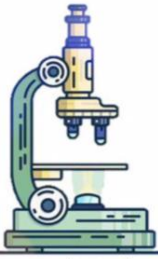




ALL Lecture of practical OSPE

***Male only**



King saud university
Histology team med438



ملاحظات للإختبار:

- 1- المحاضرة الاولى بتجي صور باقي المحاضرات بتجي مجاهر
- 2- الاسهم اللي موجودة على الصور مهمه
- 3- ممنوع كتابة الاختصارات في الاختبار لازم تكتب الاسم كامل
- 4- نفس صور المجاهر بتجي في الاختبار بس ممكن تكون الصورة اقرب او ابعد
- 5- الصور الموجودة مع المجاهر للتوضيح فقط
- 6- يفضل قراءة المحاضرات النظرية (بالذات المحاضرة الرابعة)
- 7- معمل الهيستولوجي مفتوح الان تقدر تروح المعمل وتشوف المجاهر في اوقات الدوام
- 8- مهم جدا حضور المراجعة يوم الاحد القادم
- 9- 2 ستيشن للهيستولوجي في الاختبار
- 10- الاختبار يوم الثلاثاء القادم تاريخ 23 اكتوبر الساعة 9:30 صباحا
- 11- بالتوفيق وان شاء الله الاختبار يكون سهل

CELL STRUCTURE

Nucleus

Q1- Identify the structure :

Nucleus

Q2- Location of :

- **Heterochromatin** (dark 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)

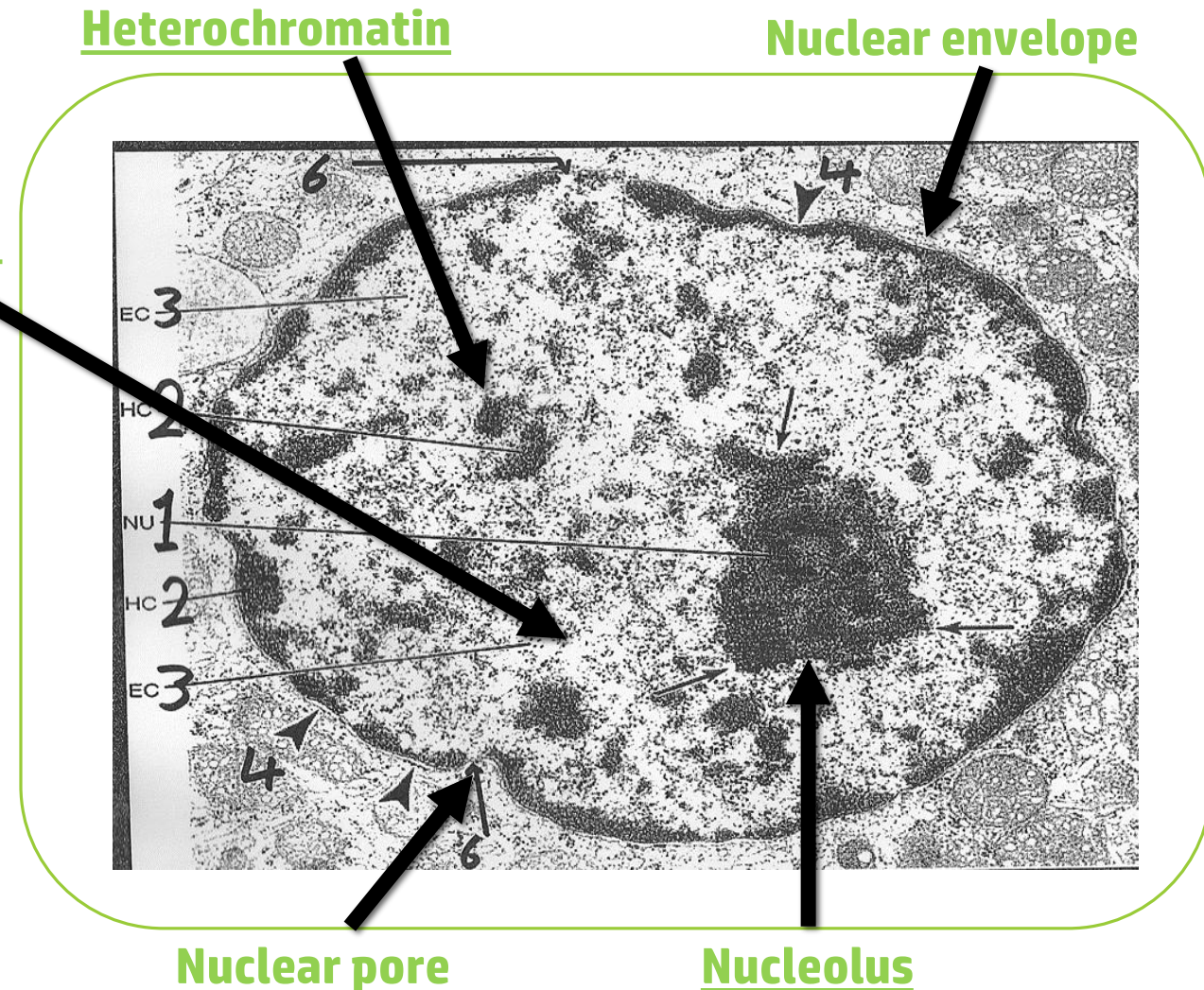
Q3- What is the function of **Nucleolus** ?

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

Euchromatin



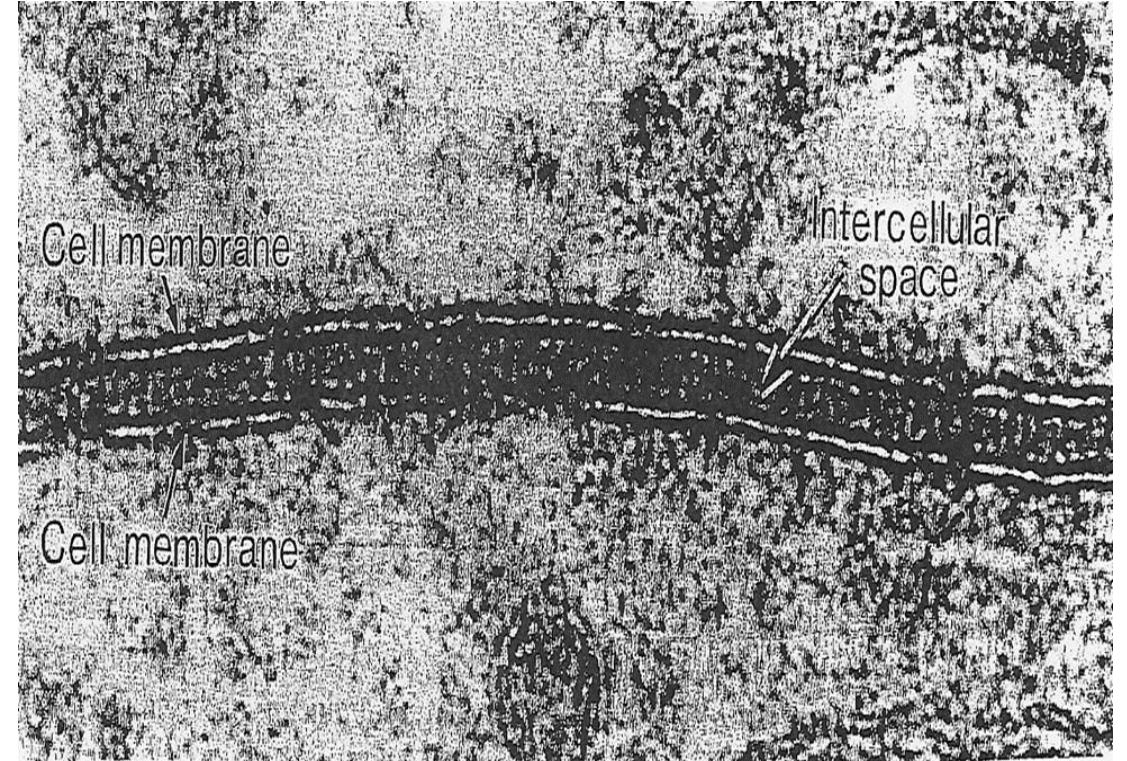
Cell membrane (trilaminar appearance)

Q1- Identify the structure? :

Cell membrane

Q2-Function of the cell membrane :

Selective barrier



Mitochondria

Q1- Identify the structure?

