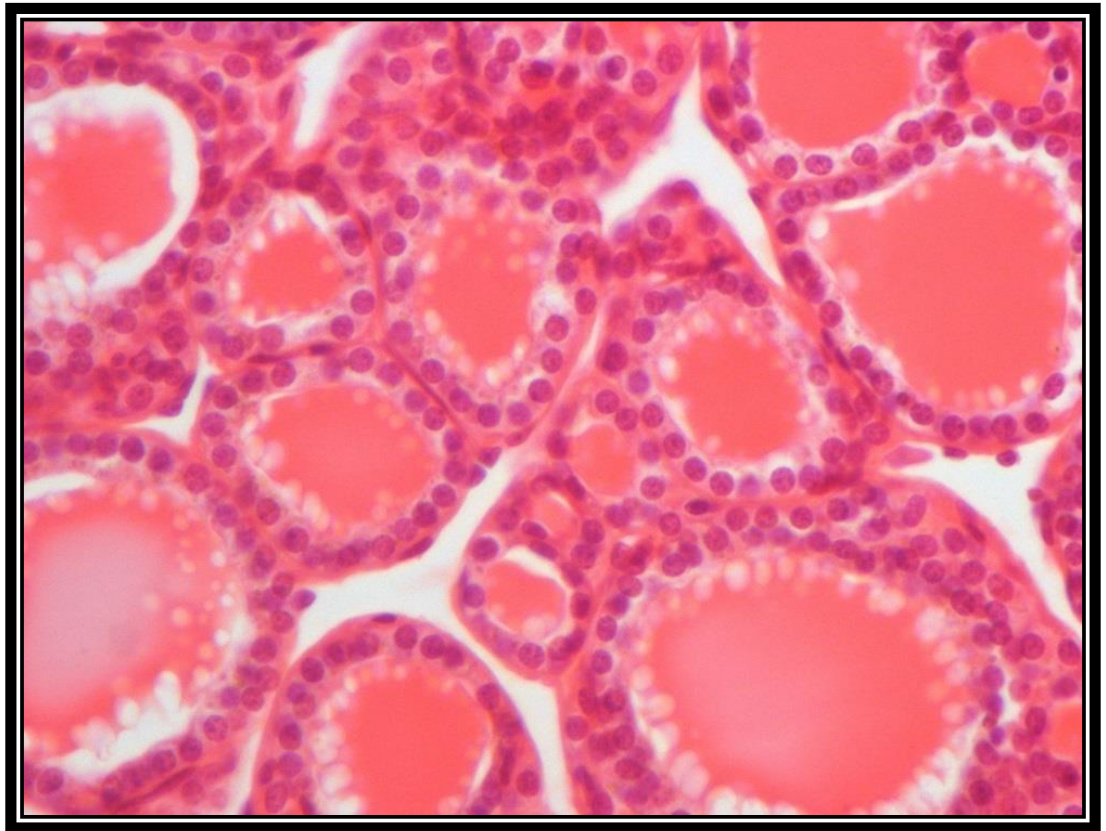
Q1- Identify the type of epithelium:

Simple cuboidal epithelium

Q2 – Mention the organ:

➢ Thyroid gland follicles

- One layer
- Cuboidal cells
- Round central nuclei.



Simple Columnar Epithelium

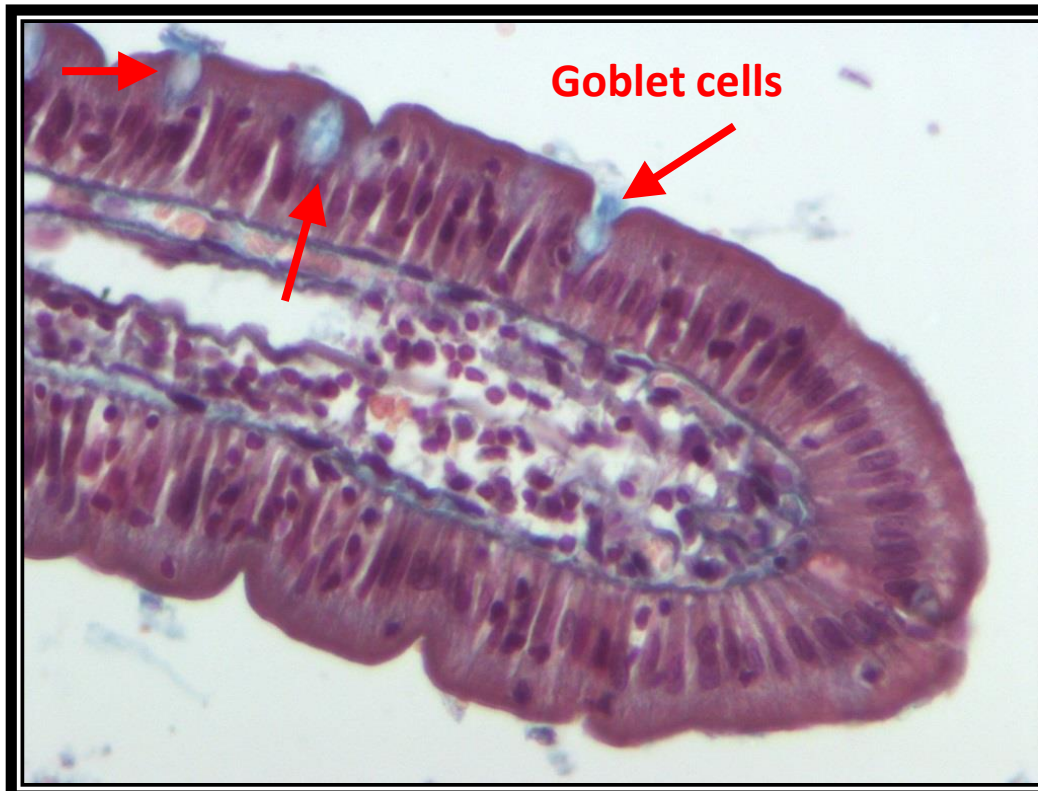
Q1- Identify the type of epithelium:

Simple Columnar Epithelium

Q2 – Mention the organ :

➢ GIT small intestines,
Stomach and Gall bladder

- One layer
- Columnar cells
- Basal oval nuclei
- **Goblet cells (Functions in mucous secretion)**



Pseudo stratified columnar ciliated epithelium with Goblet Cells

Q1- Identify the type of epithelium:

Pseudostratified columnar ciliated epithelium with Goblet Cells

Q2 – Mention the organ :

➢ Trachea and Bronchi

Distribution:

Trachea and bronchi

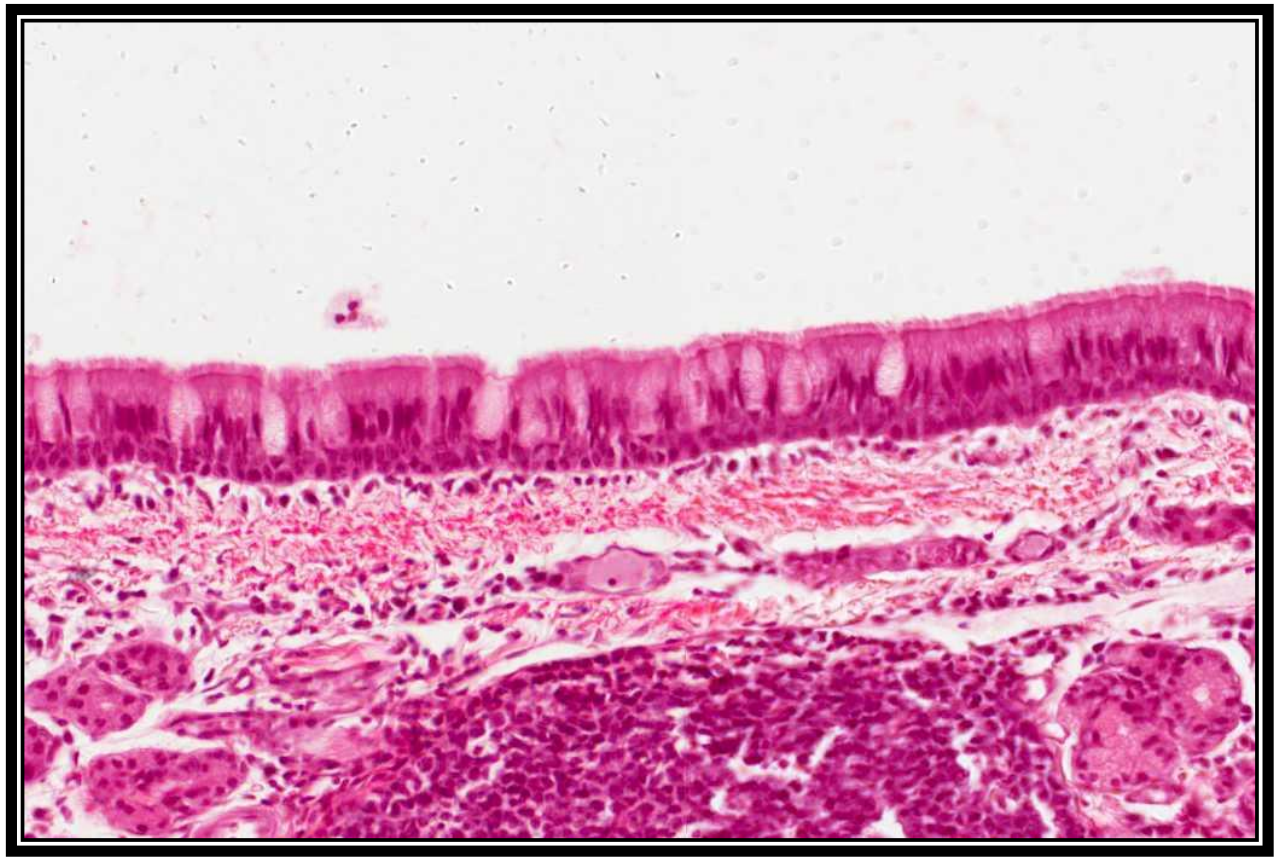
Description:

1- One layer of columnar cells.

2- Some are tall, others are short that can’t make to surface.

3- All cells rest on basement membrane.

4- Nuclei appear at different levels.



Stratified squamous-keratinized Epithelium

Q1 – Mention the organ :

- Epidermis of skin

Distribution:

epidermis of skin

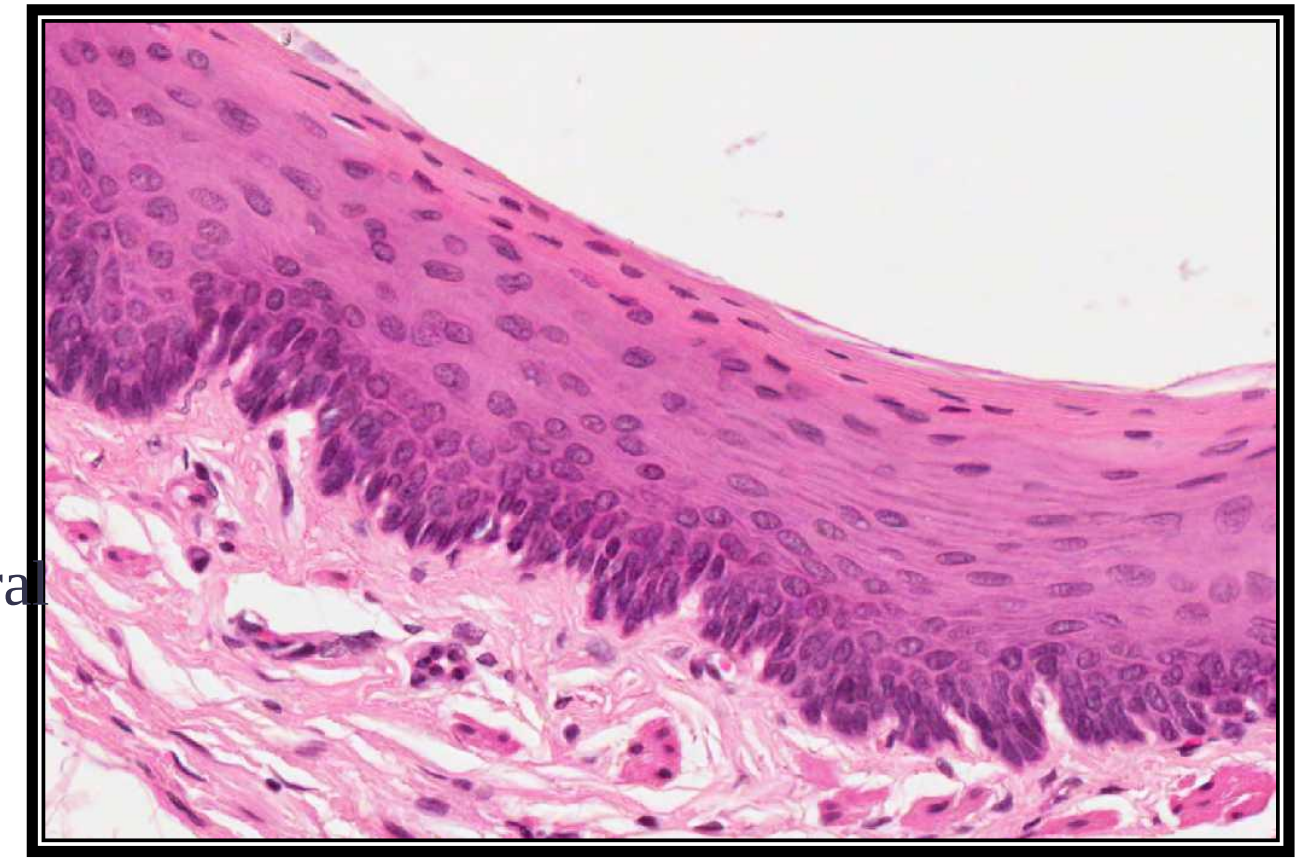
Description:

1- Multiple layers of cells.
2- Basal cells are columnar with basal oval nuclei.
3- Intermediate cells are polygonal with central rounded nuclei.
4- Surface cells are flat with flattened nuclei.
5- with a layer of keratin on the surface.

Stratified squamous non-keratinized Epithelium

Q1 – Mention the organ “distribution” :

➢ Esophagus



Description:

1- Multiple layers of cells.
2- Basal cells are columnar with basal oval nuclei.
3- Intermediate cells are polygonal with central rounded nuclei.
4- Surface cells are flat with flattened nuclei.
5- without a layer of keratin on the surface.

