

Liver

Stomach

Duodenum

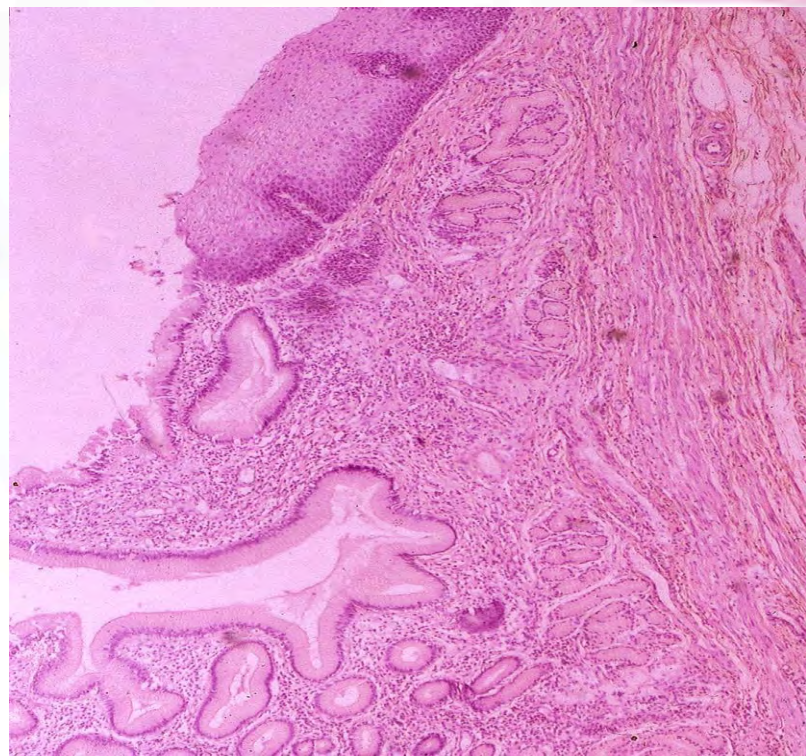
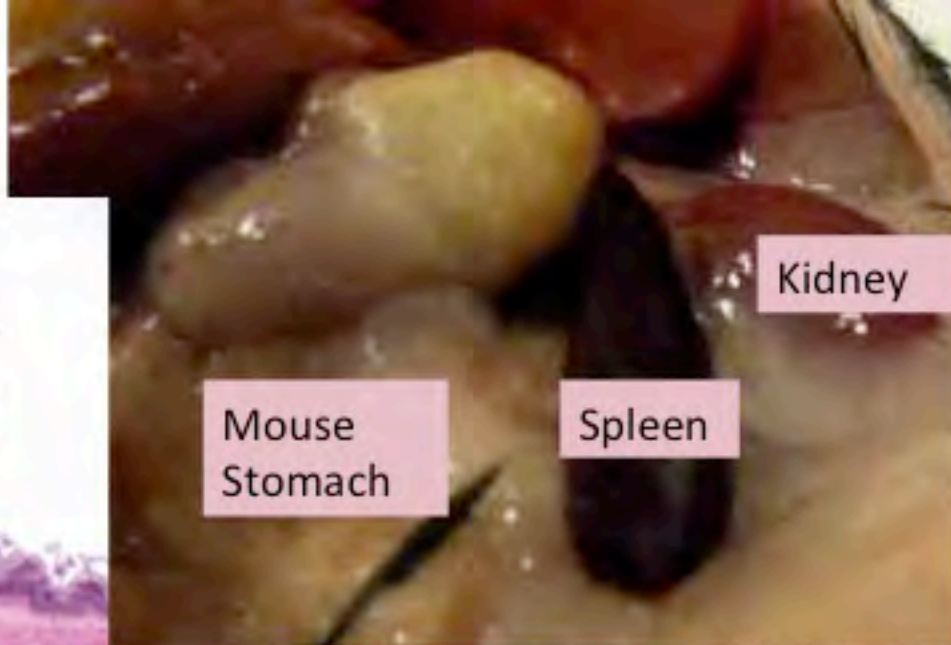
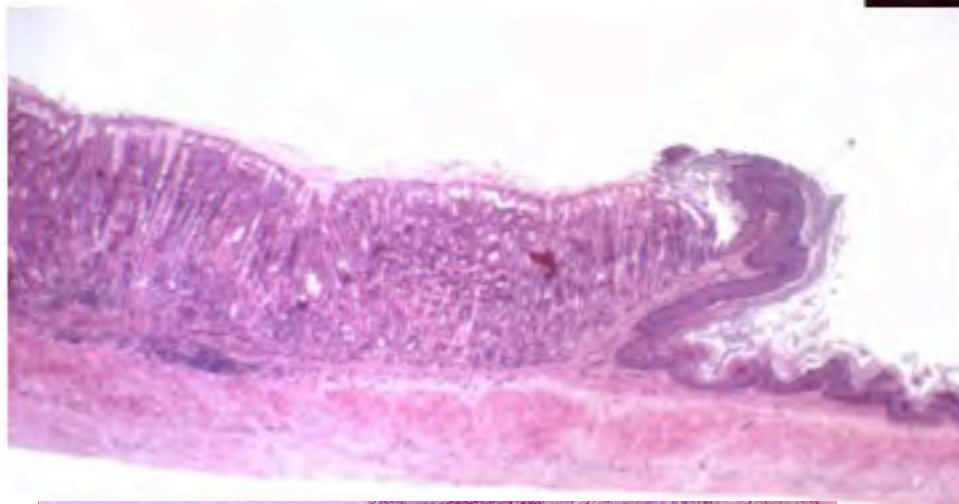
Jejunum

