Histology Practical

(foundation block)

You should know before the exam that :

* The diagrams in these slides are going to be the same in the exam however, it may not be colored.
* You have to mention the full name always and don’t use shortcuts you could lose marks because of that
* The Arrows in the diagrams are very important so please study them well
* The exam is gonna be easy so don’t worry ☺.

Nucleus

Q1- Identify : Nucleus

Q2- Location of :

- Heterochromatin

(drak and inactive)

- Euchromatin

(pale and active)

- Nuclear pore

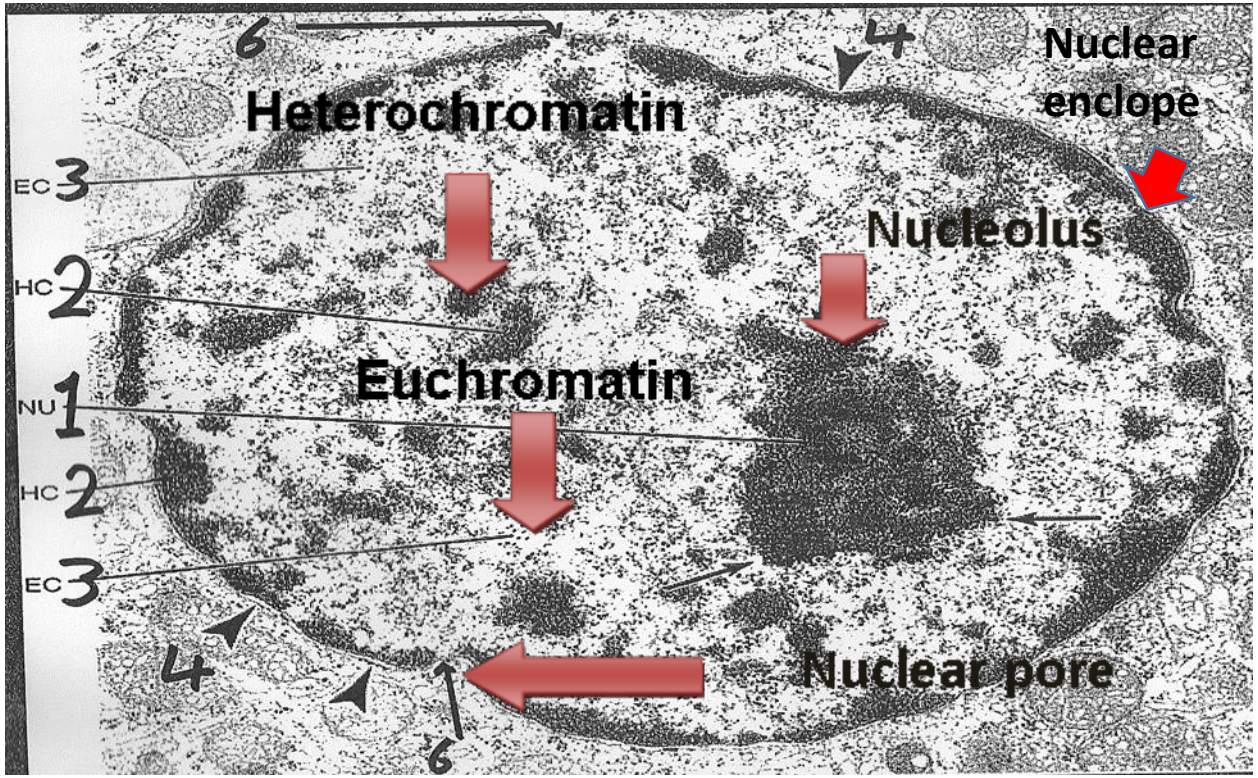
(openings in the nuclear envelope)

- Nuclear envelope

(lining the nucleus)

- Nucleolus

(The biggest dark region in the nucleus)



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

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

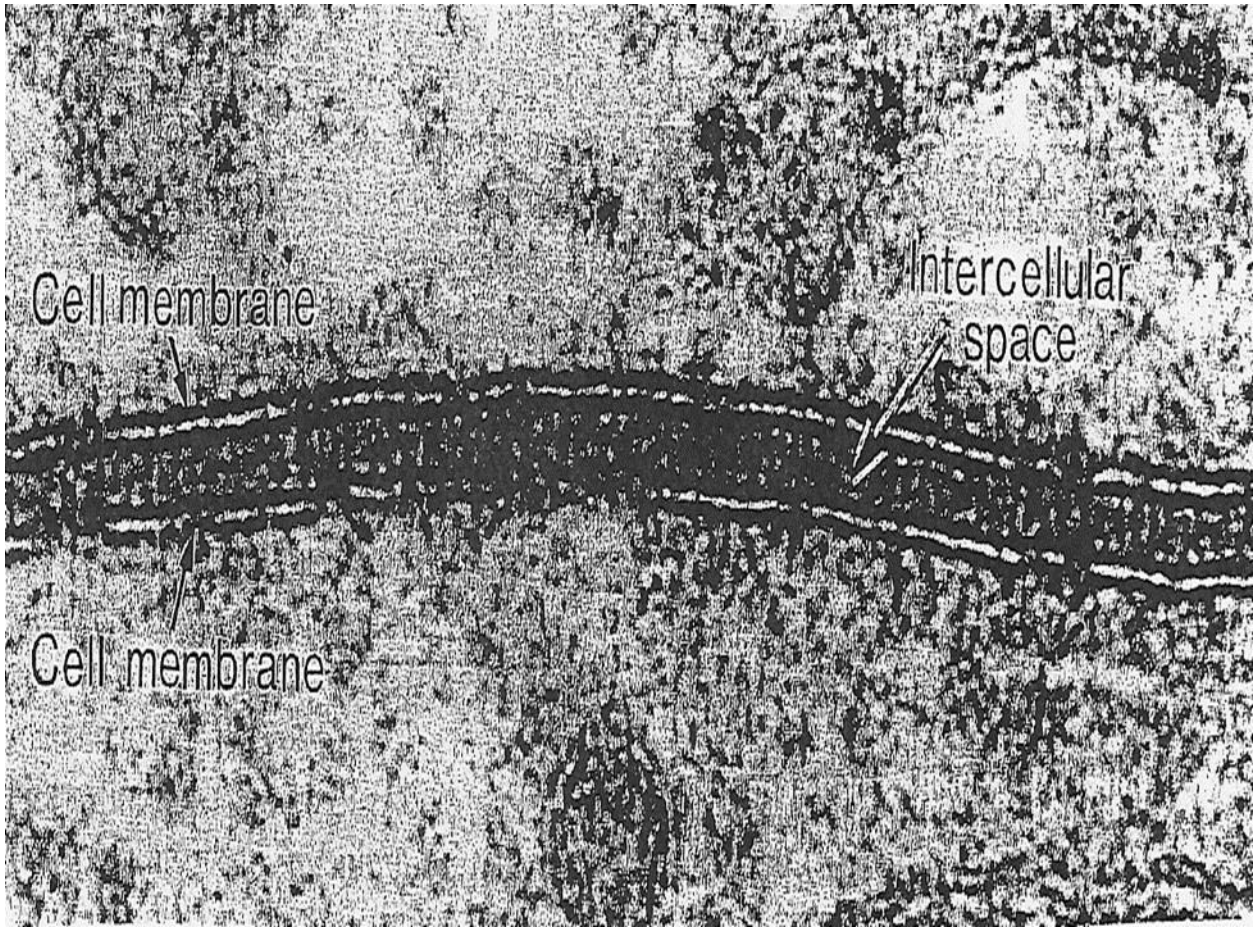
Q4- what is the function of the nucleus?

- 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)

Q1- Identify :
Cell membrane

Q2 - FUNCTION of The CM:
Selective barrier

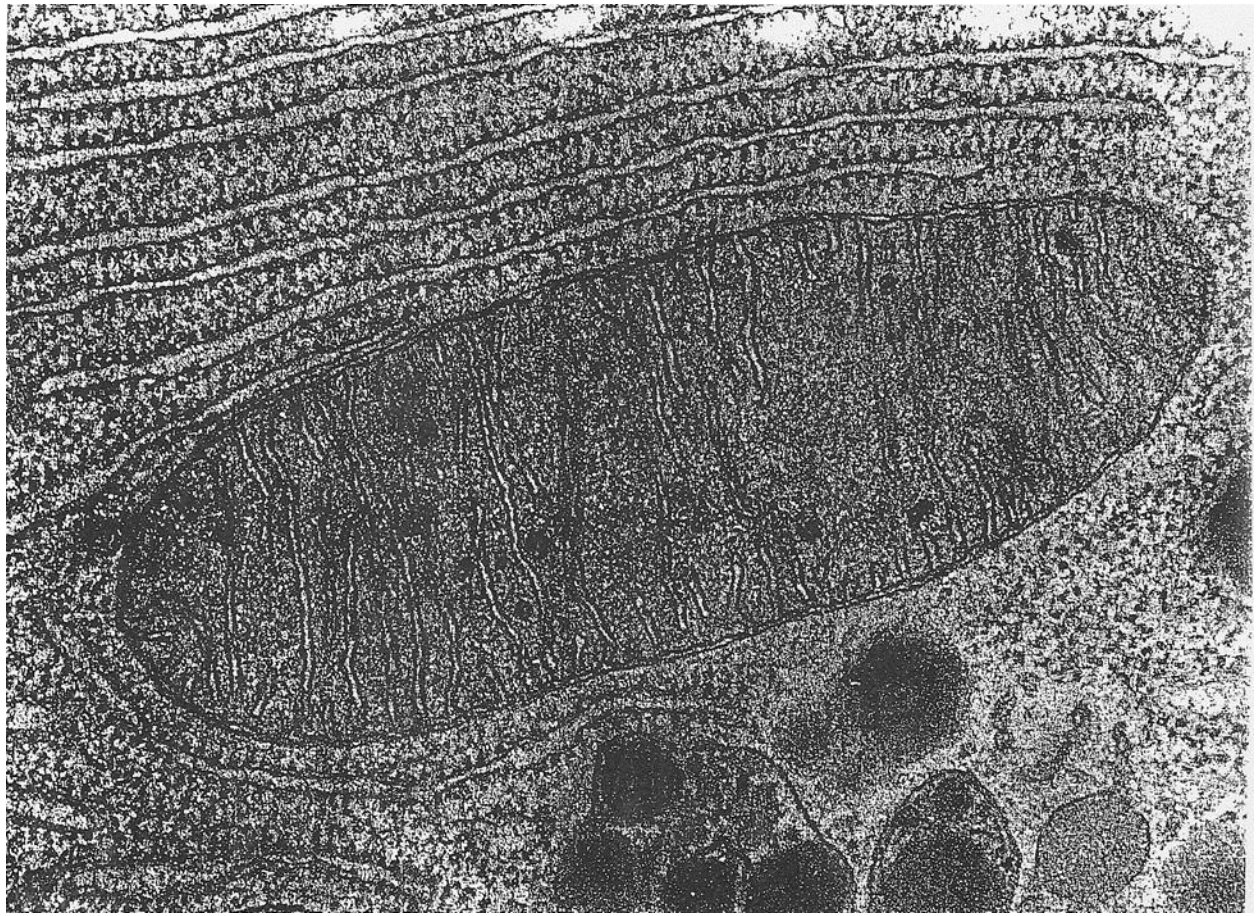


Mitochondria

Q1- Identify :

