

OSPE

ALL PRACTICAL LECTURERS



***MALES ONLY**

Cell structure

Lecture 1

The nucleus

Q1- Identify the structure:

Nucleus

Q2- Locations:

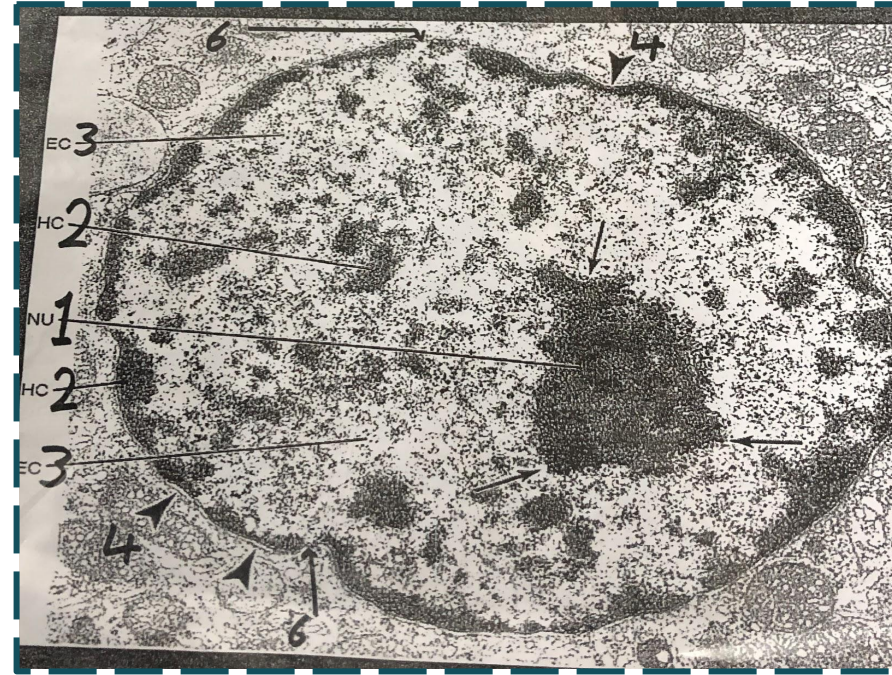
1. Nucleolus (the biggest dark region)
2. Heterochromatin (dark and inactive)
3. Euchromatin (pale and active)
4. Nuclear envelope (lining the nucleus)
5. Nuclear pores (openings in the nuclear envelope)

Q3- what's the function of the Nucleolus?

Formation of ribosomal RNA (rRNA), which is responsible for protein synthesis.

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



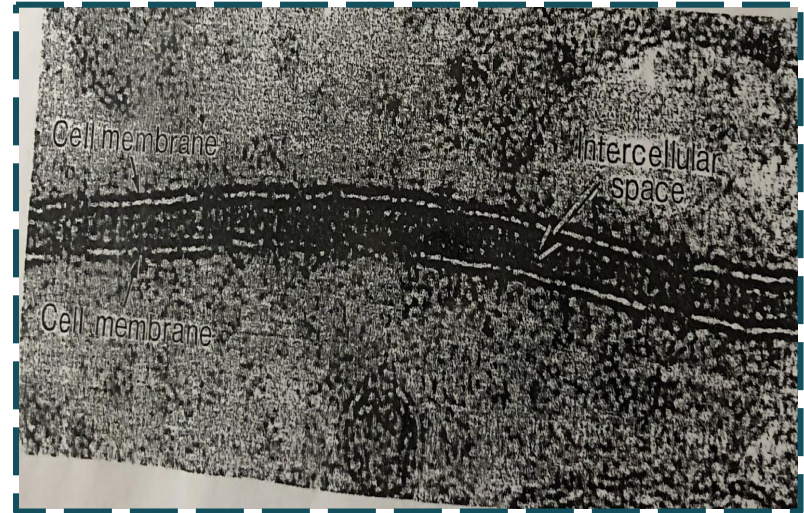
Cell membrane: (trilaminar appearance)

Q1- Identify the structure?:

Cell membrane

Q2-Function Of The Cell Membrane:

Selective barrier



Mitochondria

Q1- Identify the structure?

Mitochondria

Q2- what are the characteristics of it?

1. Rod shaped
2. It has 2 membranes
3. It can form its own protein and undergo self-replication because it has its own DNA

Q3- what is the function?