Mitochondria

Q2- What are Characteristics of it?

- 1) Rod-shaped
 - 2) Its wall has 2 membranes
 - 3) Can form their own proteins and undergo self replication, because they have their own DNA
- ## Q3- What is the function ?
- 1) Generation of ATP “the are called the power house”



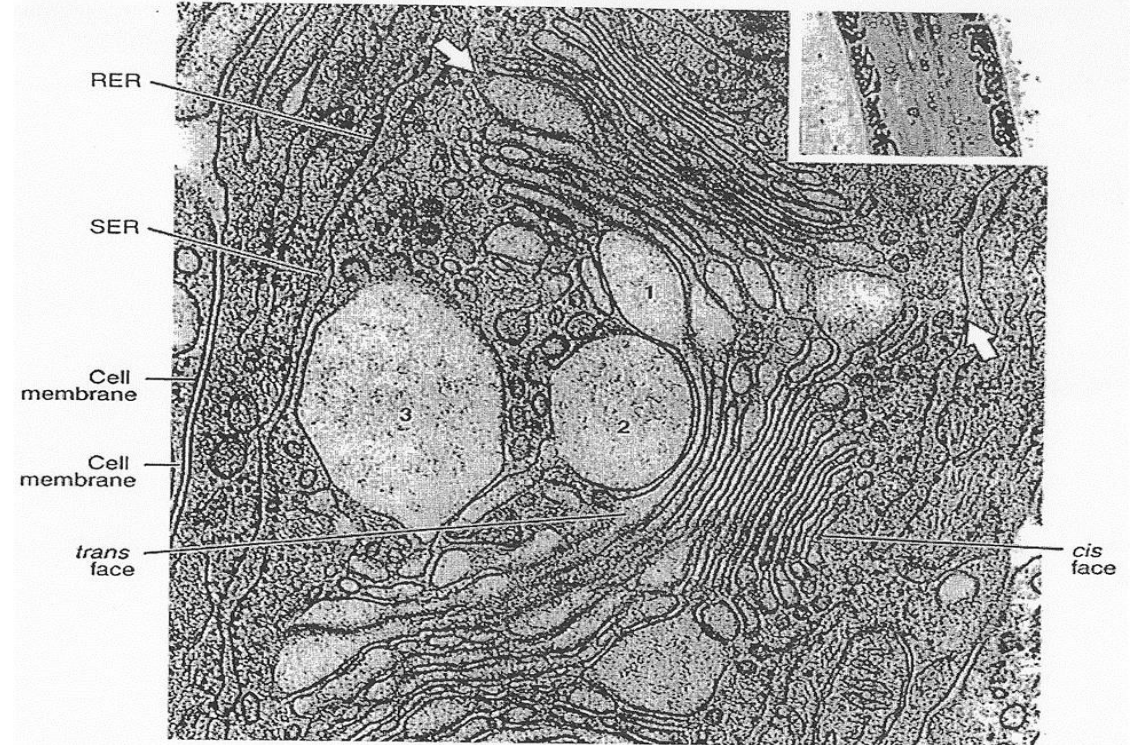
Golgi Apparatus

Q1- Identify the structure?

Golgi apparatus

Q2-What is the function?

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



Smooth Endoplasmic Reticulum

Q1- Identify the structure?

