

Practical Histology

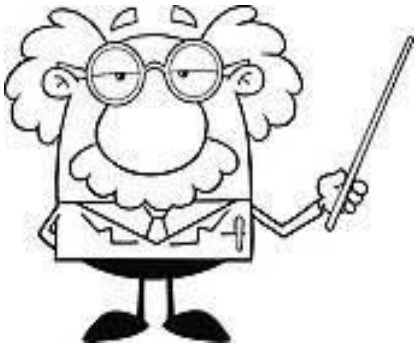
GNT Block

- Contents:
- 1. Histology of the :
 - ✓ Stomach
 - ✓ Esophagus
 - ✓ Small intestine
 - ✓ Large intestine
 - ✓ Liver
 - ✓ Gallbladder
 - ✓ Exocrine pancreas
 - ✓ Spleen

وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ

Things you need to know before the exam :

- The pictures in the exam will be the same as the ones included in the slides.
- Don't try to take short cuts during the exam so avoid using abbreviations so you don't lose marks.
- Please keep in mind that this work is done by students , so if there are any mistakes please inform us.
- This work is not by any means a reference.
- Please study hard and don't worry the exam will be easy!!



ملاحظة : *مهم جدا جدا جدا تبريطون الصور بالمعلومة بالاختبار بيحي سؤال Identify the

structure وهذا اكثر سؤال يحي

* الدكتور نبه على شيء يخطون فيه كثير من الطلاب , انه يجيب صوره لل stomach مثلا

ويقولك Mention the 4 layers هنا لازم تكتب اللايرز كاملة Mucosa and submucosa,ect

بس لمن يقولك subdivisions of the mucosa هنا تكتب Epithelium , lamina propria,ect

Esophagus

1- Mucosa:

a) Epithelium

✓ Non-Keratinized Stratified Squamous Epithelium.

b) Lamina propria

c) Muscularis Mucosae

2- Submucosa

a) Submucosal Glands

b) Meissner's plexuses

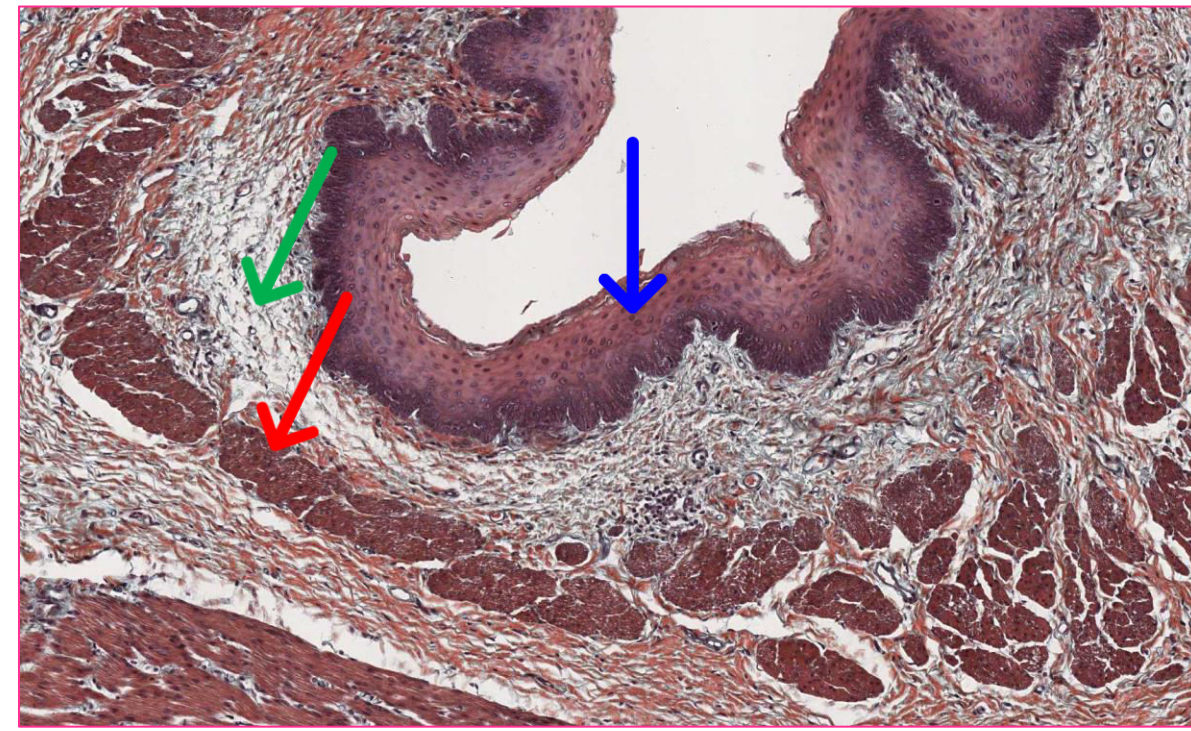
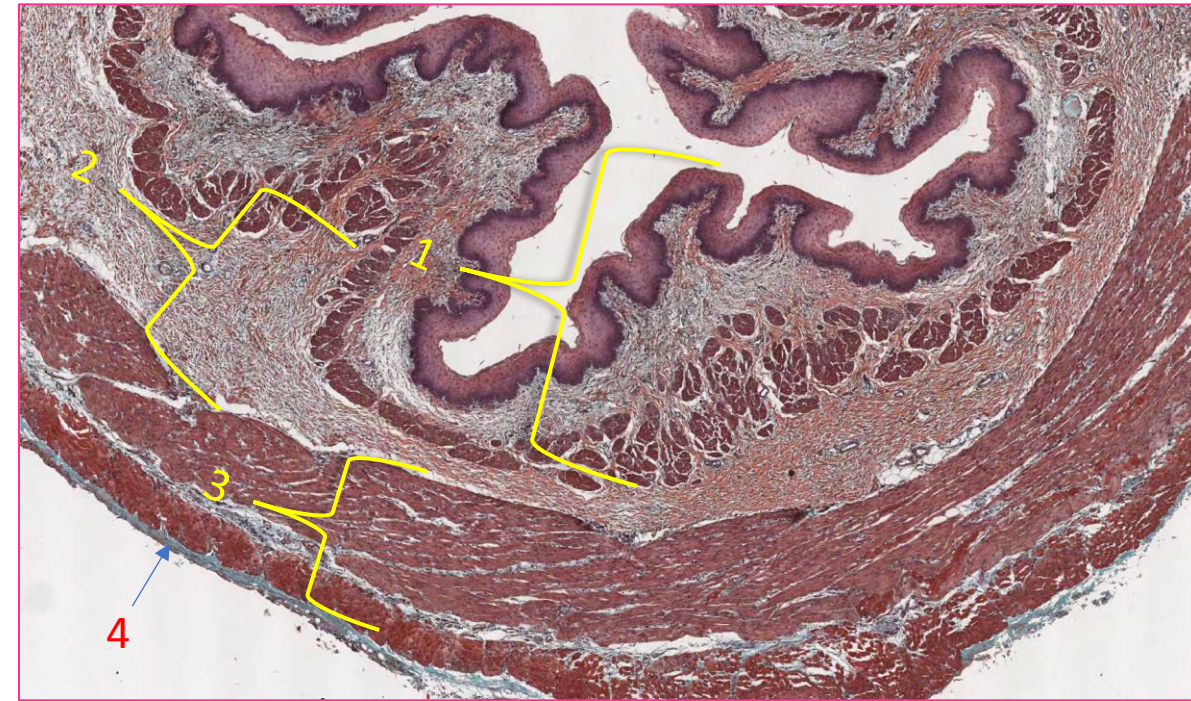
3- Muscularis Externa

a) Inner circular

b) Myenteric plexuses (Auerbach's)

c) Outer longitudinal layer.

4- Serosa (in abdominal part) or Adventitia (in cervical and thoracic parts)



Fundus of the stomach

1- Mucosa:

- a) Epithelium:
 - ✓ simple columnar epithelium
- a) Lamina propria
- b) Muscularis Mucosae
- c) Fundic Glands:**
 - ✓ Parietal cells
 - ✓ Peptic cells
 - ✓ Mucous neck cells
 - ✓ Stem cells
 - ✓ Enteroendocrine cells
 - ✓ Short pits

2- Submucosa

- a) NO submucosal glands
- b) meissner's plexuses

3- Muscularis Externa

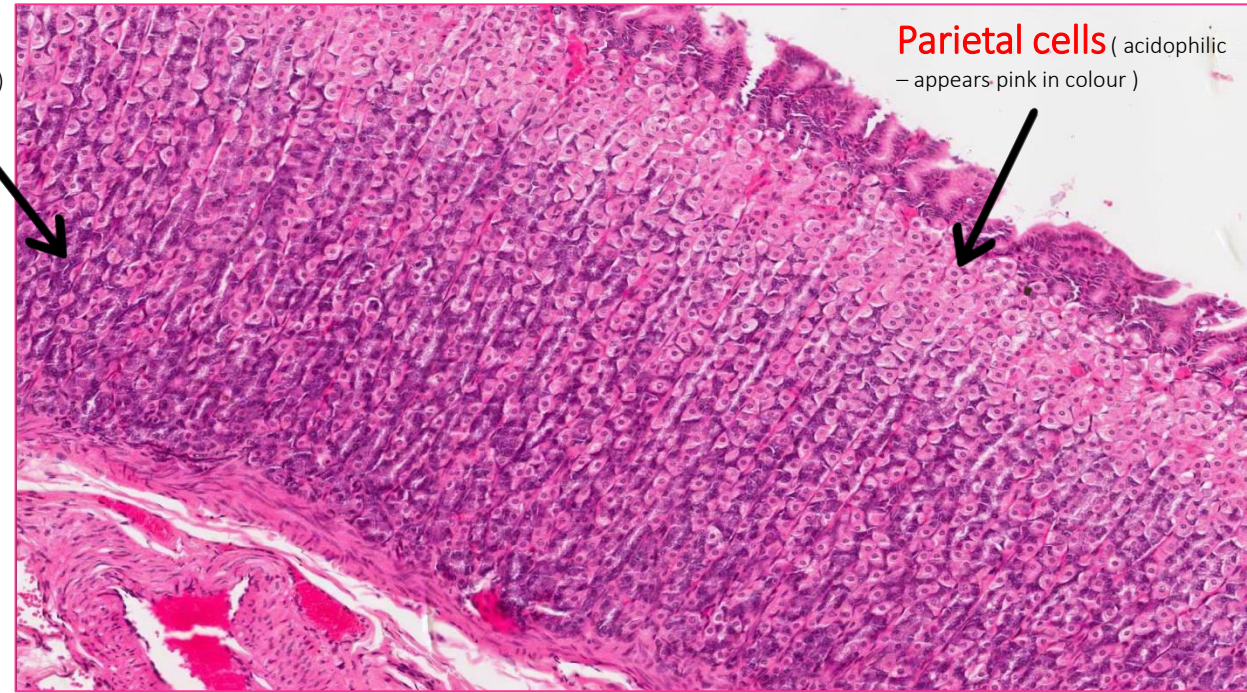
- a) Inner oblique
- b) Middle circular
- c) Myenteric plexuses (Auerbach's)
- d) Outer longitudinal