Ileum

Cecum

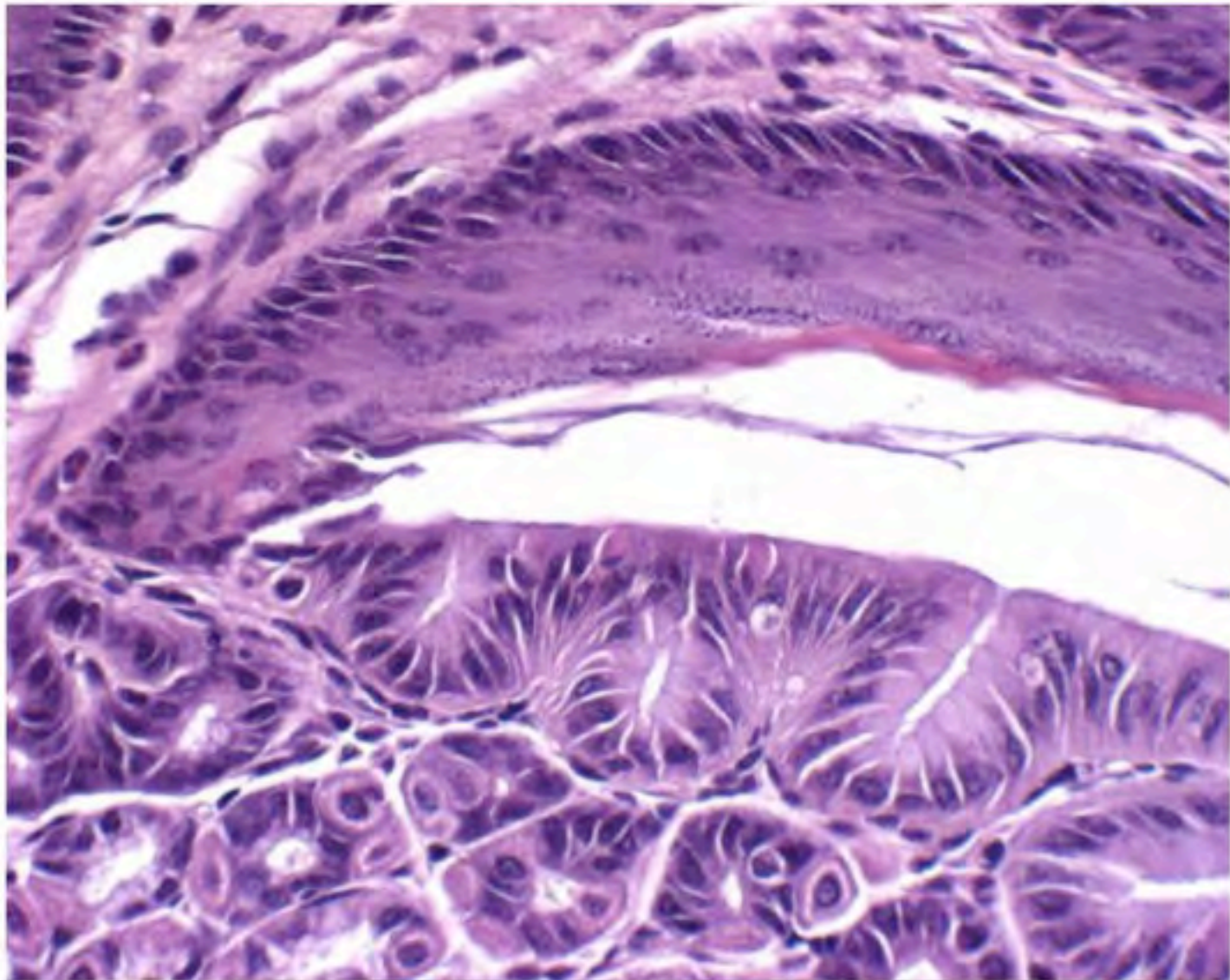
Proximal Colon

Distal Colon



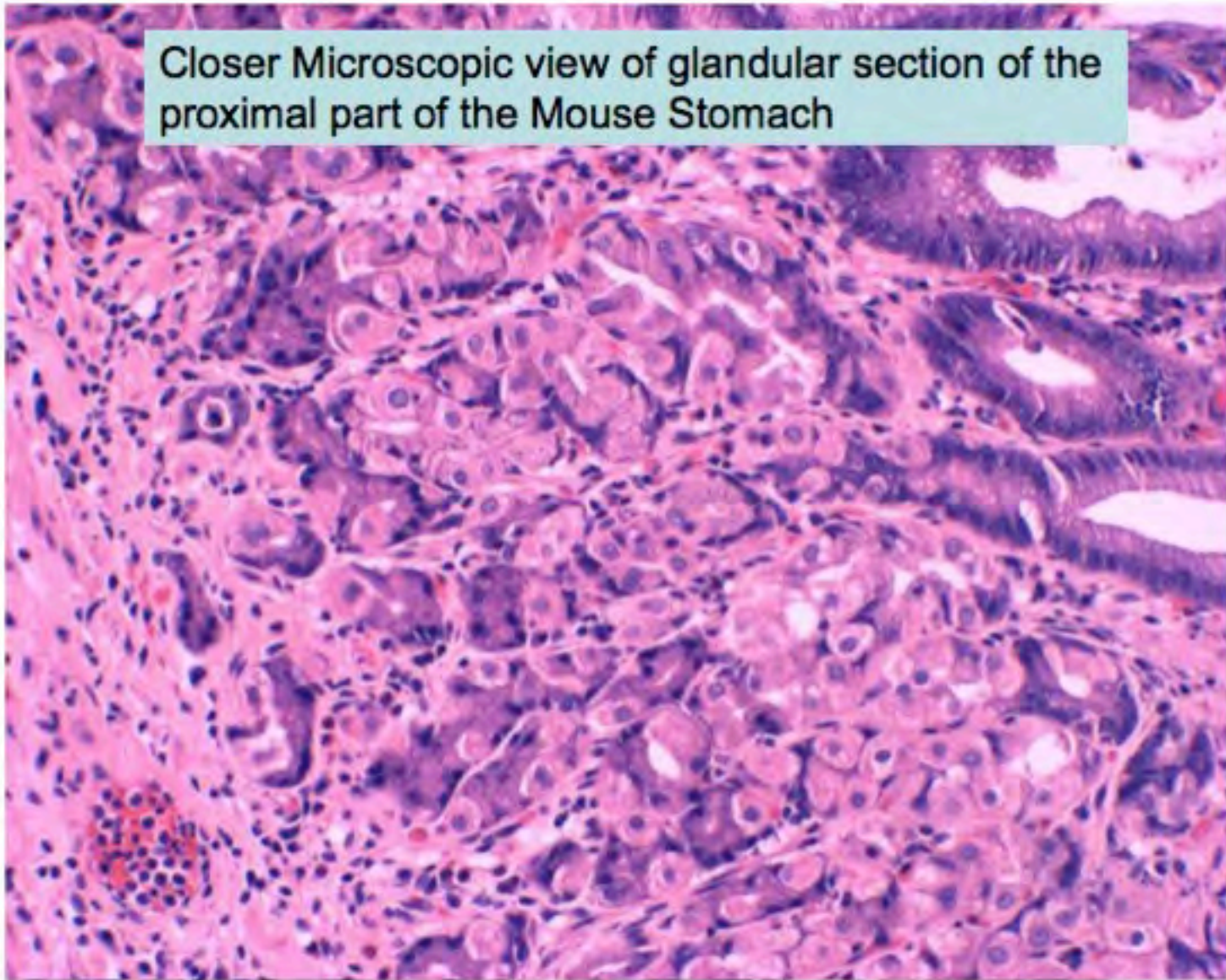


**Squamo-columnar junction of mouse stomach #2 x400**





Closer Microscopic view of glandular section of the proximal part of the Mouse Stomach



Fundic mucus producing cells, parietal cells and chief cells

Duodenum: submucosal Brunner's glands with alkaline mucin

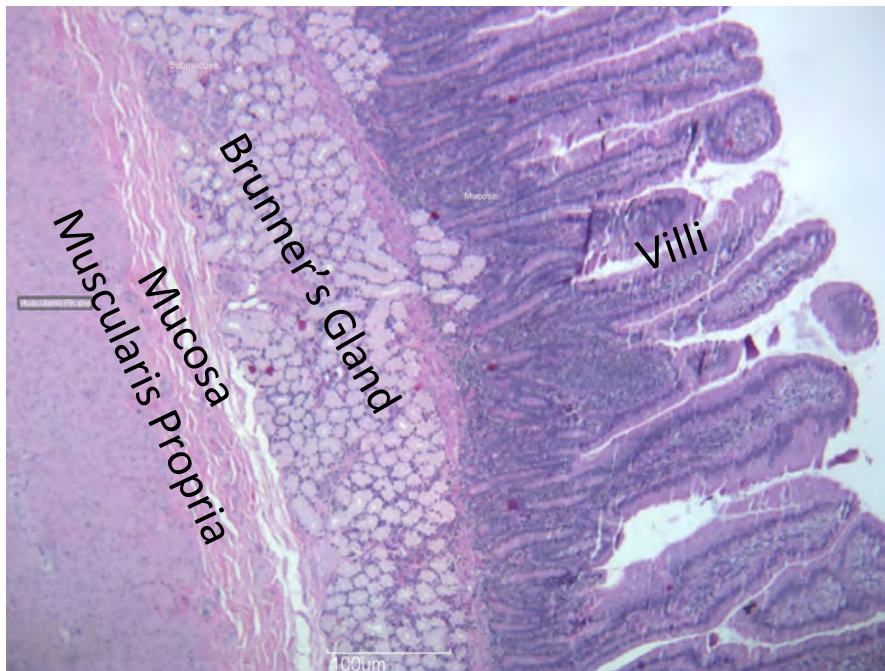
Jejunum about 2 feet long—absorption is primary function

Ileum: the rest of the 5.5 to 6 feet of small intestine : has Paneth cells( Lysozyme defence) and Peyer's lymphoid patches