Mitochondria

Rod-shaped. Its wall **has 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

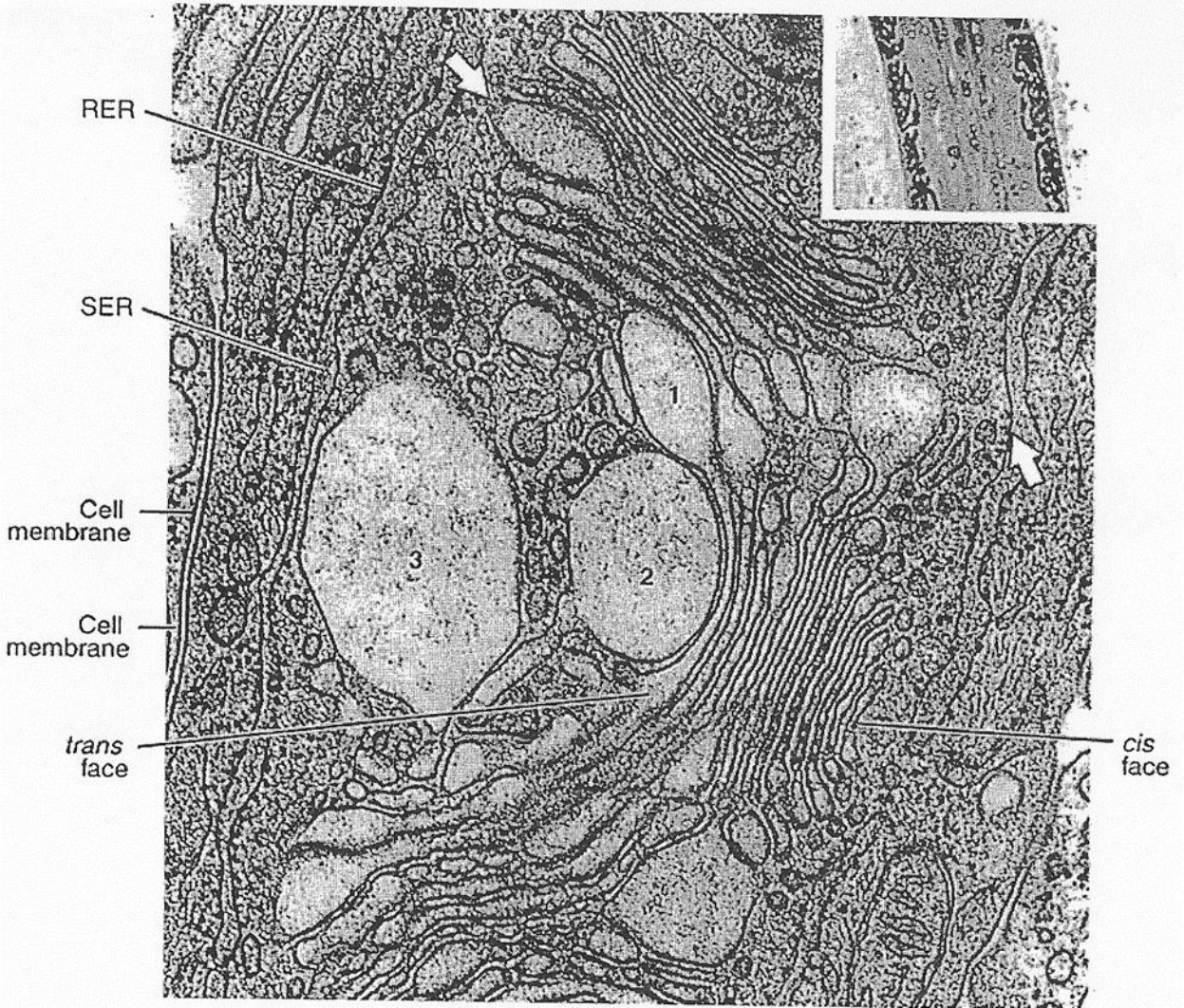
Golgi Apparatus

Q1- Identify:

Golgi apparatus

Q2- What is the function ?

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

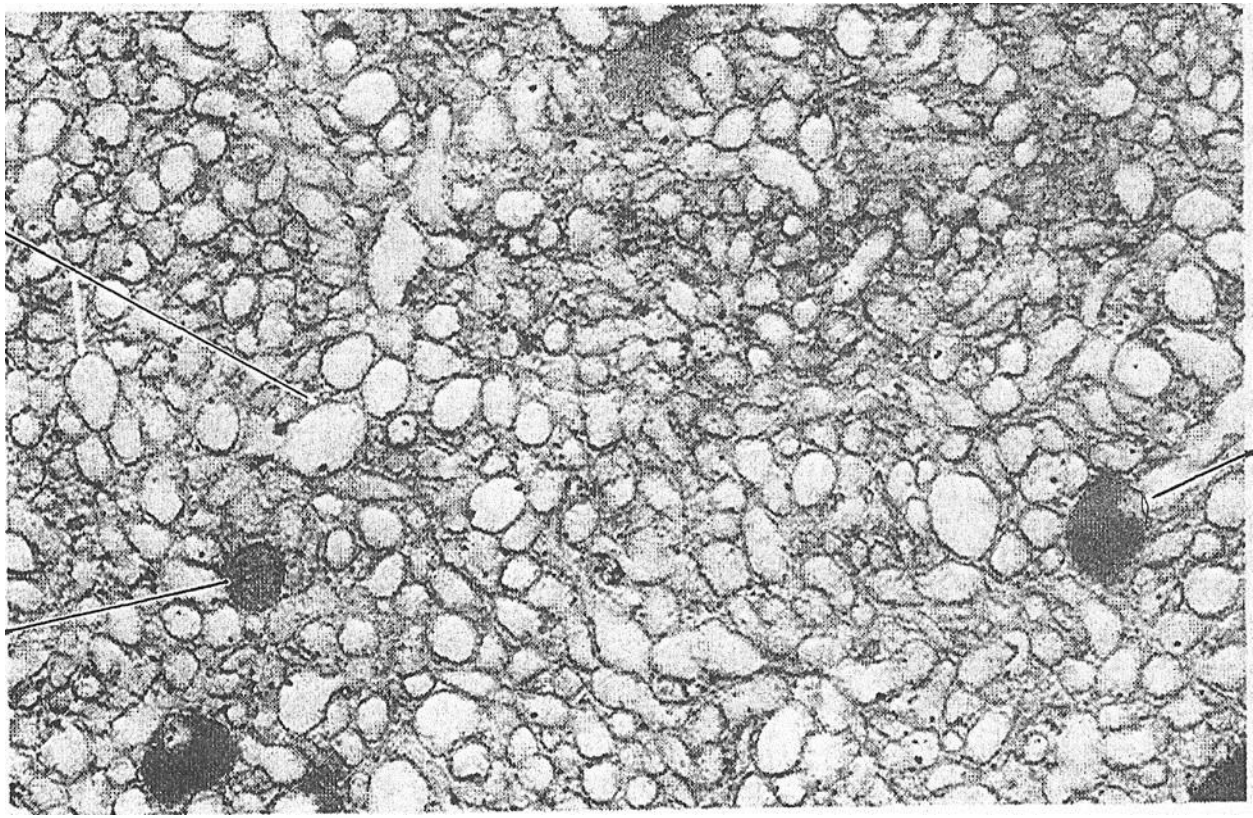


Smooth Endoplasmic Reticulum

Q1- Identify:

Smooth Endoplasmic Reticulum

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



Q2- What is the function ?

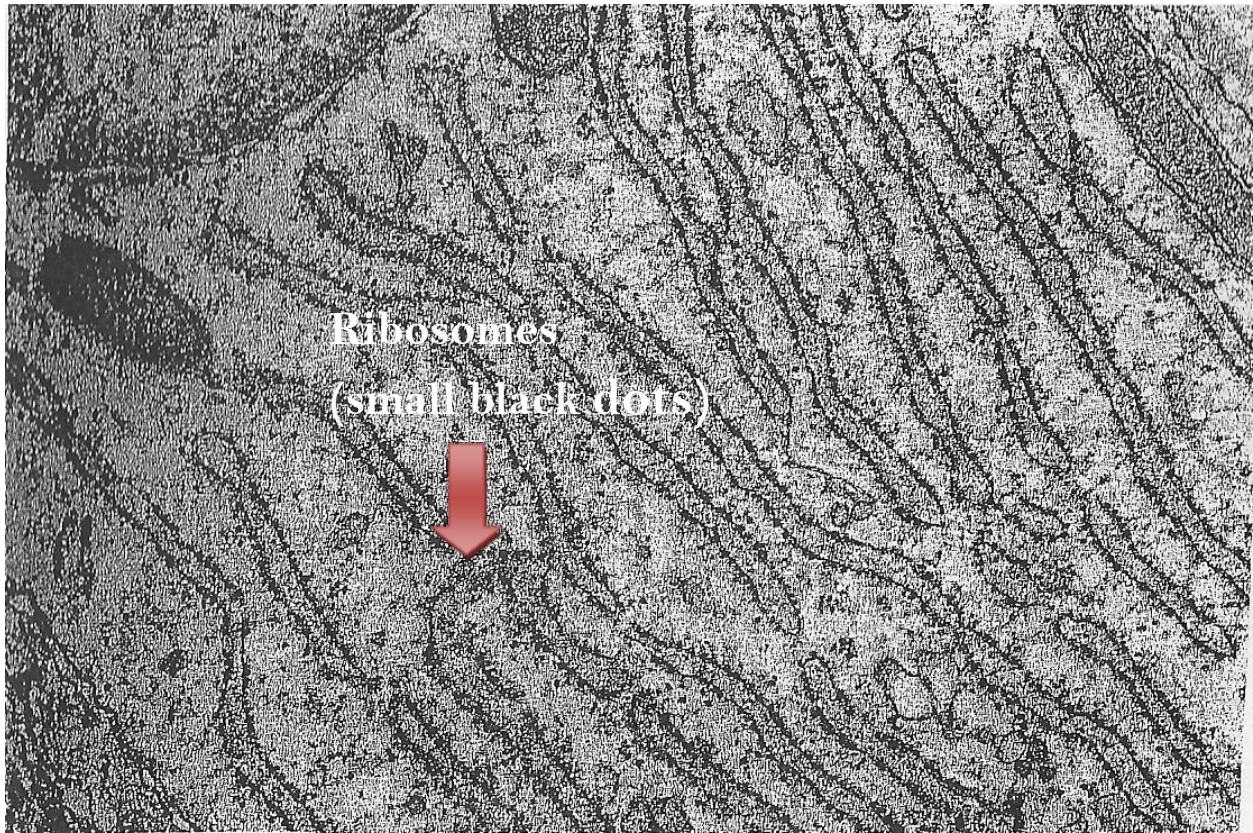
- Synthesis of lipids&cholestrol
- Detoxification from drugs and toxins