4-Serosa



Peptic cells (basophilic)

Parietal cells (acidophilic
– appears pink in colour)



Pylorus of the stomach

1- Mucosa:

- a) Epithelium:
 - ✓ simple columnar epithelium
- b) **Pyloric Glands** : ★
 - ✓ Mucous neck cells
 - ✓ Few parietal cells
 - ✓ Their pits are deep
 - ✓ Stem cells
 - ✓ No peptic (chief) cells
 - ✓ Enteroendocrine cells
- c) Lamina propria
- d) Muscularis Mucosae

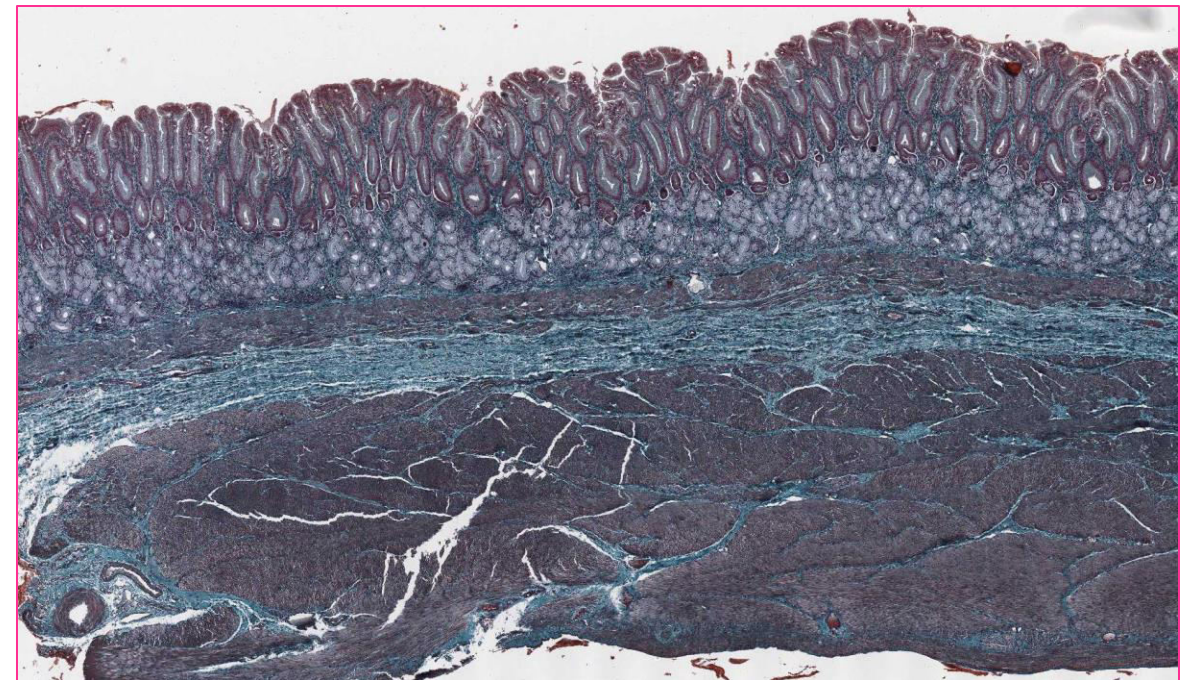
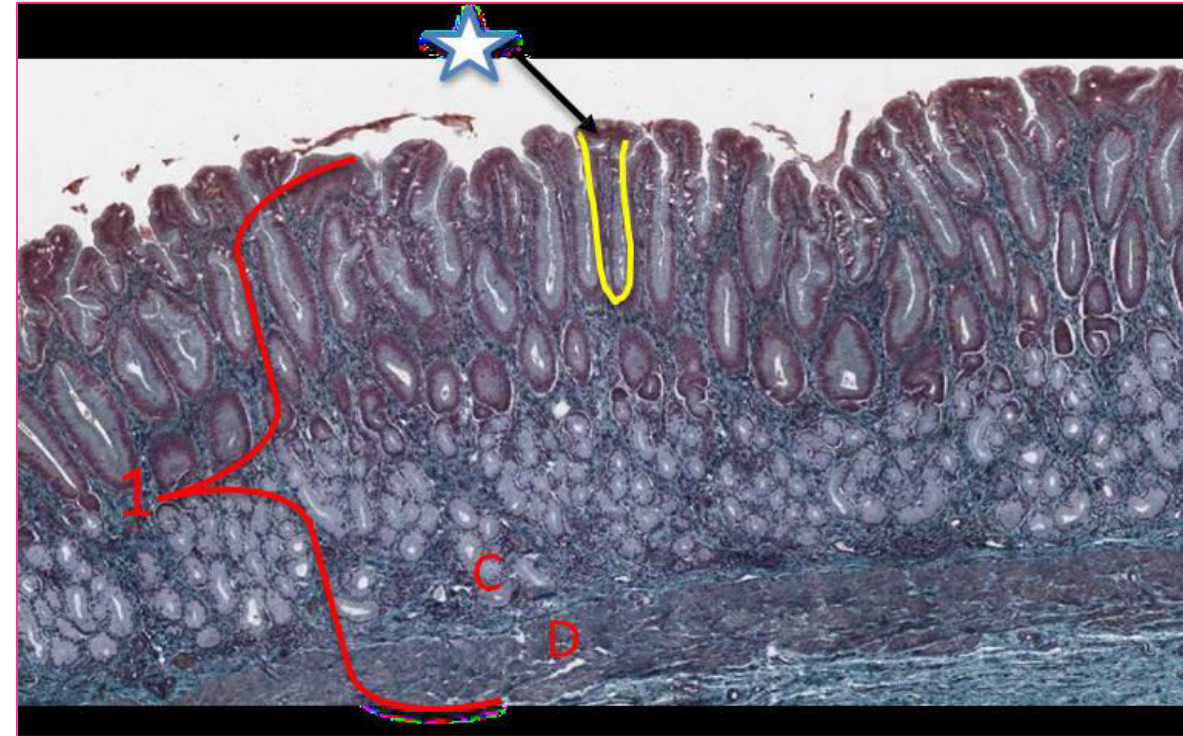
2- Submucosa

- a) NO submucosal glands
- b) Meissner's plexuses

3- Muscularis Externa

- a) Inner circular
- b) Myenteric plexuses (Auerbach's)
- c) Outer longitudinal

4-Serosa



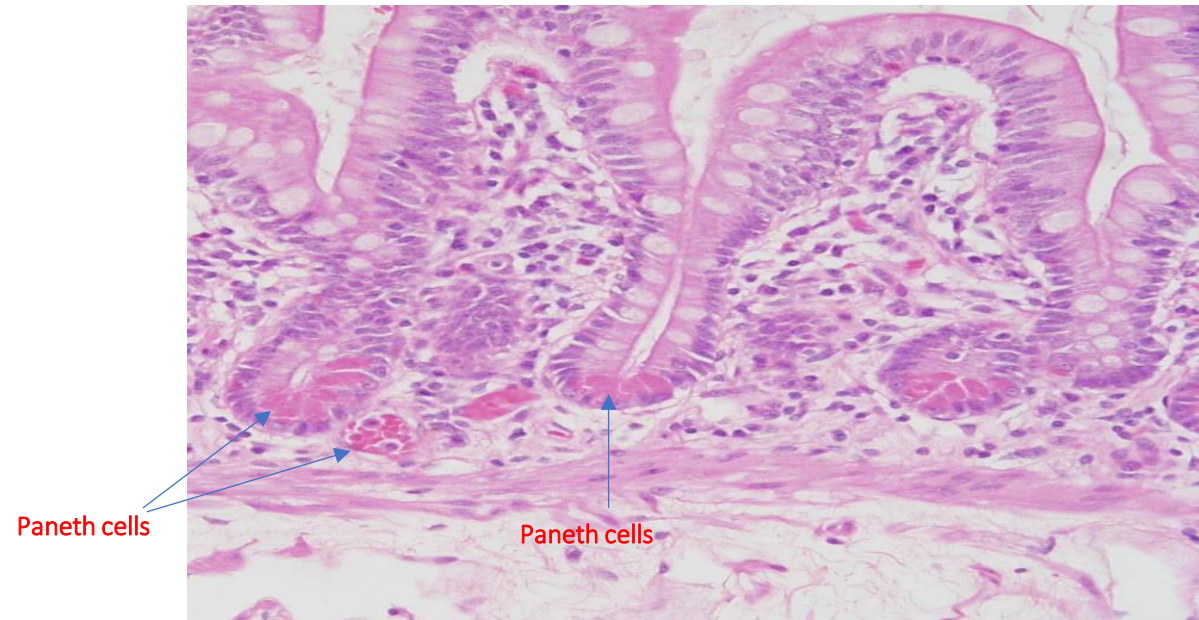
Intestinal villi and crypts

1-Villi:

- a) Covering epithelium
- b) Central core of C.T contains :
 - ✓ Lymphocytes
 - ✓ Lacteal

2-Crypts :

- a) Columnar absorptive cells.
- b) Goblet cells
- c) Enteroendocrine (EE) cells
- d) Paneth cells** (at the base of the crypt)
- e) Stem cells



Duodenum

1- Mucosa (Shows villi and crypts) :

a) Epithelium lining :

• Villi :