ATP synthesis



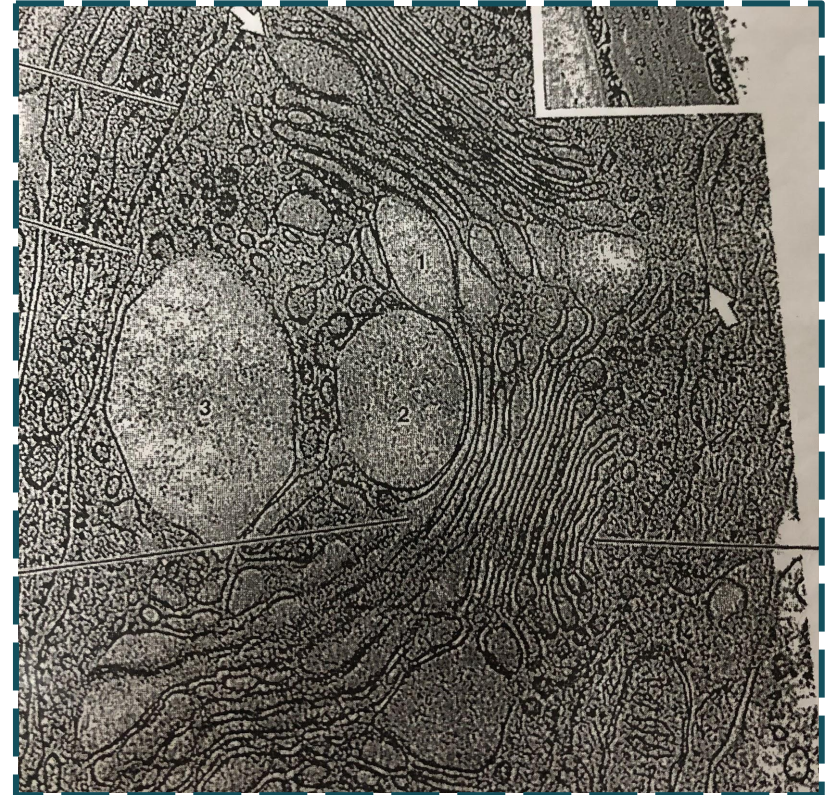
Golgi apparatus

Q1- identify the structure?

Golgi Apparatus

Q2- what is the function?

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



Smooth Endoplasmic Reticulum

Q1- Identify the structure?

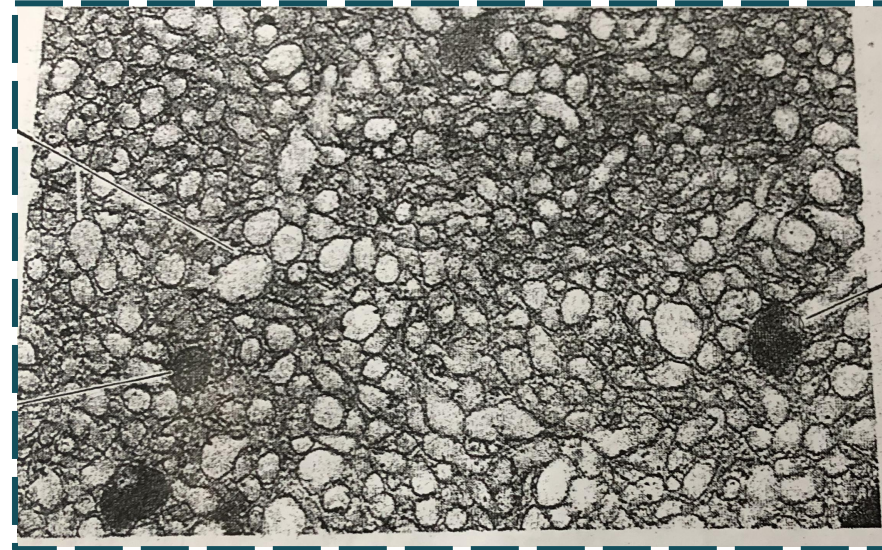
Smooth Endoplasmic Reticulum

Q2- What are Characteristics of it?

Membranous tubules and vesicles, with no ribosomes of the surface

Q3-What is the Function?

Synthesis of lipids & cholesterol Detoxification from drugs and toxins



Rough Endoplasmic Reticulum

Q1- Identify the structure

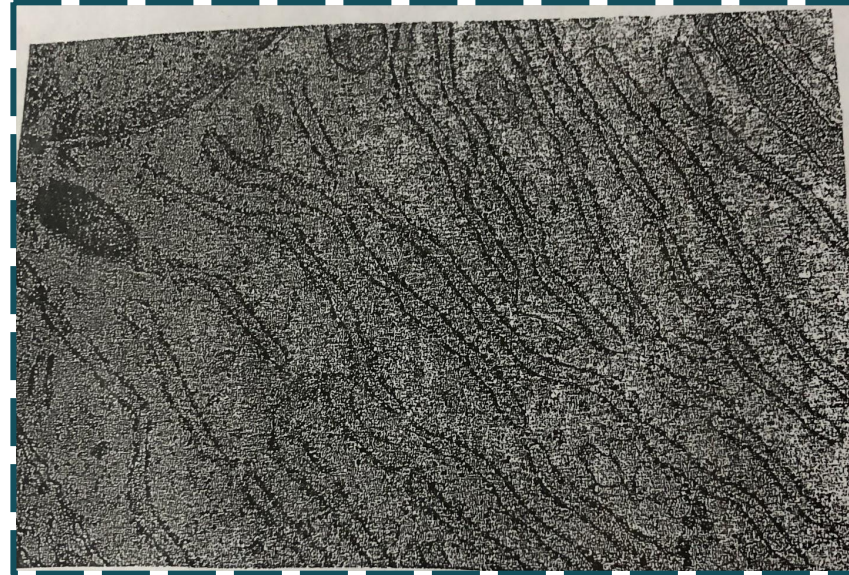
Rough Endoplasmic Reticulum

Q2- What are Characteristics of it?

Membranous sheets of flattened tubules & vesicles with ribosomes on the surface

Q3-What is the function?

Synthesis Of Proteins By ribosomes on its outer surface.