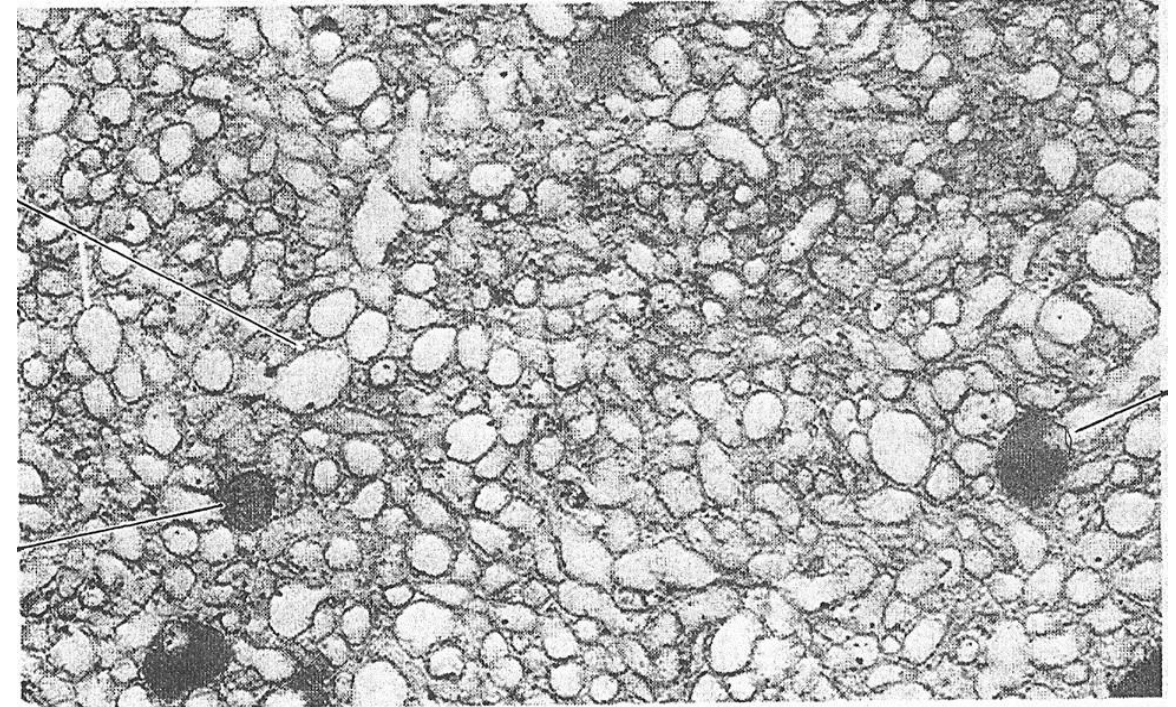
Smooth Endoplasmic Reticulum

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

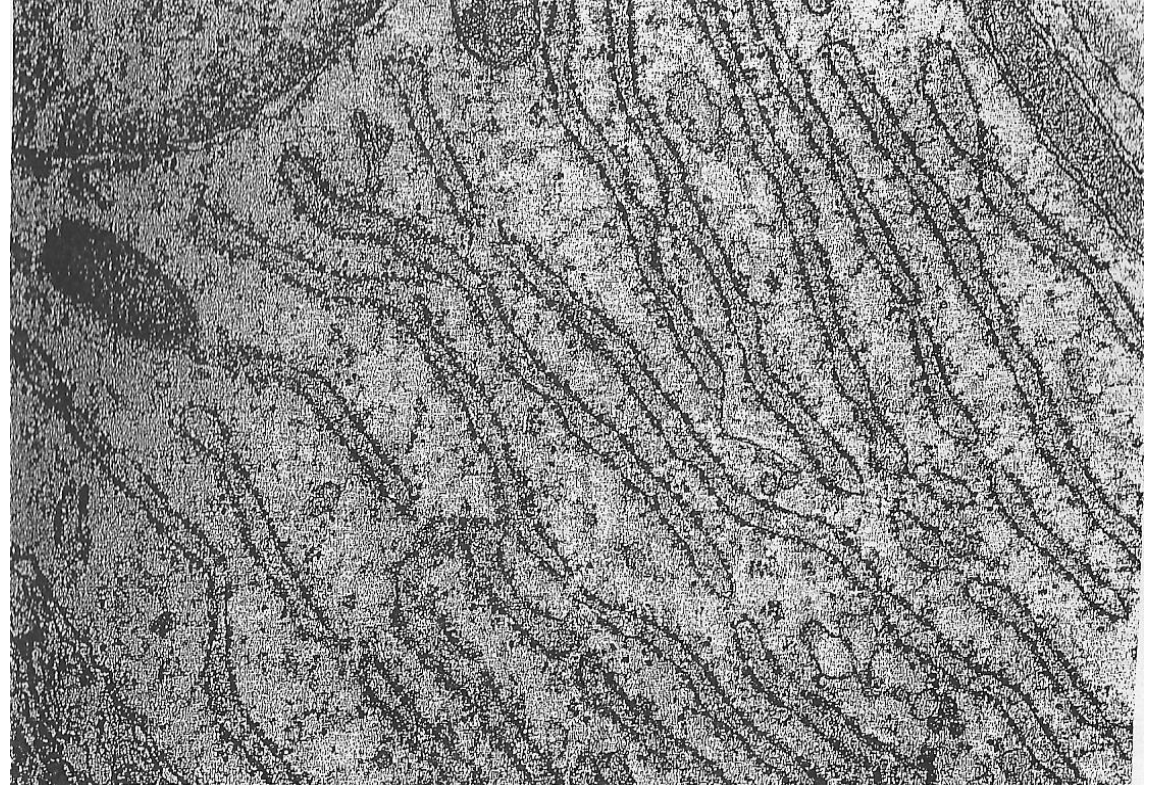
Rough Endoplasmic Reticulum

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

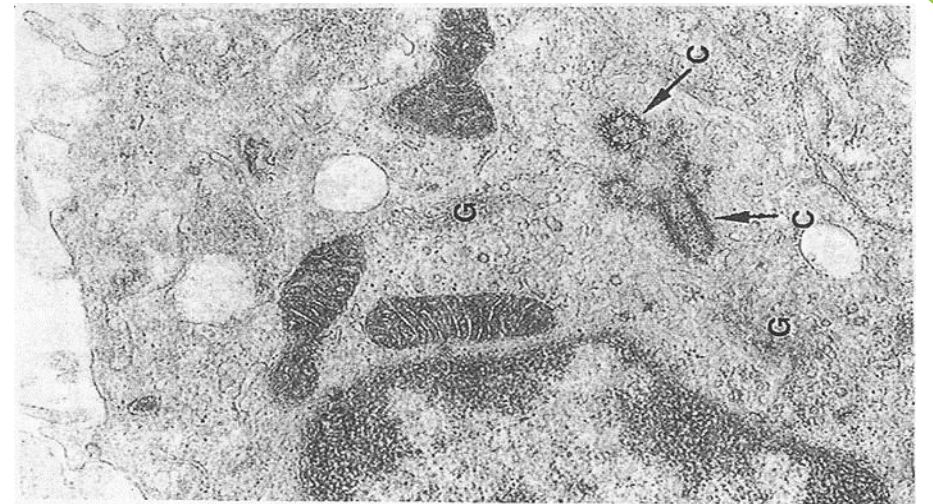
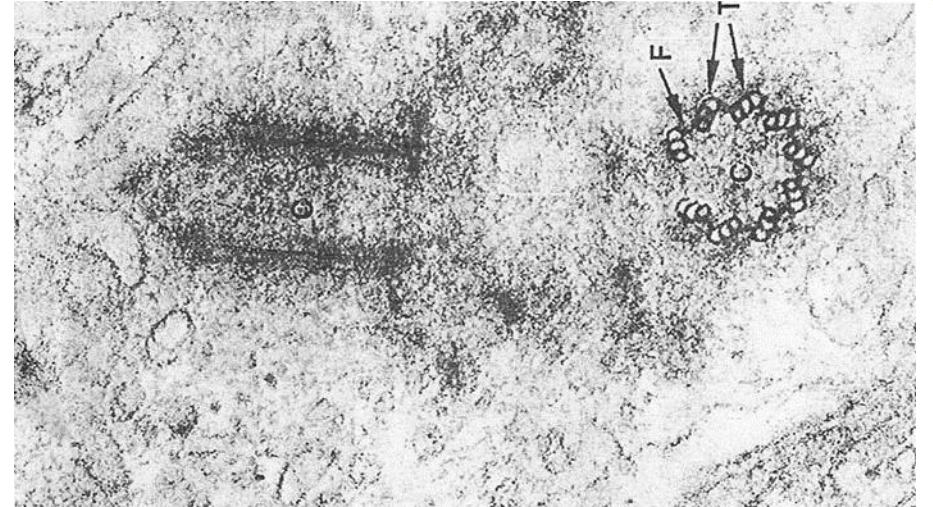
Centrioles

Q2- What are Characteristics of it?

- 2 cylinders which are perpendicular to each other
- ***their wall is made of 9 triplets of microtubules (9x3 = 27)**
- 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

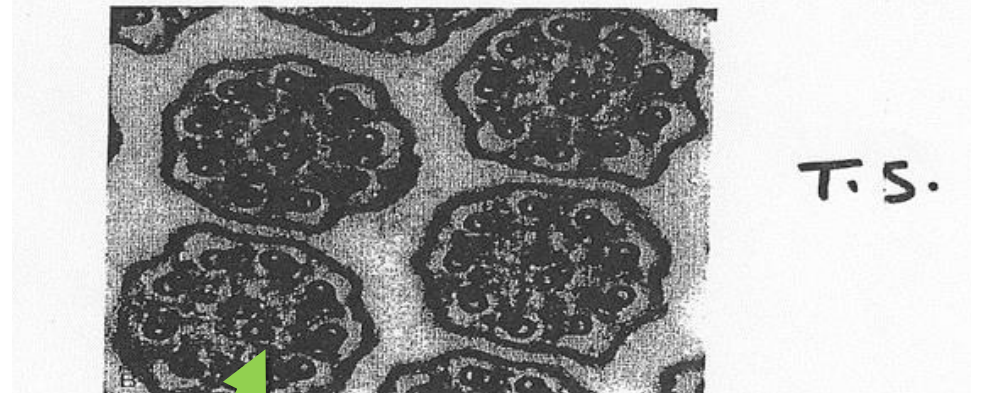
Q2- What are Characteristics of it?

Hair like striations on the free surface of some cells

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

Q3- What is the function of it?

Movement of particles or fluids in one direction



Microtubules (9 doublets and 2 central)

Microvilli

Q1- Identify the structure?

Microvilli

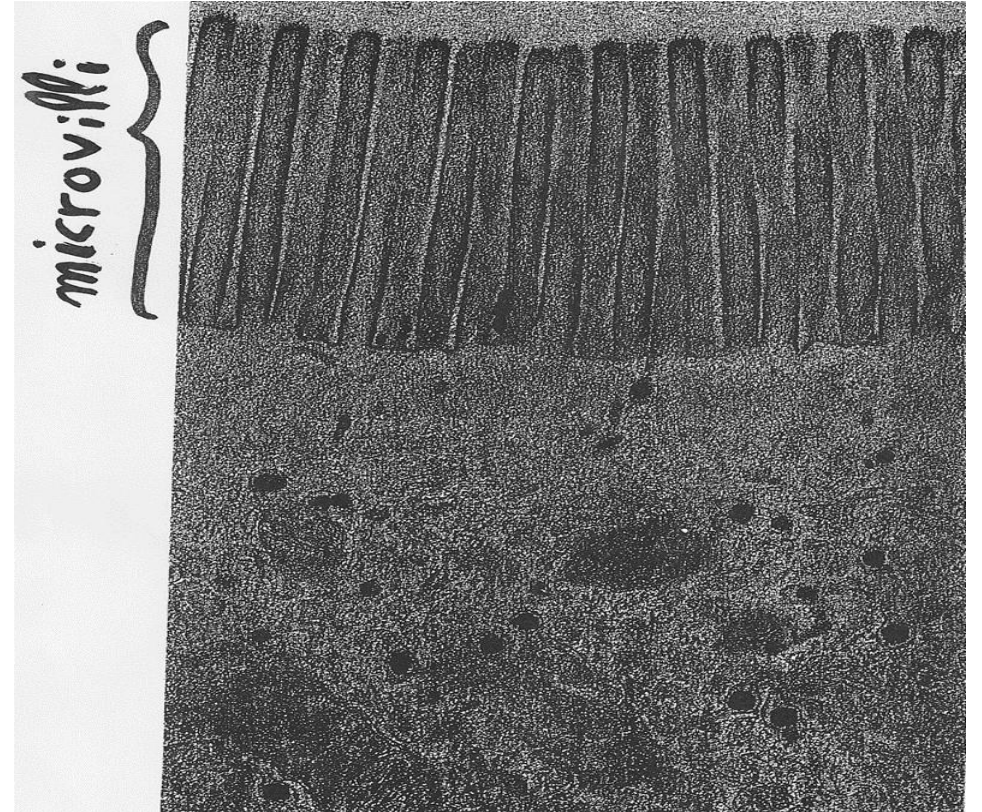
Q2- What are Characteristics of it?