Transitional Epithelium

Q1- Identify the type of epithelium:

Transitional Epithelium

Q2- Mention the organ “Distribution” :

➢ Urinary bladder

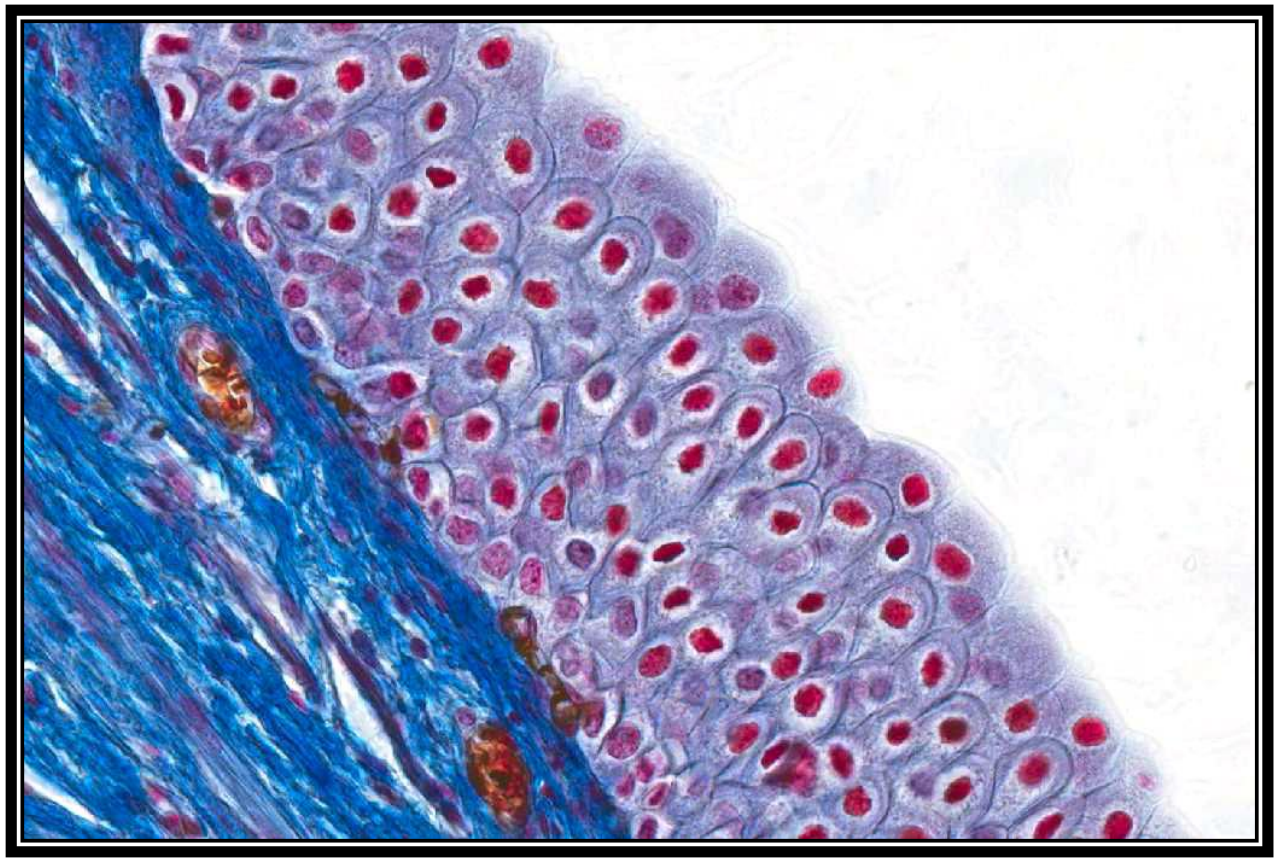
Description:

1- Multiple layers of cells.

2- Basal cells are columnar.

3- Intermediate cells are polygonal.

4- Surface cells large cuboidal with convex free surface and may be binucleated.

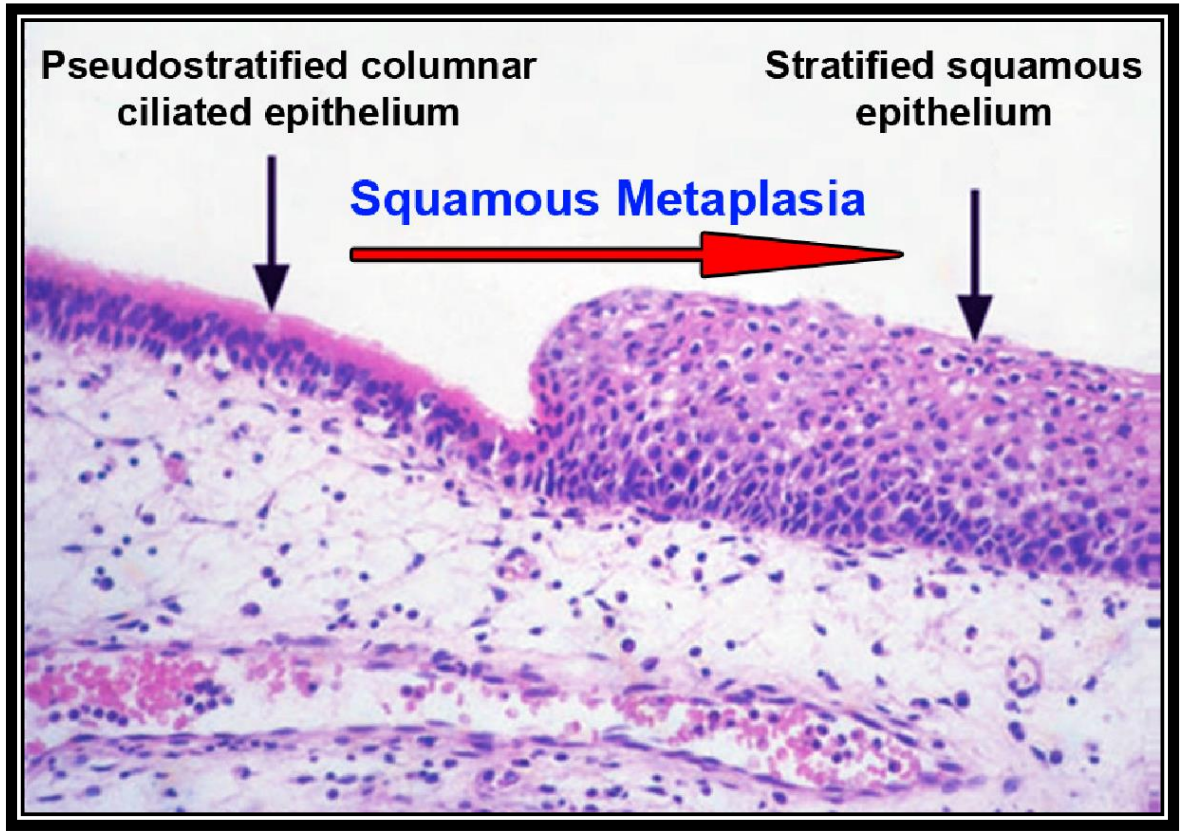


Squamous Metaplasia

Q1- Identify:

Squamous Metaplasia*

- From pseudostratified columnar ciliated epithelium to stratified squamous epithelium in trachea



Metaplasia*:

تغير طبيعة الخلايا من نوع إلى آخر

Identify:

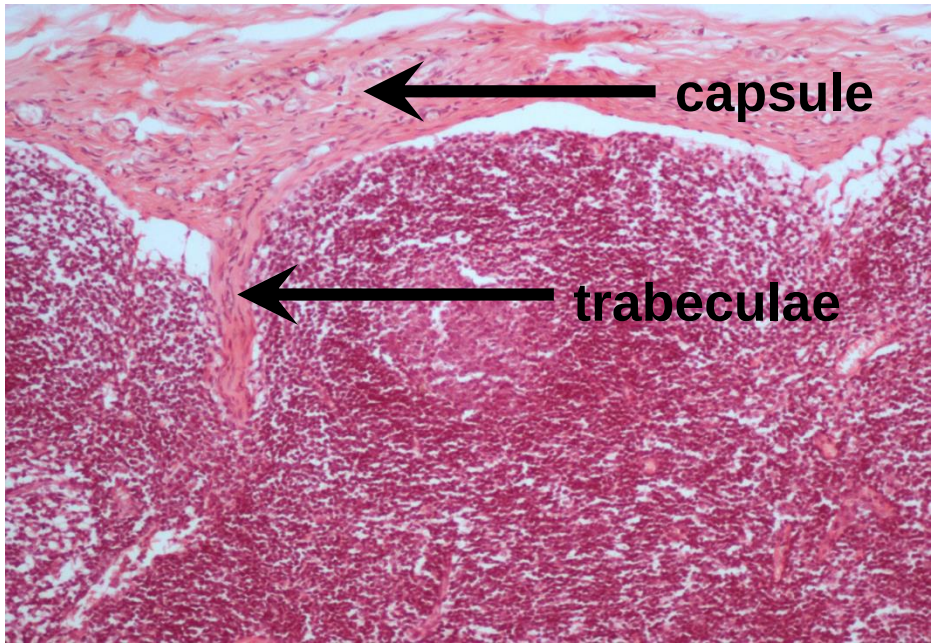
Lymph node

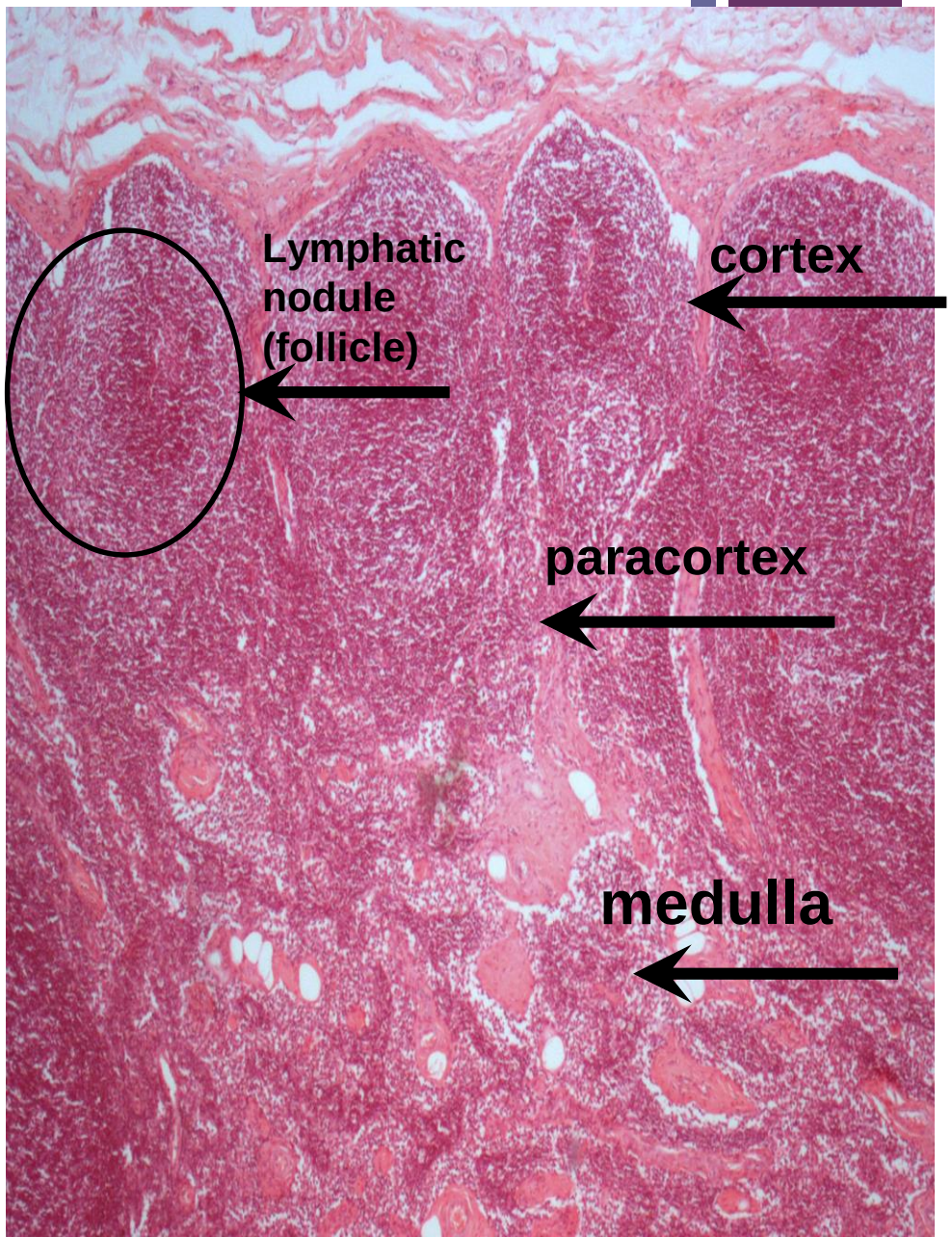
Function :

production of lymphocytes.
Filtration of lymph

Location of :

Lymphatic nodule (follicle)
Cortex
Paracortex
Medulla
Capsule
Trabeculae(septa)





Thymus

Q1- Identify:

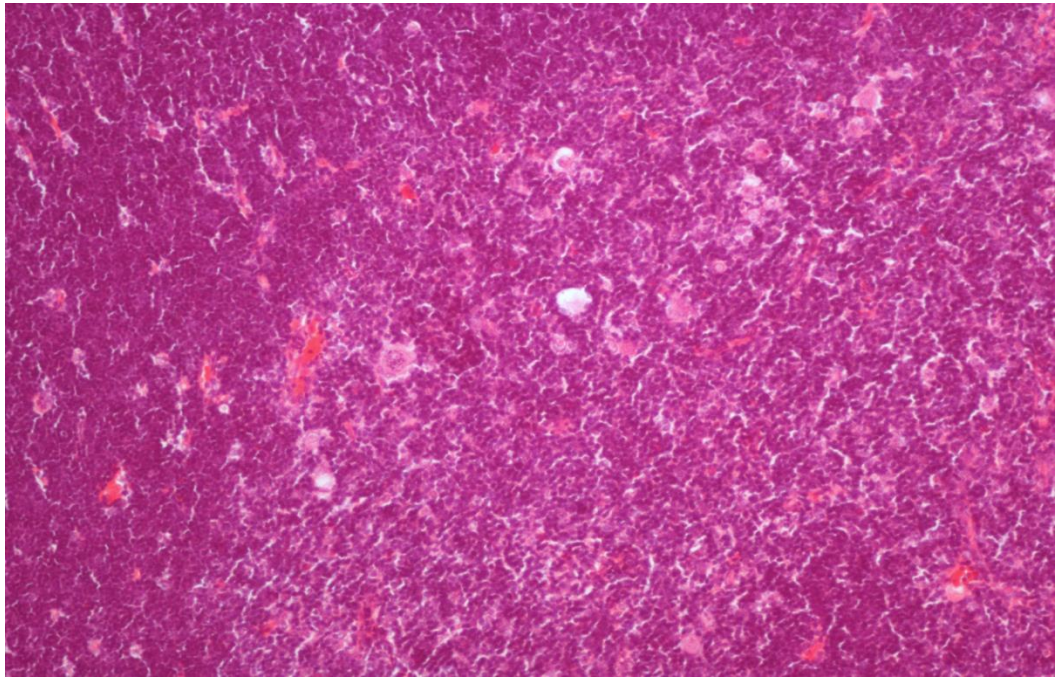
Thymus “ Incomplete septum”