Centrioles

Q1- Identify the structure

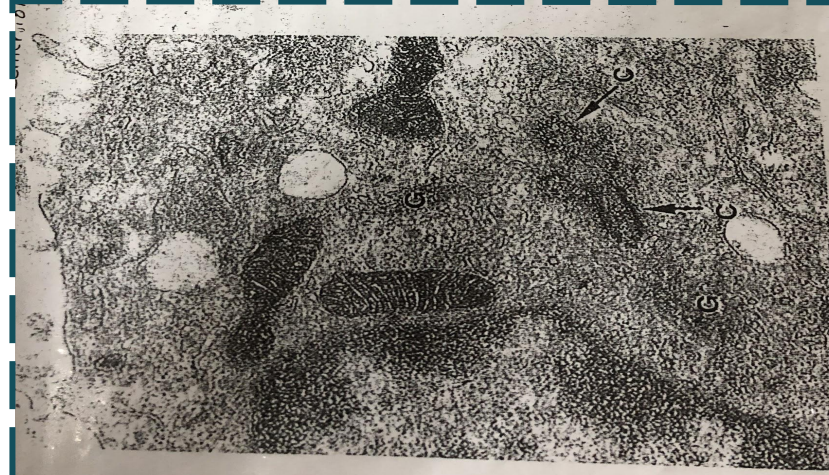
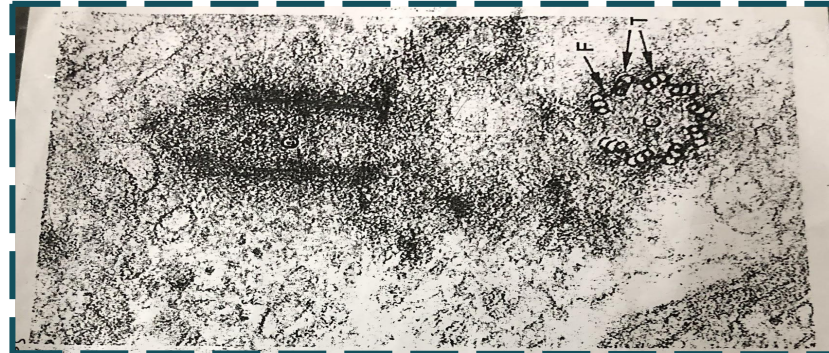
Centrioles

Q2- What are Characteristics of it?

1. 2 cylinders which are perpendicular to each other
2. Their wall is made of 9 triplets of microtubules ($9 \times 3 = 27$).
3. Non-Membranous Organelle.

Q3- What is the function of it?

- Essential for cell division
- Formation of cilia and flagella



Cilia

Q1- Identify the structure?

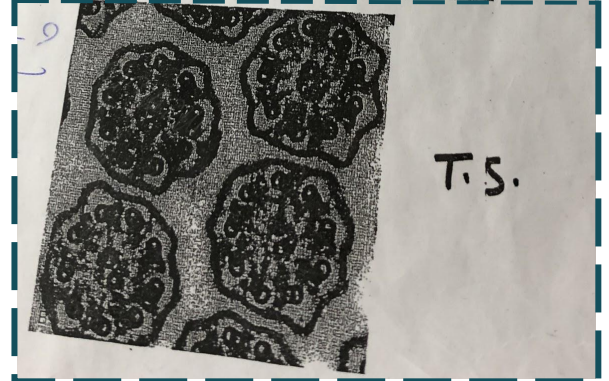
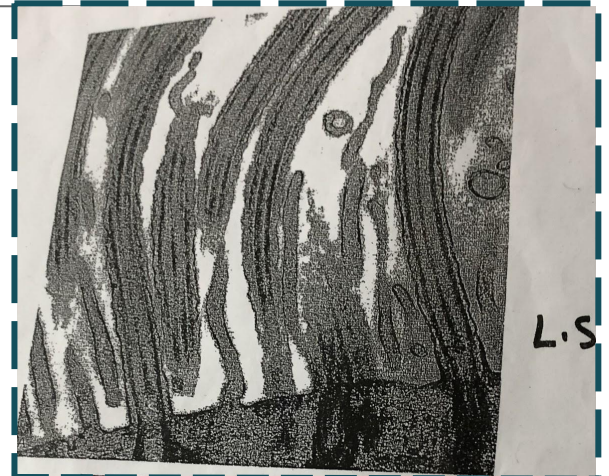
Cilia

Q2- What are Characteristics of it?

- Hair like striations on the free surface of some cells
- Shaft form of 9 doublets & 2 central singlets of microtubules ($9 \times 2 + 2 = 20$)

Q3- What is the function of it?

Movement of particles or fluids in one direction



Microvilli

Q1- Identify the structure?

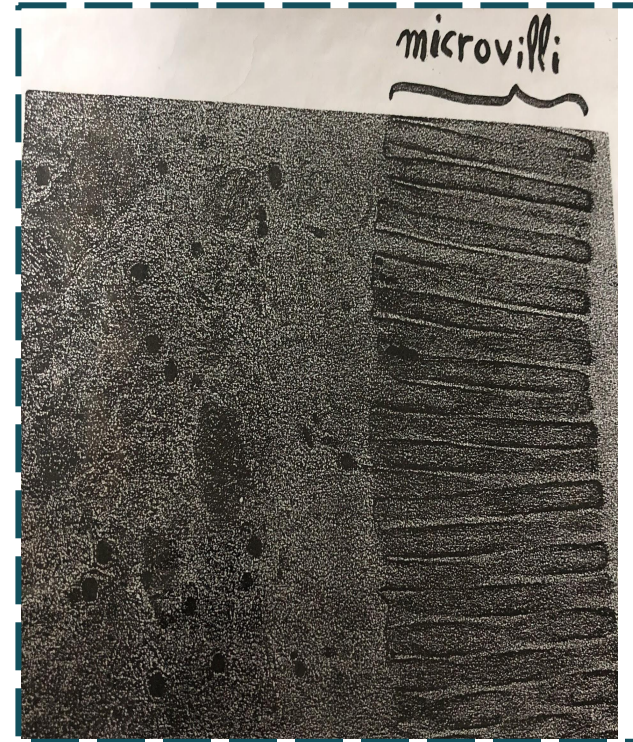
Microvilli

Q2- What are Characteristics of it?

- Cylindrical cytoplasmic projections of apical surface to increase surface area.
- they contain actin filament (microfilaments)

Q3- What is the function of it ?