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

Simple Squamous Epithelium

Q1- Identify the type of epithelium?

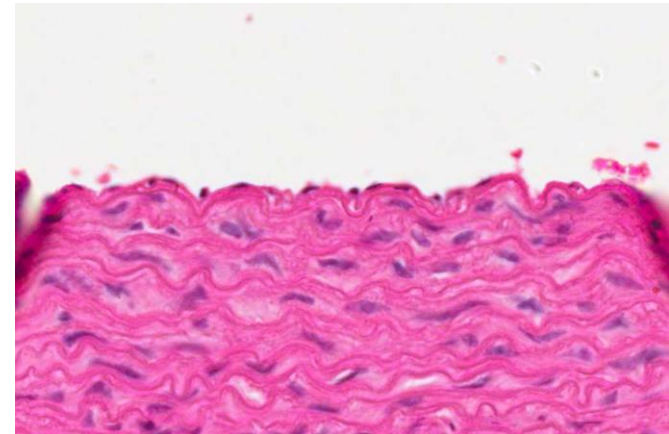
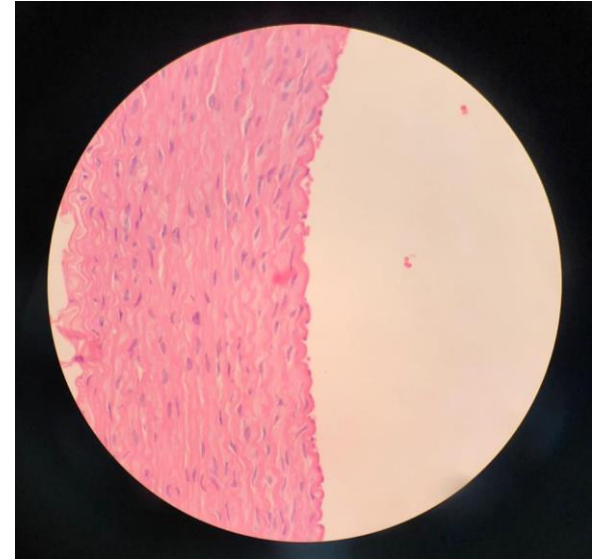
Simple squamous epithelium

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

- Endothelium of Aorta
- Alveoli of lungs

Q3- What are Characteristics of it?

- One layer
- Flat cells
- Flat nuclei



Simple Cuboidal Epithelium

Q1- Identify the type of epithelium?

Simple cuboidal epithelium

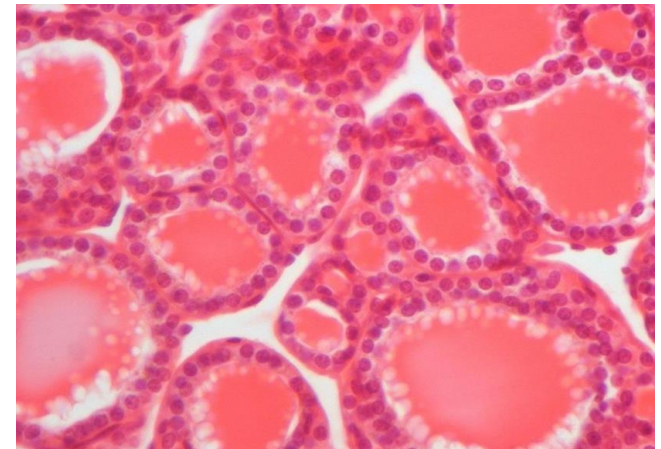
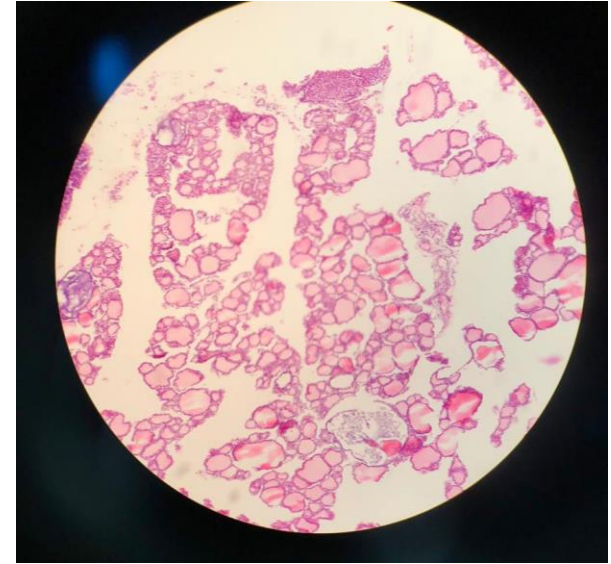
Q2- mention the organs (distribution, site & example)?

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 gall bladder (without goblet cell)

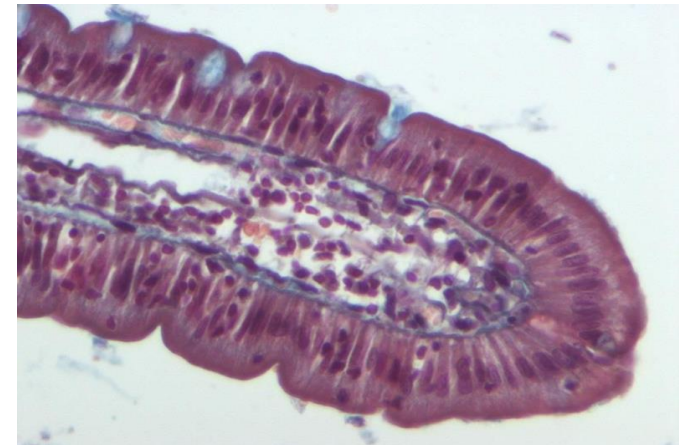
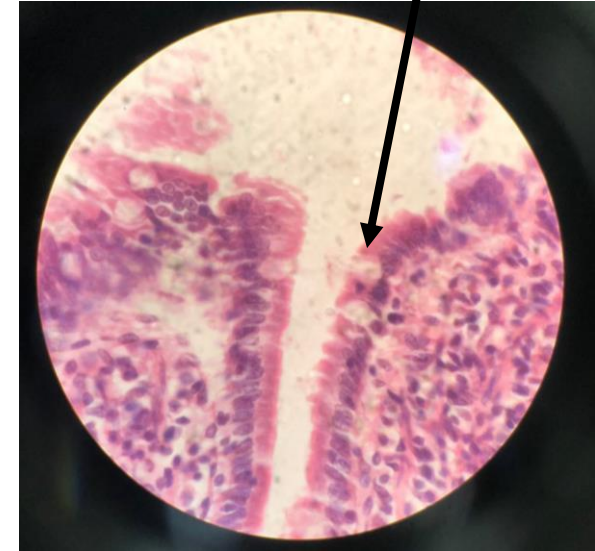
Q3- What is the function of the pointed area?