1. simple columnar epithelium (brush border) with goblet cells

• crypts of lieberkuhn :

1. Paneth cells

2. Goblet cells

3. Simple columnar epithelium (brush border)

4. Stem cells

5. M cells over lymphoid nodules

b) Lamina propria

c) Muscularis Mucosae

2- Submucosa

a) **Brunner's glands** (seromucus glands)

b) meissner's plexuses

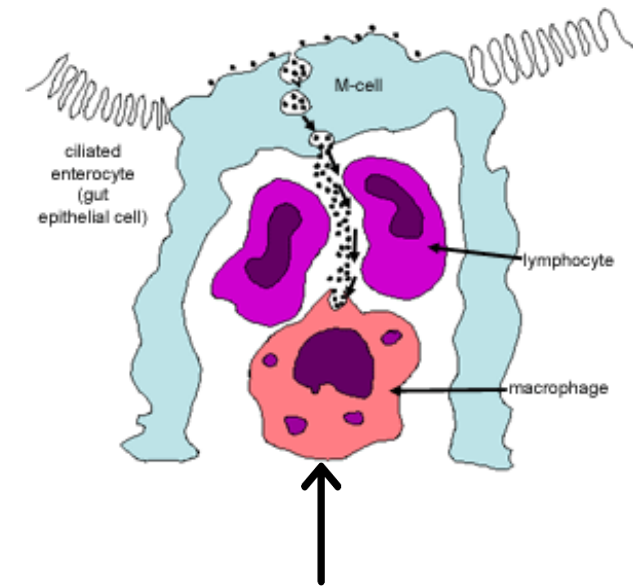
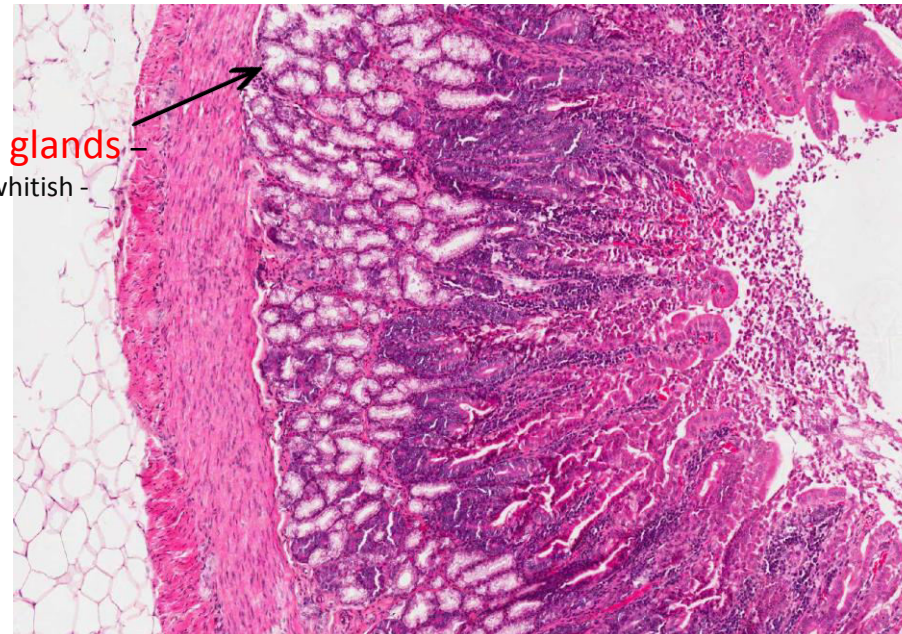
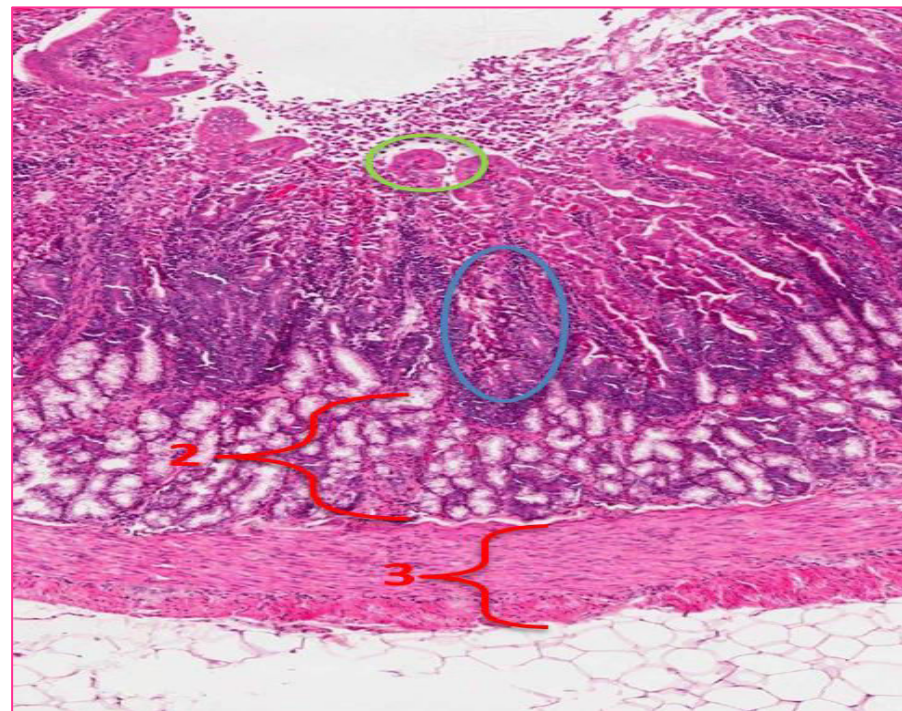
3- Muscularis Externa

a) Inner circular

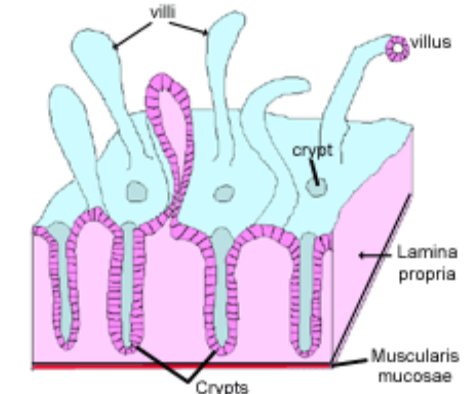
b) Myenteric plexuses (Auerbach's)

c) Outer longitudinal

4-Serosa



Recommended by the doctor 😊



Ileum

1- Mucosa:

a) Epithelium lining (Similar to the deudenum) :

- ✓ simple columnar epithelium with goblet cells
- ✓ M cells over lymphoid nodules

b) Lamina propria

- ✓ Has lymphoid nodules (**Peyer's patches**) that extend to the submucosa.

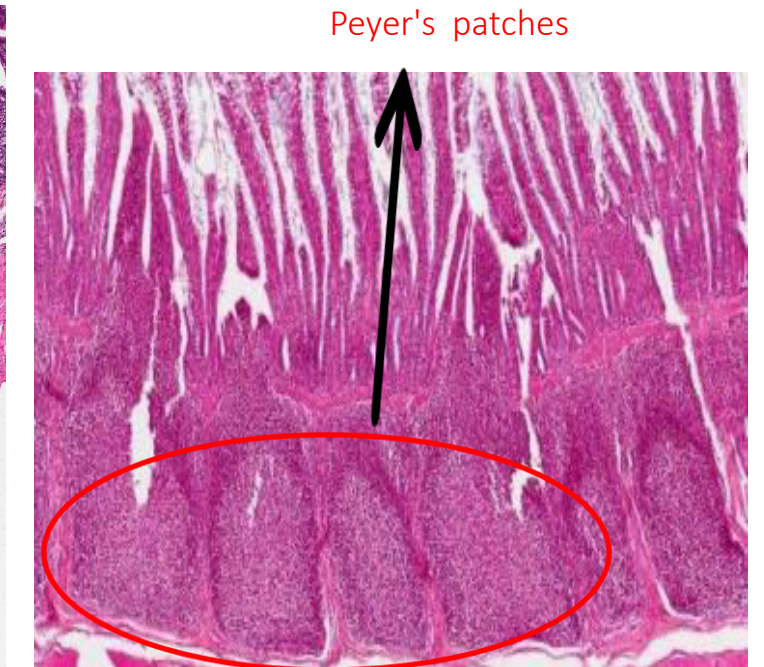
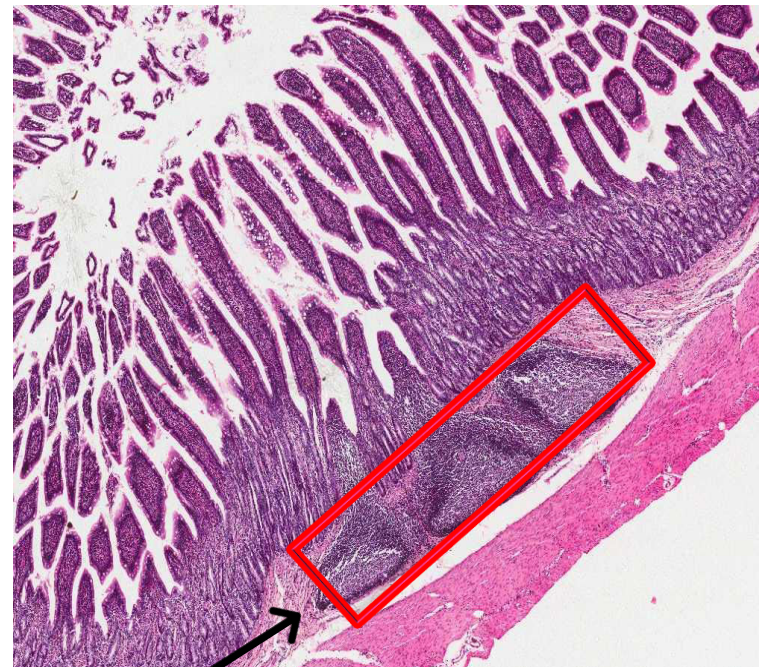
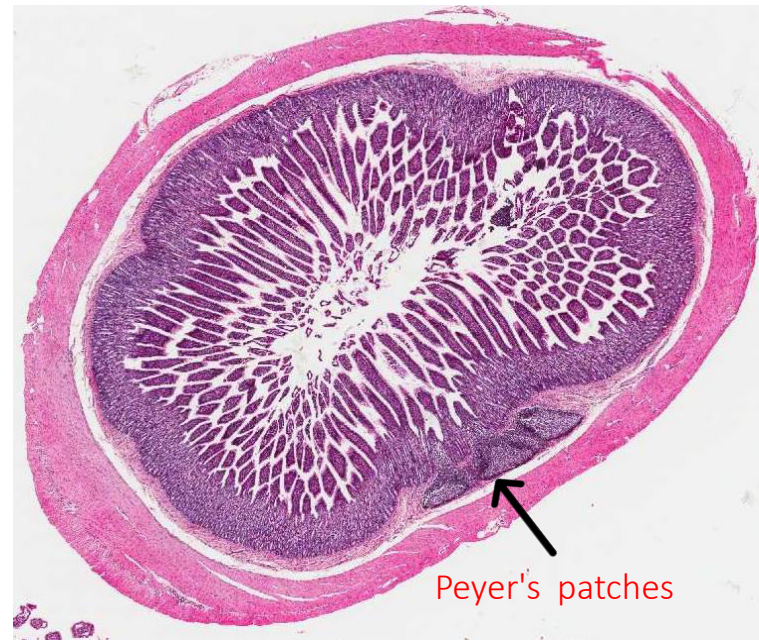
c) Muscluaris Mucosae