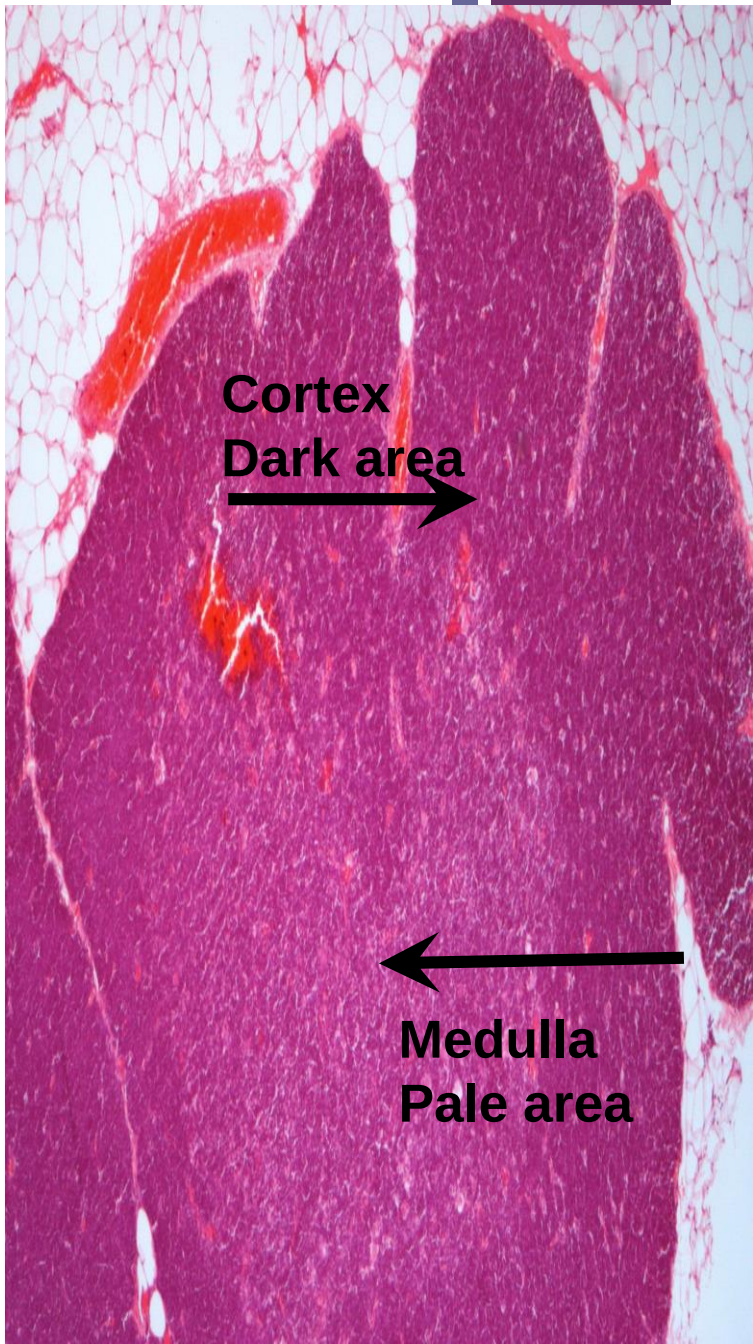
Q3 - Function :

Maturation of T lymphocytes

Q2- Location of :

- Cortex
- Medulla (Hassall’s corpuscles)





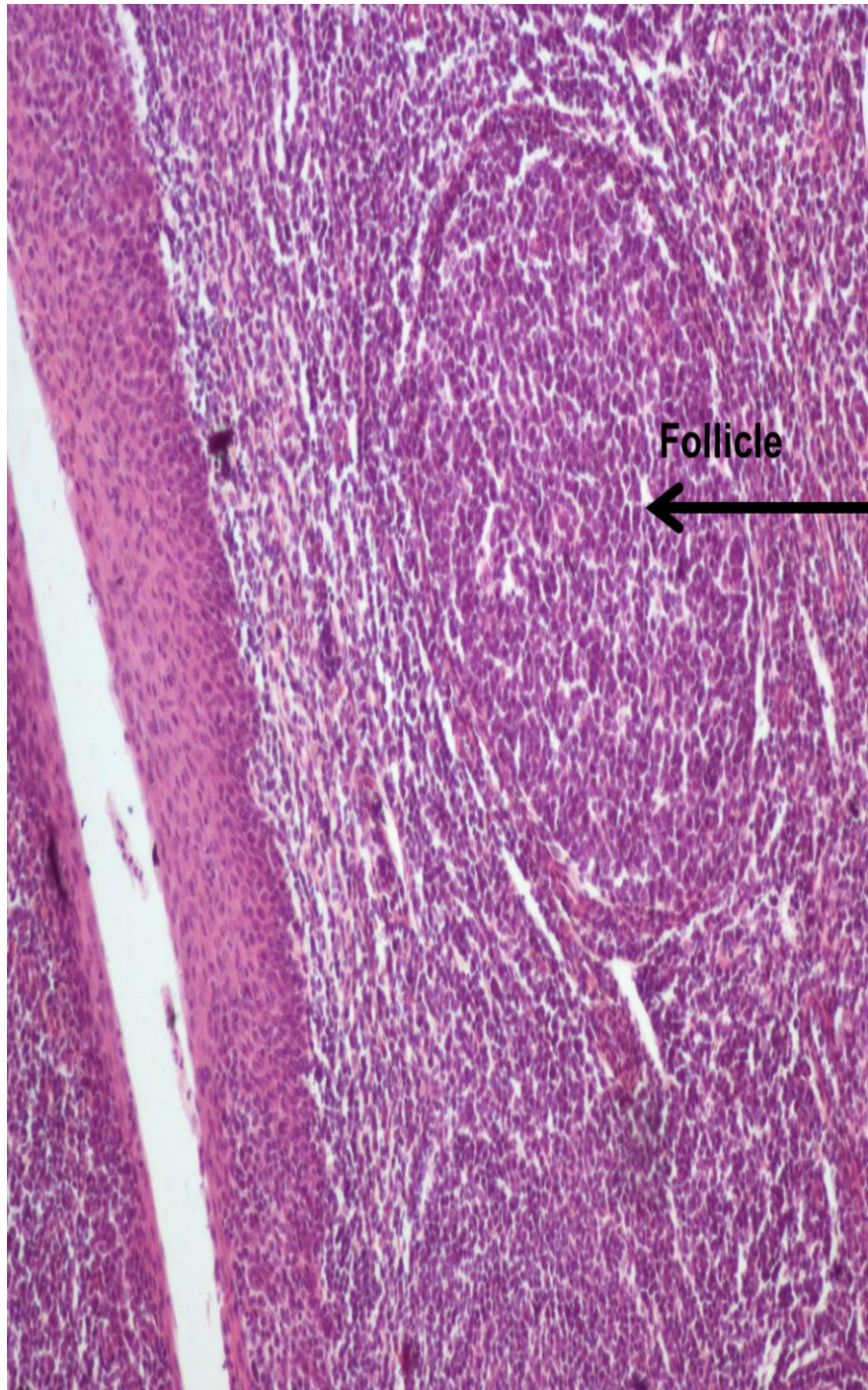
Palatine Tonsil

Q1- Identify:

Palatine Tonsil

Q2- What is the type of epithelium ?