Secreting mucus

Q4- What are Characteristics of it?

- One layer
- columnar cells
- basal oval nuclei

Goblet cell



Pseudostratified columnar ciliated with goblet cells

Q1- Identify the type of epithelium?

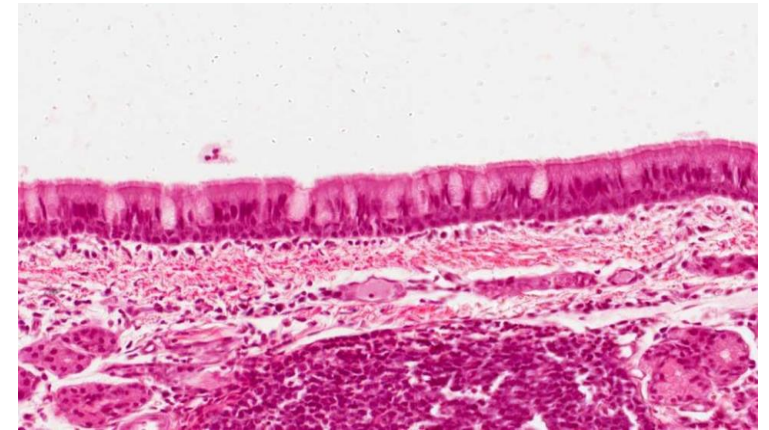
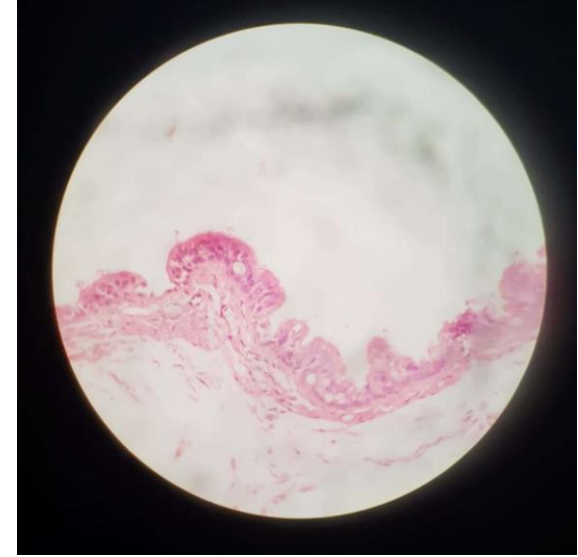
Pseudostratified Columnar epithelium “ciliated with goblet cells”

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 to surface



Keratinized Stratified Squamous Epithelium

Q1- Identify the type of epithelium?

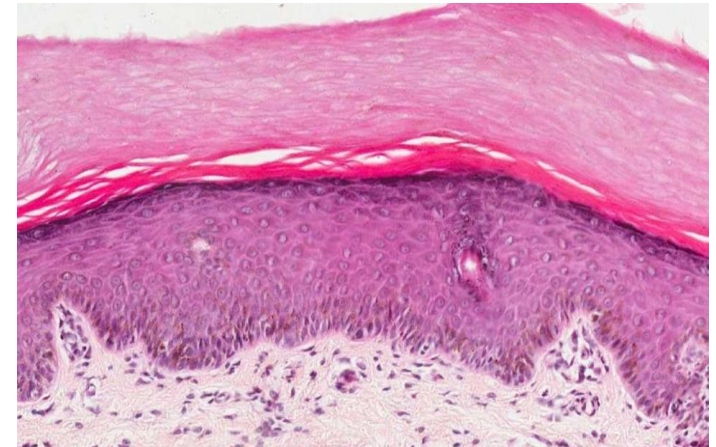
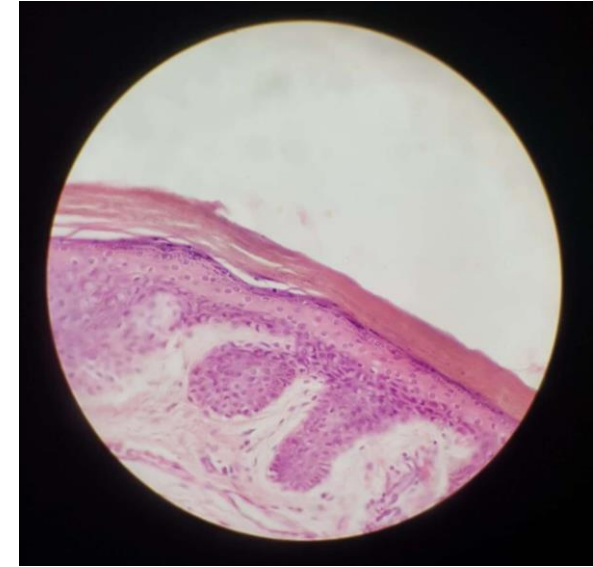
Keratinized Stratified Squamous Epithelium

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?

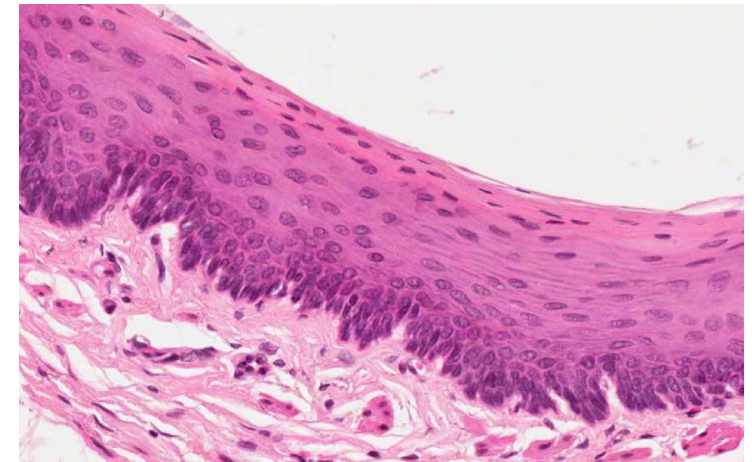
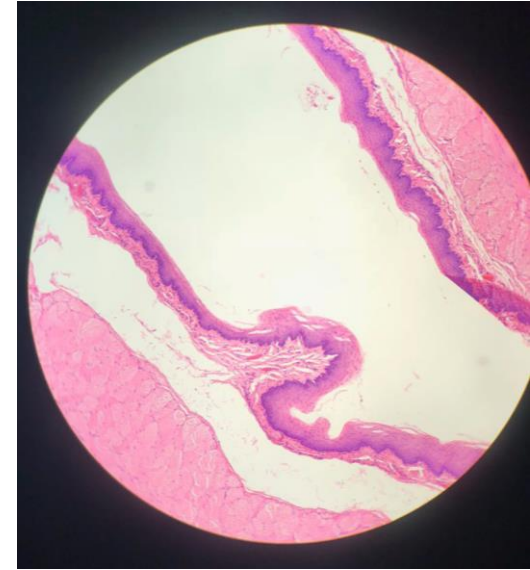
Non-keratinized Stratified Squamous Epithelium