2- Submucosa

3- Muscularis Externa:

- a) Inner circular
- b) Myenteric plexuses (Auerbach's)
- c) Outer longitudinal

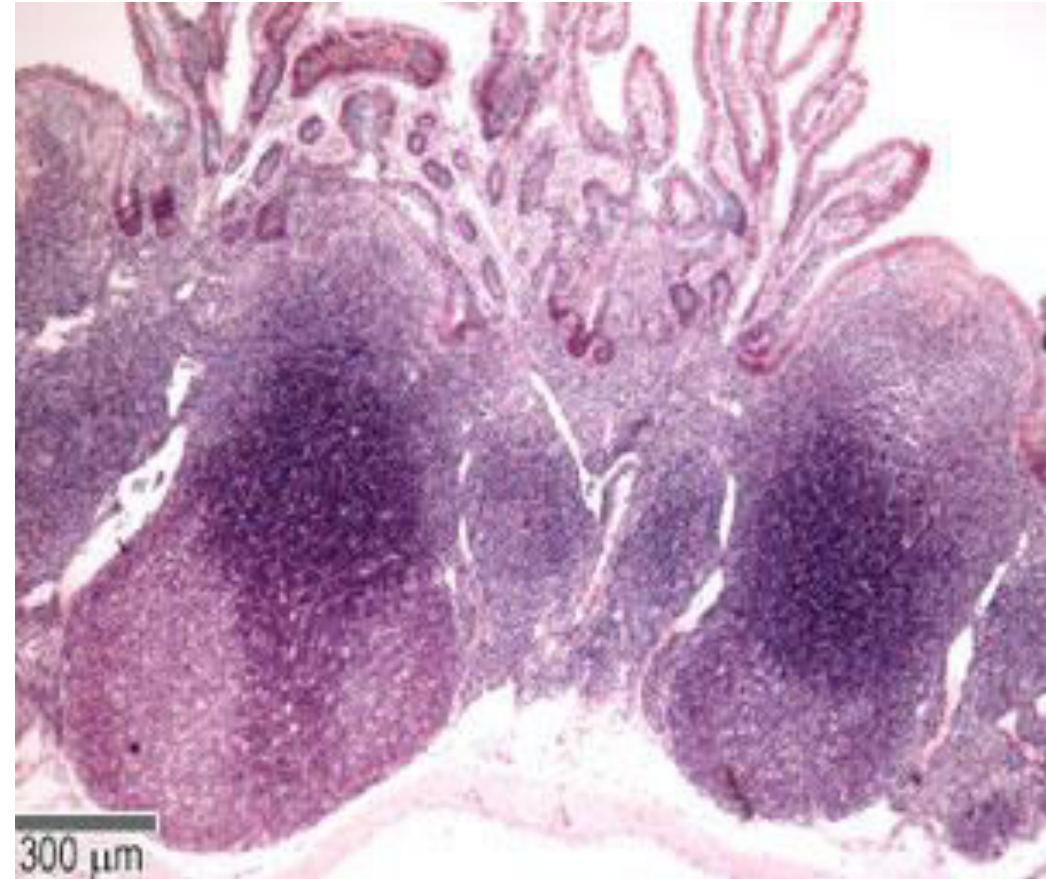
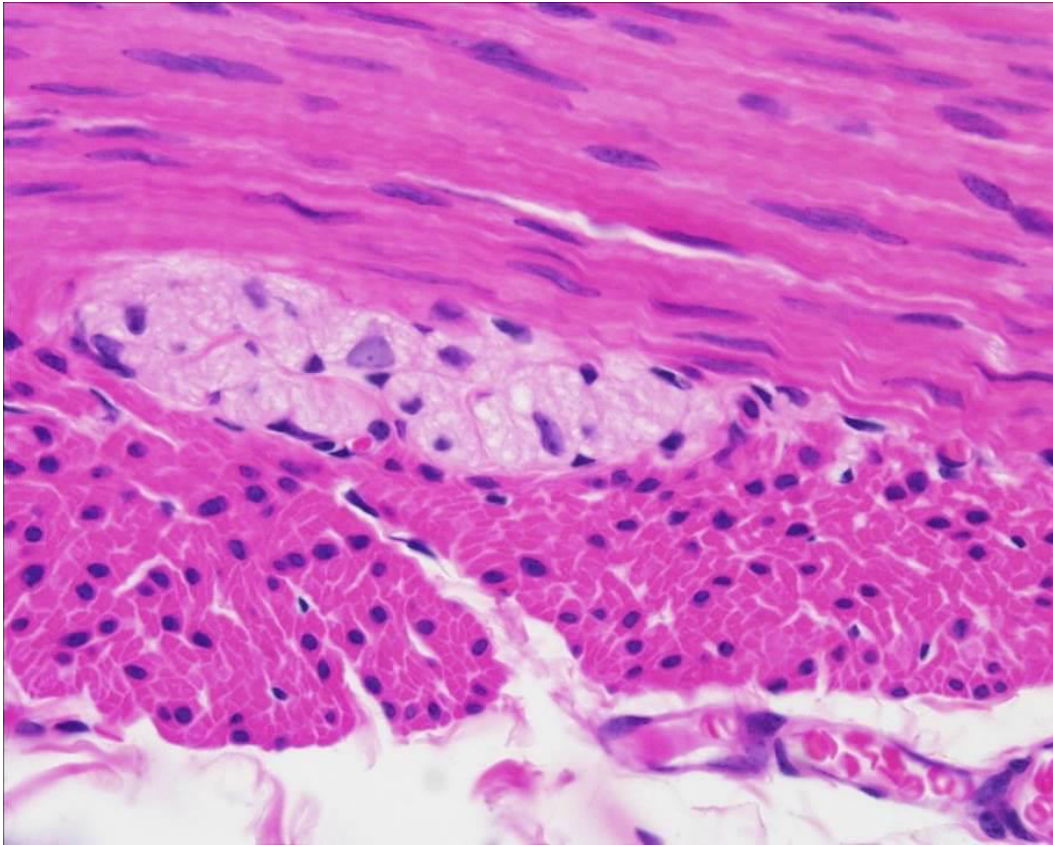
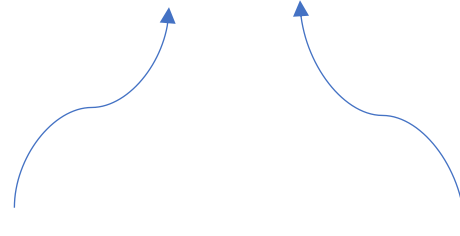
4-Serosa



Peyer's Pathches is in front of mesentery attachment

Ileum

Recommended by
the doctor 😊



Colon

1- Mucosa (Shows only *crypts*) :

a) Epithelium lining :

- ✓ simple columnar epithelium with goblet cells

b) Lamina propria :

- ✓ Contains frequent **lymphatic nodules** (White circle)

c) Muscularis Mucosae

NO VILLI

2- Submucosa

3- Muscularis Externa

a) Inner circular

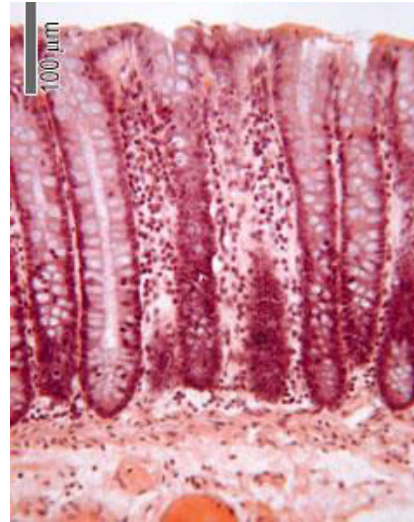
b) Myenteric plexuses (Auerbach's)

c) Outer longitudinal (has **Teniae coli**).

4-Serosa (has **appendices epiploicae**).