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:

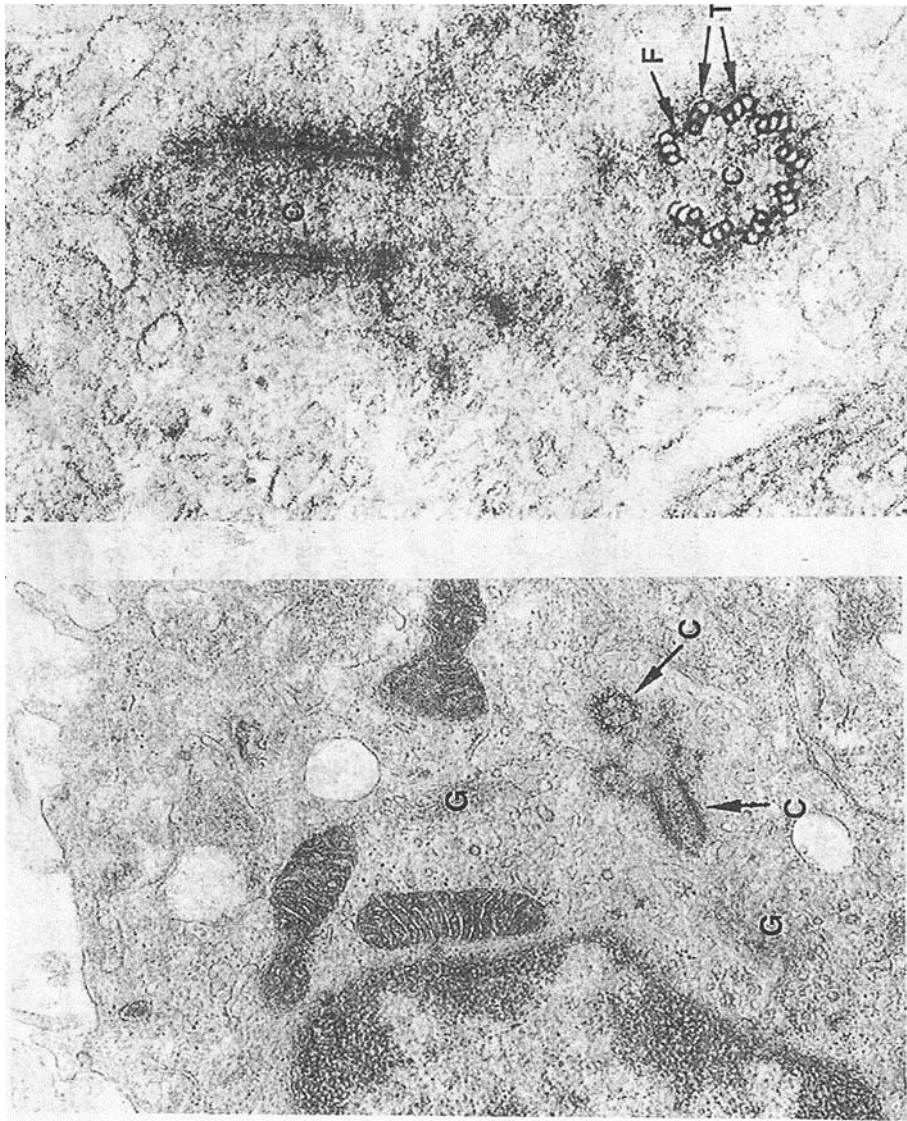
2 cylinders which are perpendicular to each other

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 :

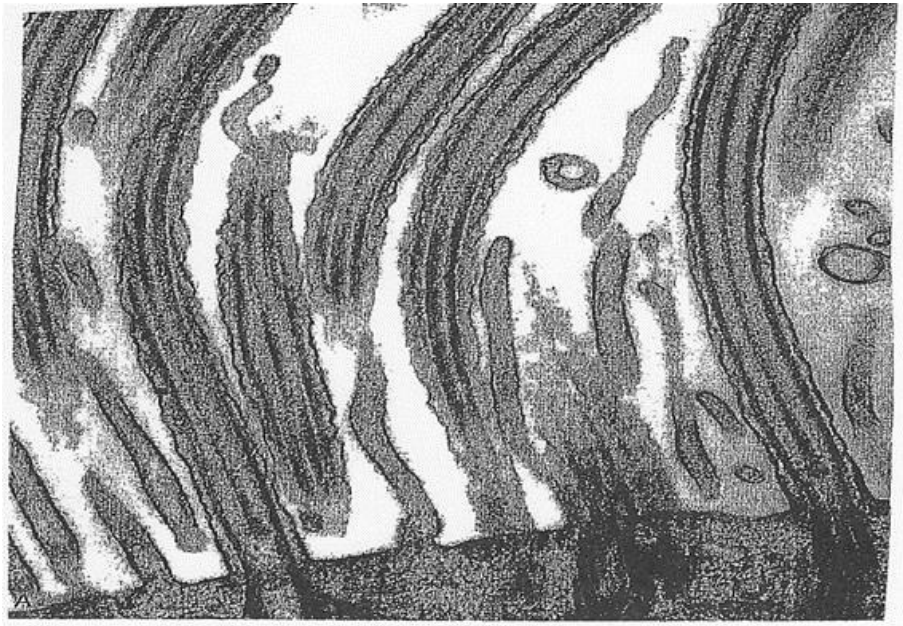
Cilia

hair like striations on the free surface of some cells.

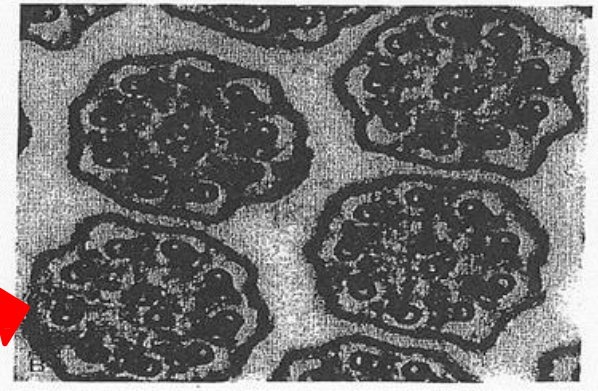
Q2- What is the function ?

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 surfacearea

***They contain actin flaments (Microfilaments)**

Simple Squamous Epithelium

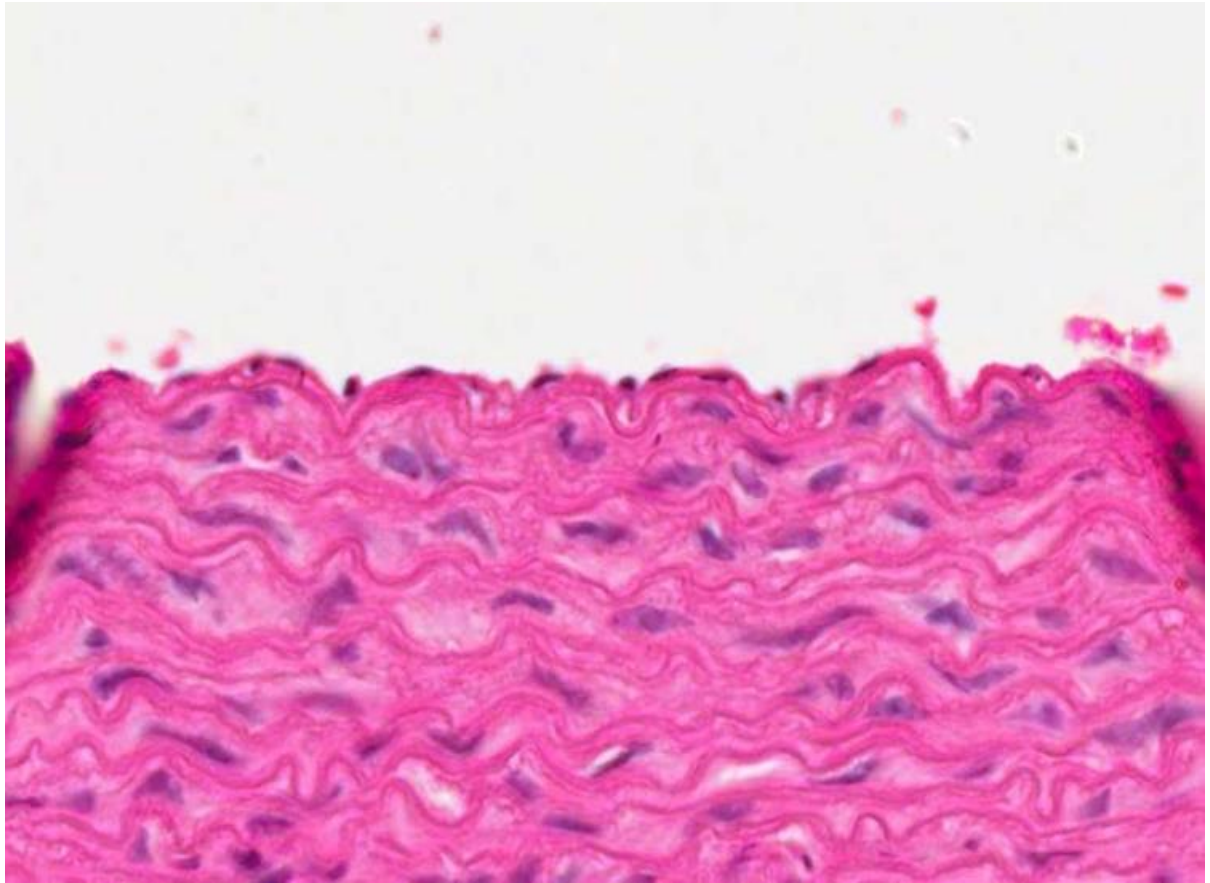
* Characteristics
•One layer
•Flat cells
•Flat nuclei

- Q1- Identify the type of epithelium ?
- Simple Squamous Epithelium.