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

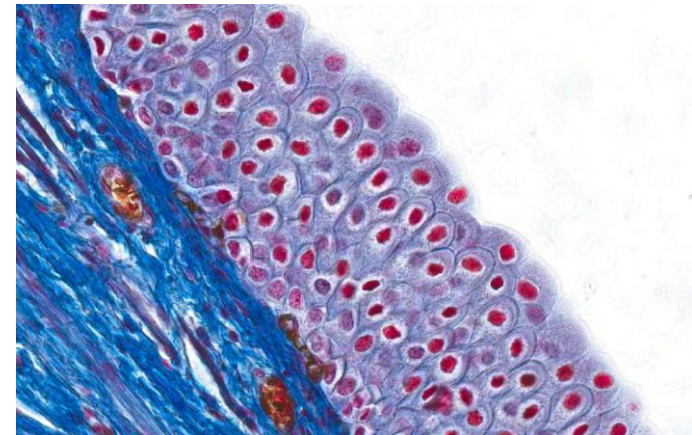
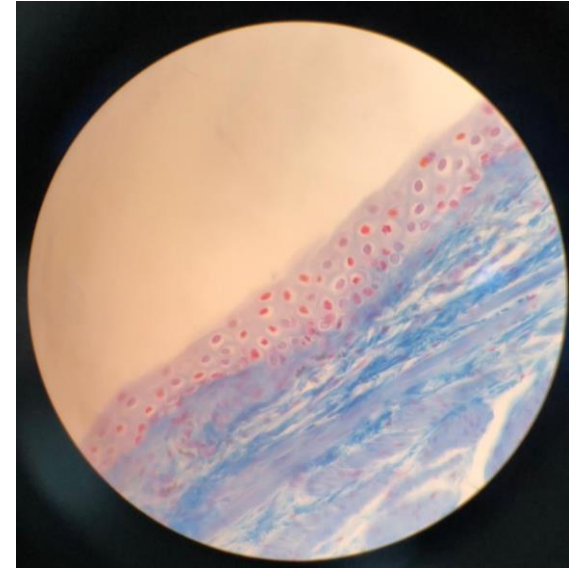
Q2- mention the organs (distribution, site & example)?

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

Dense collagenous regular connective tissue

Q1- Identify the structure?

Dense collagenous regular connective tissue

Q2- What is the type of fibers?

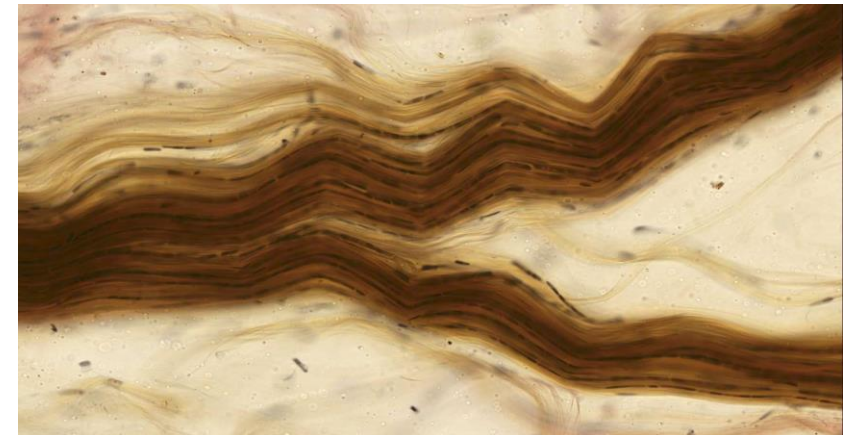
Collagen fiber (Collagen type I)

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?

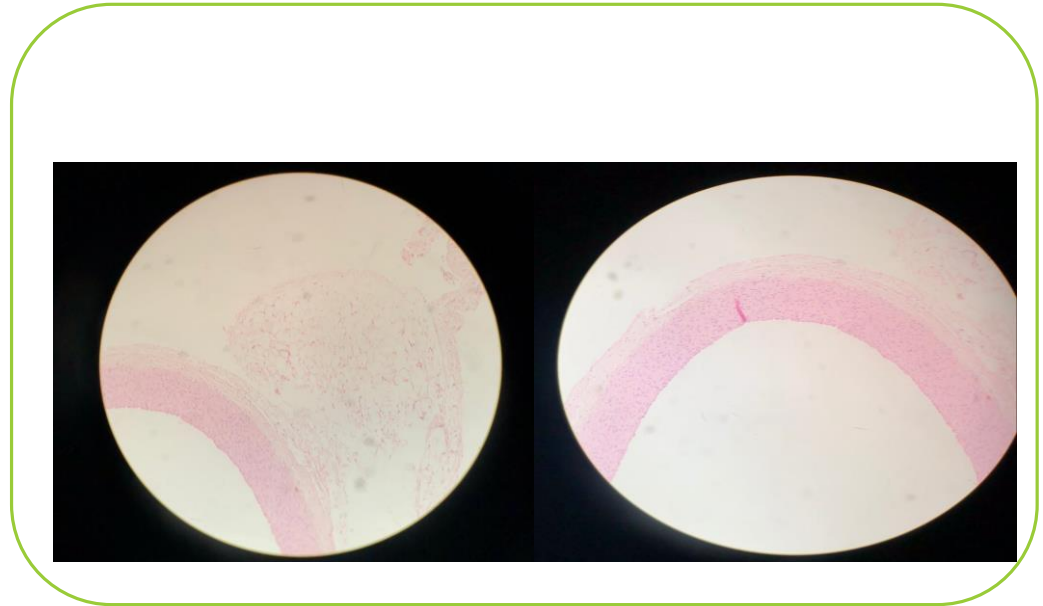
Elastic connective tissue

Q2- What is the type of cells?

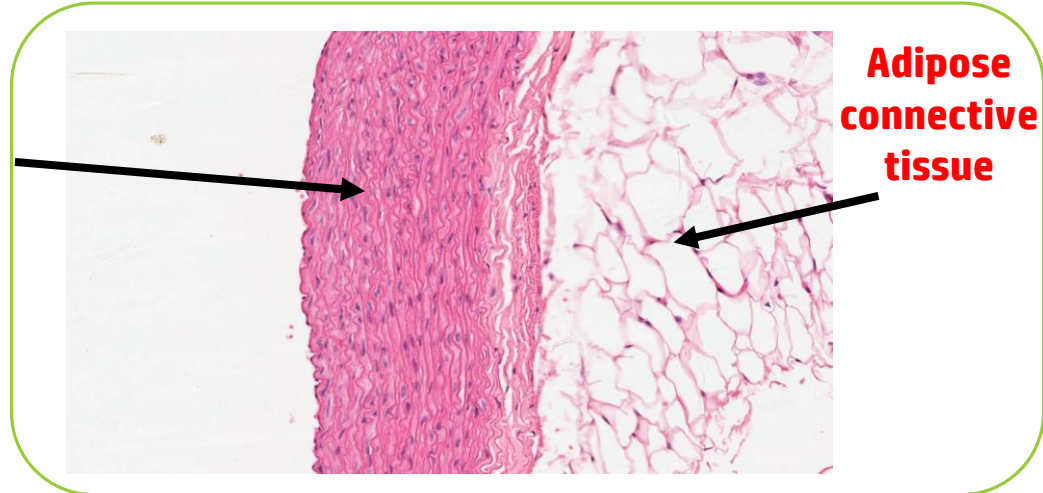
Fibroblast cells

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

Aorta



**Elastic
connective
tissue**



**Adipose
connective
tissue**

Adipose Connective Tissue

Q1- Identify the type of connective tissue?

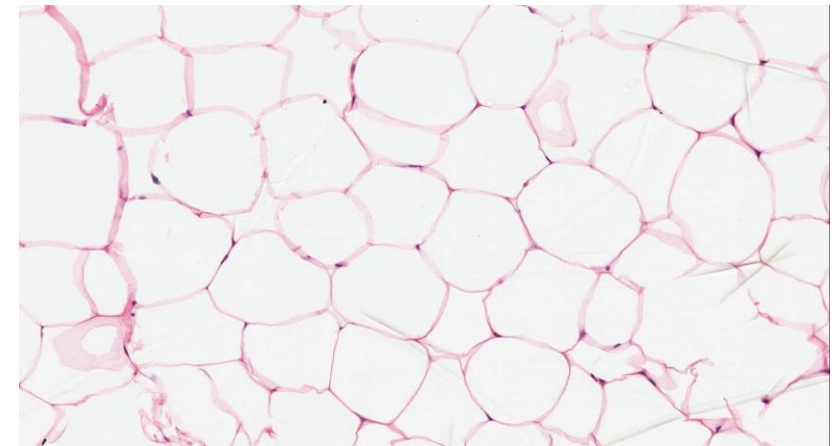
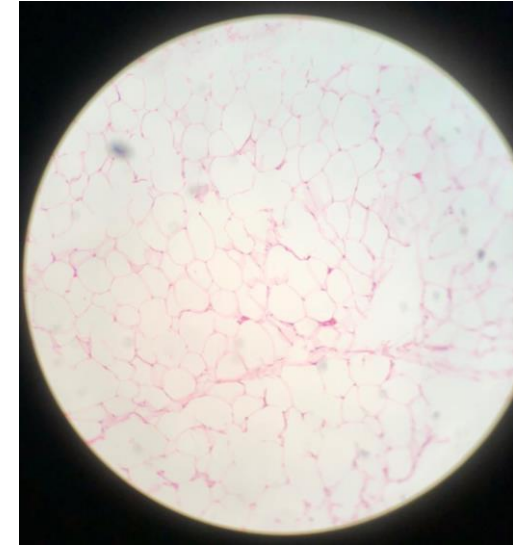
Adipose connective tissue

Q2- What is the type of cells ?