Cells lining the crypts of the colon are:

1. Surface columnar absorptive cells.
2. Goblet cells.
3. Enteroendocrine cells.
4. Stem cells.
5. M-cells.



Appendix

1- Mucosa:

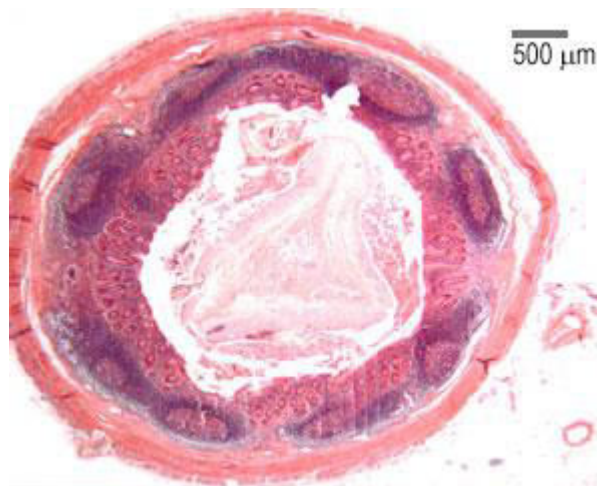
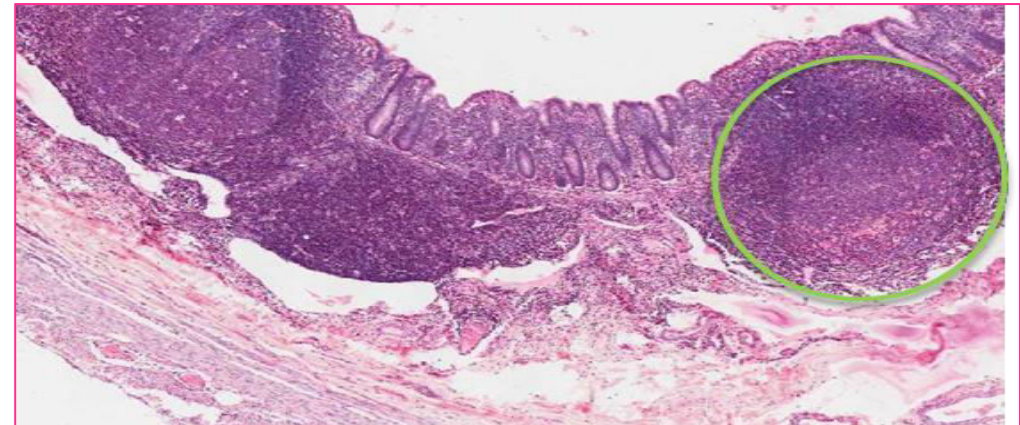
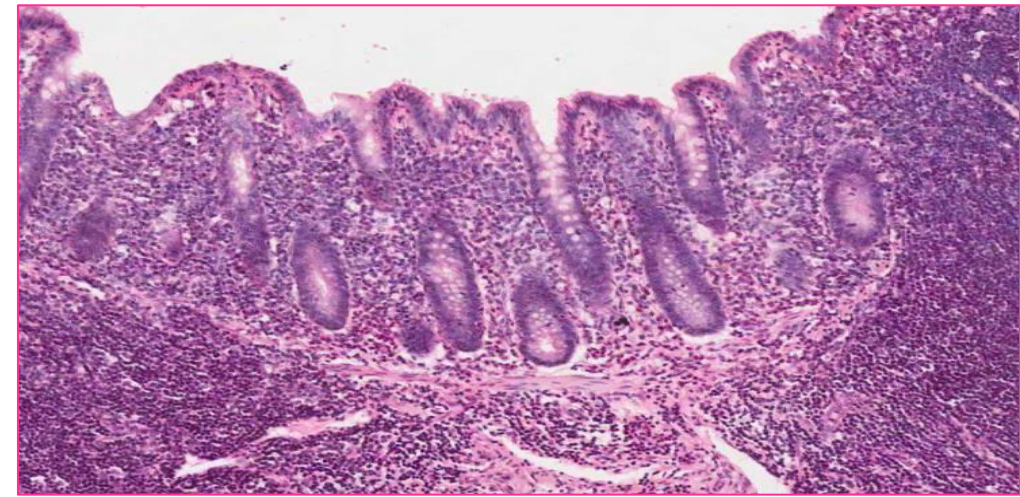
- a) Epithelium lining (similar to the Colon) :
 - ✓ simple columnar epithelium with goblet cells
- b) Lamina propria
 - ✓ Contains lymphoid nodules
- c) Muscularis Mucosae

2- Submucosa

3- Muscularis Externa:

- a) Inner circular
- b) Myenteric plexuses (Auerbach's)
- c) Outer longitudinal

4-Serosa



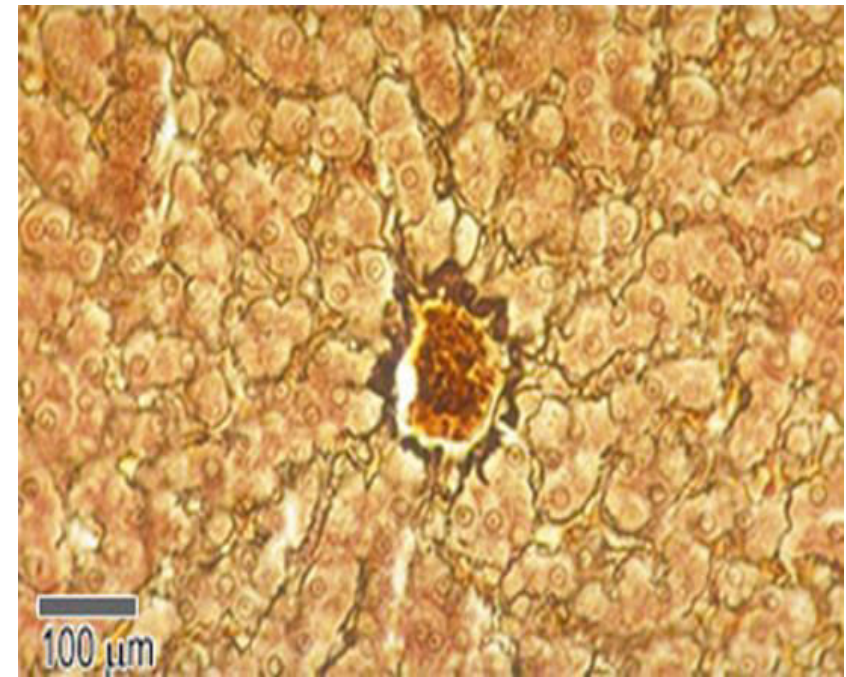
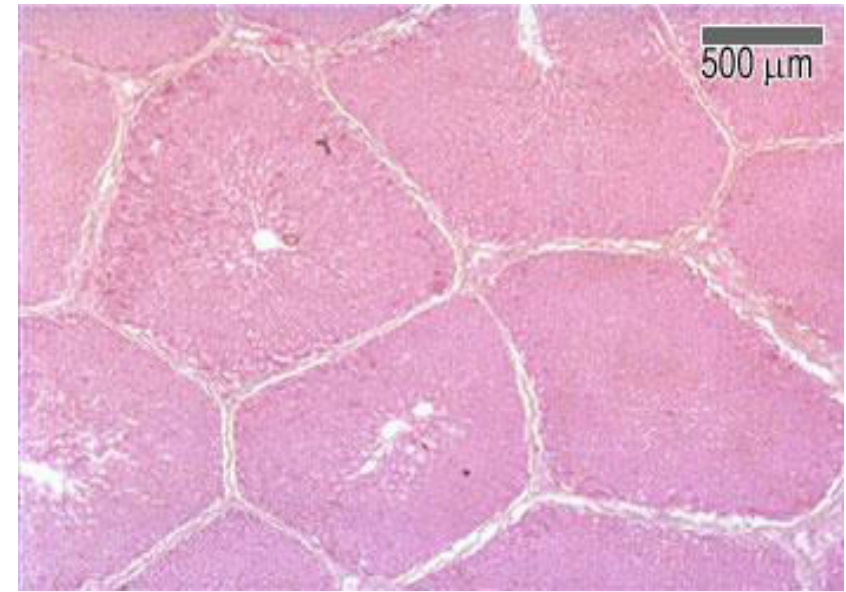
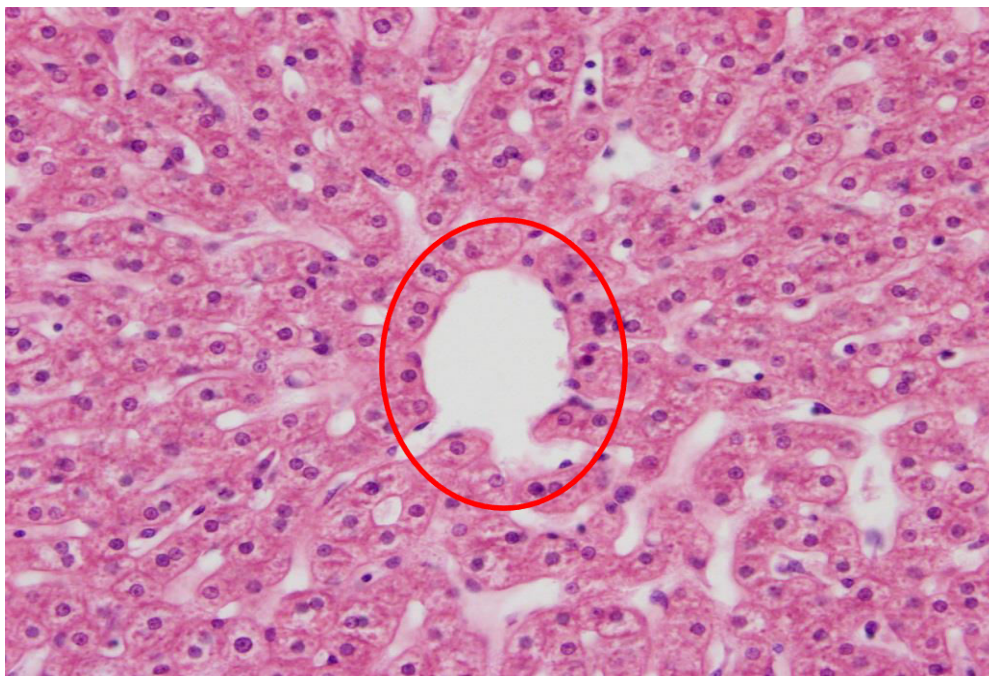
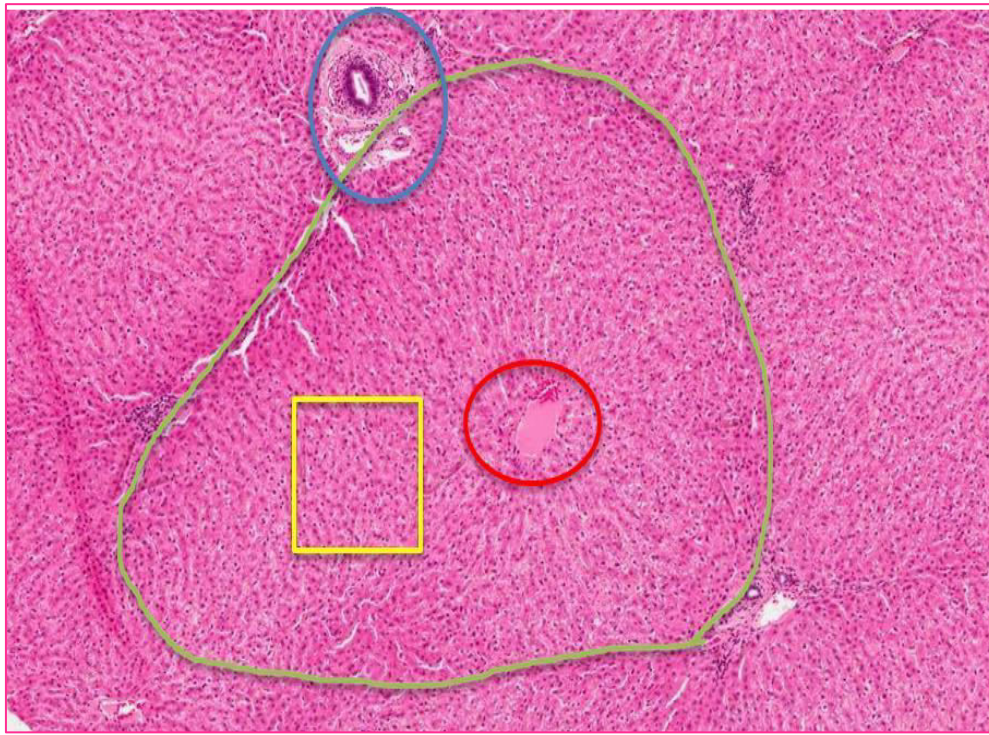
Liver