Stratified squamous epithelium



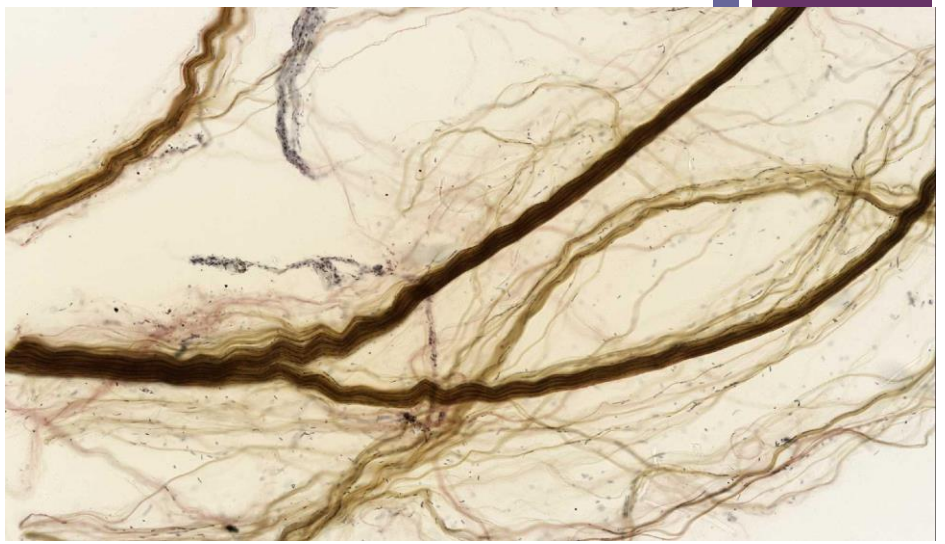
Dense collagenous regular connective tissue