Q2- What is the type of Connective
- tissue ?
- Elastic connective tissue.

- Q3- Mention the organ ? (Distribution , site)

- Endothelium* of (Aorta)
- Alveoli of lungs.



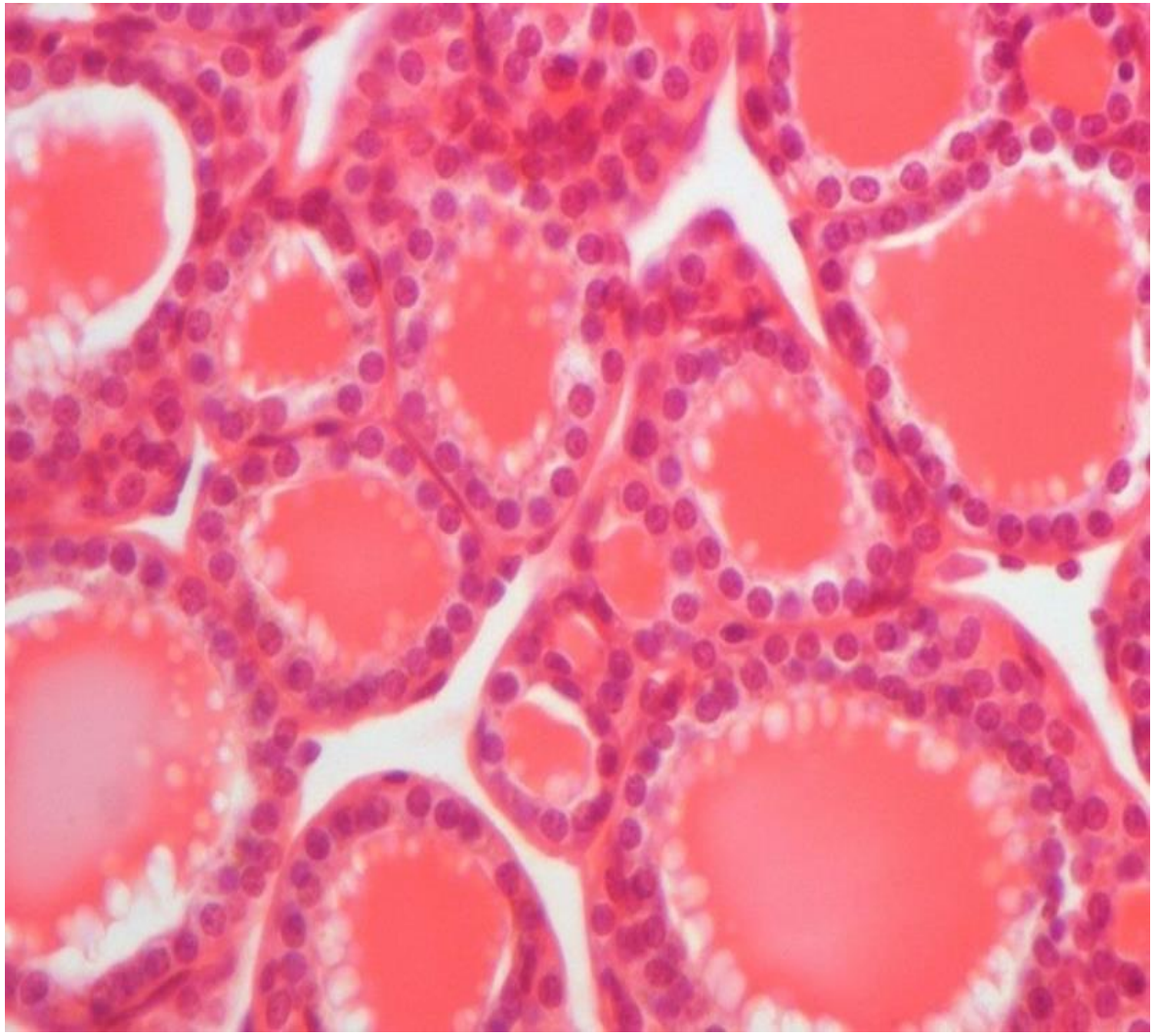
Simple Cuboidal Epithelium

- Q1- Identify the type of Epithelium ?
- Simple Cuboidal Epithelium.

- Q2- Mention the organ ? (Distribution , site)
- Thyroid gland. (follicles)

Characteristics :

- One layer.
- Cuboidal cells.
- Round central nuclei.



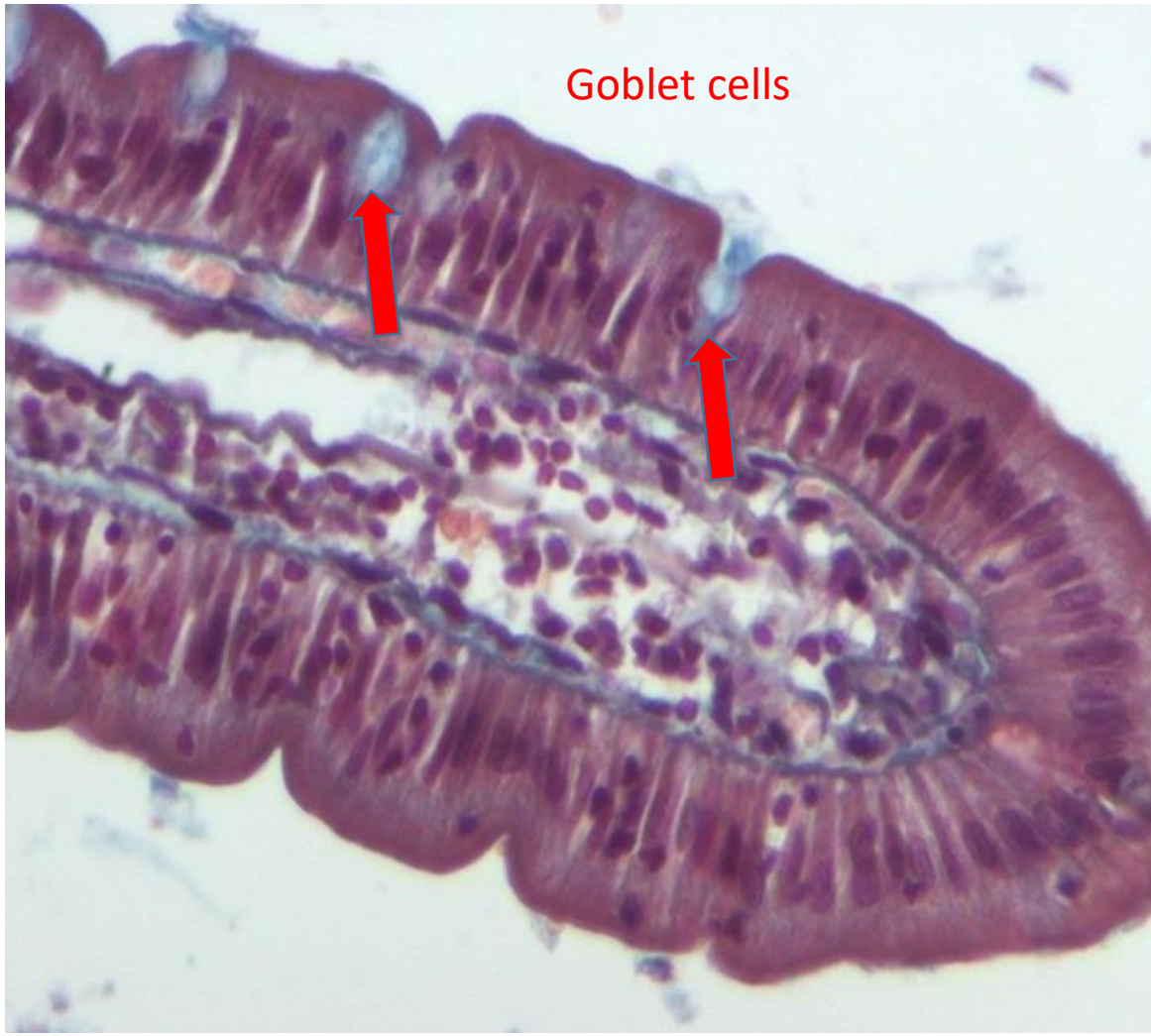
Simple Columnar Epithelium

- Q1-Identify the type of epithelium ?
- Simple Columnar Epithelium.

- Q2 –Mention the organ ? (Distribution , site)
- GIT small intestines (WITH GOBLET CELLS)
- ~~Stomach and Gall bladder.(WITHOUT GOBLET CELLS)~~

Characteristics :

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



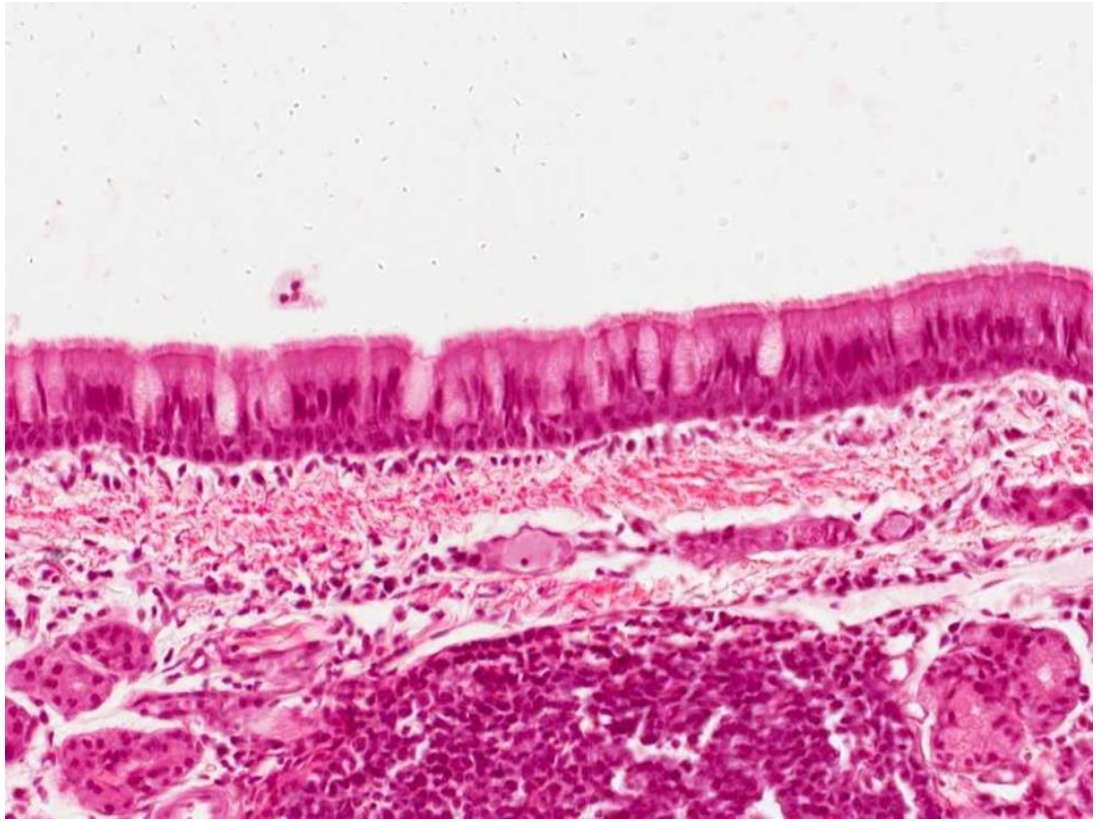
Pseudostratified Columnar Ciliated Epithelium with Goblet Cells

- Q1-Identify the type of epithelium ?
- Pseudostratified columnar ciliated epithelium with Goblet Cells.