1- Features:

- a) Classical hepatic lobule.
- b) Central hepatic vein.
- c) Portal area.
- d) C.T.

• Mention four cells in the square:

- a) Hepatocytes.
- b) Ito Cells (stellate cells)
- c) Kuppfer Cells
- d) Cells Of Endothelium



Reticular fibers in liver

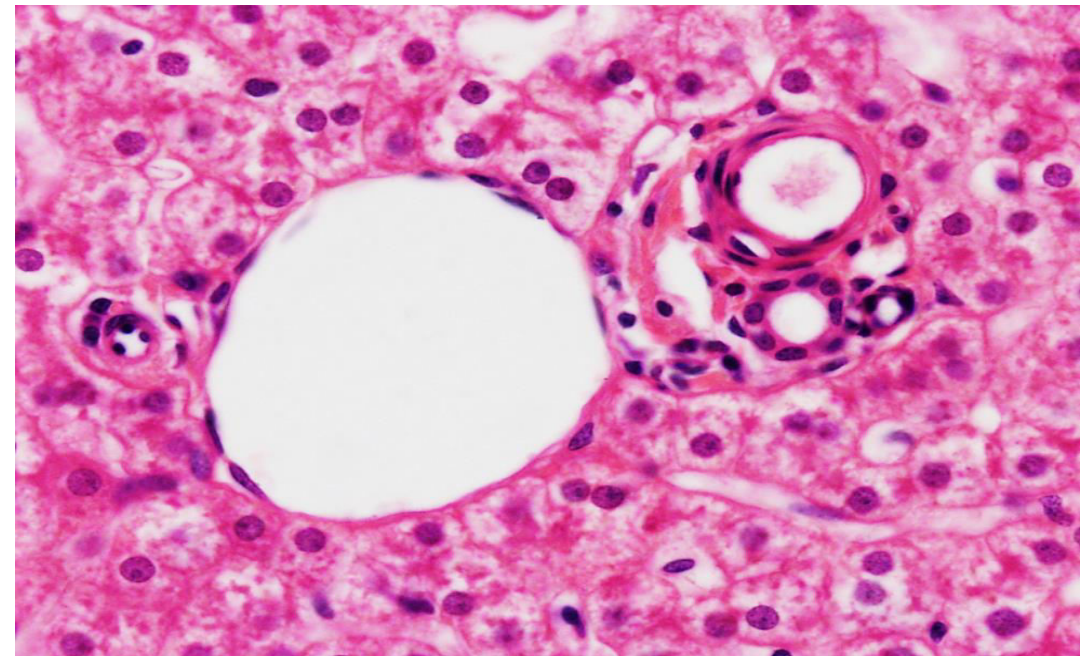
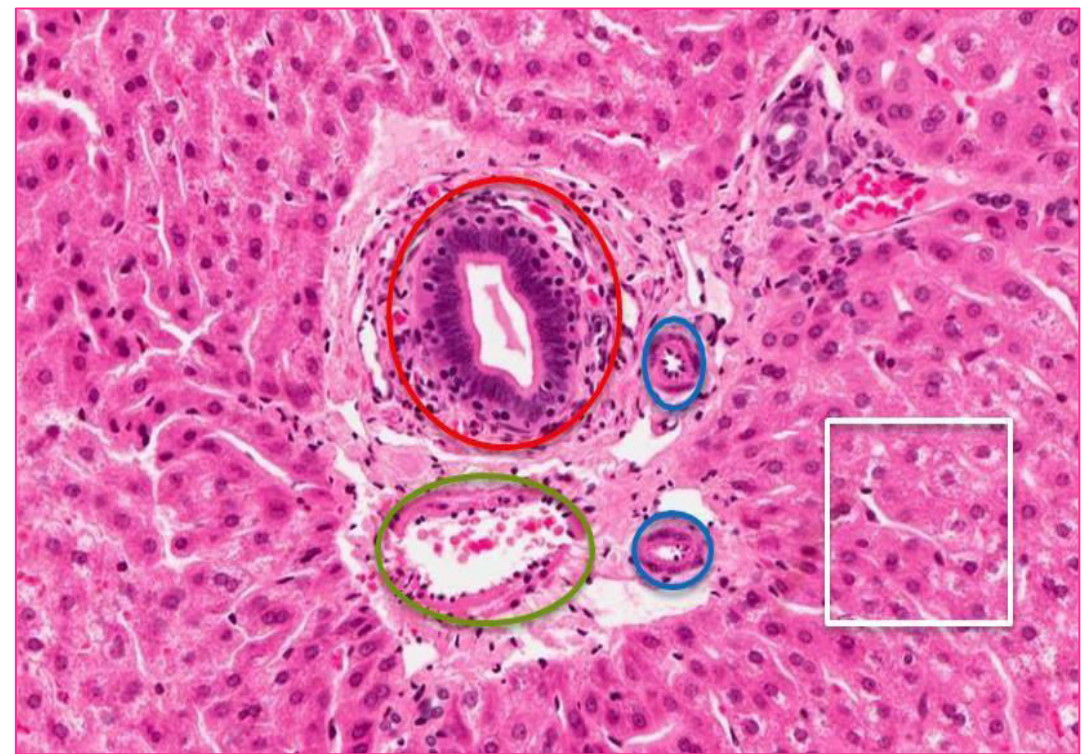
Portal Area

1- Features:

- a) Branch of portal vein.
- b) Bile duct.
- c) Branch of hepatic artery
- d) C.T

• Mention four cells in the square:

- a) Hepatocytes.
- b) Ito Cells (stellate cells)
- c) Kupffer Cells
- d) Cells Of Endothelium



Gallbladder

1- Mucosa:

a) Epithelium lining (Similar to the Colon) :

- ✓ simple columnar epithelium

b) Lamina propria

- ✓ Contains contains **mucous glands in the neck** of gall bladder.

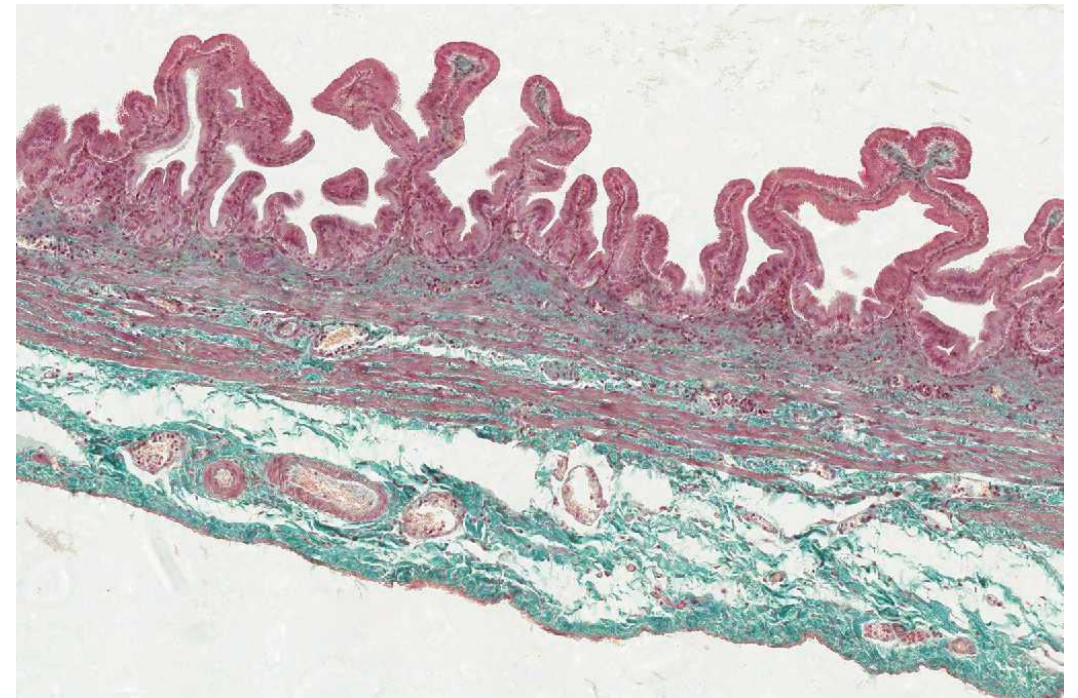
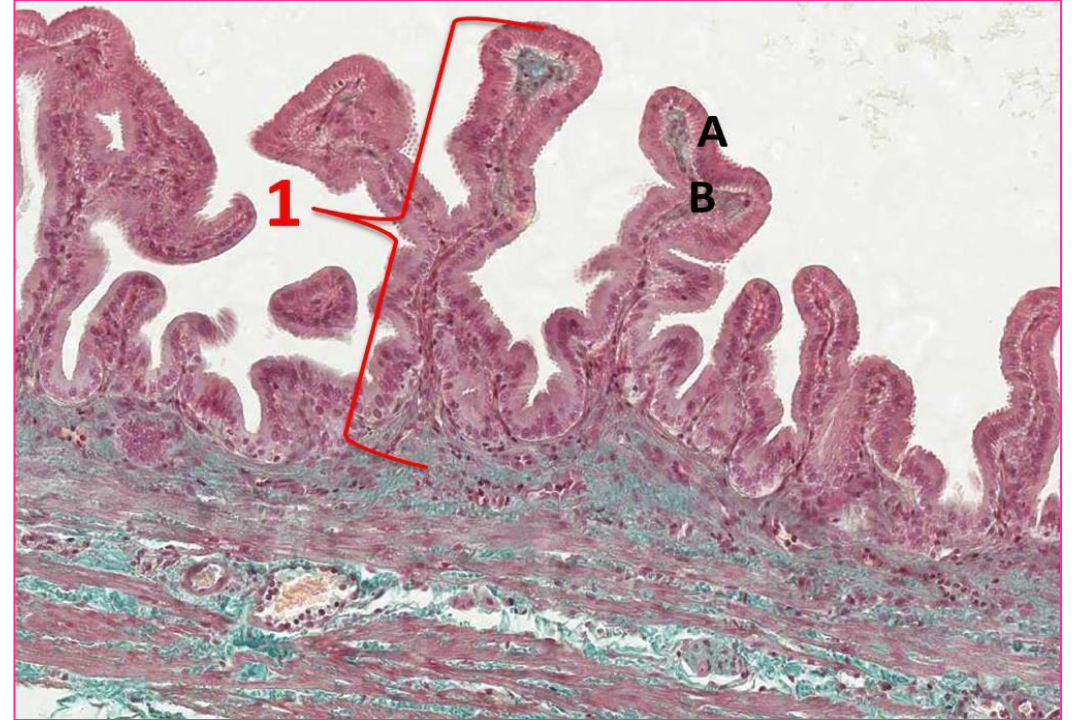
c) Muscularis Mucosae