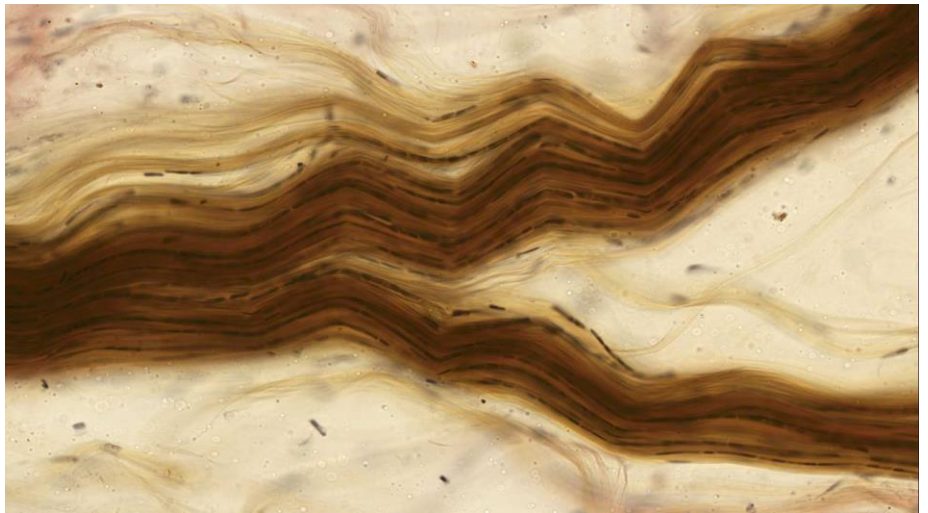
Type of fibers: collagen type-1 fibers

Type of cells: Fibroblasts

Mention the organ:
tendon and ligaments

Function:
Tough tissue; resistant to stretch



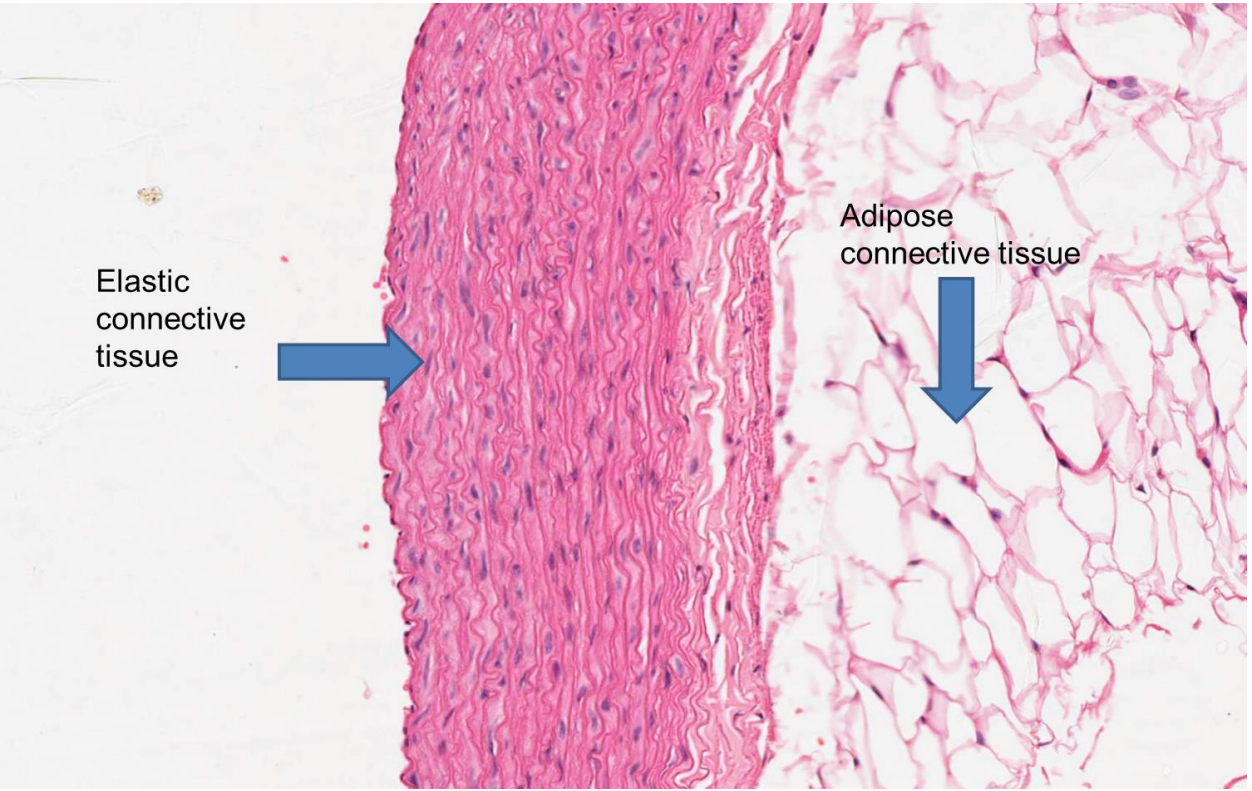


Elastic connective tissue

Type of epithelium: simple squamous

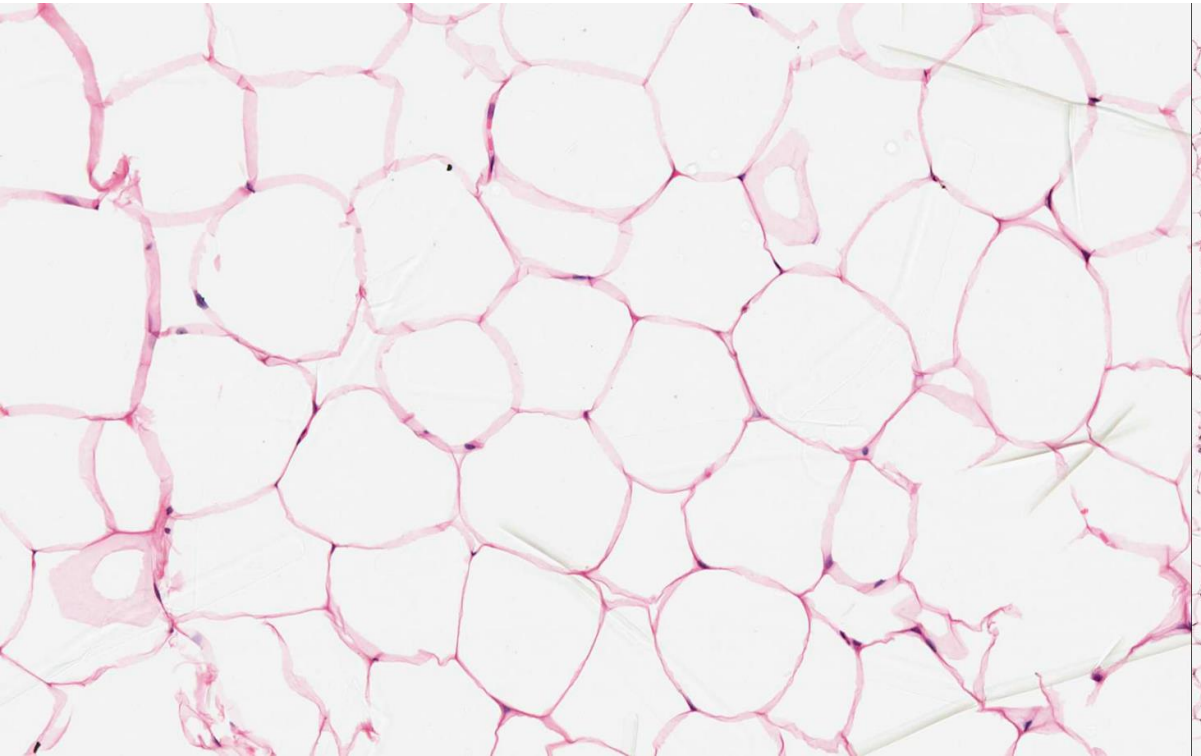
Function: elastic tissue; stretchable

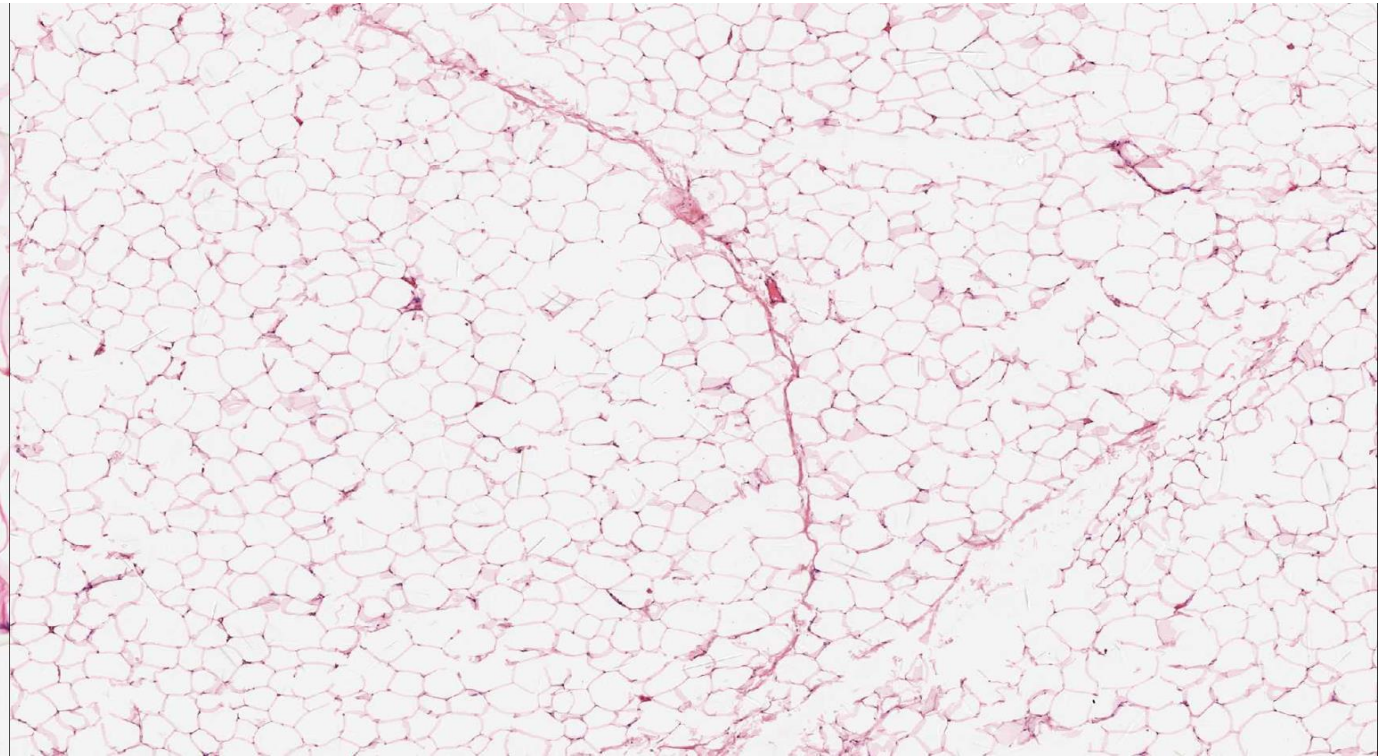
(e.g. in wall of aorta)



Adipose connective tissue

Type of cells: Adipocyte cells
(e.g. : Abdominal wall)