Adipocyte

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

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



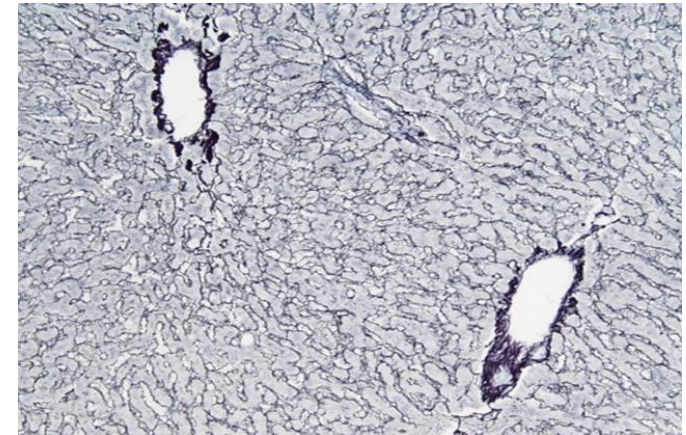
Reticular connective tissue

Q1- Identify the type of connective tissue?

Reticular connective tissue (Collagen type III)

Q2- mention the organ?

- Lymph node
- spleen
- liver



*No microscope only picture

Plasma cell

Not important

Q1- Identify the type of the cell?

Plasma cell (clock-face nucleus)

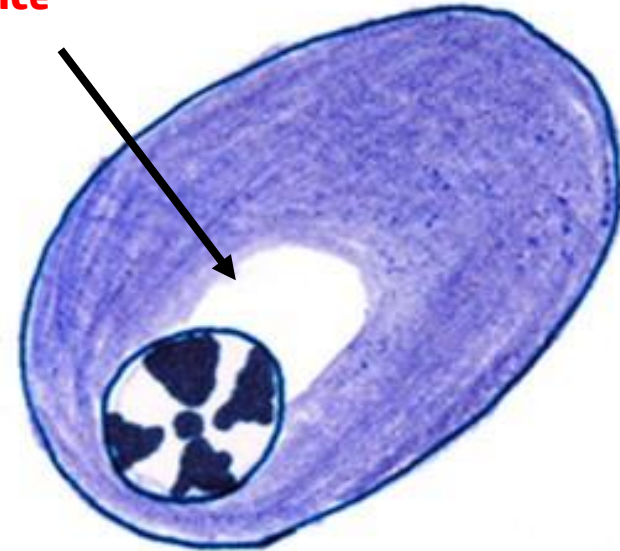
Q2- What is the function of it?

Secretion of Antibodies

Q3- What is the type of cytoplasm?

Basophilic cytoplasm

**Negative Golgi
Appearance**



*No microscope only picture

Mast cell

Not important

Q1- Identify the type of the cell?

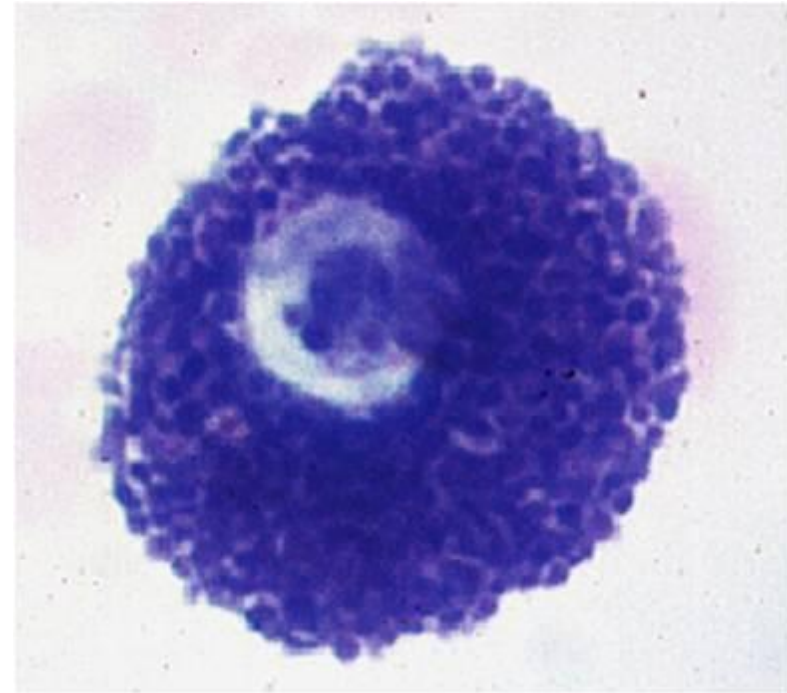
Mast cell

Q2- What is the function of it?

- Secretion of Histamine
- Secretion of heparin

Q3- What is the type of cytoplasm?

Basophilic cytoplasm-coarse secretory granules



LYMPHOID TISSUE

We recommend reading the slides for this lecture

Lymph Node

Q1- Identify the structure?

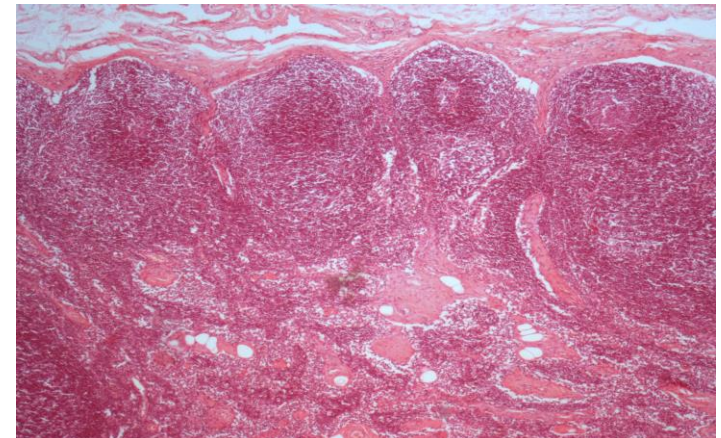
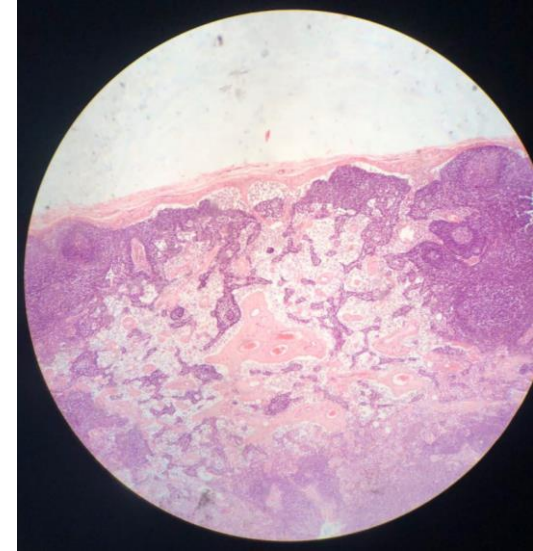
Lymph node

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- Paracortex
- 3- Medulla



Thymus

Q1- Identify the structure?

Thymus (incomplete septum)

Q3- What is the main part of the structure ?