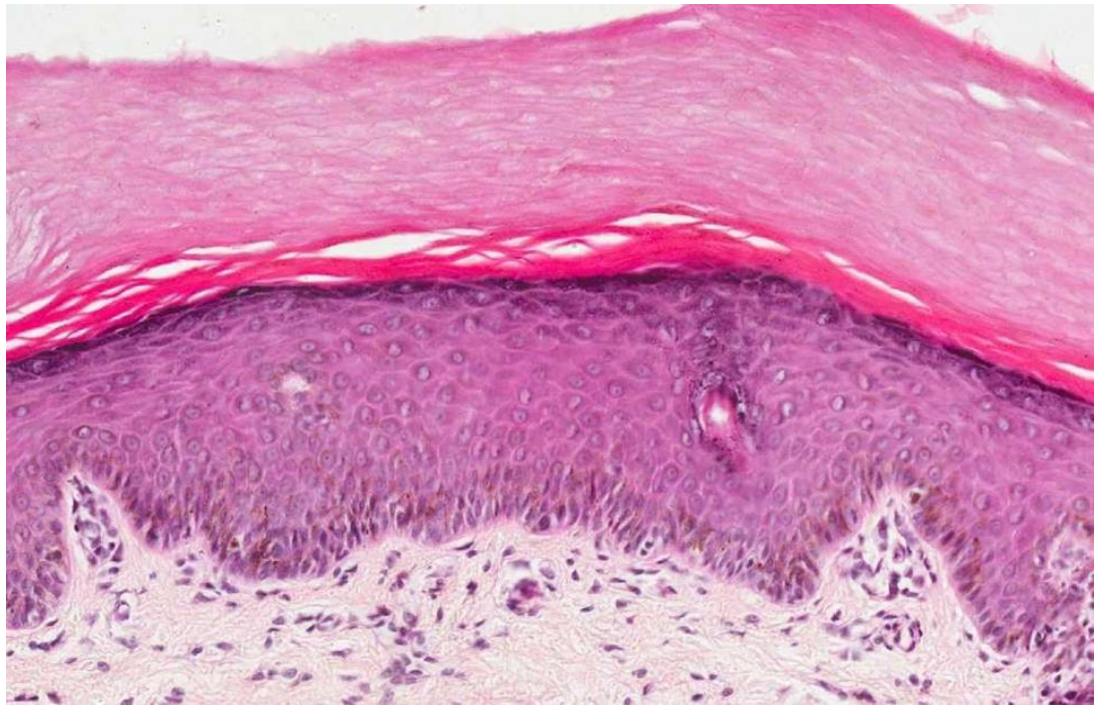
- Q2 –Mention the organ ? (Distribution , site)
- Trachea and Bronchi.

Characteristics :

- 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



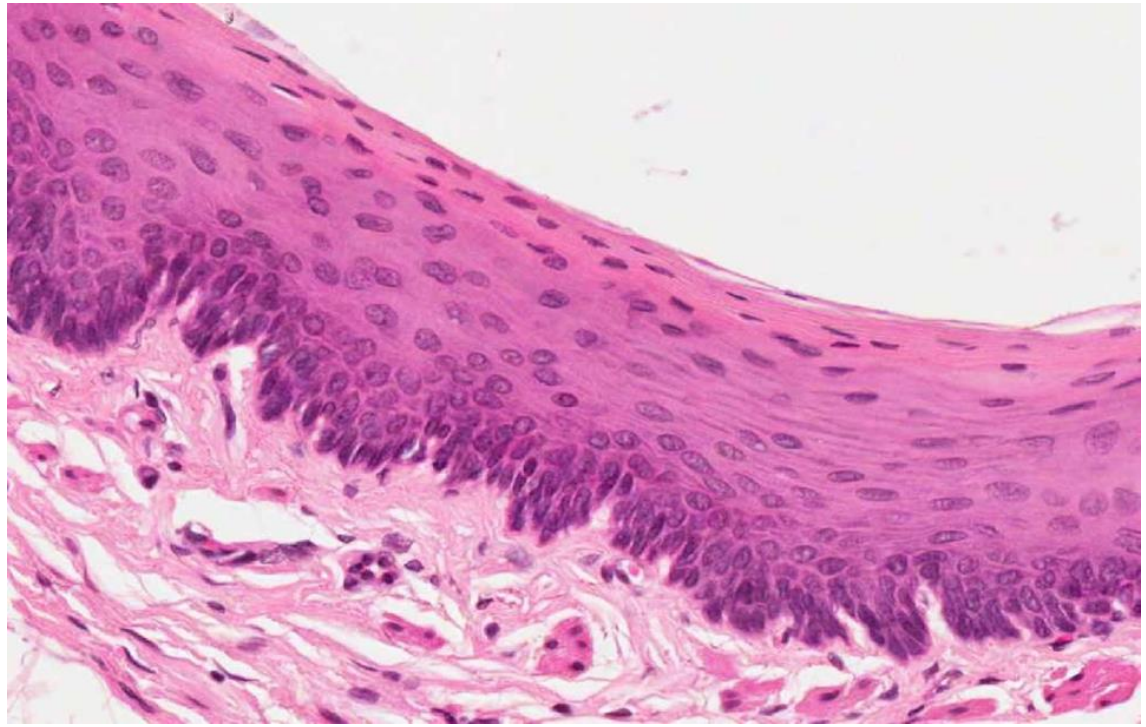
- Q1 –Mention the organ? (Distribution , site)

Epidermis of skin.

Characteristics :

- 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 , site)
- Esophagus.

- Characteristics :
- 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.

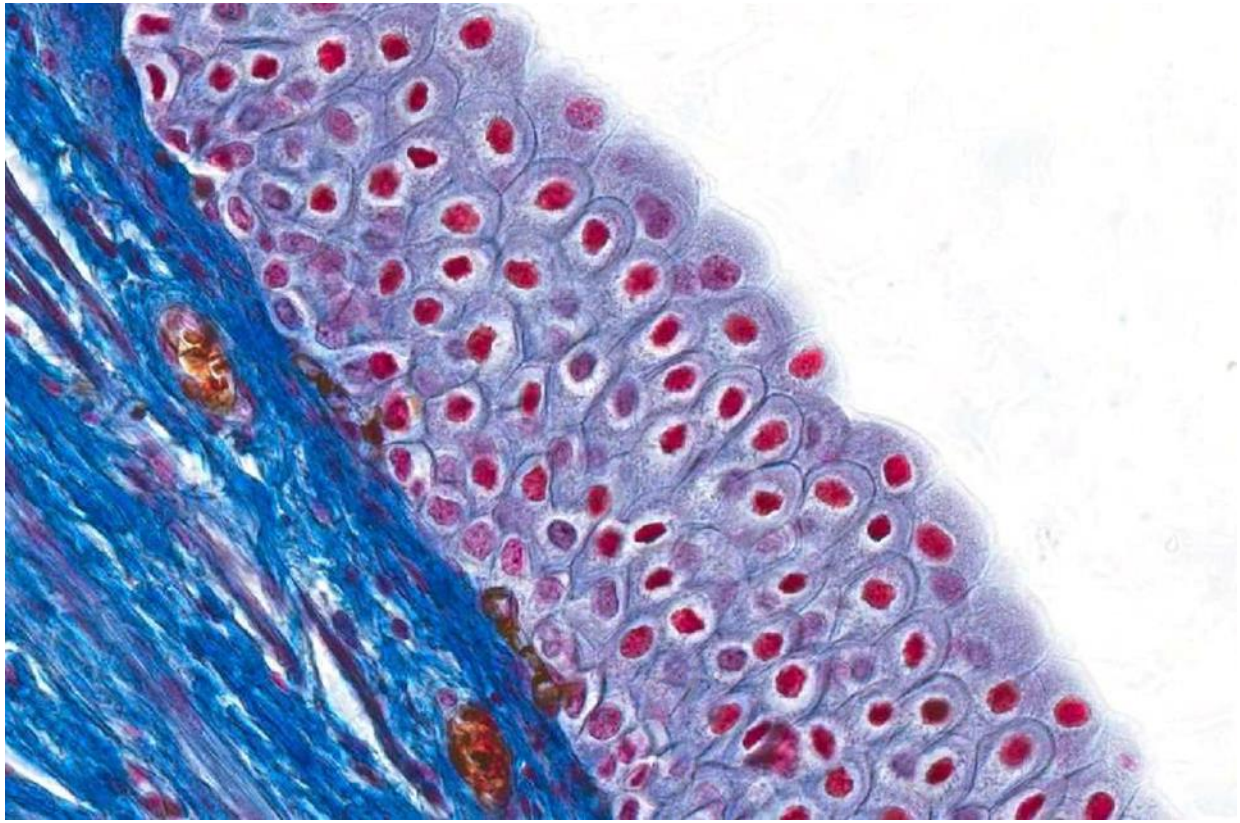
Transitional Epithelium

- Q1-Identify the type of epithelium?
- Transitional Epithelium

- Q2-Mention the organ? (Distribution , site)
- Urinary bladder

Characteristics :

- 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.