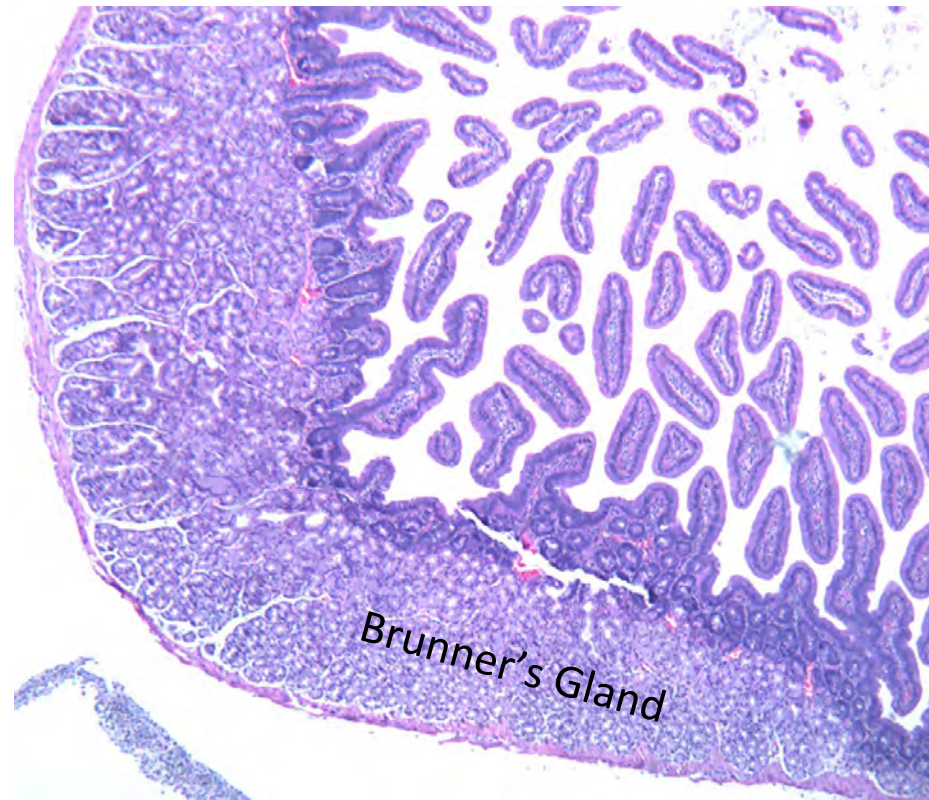


# Duodenum

Human

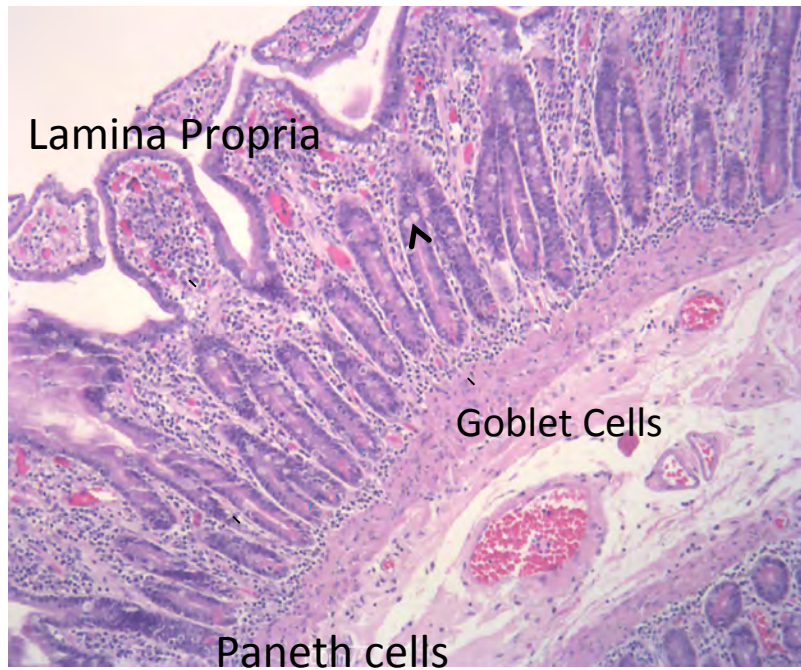


Mouse

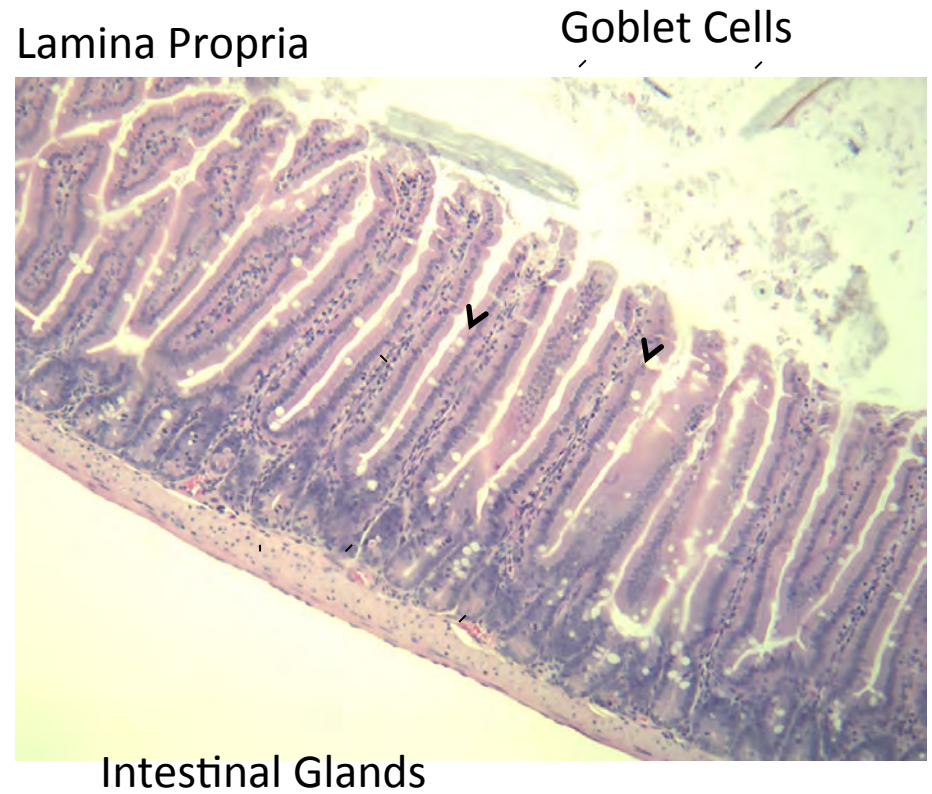


# Finger-like mucosal epithelial villi of Small Intestine

## Human

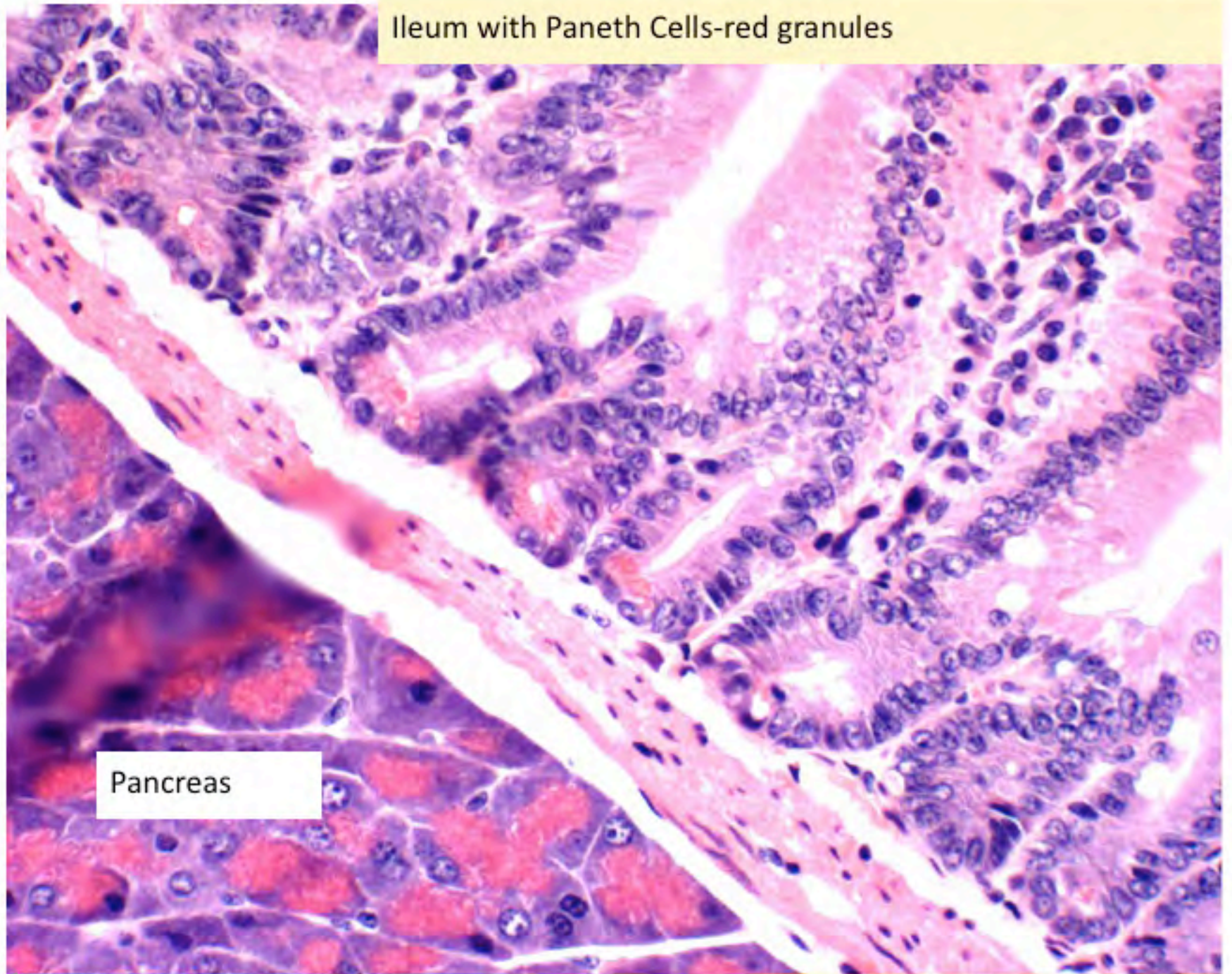


## Mouse





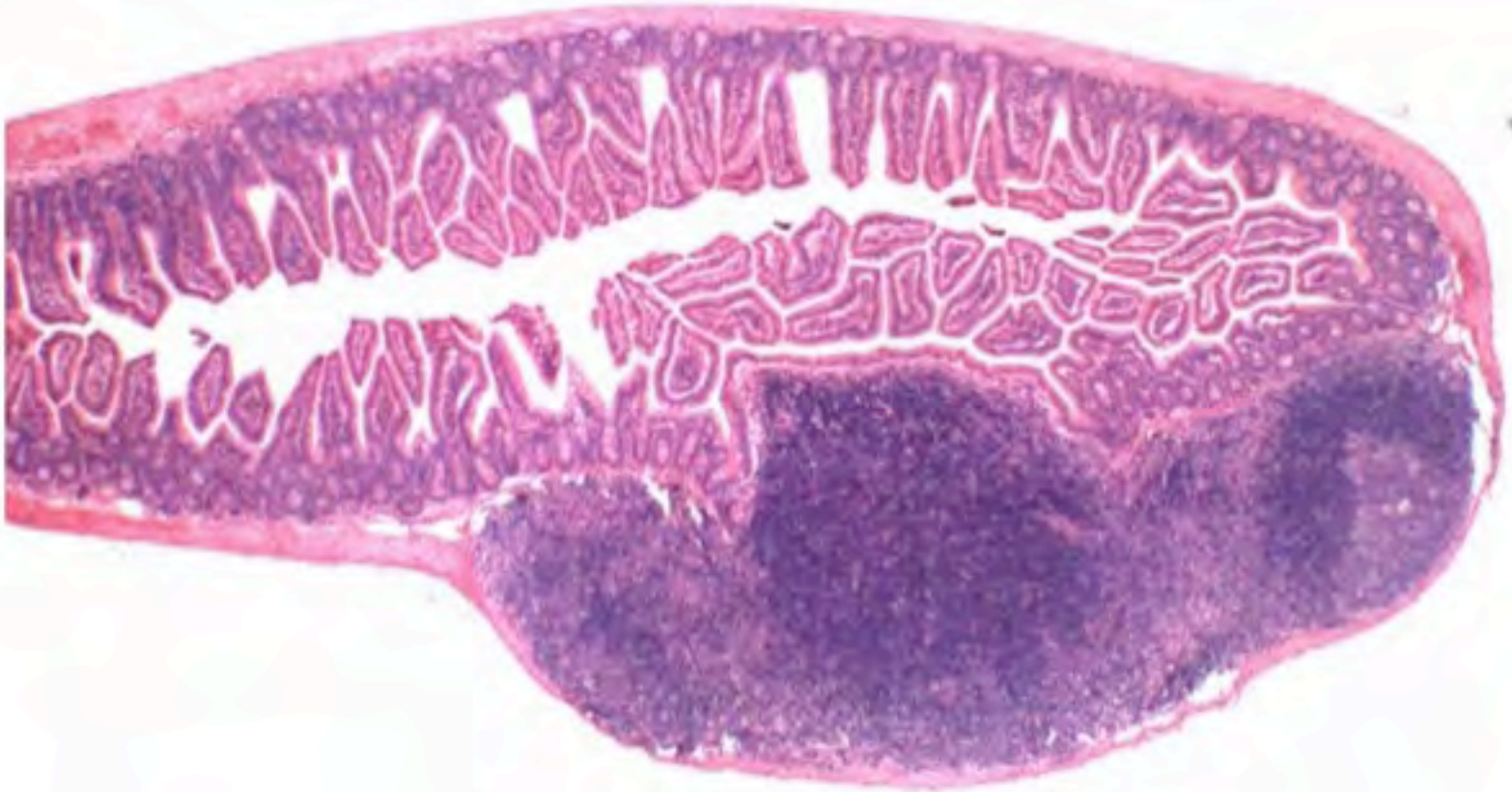
Ileum with Paneth Cells-red granules



Pancreas



Mucosa associated lymphoid tissue: Peyer's patch in the small intestine

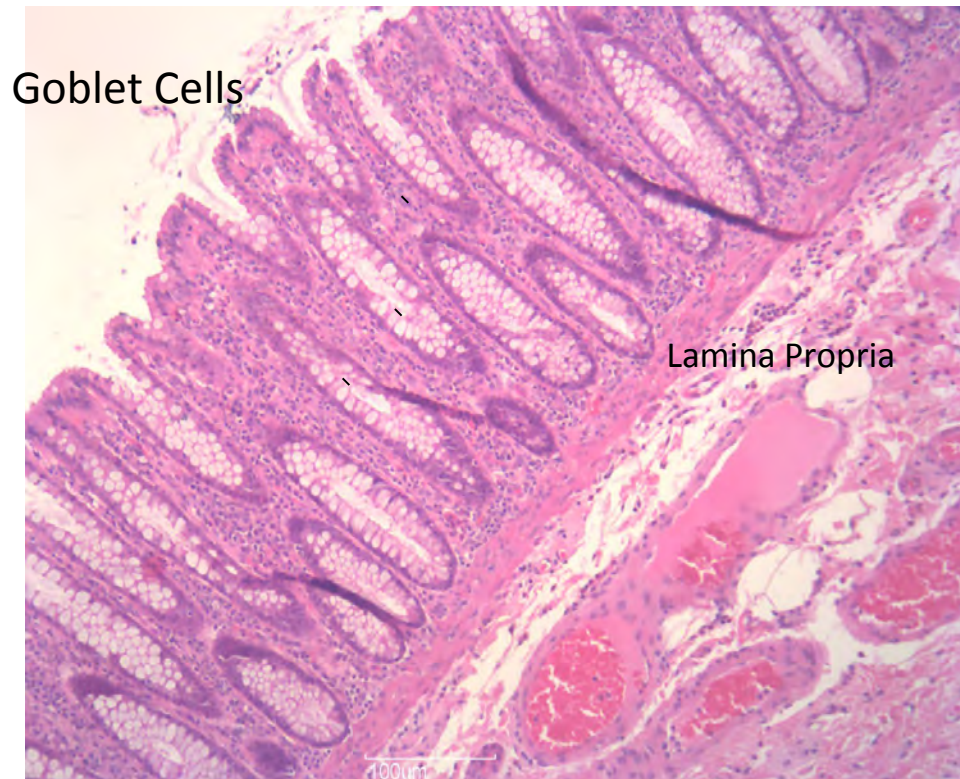


**Paneth cells: Lysozyme, defense**

**Peyer's patches: lymphoid, cellular defense**

Colon (Large Intestine): columnar epithelial cells lining mucosa with no villi and numerous goblet cells

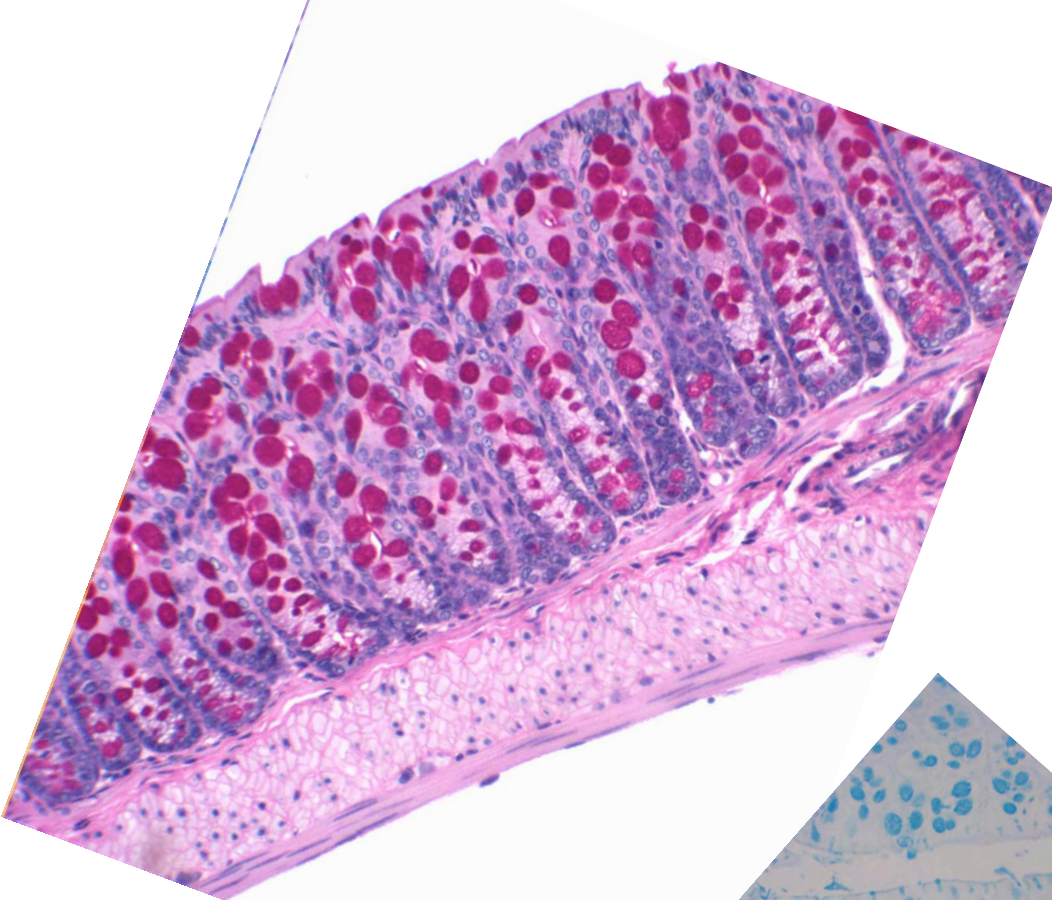
Human



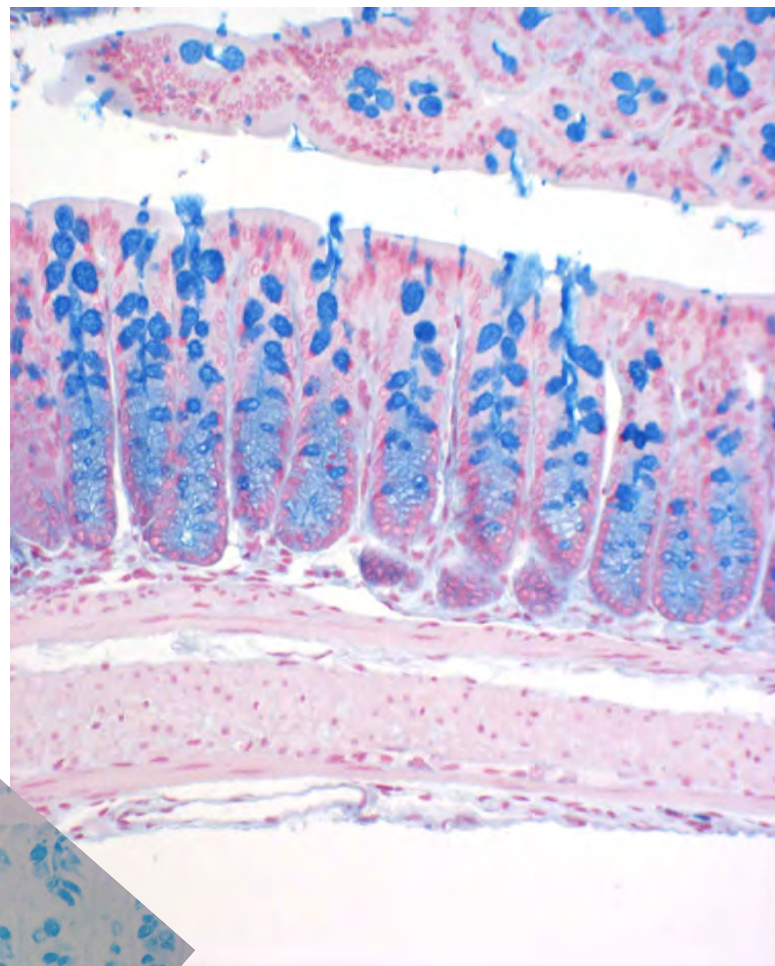
Mouse







**PAS stain for  
mucin in colon**



**Alcian Blue at  
pH2.5 or pH 1.0  
stain for mucin in  
colon**

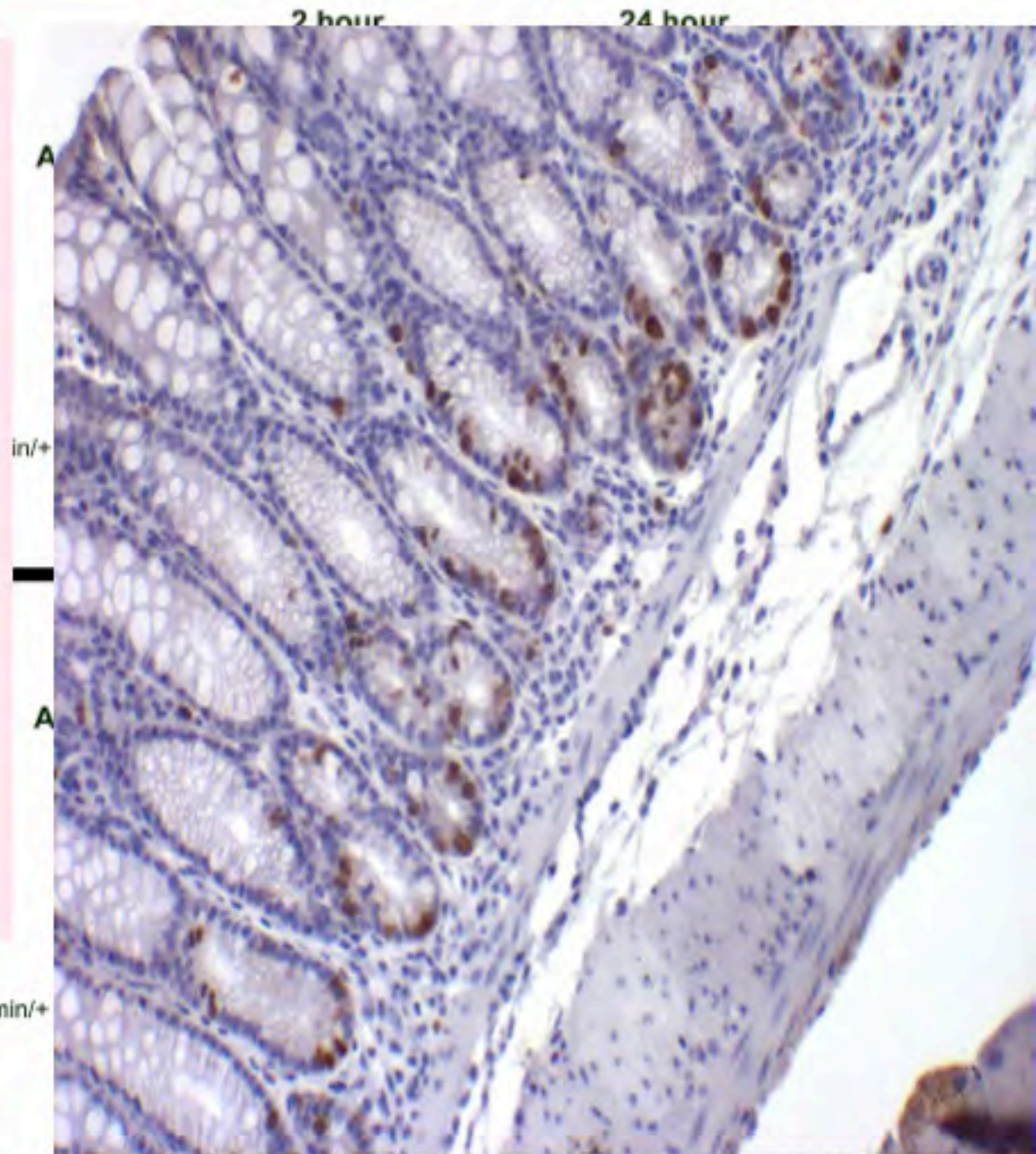


**Proliferating cells** at the crypt base, move up the crypt as they mature.

One can use **anti-Ki67**, or the **PCNA**, if no BrdU injected, to detect cell proliferation.

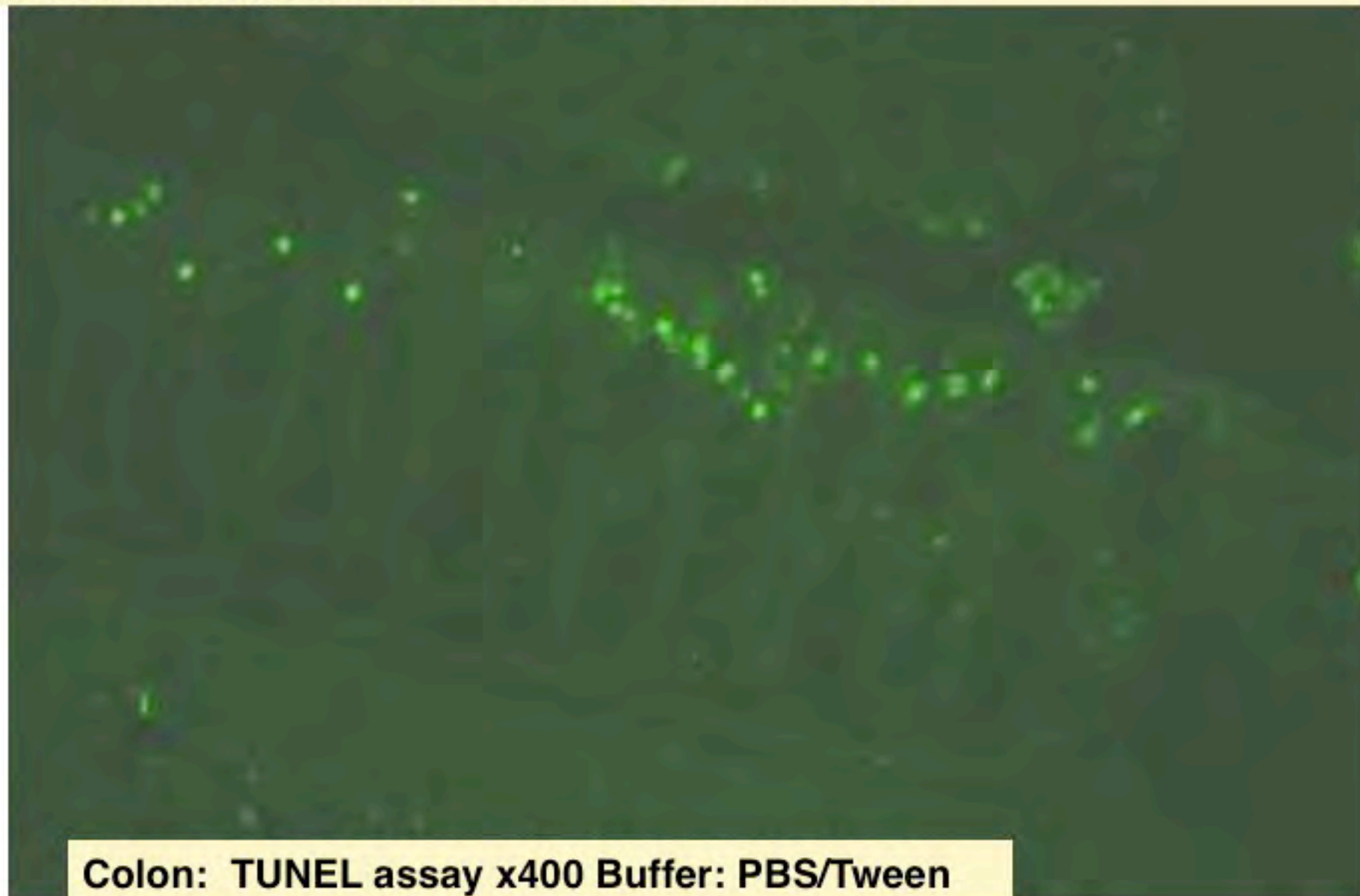
Marker: Inject BrdU intravenously, a couple of hours before sacrificing animal, fix, process, section and IHC with anti-BrdU

**APC** <sup>min/+</sup>

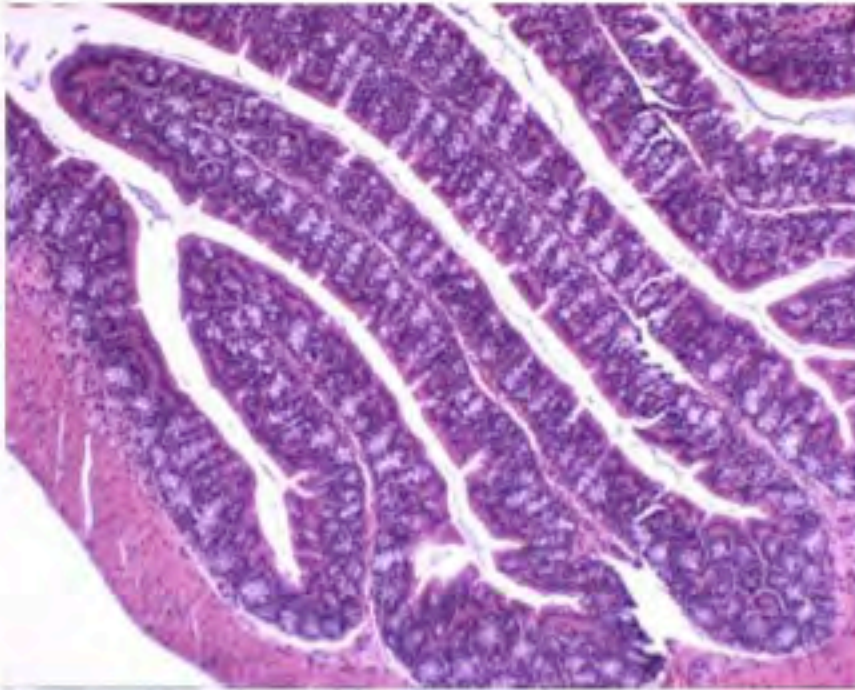




Apoptotic cells at the luminal edge detected using the TUNEL assay, where fluorescein tag attached to 3-OH ends of “broken” DNA

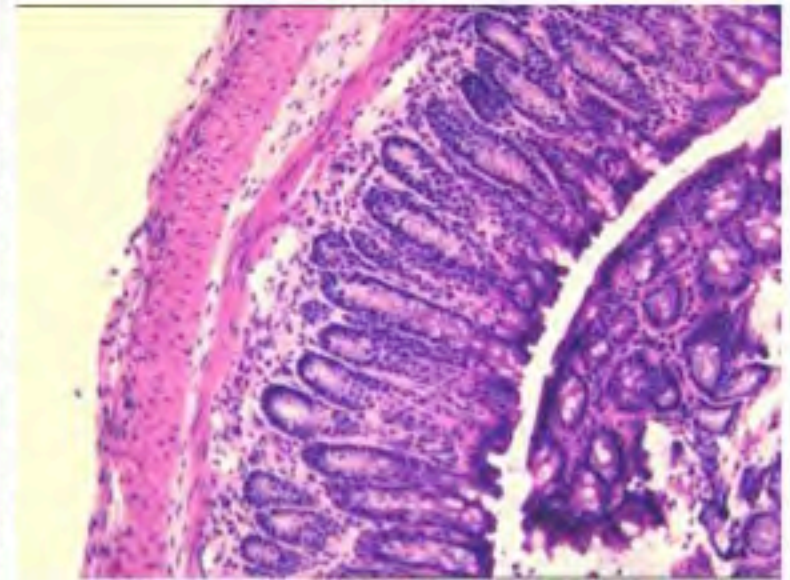


Colon: TUNEL assay x400 Buffer: PBS/Tween



Mouse proximal colon, mucosa folded

**The colon mucosal epithelium has an abundance of mucus producing goblet cells**

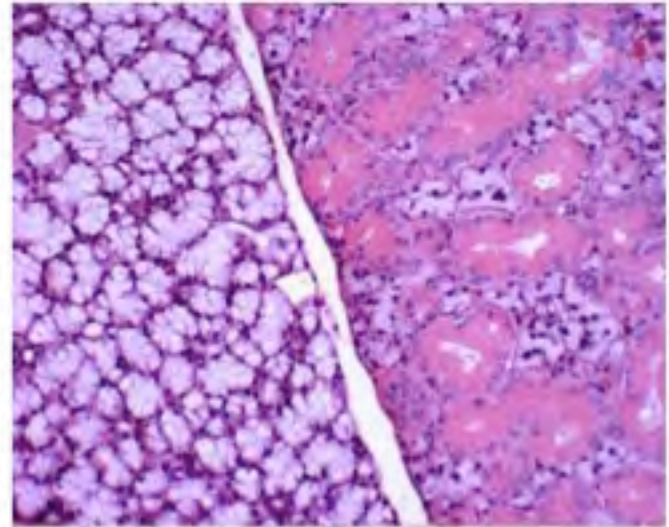
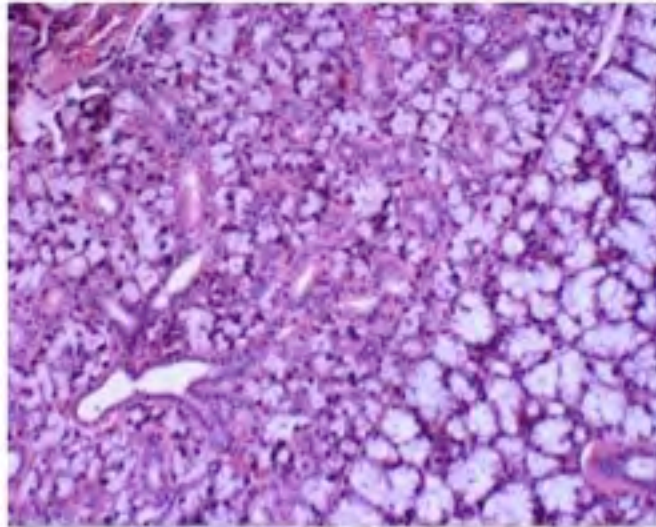


Mouse distal colon



What are the key items that help you identify confidently, the different areas in the gut?

- Stomach: parietal cells
- Duodenum: Brunner's glands
- Small Intestine: Paneth Cells in the crypts
- Small Intestine: Peyer's patches
- Colon: abundant goblet (mucus) cells



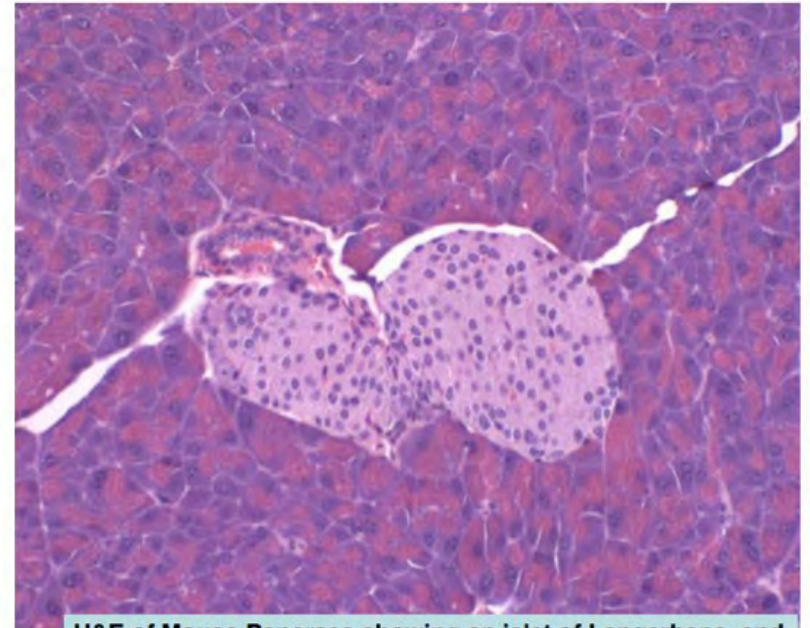
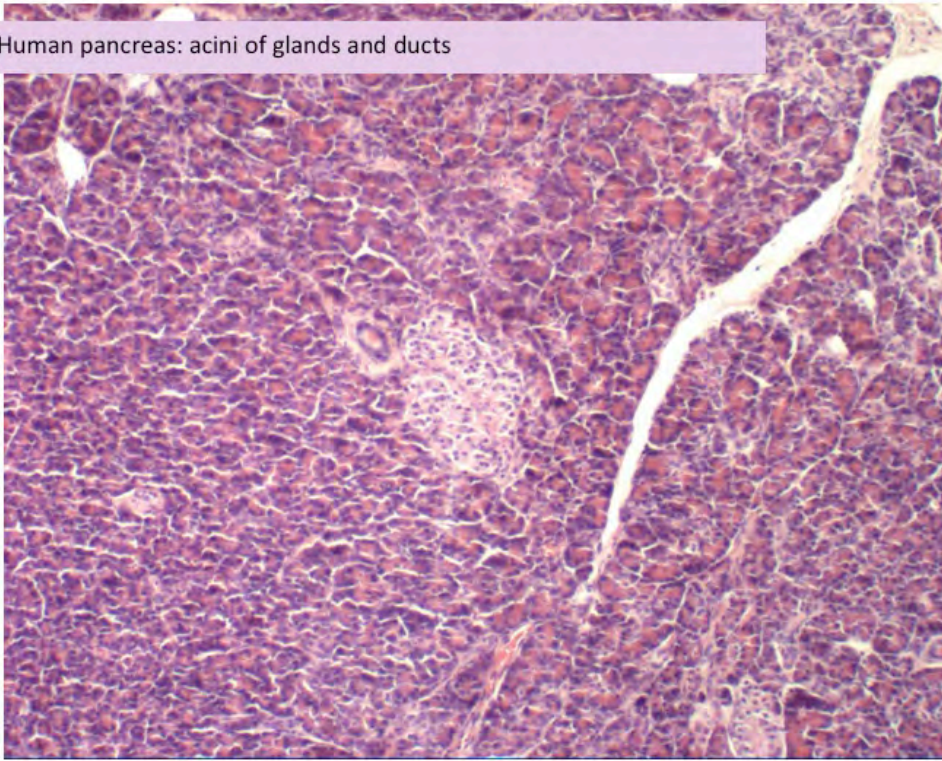
**Salivary gland of the male mouse has more eosinophilic ducts**

**Pathologies commonly seen in the salivary glands include:**

- inflammation, acute or chronic,**
- degeneration and cysts,**
- tumors--lymphomas, adenocarcinomas,**
- other benign tumors and carcinomas and metastatic tumors**



Human pancreas: acini of glands and ducts



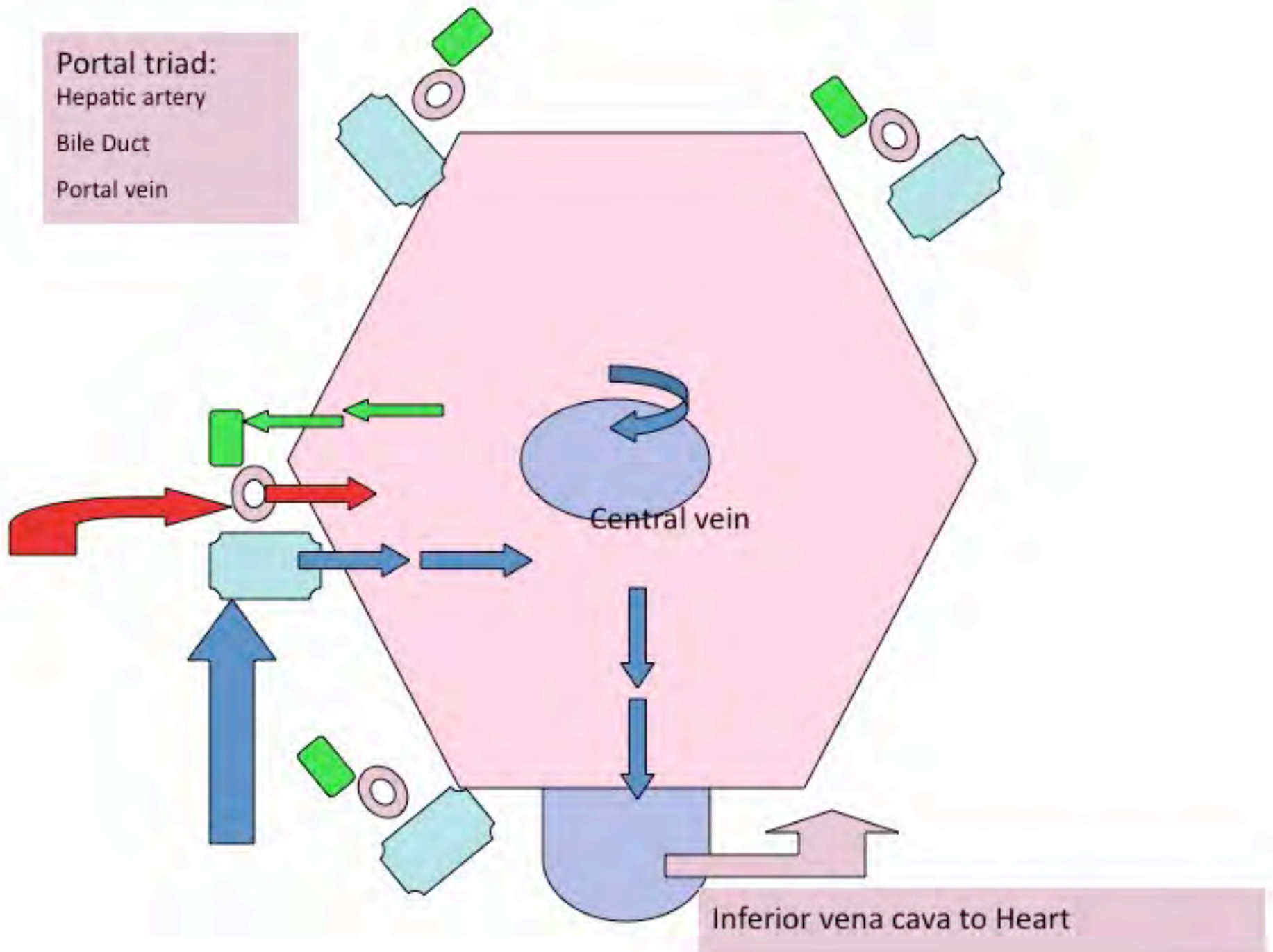
H&E of Mouse Pancreas showing an islet of Langerhans, and a pancreatic duct, surrounded by pancreatic acini

**Portal triad:**

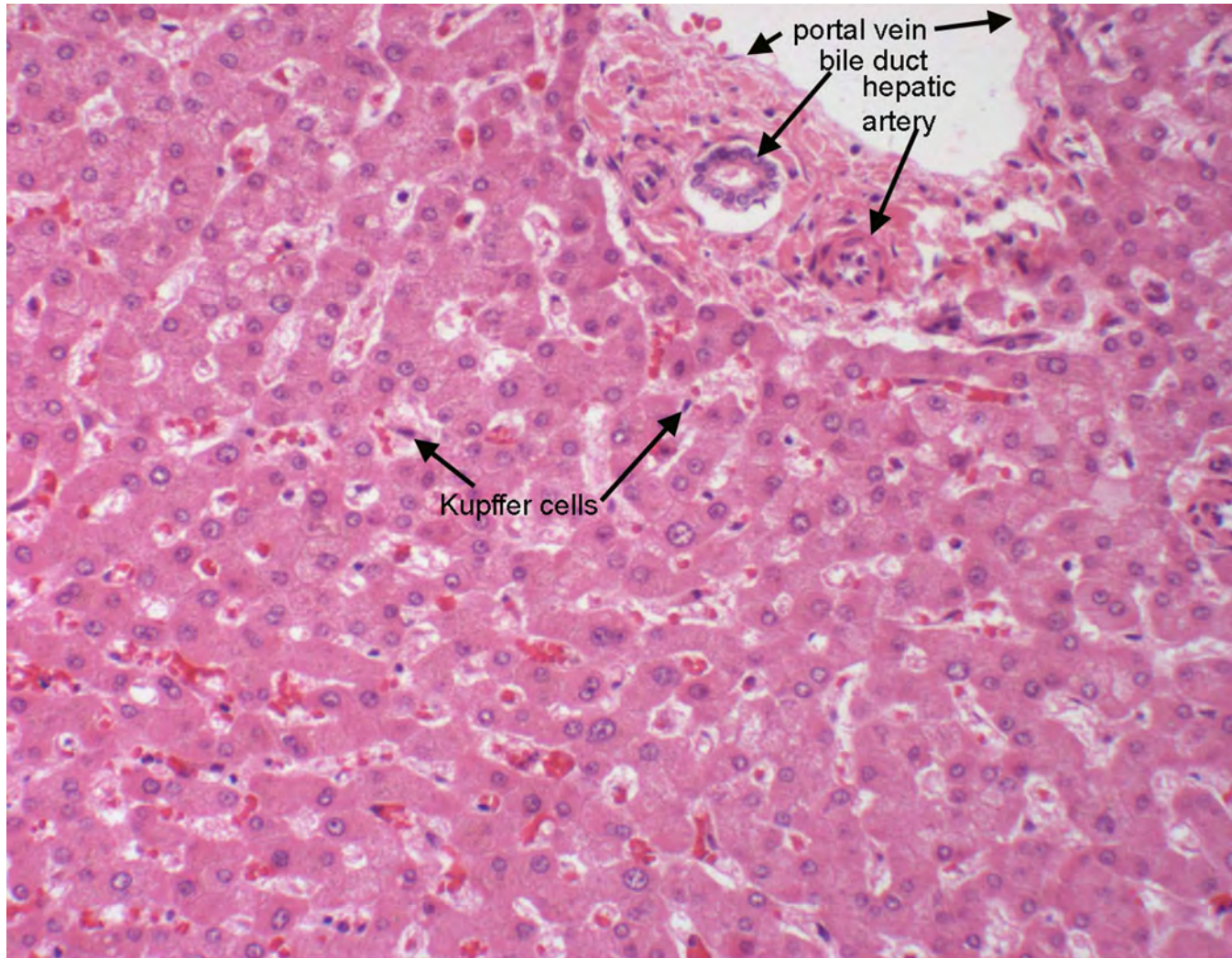
Hepatic artery

Bile Duct

Portal vein





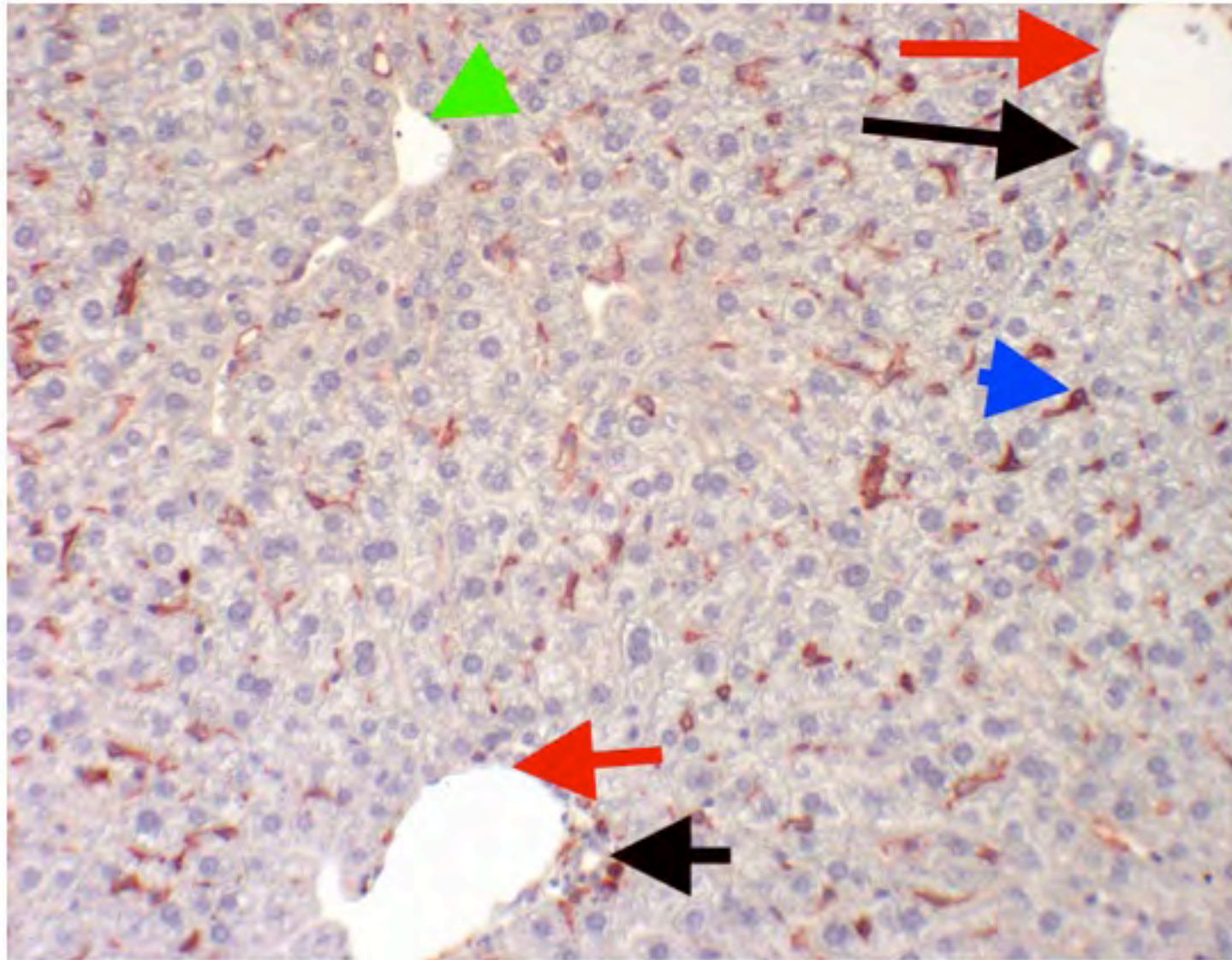




**Anti-CD31 for endothelial cells**

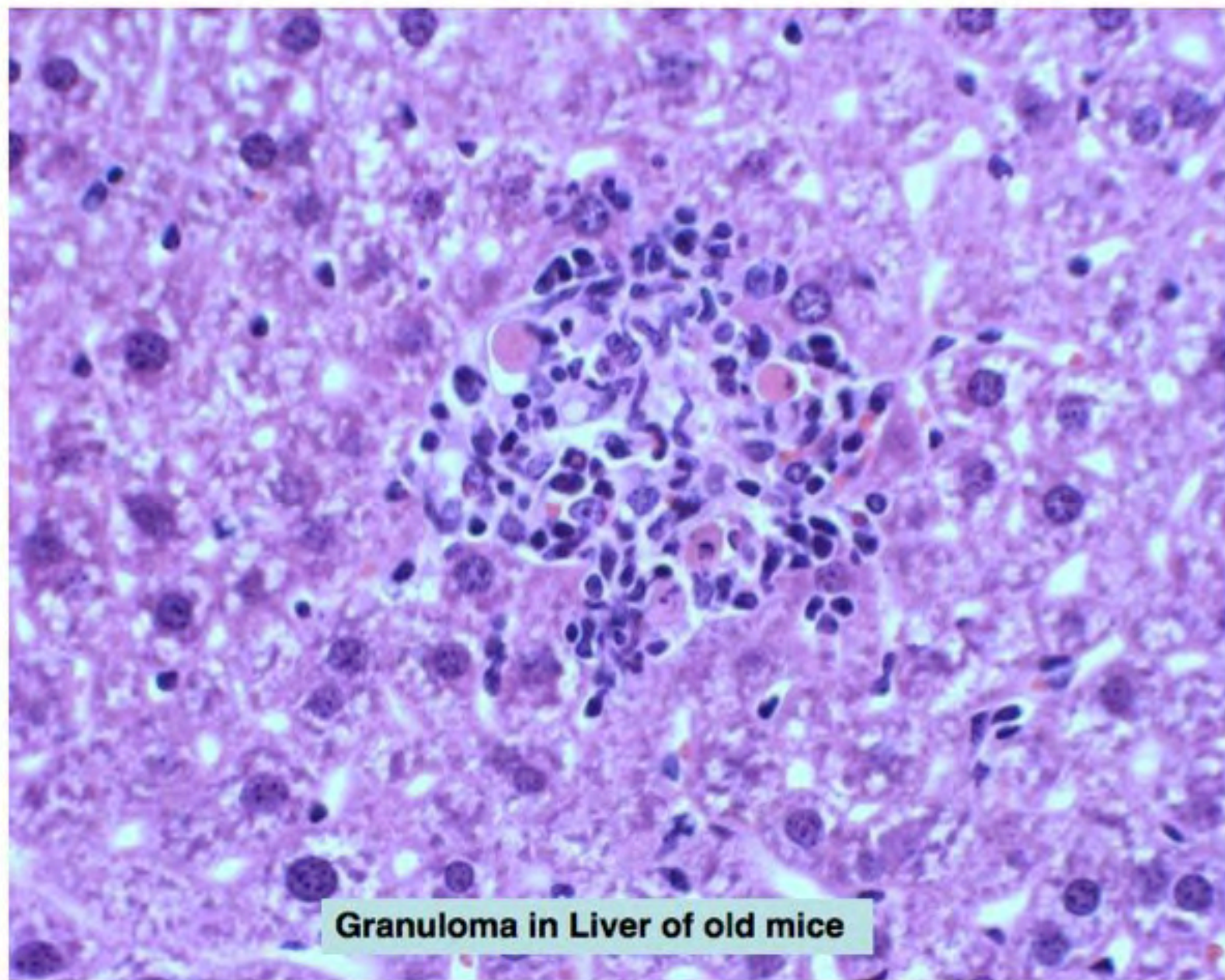






**Anti-CD-68 for macrophages (Kupffer cells in liver)**





**Granuloma in Liver of old mice**

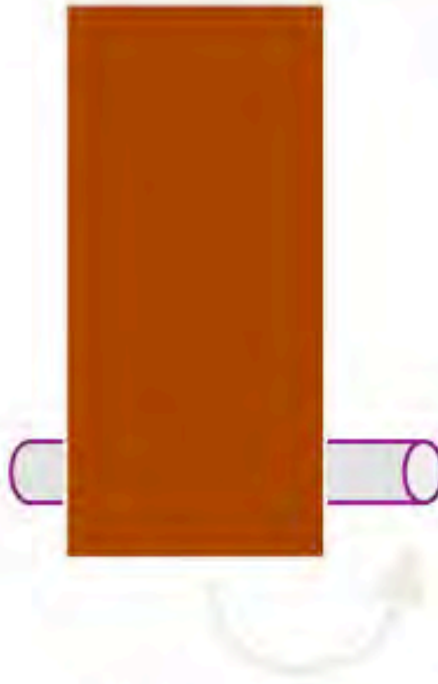


To examine  
mouse colon

## “Swiss rolls” of the colon



Remove and  
cut open  
longitudinally

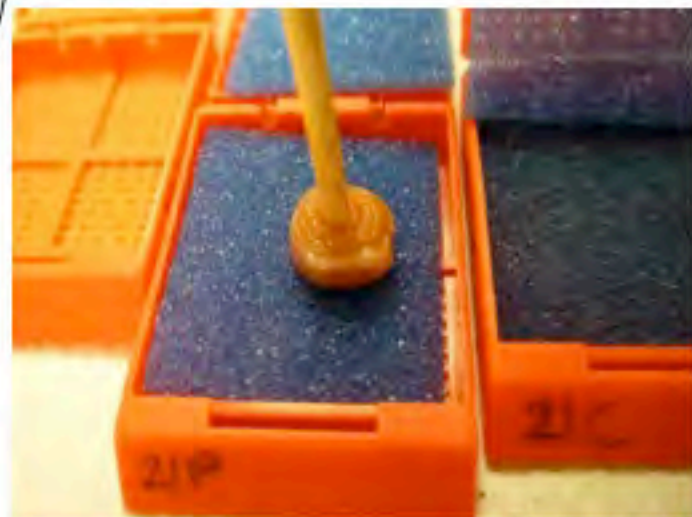


Remove fecal contents and  
roll onto wooden  
applicator stick



Remove stick and cut  
sections perpendicular  
to axis

Histologic evaluation of colon rolls are critical when studying mouse models of inflammatory bowel disease





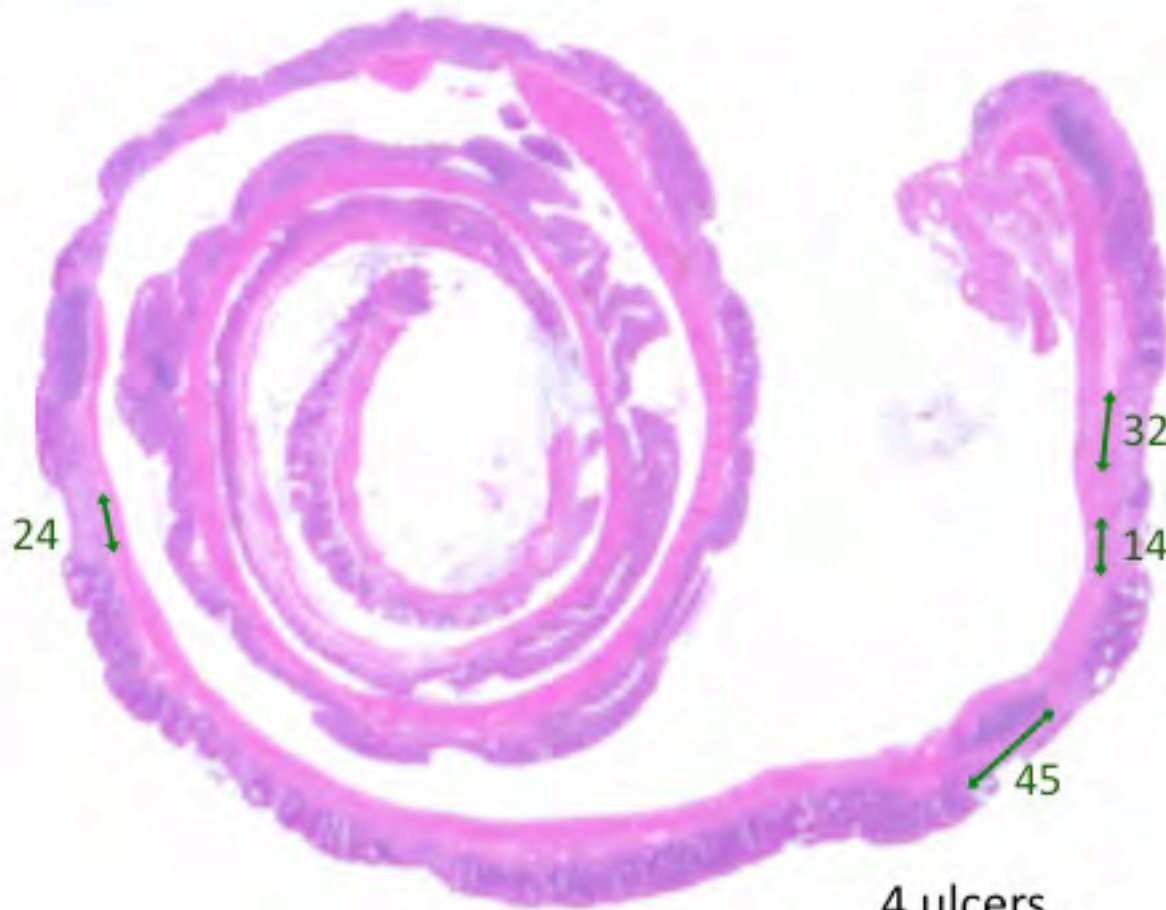
# “Swiss roll” of the colon



Histologic evaluation of colon rolls are critical when studying mouse models of inflammatory bowel disease

Colon ulcerations (loss of epithelium with inflammation) easily detected on colon rolled samples, fixed, embedded and processed for H&E

Histologic evaluation of colon rolls are critical when studying mouse models of inflammatory bowel disease



4 ulcers  
Ulcer length (Units):  
Total 115  
Average 29