Increase surface area for more absorption



Epithelial Tissue

Lecture 2

Simple Cuboidal Epithelium

Q1- Identify the type of epithelium?

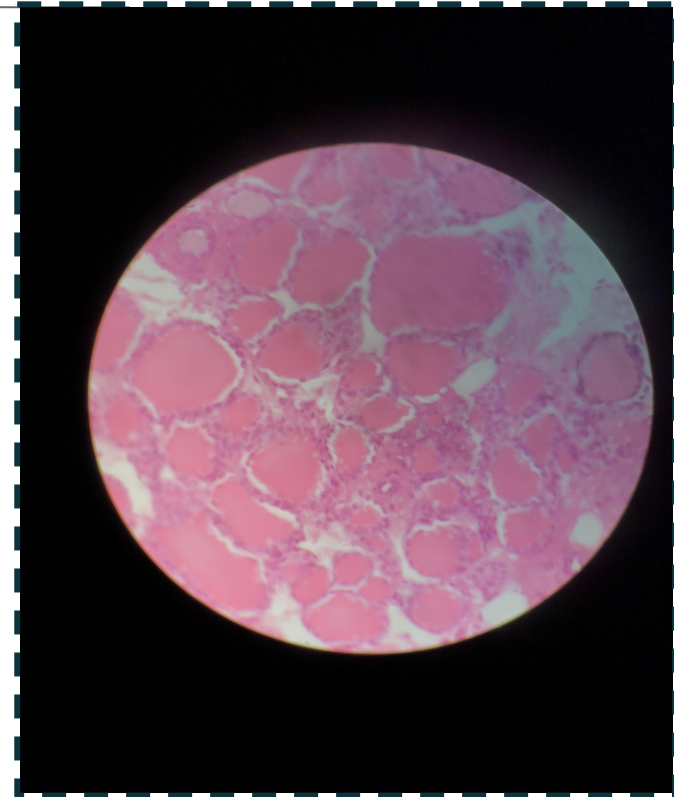
Simple cuboidal epithelium

Q2- mention the organs (distribution, site & example)?

- Thyroid gland (follicles)
- salivary glands

Q3- What are Characteristics of it?

- One layer
- cuboidal cells
- Round central nuclei



Simple columnar epithelium

Q1- Identify the type of epithelium?

Simple columnar epithelium with goblet cells

Q2- mention the organs (distribution, site & example)?

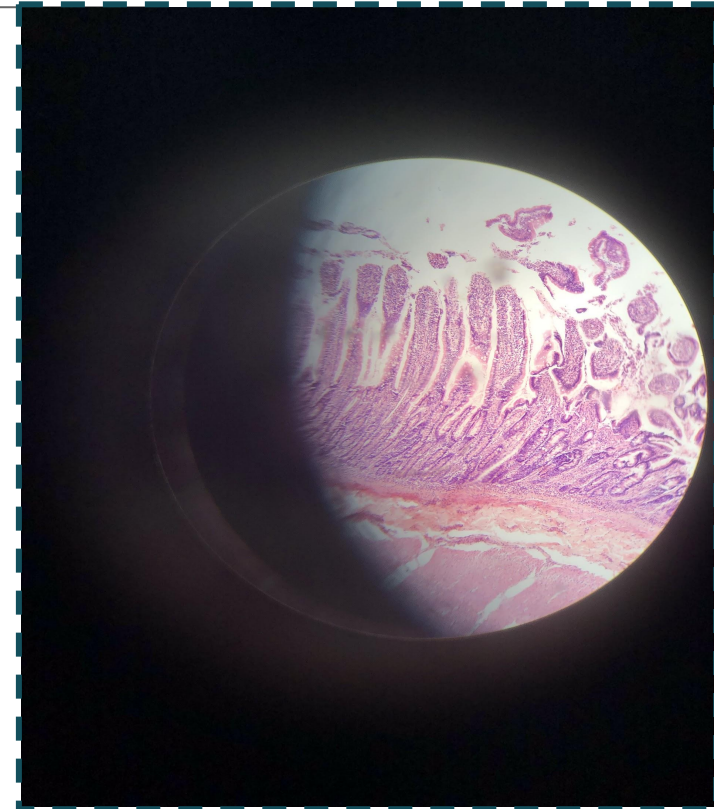
- GIT -small intestine (with goblet cell)
- GIT -stomach and gallbladder (without goblet cell)

Q3- What is the function of the pointed area?

Secreting mucus

Q4- What are Characteristics of it?

- One layer
- columnar cells
- basal oval nuclei



Pseudostratified columnar ciliated with goblet

Q1- Identify the type of epithelium?

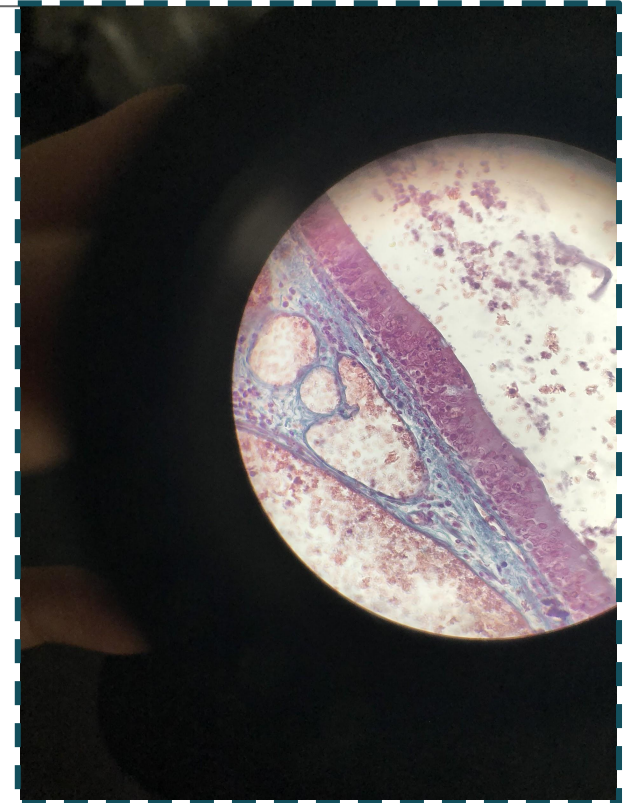
Pseudostratified Columnar epithelium
"ciliated with goblet cells"

Q2- mention the organs (distribution, site & example)?