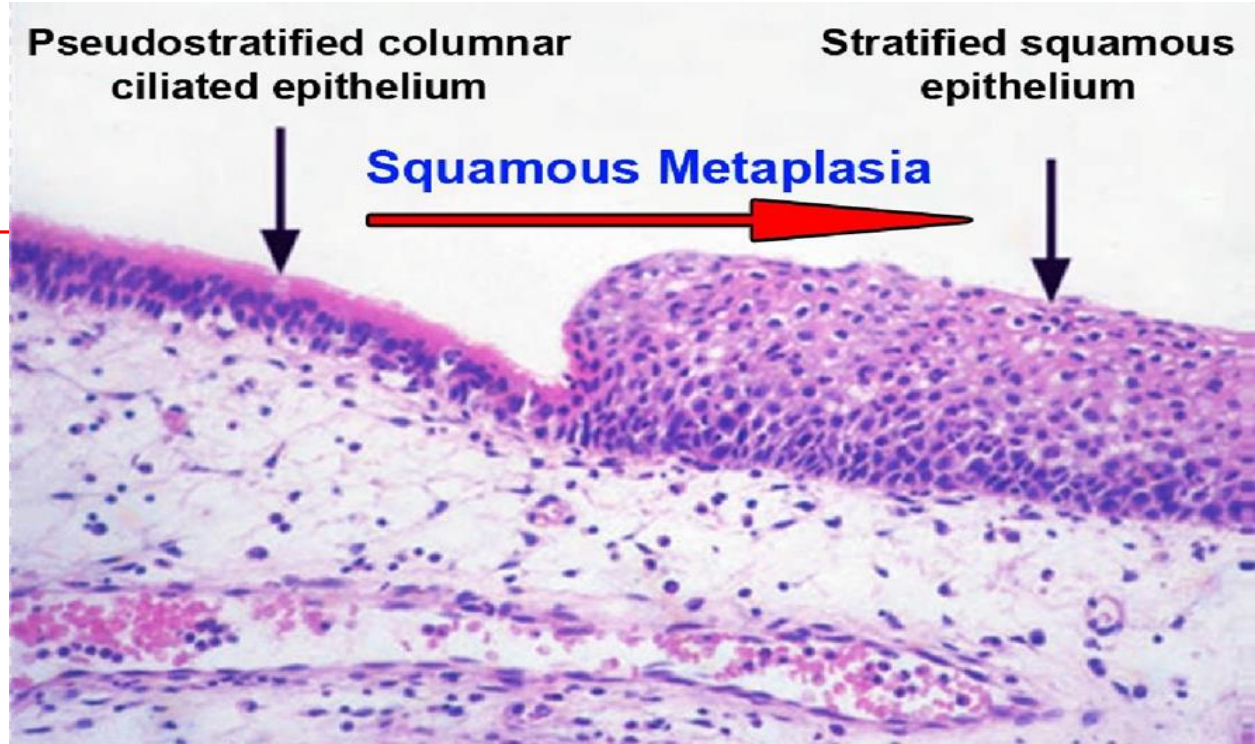
Squamous Metaplasia

- Q1-Identify
- Squamous Metaplasia

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

Metaplasia*: **Change of epithelium from stratified epithelium**

- تغير طبيعة الخلايا من نوع إلى آخر



Dense collagenous regular connective tissue

Q1- What is the type of fibers ?

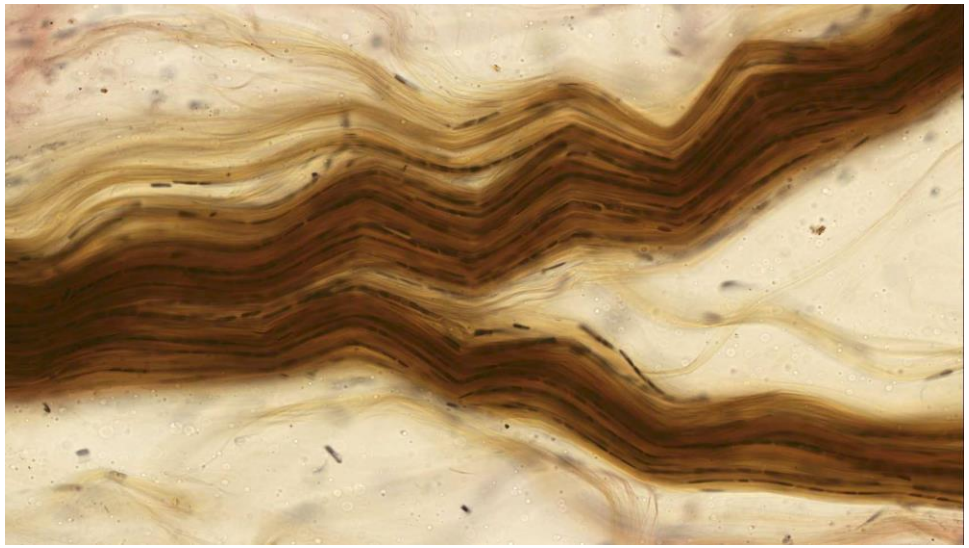
Collagen Fibers

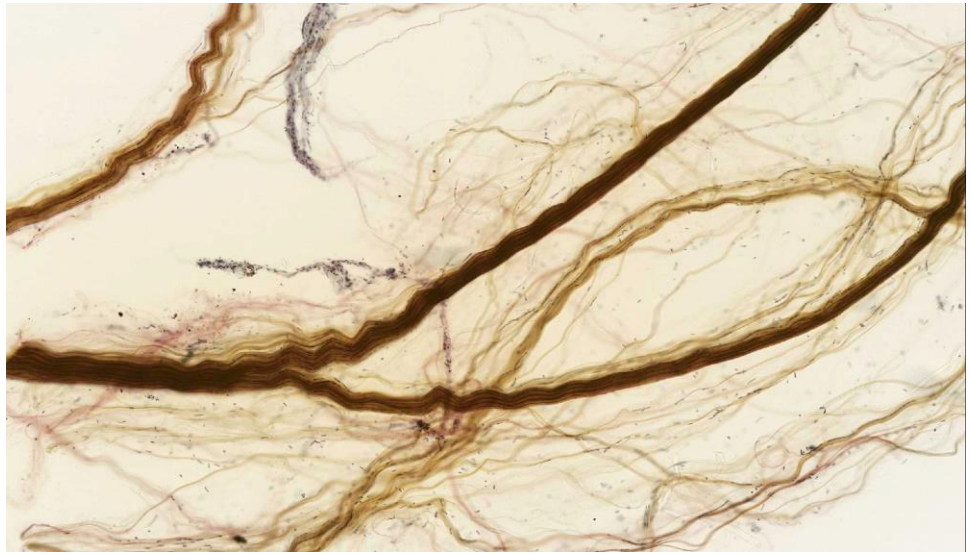
Q2- What is the type of cells ?

Fibroblasts cells

Q3- Mention the organ **or the distribution:**

Tendons and ligaments

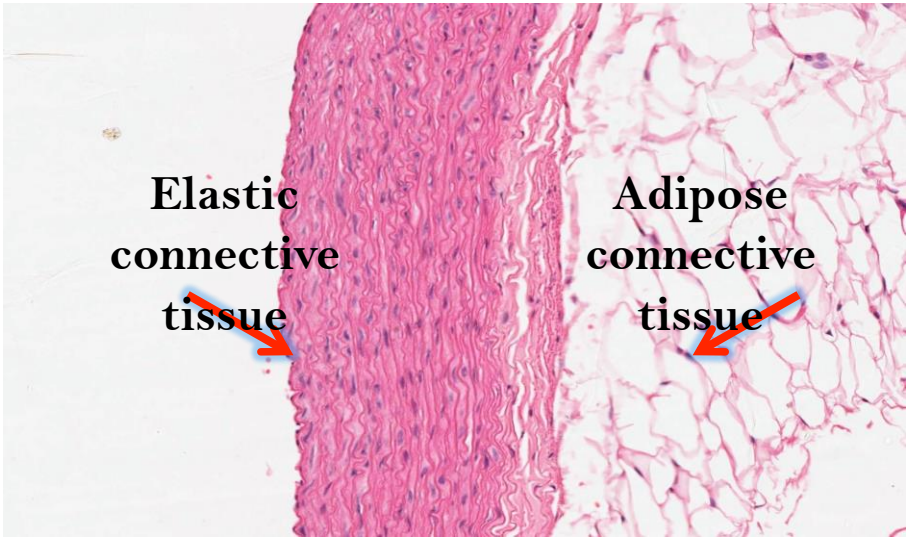




Elastic connective tissue

Q1- Identify:

Elastic connective tissue



Q2- Type of epithelium:

Simple squamous

Q3- Mention the organ :

Aorta

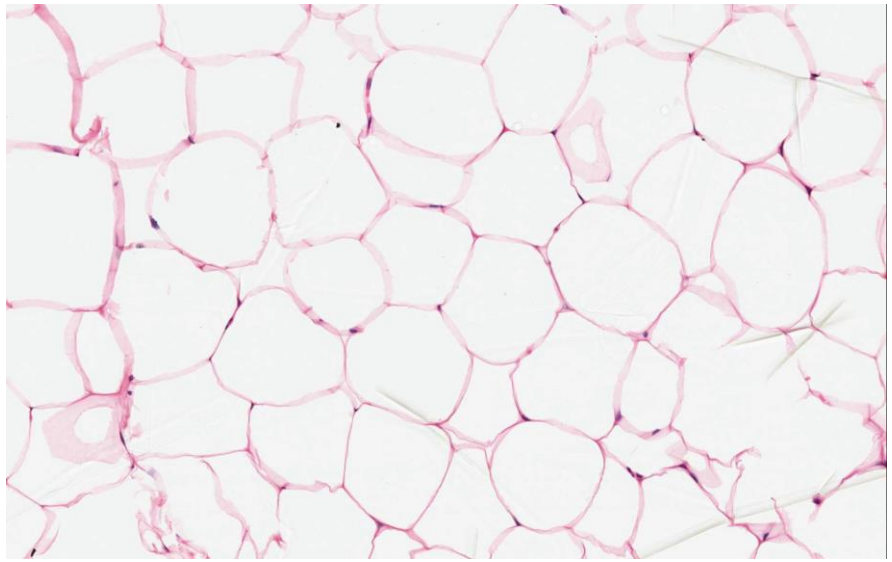
Adipose Connective Tissue

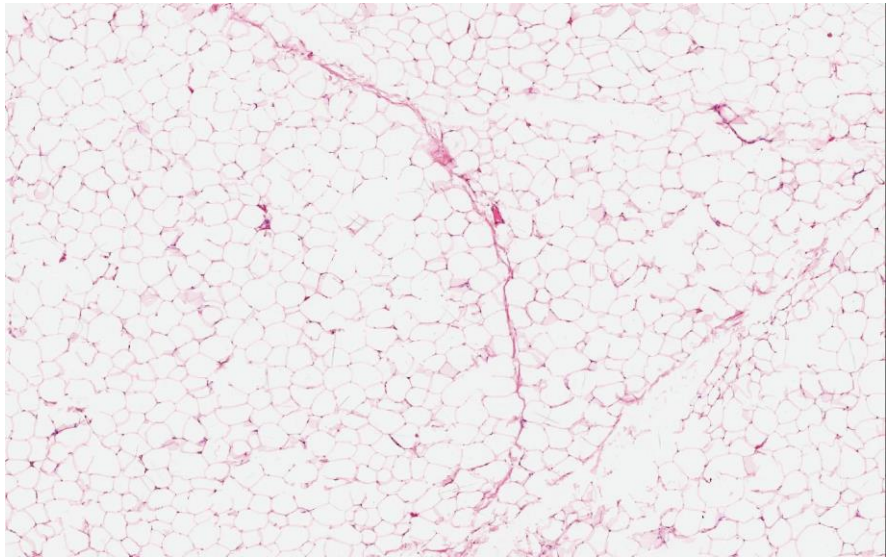
Q1- Identify the type of connective tissue:

Adipose connective tissue

Q2- What is the type of cells ?