2- Muscularis Externa:

- a) Smooth muscle fibres are oriented in all directions

- b) Myenteric plexuses (Auerbach's)

3- Adventitia except the fundus which is Serosa



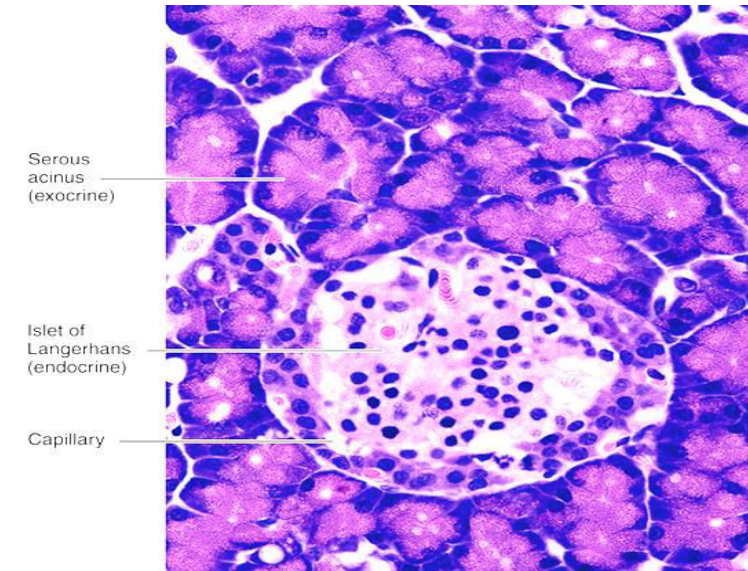
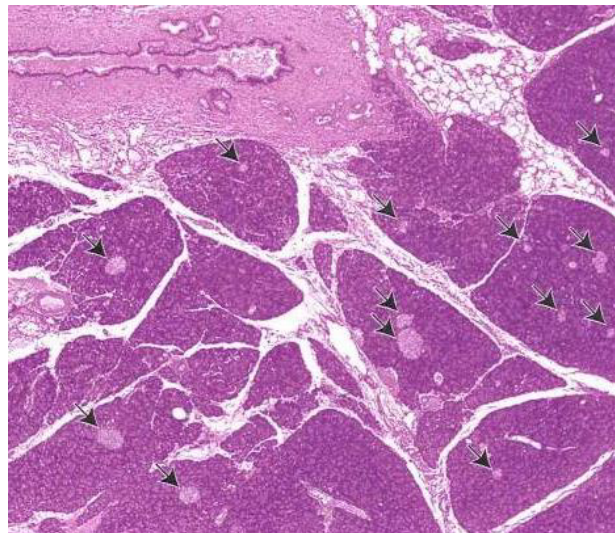
Pancreas

1- Features:

- a) 1-Islets of Langerhans
- b) 2-Pancreatic acini :
- ✓ 3-Centroacinar cells:
- ✓ pancreatic acinar cells

2-Features of the pancreatic acinar cells :

- ✓ Basal part basophilic due to abundant rER
- ✓ Apical part acidophilic due to granules



Spleen

1- Features:

a) White pulp

✓ **Periarterial lymphatic sheaths (PALS):**

- housing T lymphocytes.

✓ **Lymphoid follicles (with germinal centers):**

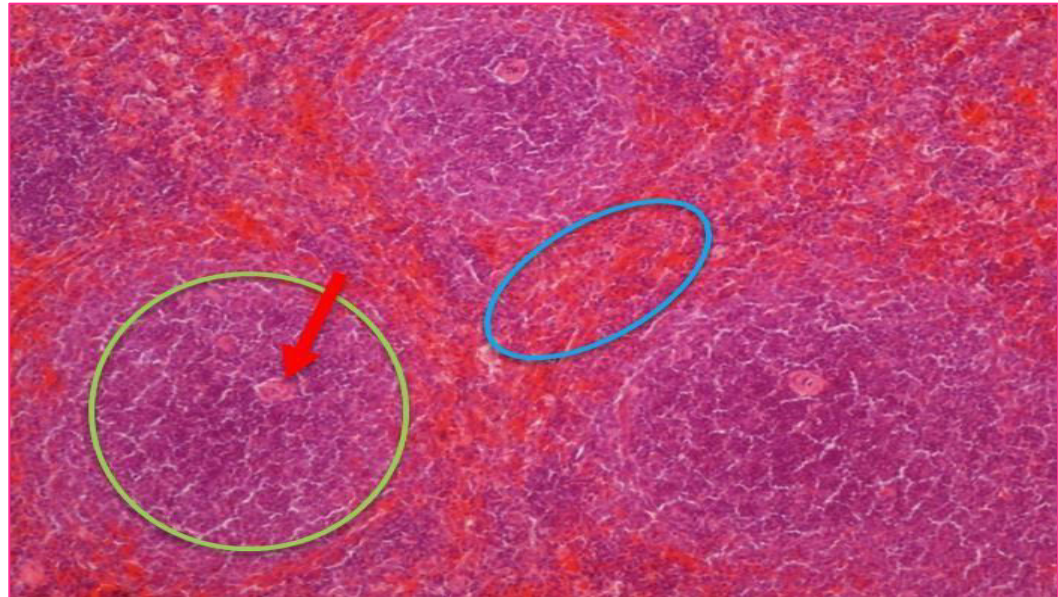
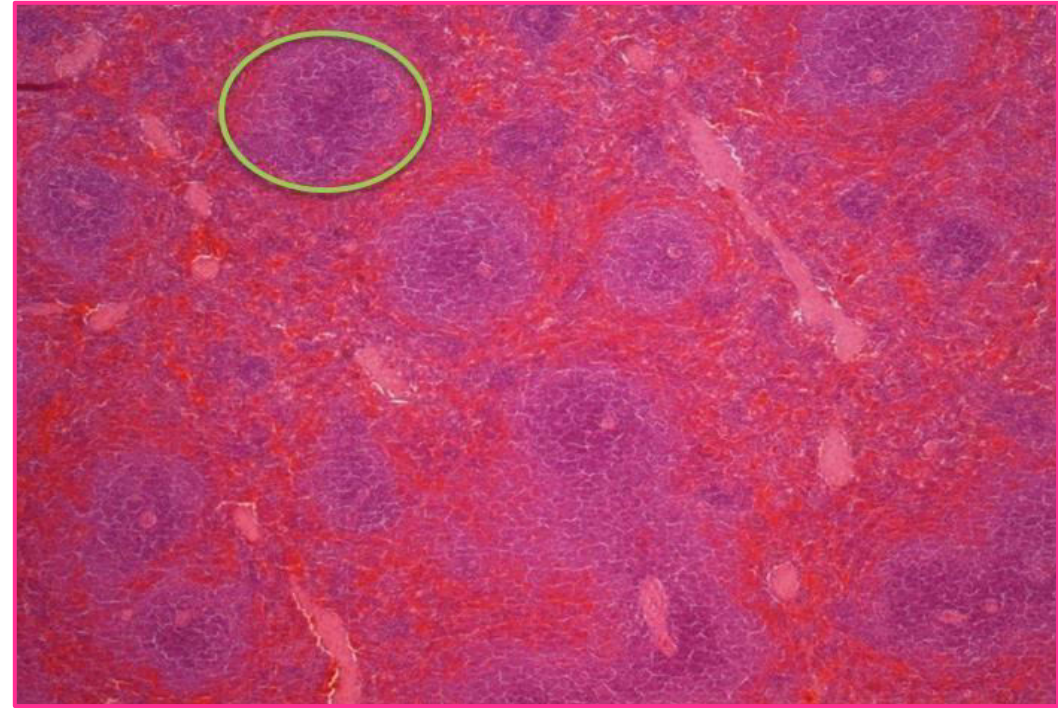
- housing B lymphocytes, plasma cells and macrophages.