- Trachea
- bronchi

Q3- What are Characteristics of it?

- One layer
- columnar cells
- Nuclei appear at different levels
- All cells rest on basement membrane Some are tall, others are short that can't make it to surface



Keratinized Stratified Squamous Epithelium

Q1- Identify the type of epithelium?

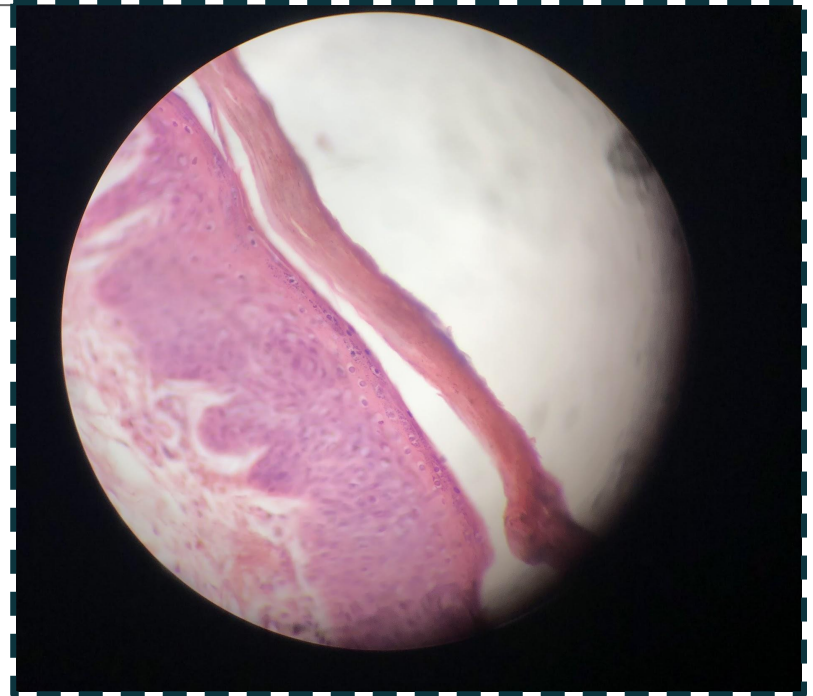
Keratinized Stratified Squamous Epithelium

Q2- mention the organs (distribution, site & example)?

Epidermis of skin

Q3- What are Characteristics of it?

- multiple layers
- basal cells: columnar, basal oval nuclei
- Intermediate cells: polygonal , central rounded nuclei]
- Surface cells: flat, flattened nuclei
- With layer of keratin on the surface



Non-Keratinized Stratified Squamous Epithelium

Q1- Identify the type of epithelium?

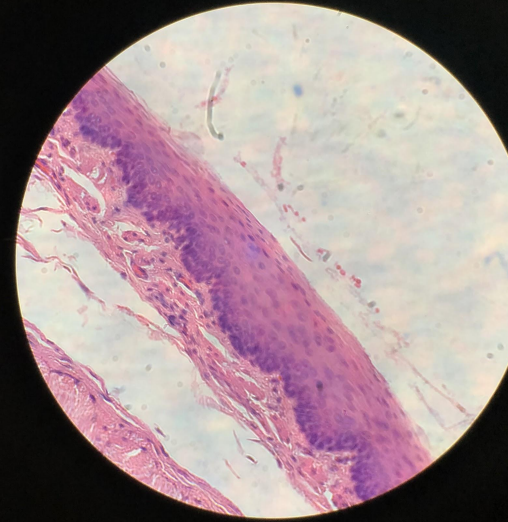
Non-keratinized Stratified Squamous Epithelium

Q2- mention the organs (distribution, site & example)?

Esophagus

Q3- What are Characteristics of it?

- multiple layers
- basal cells: columnar, basal oval nuclei
- Intermediate cells: polygonal , central rounded nuclei
- Surface cells: flat, flattened nuclei
- Without a layer of keratin on the surface



Transitional epithelium

Q1- Identify the type of epithelium?

