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
Finger-like mucosal epithelial villi of Small Intestine

**Human**
- Lamina Propria
- