



# GI HISTOLOGY

# lab pt3



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# LARGE INTESTINE

The large intestine has the same layers as the small intestine but has:

1. No villi.
2. type of gland: simple tubular gland vs in the small intestine glands were branched.
3. prominent goblet cells and mucus secreting cells
4. solitary nodules of lymphocytes in the lamina propria of the submucosa.
5. muscularis mucosa that is well defined.

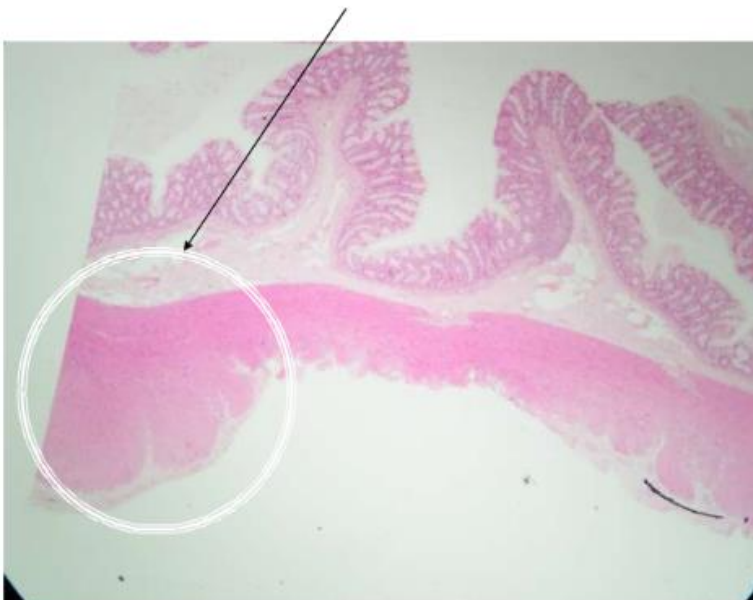
This is a section of the colon:

- The gland in the lamina propria has no Paneth cells (**blue arrow**) but instead there are secreting or absorptive cells.
- Goblet cells are very common. They are present on the surface and on the gland  $\Rightarrow$  secretes mucus (important for lubrication)
- Crypts of Lieberkühn have no Paneth cell.

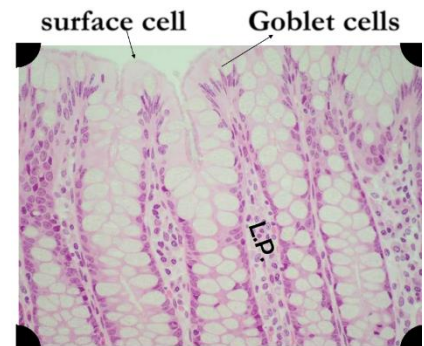
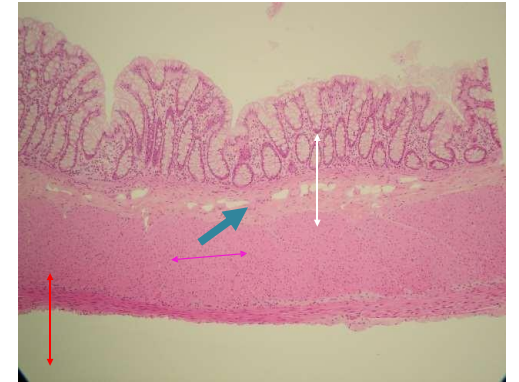
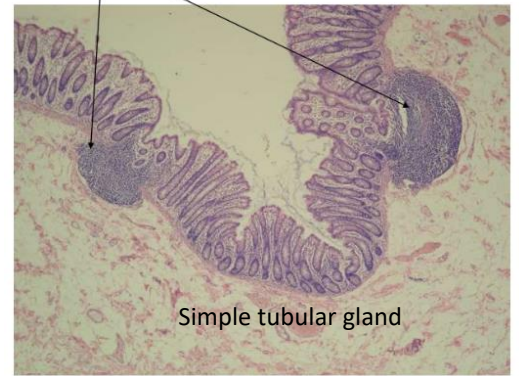
Taeniae coli:

The large intestine has teniae coli that is formed by three bands of **outer longitudinal** smooth muscle.

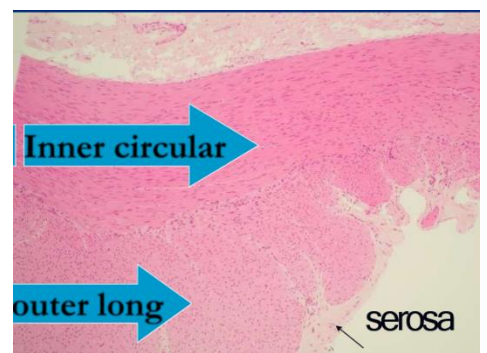
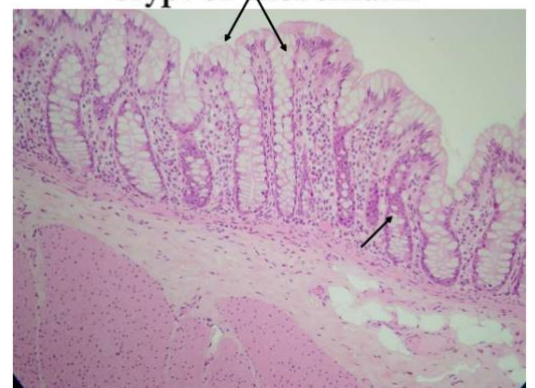
## Taeniae coli



solitary nodule in colon



Simple tubular gland in colon  
Crypt of Lieberkuhn=

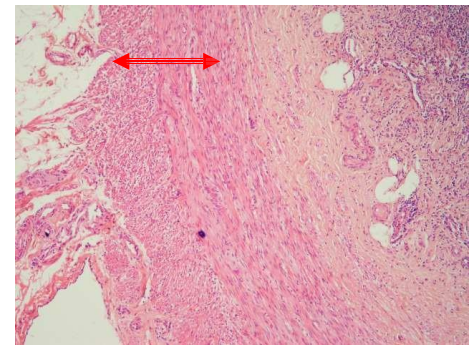
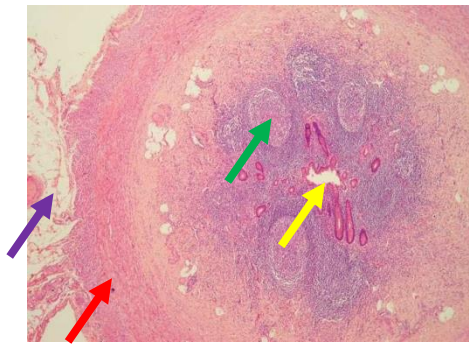




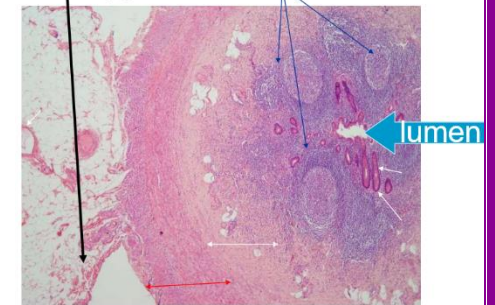
## Appendix:

Section in the appendix

- Appendix has a **very narrow lumen**.
- Lamina propria has **lymphoid tissue, circular lymphatic nodules all around the lumen**.
- It has a few glands and few goblet cells.
- **Mesoappendix** (blood supply **ال بوصل ال**) has:
  - fat
  - arteries
  - veins
  - lymphatic drainage
- appendix: **muscularis externa**



Mesoappendix lymph. Nodu.  
Crypt of Lieberkuhn

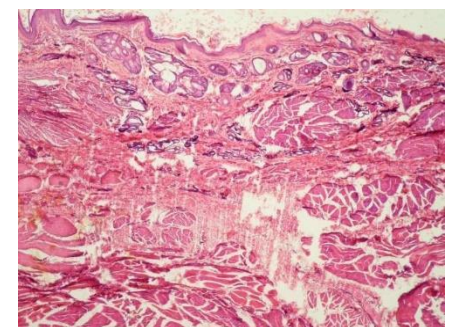
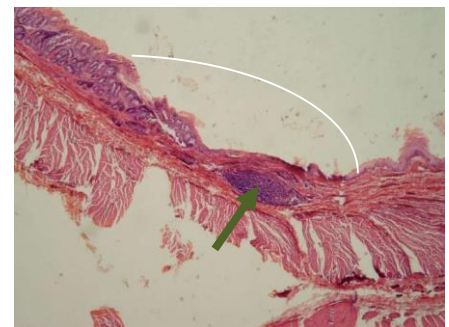


## Recto-Anal Junction

mucosa of rectum:

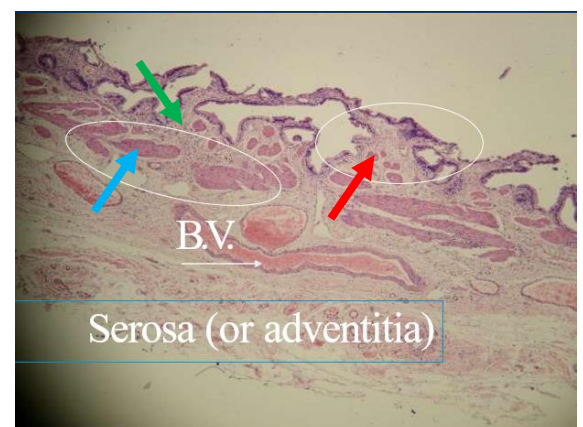
- transverse fold (3): 2 on the left and one on the right
- longitudinal fold: anal column, **lymphatic nodules** in the rectum and anal canal

lower anal canal has the anal column and the sinuses.

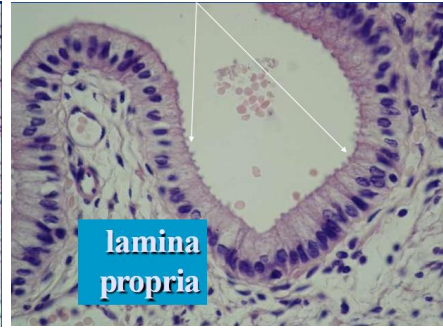
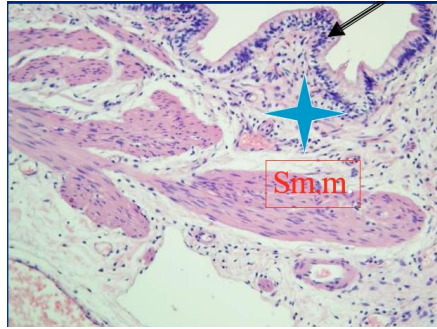
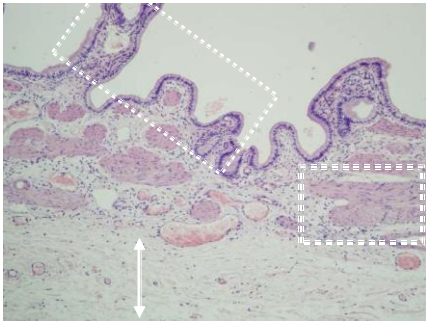


## GALLBLADDER

- **Mucosa**: simple columnar without goblet cells (like the stomach)
  - Has abundant folding of mucosa: honeycomb appearance.
- Gallbladder has **lamina propria**.
- **Muscularis externa** is irregular and not well defined.
- Submucosa is absent.
- Sometimes in the neck of the gallbladder we can find mucus secreting cells.
- Lamina propria has few glands.



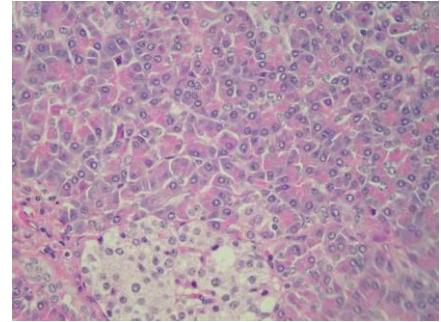




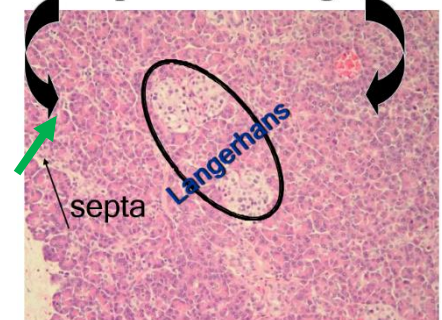
# PANCREAS

Pancreas is a mixed gland. It has:

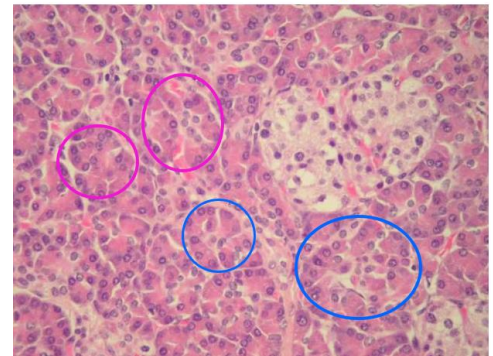
- an endocrine part: **islets of Langerhans**.
- an exocrine part: **pancreatic acini**.
- Its polarity is due to accumulation of secretion in the apex (zymogen granules = secretory granules)
  - Base = basophilic
  - Apex has secretory granules.
- Intercalated duct without striated duct
  - Centro acinar cuboidal cells in intercalated duct
- Mucoserous gland in intercalated ducts



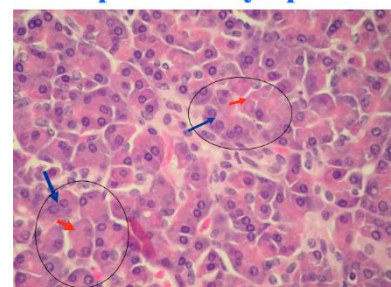
**Exocrine pancreatic portion: compound acinar gland**



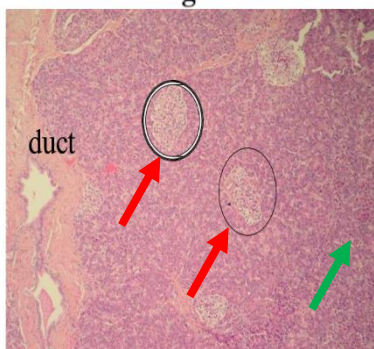
**Pancreatic Serous acini: Protein secretory cells**



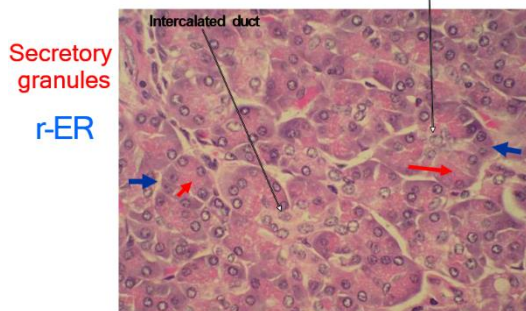
**Zymogenic granules basophilic cell cytoplasm**



**Mixed endocrine-exocrine gland**  
**Islet of Langerhans**



**Centroacinar cells**





# LIVER

Central vein in the middle of the hexagonal lobule

In the corners, portal space containing:

- Artery, vein, bile duct.

This figure shows the hepatocyte and Kupffer cells (dark cell)

- We can differentiate them from their nuclei; hepatocyte is binucleated.
- Kupffer cell is a macrophagic cell.

Sinusoids are vascular channels that contain mixed blood (oxygenated and non-oxygenated)

Portal triad:

- Has artery, vein, bile duct.
- Vein:
  - o larger vessel
  - o simple squamous endothelium
- artery
  - o smaller and circular
- duct
  - o cuboidal cells
  - o contains bile therefore has different color.

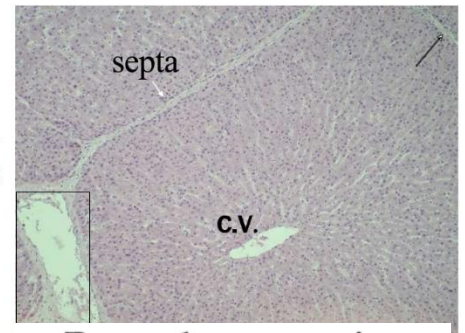
Human liver has ill-defined boundaries.

Portal triad has reticular fiber.

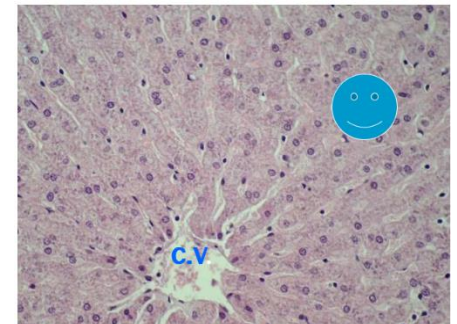
Special stain:

- silver impregnation shows reticular fibers.
- PAS stain: periodic acid Schiff shows glycogen (pink in color) glycogen is present surrounding central vein and portal triad.

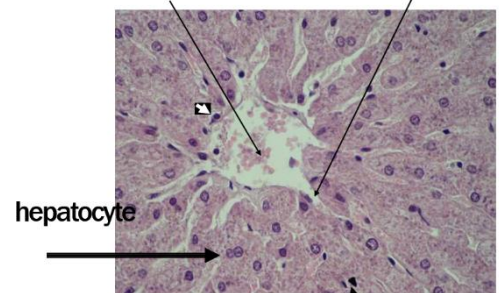
Animal liver  
glisson's capsule



Parenchyma portion



Central vein Sinusoid(endothelium)



Kupffer Cell

Portal vein hepatic artery bile duct