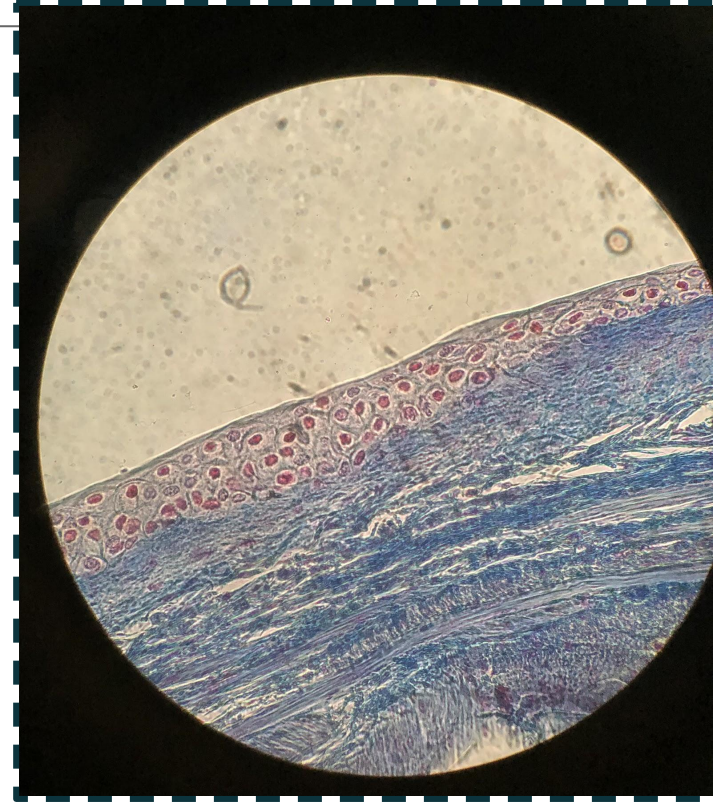
Transitional epithelium

Q2- mention the organs (distribution, site & example)?

Urinary bladder
Ureters

Q3- What are Characteristics of it?

- multiple layers
- basal cells: columnar •Intermediate cells: polygonal
- Surface cells: large cuboidal with convex free surface maybe binucleated



Connective Tissue

Lecture 3

Dense collagenous regular connective tissue

Q1- Identify the structure?

Dense collagenous regular connective tissue

Q2- What is the type of fibers?

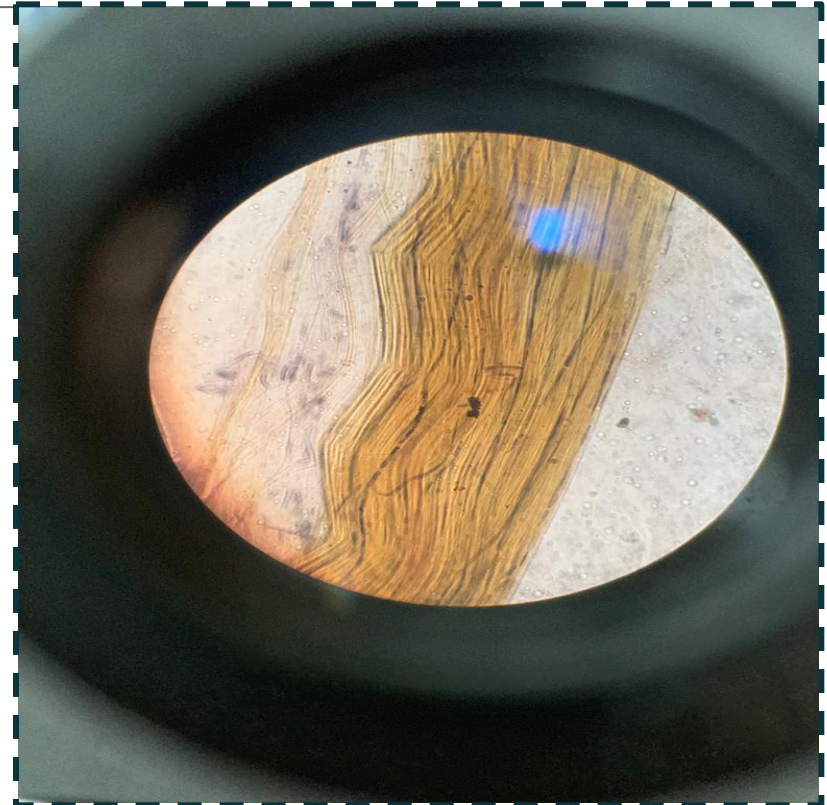
Collagen fiber (Collagen type I)

Q3- What is the type of cells?

Fibroblast cells

Q4- mention the organs (distribution, site & example)?

- Tendons
- ligaments



Elastic connective tissue

Q1- Identify the structure?

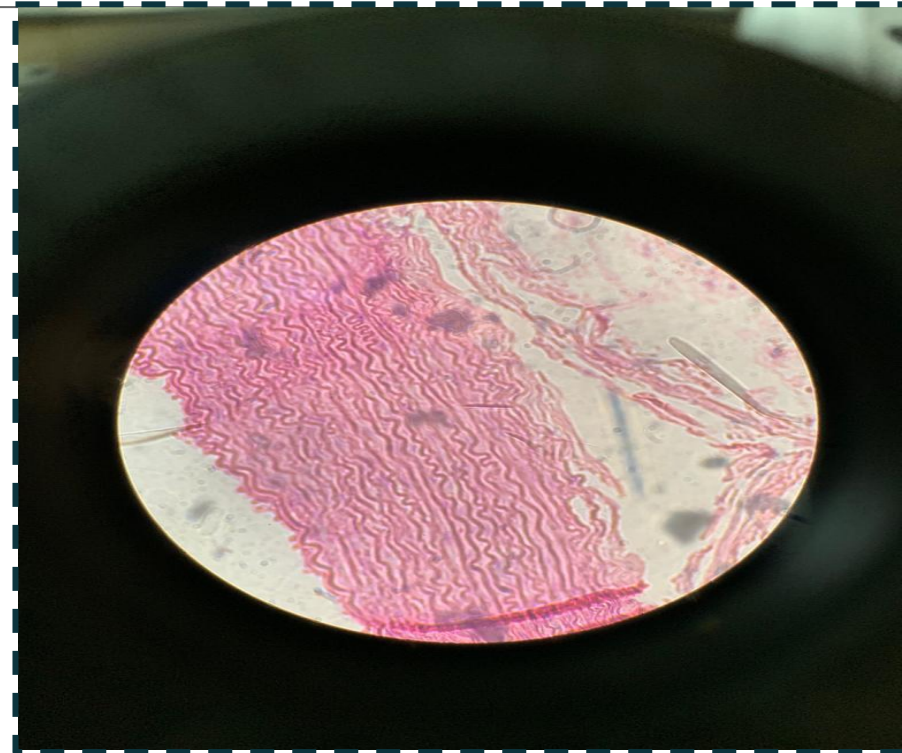
Elastic connective tissue

Q2- What is the type of cells?

Fibroblast cells

Q3- mention the organs (distribution, site & example)?

Aorta



Adipose Connective Tissue

Q1- Identify the type of connective tissue?

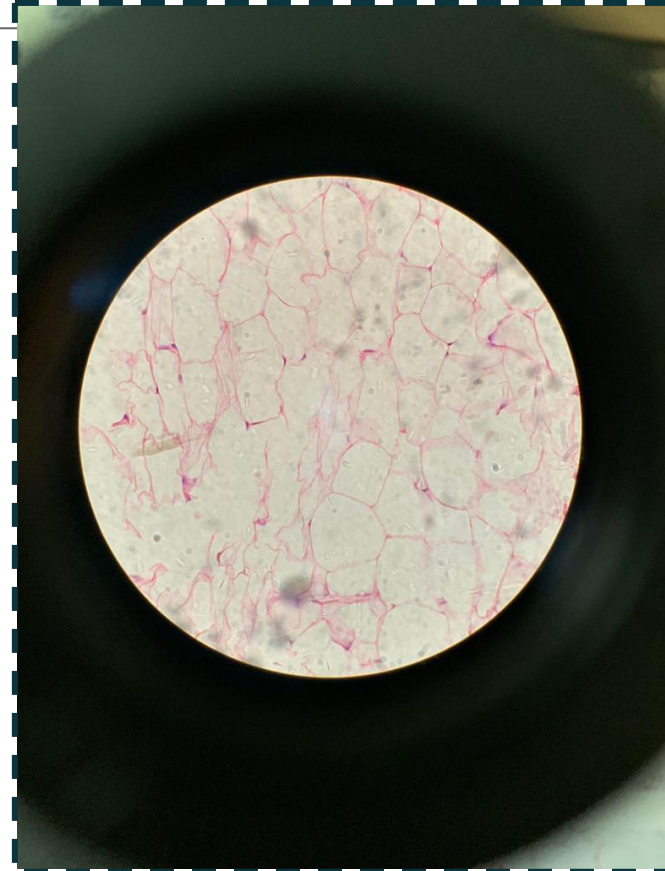
Adipose connective tissue

Q2- What is the type of cells ?

Adipocyte

Q3- mention the organs (distribution, site & example)?

- Around the kidney
- Female breast
- Abdominal wall
- buttocks



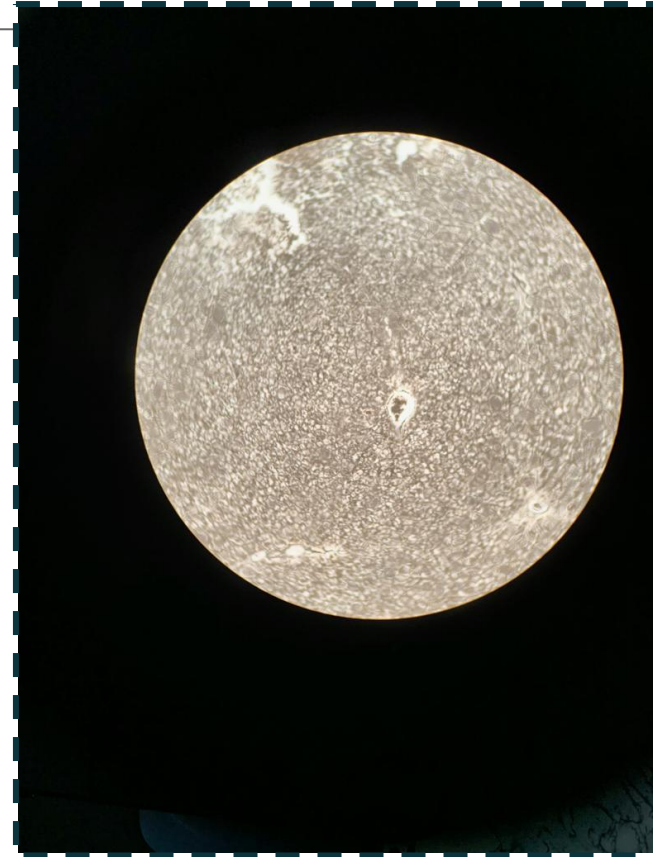
Reticular connective tissue

Q1- Identify the type of connective tissue?

Reticular connective tissue (Collagen type III)

Q2- mention the organ?

- Lymph node
- spleen
- liver



Lymphoid Tissue

Lecture 4

Lymph Node

Q1- Identify the structure?

Lymph node

Q2- What is the function of it?

1-Proliferation of B and T lymphocytes.

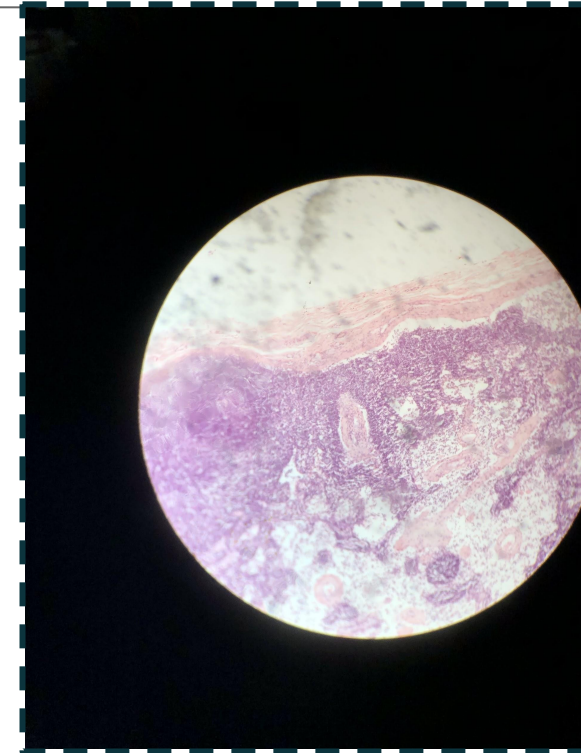
2-Filtration of lymph from bacteria and other foreign substances.

Q3- What is the main part of the structure ?

1- Cortex (lymph nodules follicles)

2- Para Cortex

3- Medulla



Spleen

Q1- Identify the structure?

Spleen

Q2- What is the function of it?

- 1-Filtration of blood.
 - 2-Phagocytosis of old RBCs & old blood platelets, invading microorganisms.
 - 3-Production, proliferation of immunocompetent B & T lymphocytes.
 - 4-Production of antibodies.
-

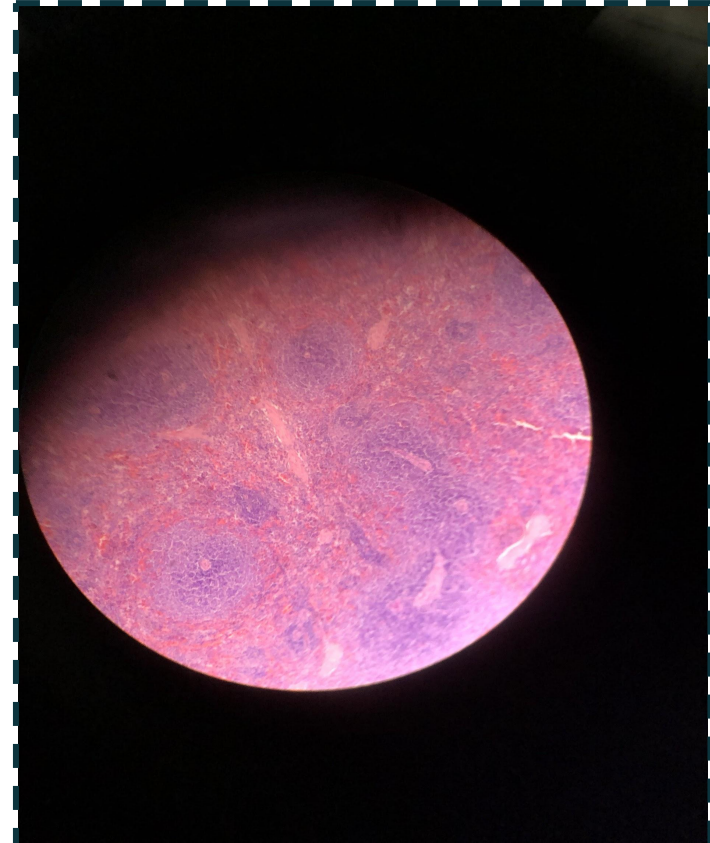
Q3- What is the main part of the structure ?

□ White pulp

- 1) Periarterial lymphatic sheaths (PALS)
- 2) Lymphoid follicles

□ Red pulp

- 1) Splenic cords
- 2) Splenic blood sinusoids



Thymus

Q1- Identify the structure?

Thymus (incomplete septum)

Q2- What is the main part of the structure ?

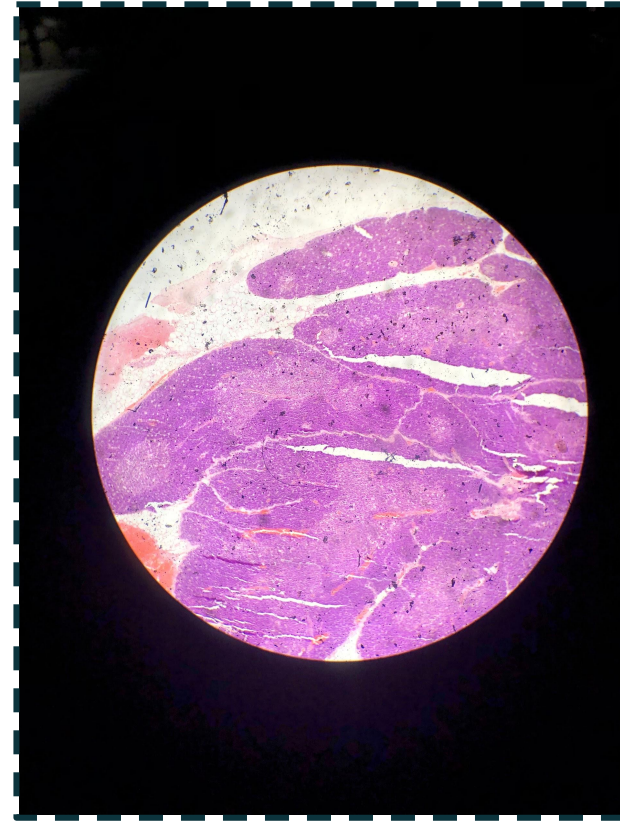
- Cortex : immature t-lymphocytes
 - Medulla : mature t-lymphocytes + (Hassall's corpuscles)
-

Q3- What is the main type of the cell ?

T-lymphocytes

Q4 - What is the function of it?

- 1- Maturation of T lymphocytes
- 2- It involutes after puberty and becomes infiltrated by adipose tissue.
- 3- Remnants of thymus remain in adult to form T lymphocytes.



See you in the next block amigos 

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Any future corrections will be in
the editing file :Click [Here](#)