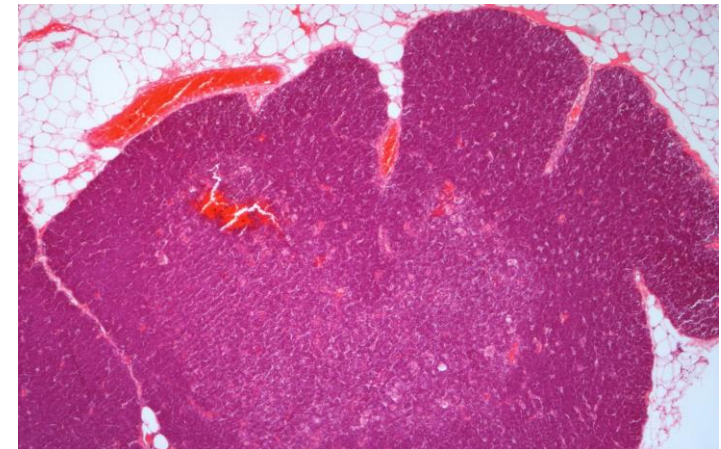
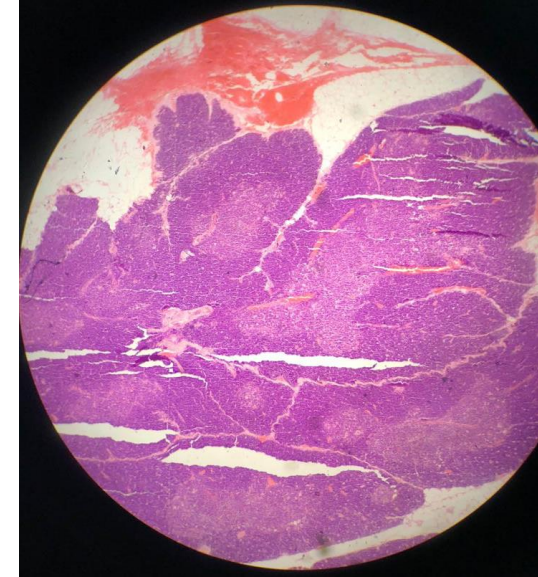
- Cortex : immature t-lymphocytes
- Medulla : mature t-lymphocytes + (Hassall's corpuscles)

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.



Palatine Tonsil

Q1- Identify the structure?

Palatine tonsil (incomplete capsule)

Q2- What is the type of epithelium?

Non-keratinized Stratified Squamous Epithelium

Q3- What is the function of it

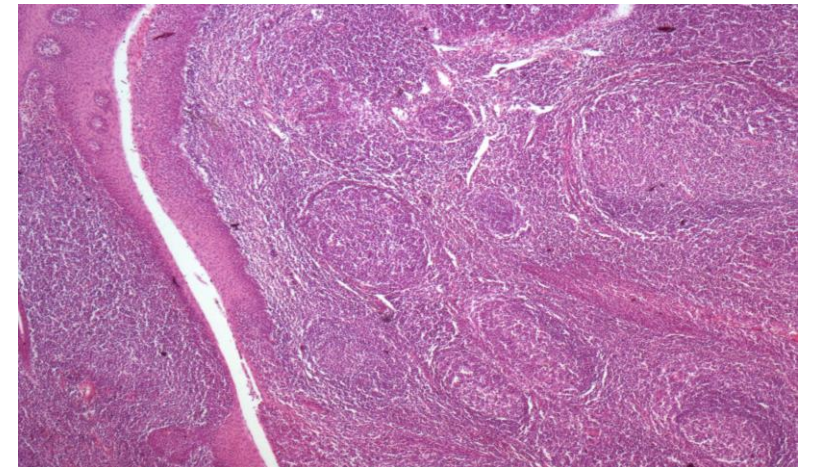
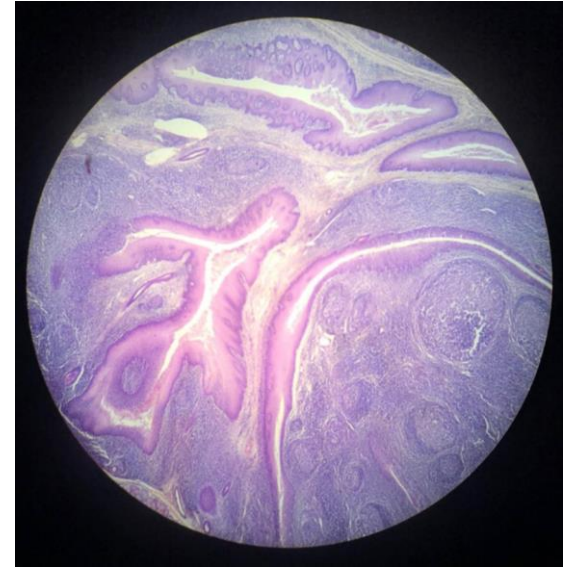
Production of antibodies

Q4- Where is located

At the entrance of oral pharynx

Q5- What is the main part of the structure ?

1. incomplete capsule
2. Stratified squamous epithelium
3. Cleft (crypt)
4. follicles



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.

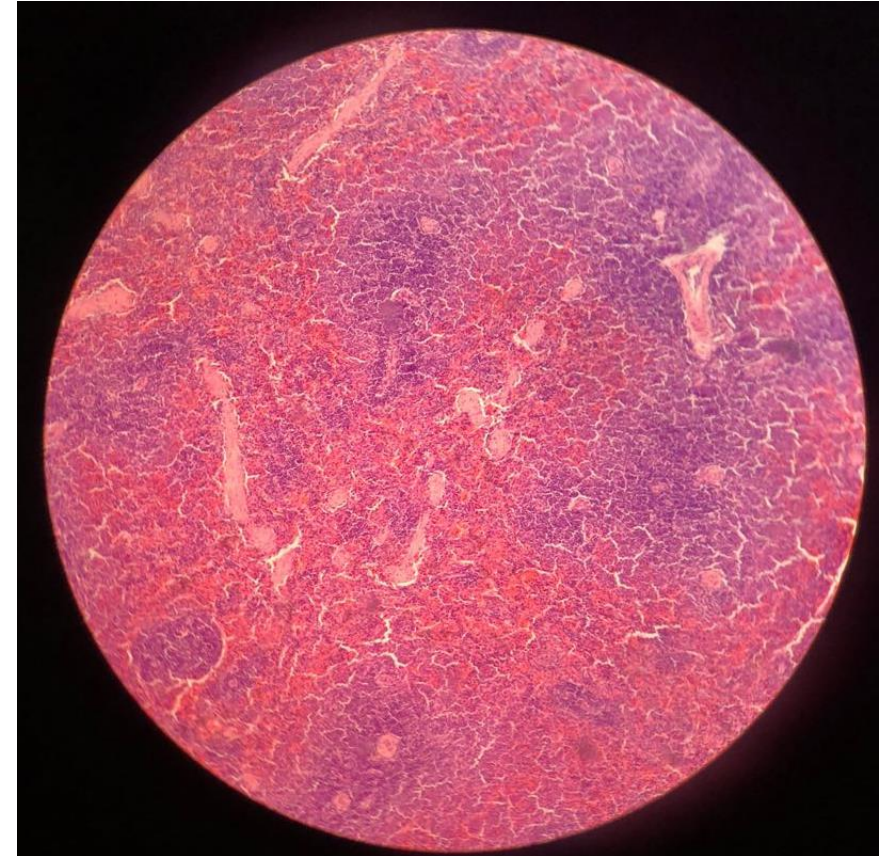
Q3- What is the main part of the structure ?

❑ White pulp

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

❑ Red pulp

- 1) Splenic cords
- 2) Splenic blood sinusoids



Team members :

- **Abdullah alassaf**
- **Abdullah altuwaijri**
- **Talal jamal aldeen**
- **Faisal alqifari**

Team leaders :

- **Abdullah shadid**
- **Noura alnasser**

See you in the next block 