b) Central artery

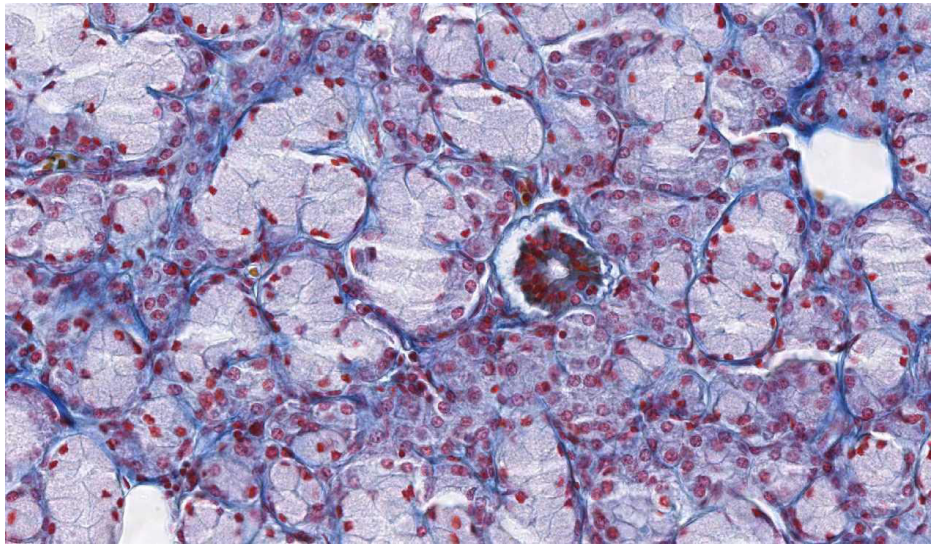
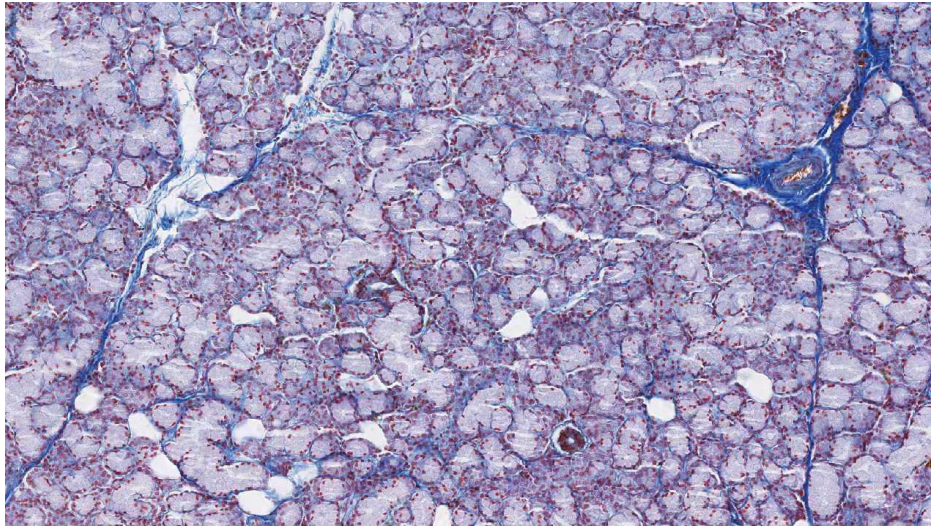
c) Red pulp:

✓ **Splenic (pulp) cords (Bilroth's cord):**

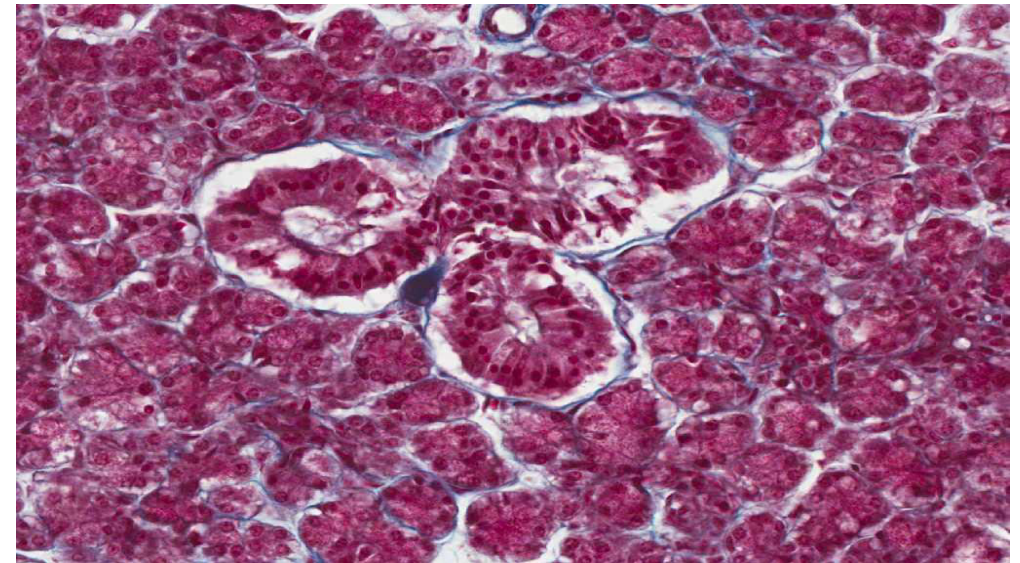
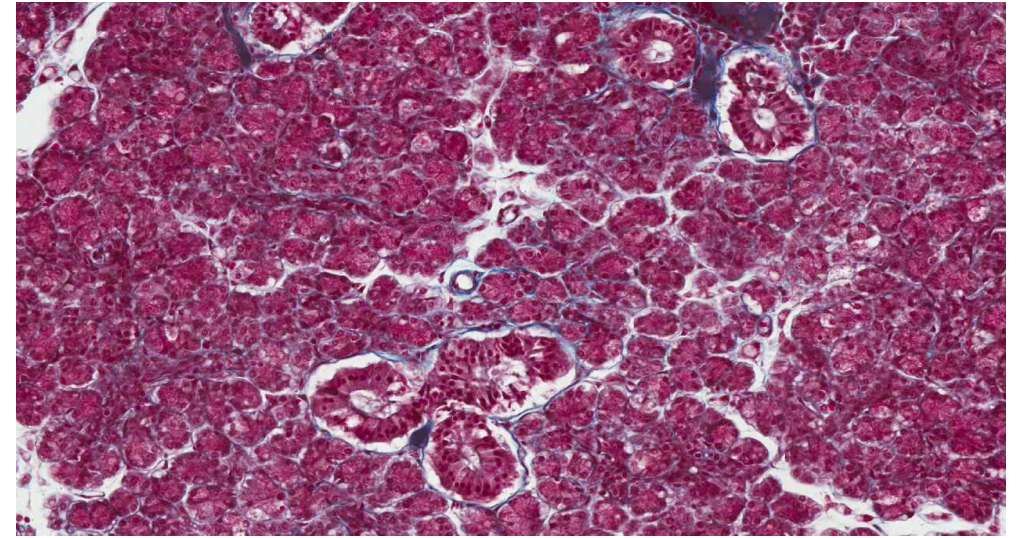
- Extravasated blood cells, plasma cells, B and T lymphocytes, macrophages, reticular cells and fibers. **Splenic blood sinusoids.**



Sublingual Gland



Parotid Gland



SUMMARY

Esophagus	Mucosa			Submucosa	Muscularis externa	Serosa ? Adventitia?
	Epithelial lining	Lamina propria	Muscularis mucosa		2 LAYERS	
	Non-Keratinized Stratified Squamous Epithelium	-	-	Contain glands , Meissner's plexus	(upper 1/3 skeletal, middle 1/3 mixed, lower 1/3 smooth) - Inner circular layer. - Outer longitudinal layer. Auerbach's (myenteric) plexus in between the 2 layers	- Serosa in abdominal part - Adventitia in cervical and thoracic part
Fundus of the stomach	Simple columnar mucus secreting cells.	Fundic Glands Short pits with simple branched glands .It is rich in parietal and chief cells.	-	-	3 LAYERS	Serosa ONLY
					-Inner <u>oblique</u> layer. -Middle <u>circular</u> layer. -Outer <u>longitudinal</u> layer. + Auerbach's(myenteric) plexus.	
Pylorus of the stomach	Simple columnar mucus-secreting cells.	Loose C.T contains pyloric gland. Pyloric Glands: Deep pits with branched and convoluted glands.	-	-	2 LAYERS	Serosa ONLY
					-Inner circular layer. -Outer longitudinal layer. + Auerbach's(myenteric) plexus	
Duodenum	Mucosa of Duodenum : Crypts and villi			Contains Brunner's glands which secrete mucus.	2 LAYERS	Upper(1st) part : Serosa 2nd & 3rd parts : Adventitia
	- Villi : Simple columnar epithelium absorptive cells with goblet cells. - Crypts of lieberkuhn Simple columnar epith. With goblet cells, stem cells, enteroendocrine cells, and Paneth cells(Paneth cells located in base of crypt).	-	-		- Inner <u>circular</u> layer. -Outer <u>longitudinal</u> layer.	
Ileum	Mucosa of ileum : Crypts and villi			-	2 LAYERS	Serosa
	Similar to the duodenum, Simple columnar epithelium with goblet cells.	Has lymphoid nodules (Peyer's patches) that extend to the submucosa.	-		- Inner <u>circular</u> layer. -Outer <u>longitudinal</u> layer.	

SUMMARY

Colon	Mucosa of colon : Crypts ONLY			-	2 LAYERS	Serosa (has appendices epiploicae)
	Simple columnar epithelium with goblet cells.	Contains frequent lymphatic nodules	-		-Inner <u>circular</u> layer. -Outer <u>longitudinal</u> layer. (has Teniae coli)	
	Cells lining the crypts are: 1. Surface columnar absorptive cells. 2. Goblet cells. 3. Enteroendocrine Cells. 4. Stem cells. 5. M-cells					
Appendix	Mucosa of Appendix : shallow Crypts ONLY			-	2 LAYERS	Serosa
	Similar to the colon, Simple columnar epithelium with goblet cells.	Contains lymphatic nodules.	-		-Inner <u>circular</u> layer. - Outer <u>longitudinal</u> layer	
GallBladder	Mucosa of GallBladder : highly folded			-	-	Srosa or adventitia
	Simple columnar epithelium	contains mucous glands in the <u>neck</u> of gallbladder	-			



Thank you & good luck

- Histology team

Done by:

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