Adipocyte

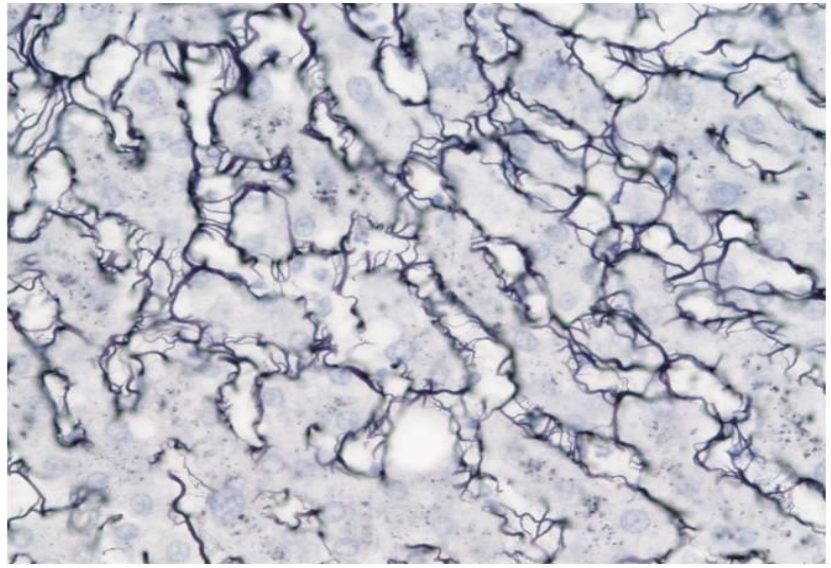




Reticular connective tissue

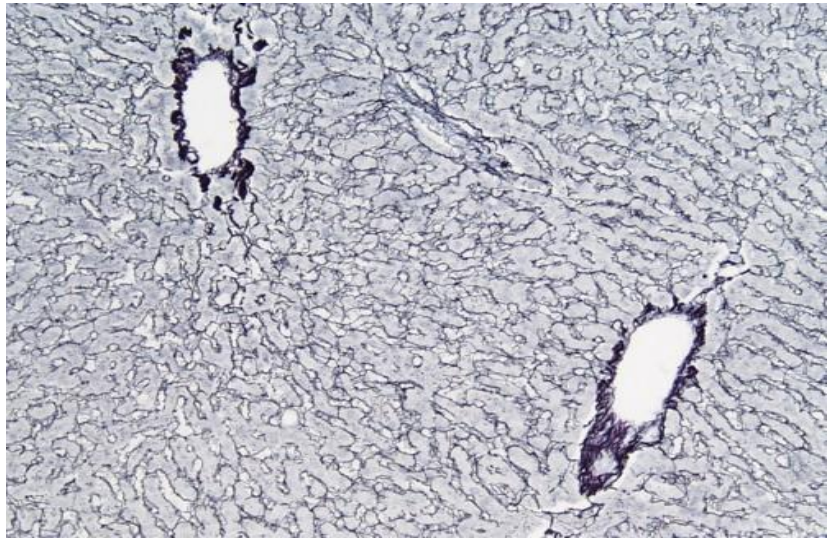
Q1- Identify the type of connective tissue:

Reticular connective tissue (Collagen Type III)



Q2- Mention the organ:

Lymph node and Spleen



Plasma cell

Q1- Identify the type of the cell :

Plasma cell (Clock-face)

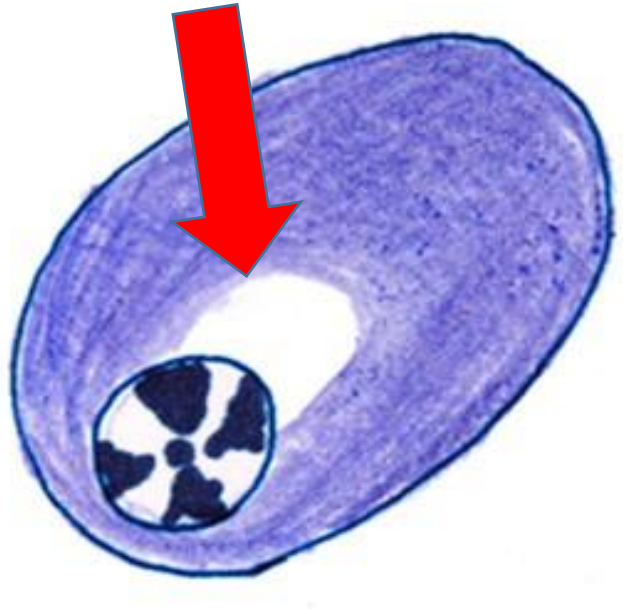
Q2- What is the function ?

Secretion of Antibodies

Q3- What is the type of cytoplasm ?

Basophilic cytoplasm

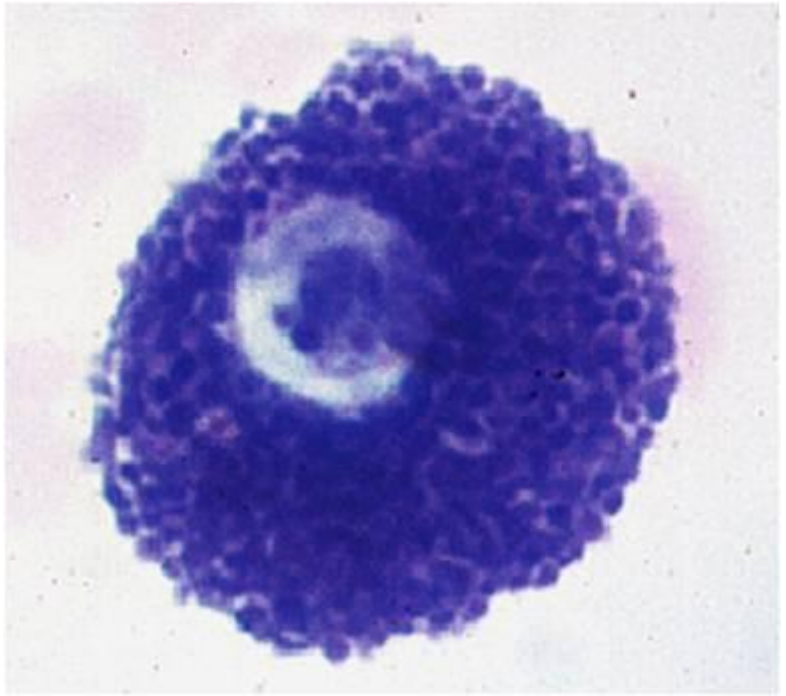
Negative Golgi Appearance



Mast cell

Q1- Identify the type of the cell:

Mast cell



Q2- what is the function ?