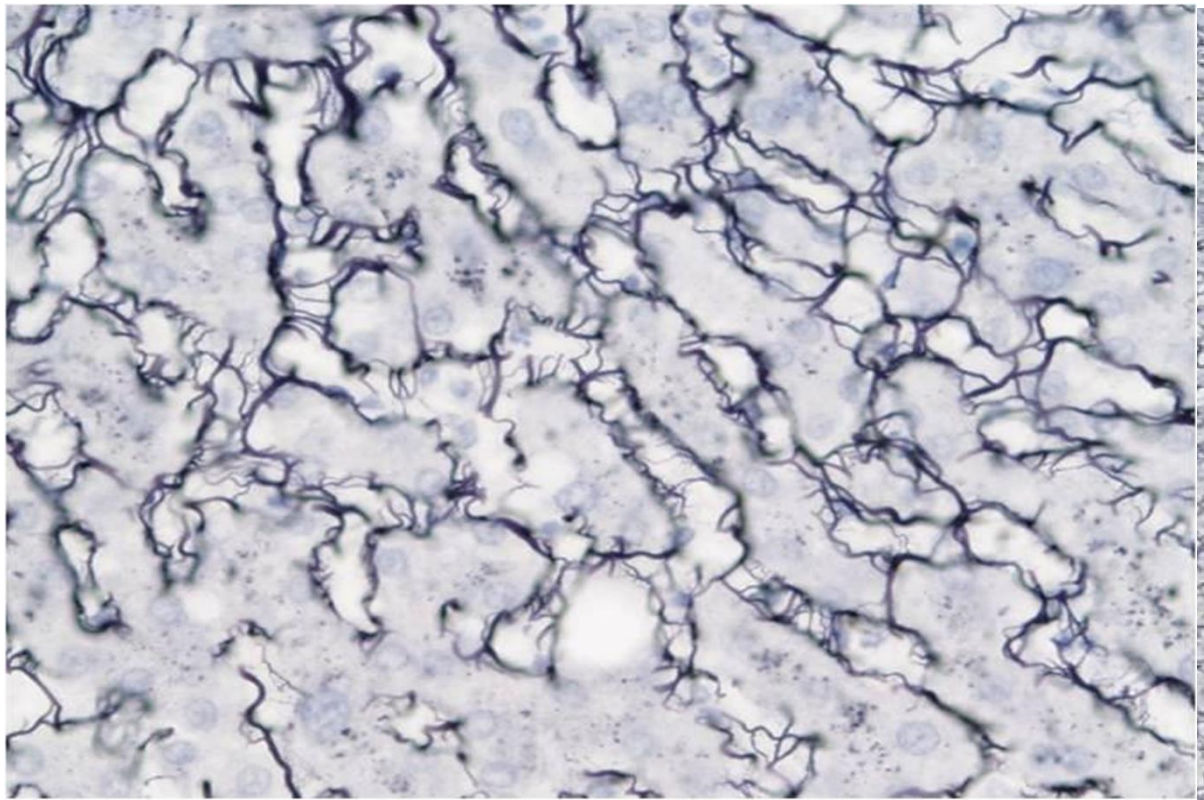


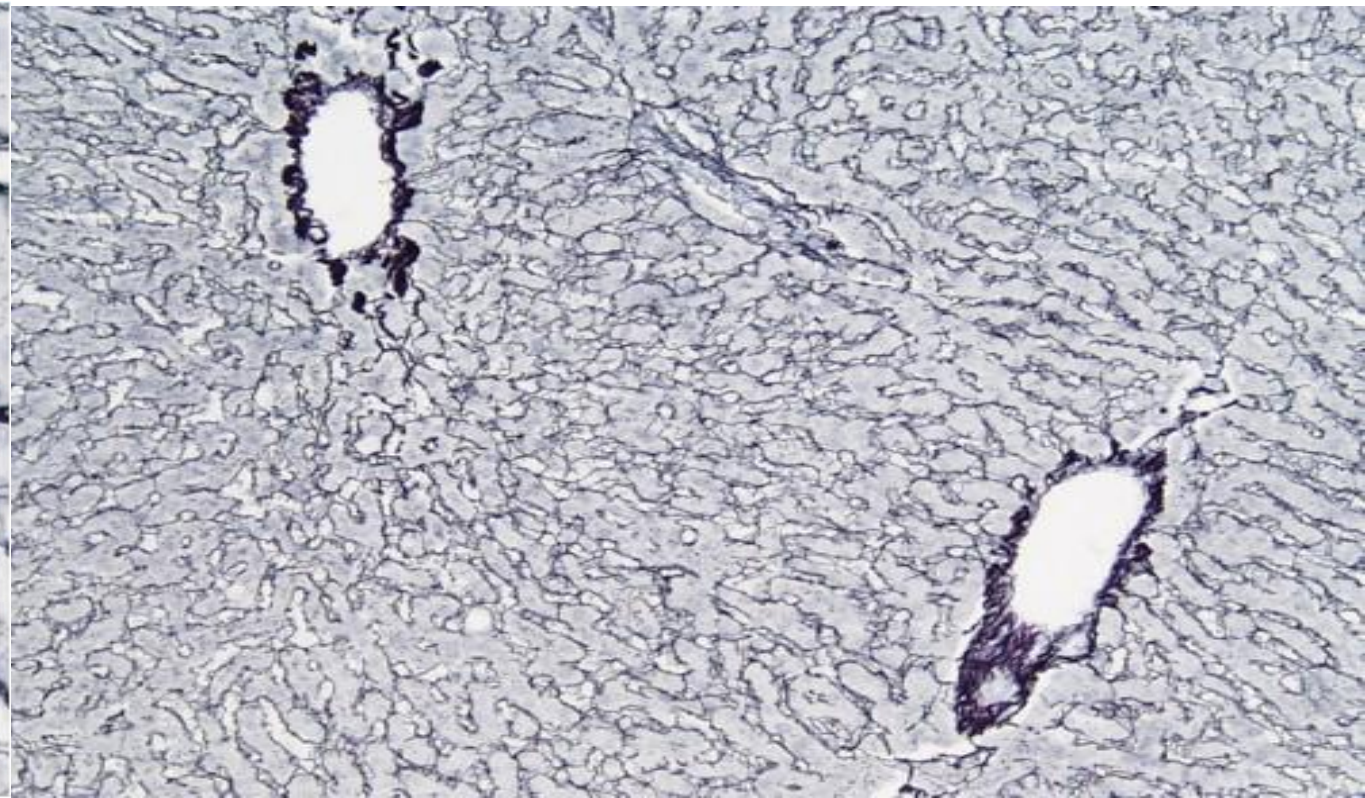


Reticular connective tissue

Type of fibers: Reticular fibers Collagen type-3

Type of cells: Reticular cells

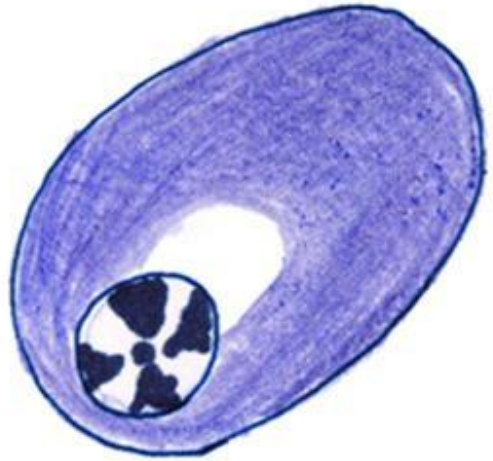




Plasma cell (clock-face)

Function: secretion of antibodies (immunoglobulins)

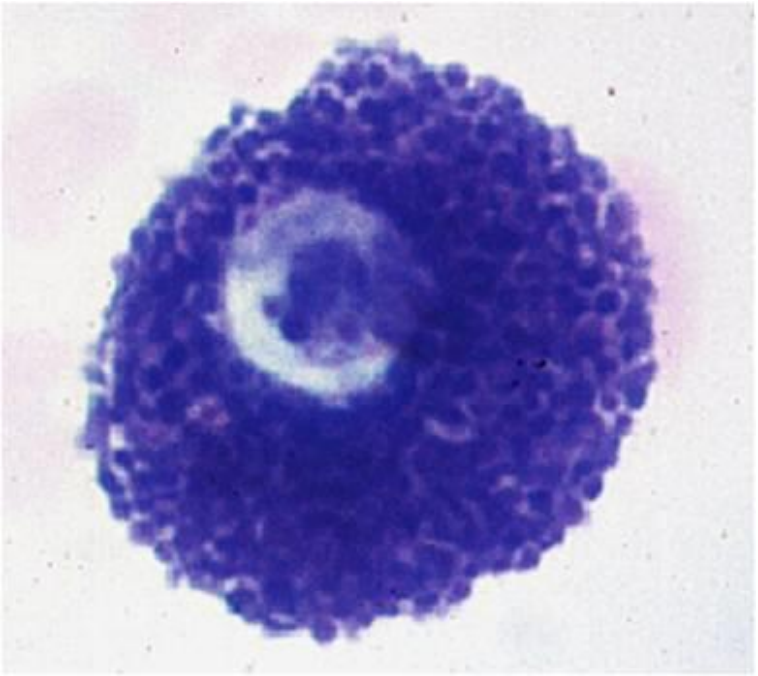
Type of cytoplasm: Basophilic cytoplasm , with a negative Golgi image



Mast cell

Function : secretion of Histamine and Heparin

Cytoplasm contains : numerous basophilic cytoplasmic granules



Credit

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- Khalid Alghsoon
- Anas Ali
- Abdullah Alshathry

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- Areeb AlOkaiel
- Hazim Bajri

Thanks for checking our work, Good luck.

-Team histology.

HISTOLOGY
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