Secretion of Histamine and Heparin

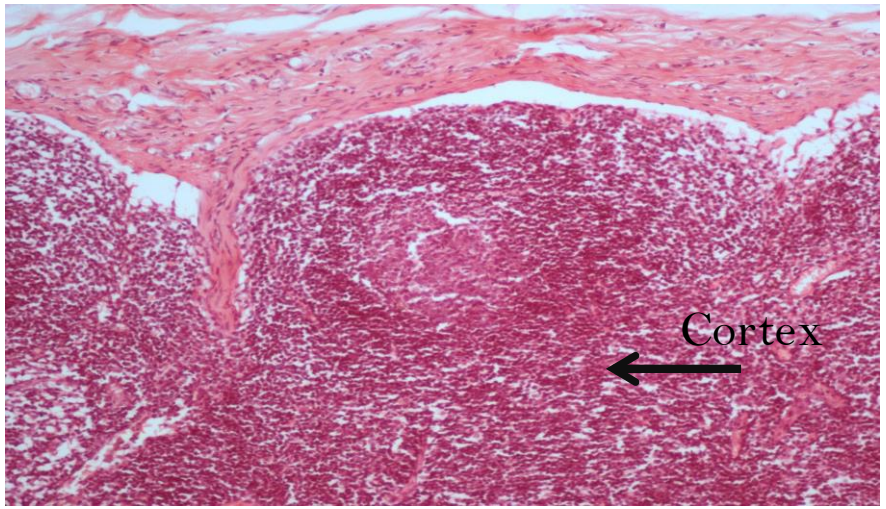
Lymph Node

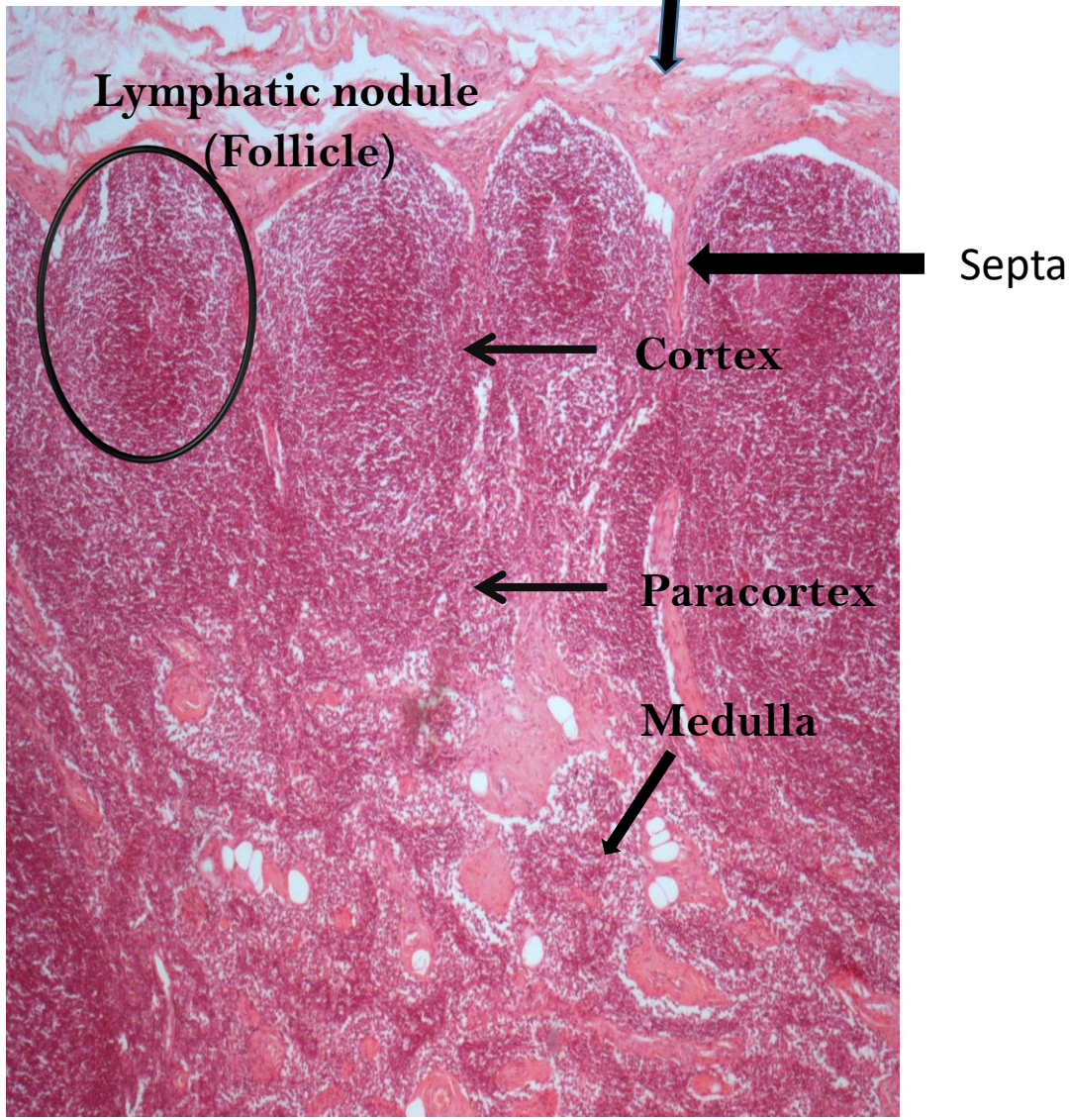
Q1- Identify :

Lymph Node

Q2- Location of :

- Lymphatic nodule (Follicle)
- Cortex
- Paracortex
- Medulla





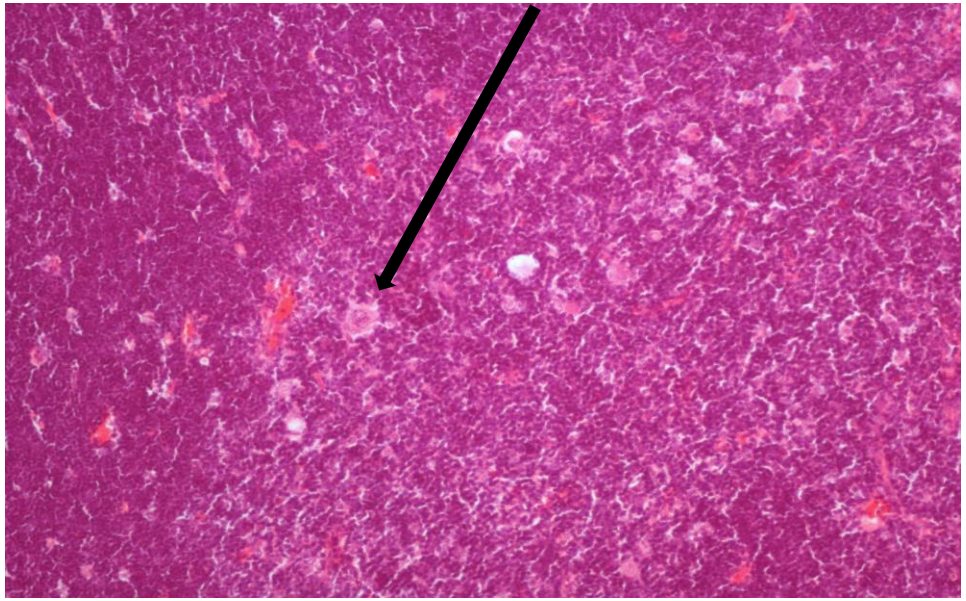
Thymus

Q1- Identify:

Thymus " Incomplete septum"

Q2- Location of :

- Cortex
- Medulla (**Hassall's corpuscles**)



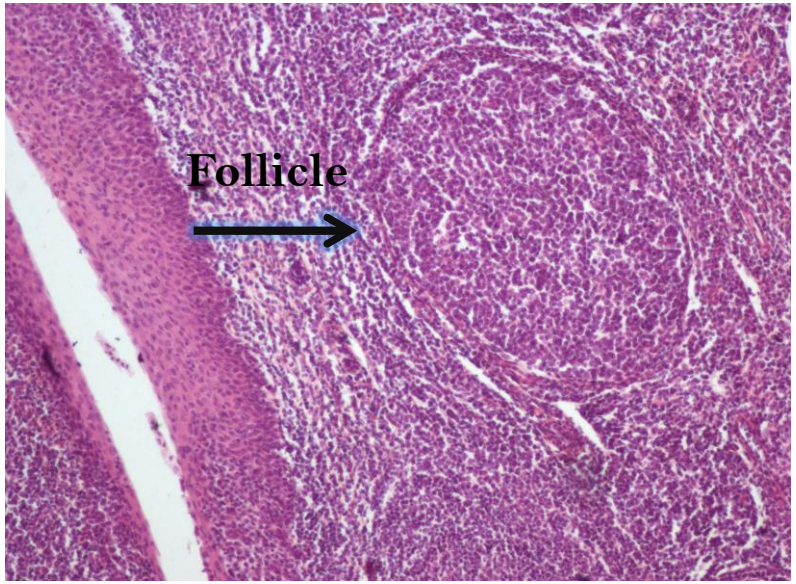
Palatine Tonsil

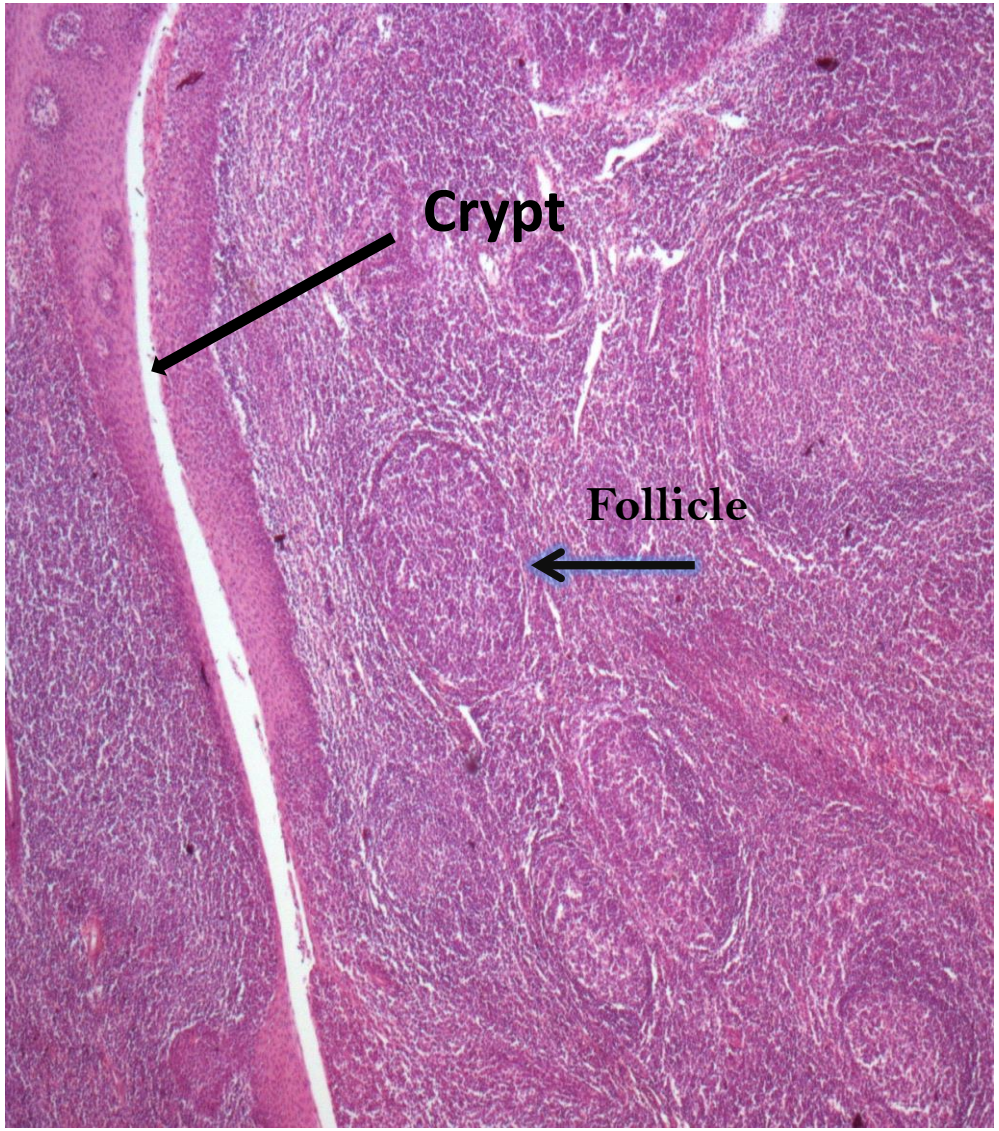
Q1- Identify:

Palatine Tonsil (incomplete capsule)

Q2- What is the type of epithelium ?

Stratified squamous epithelium





THANK YOU !

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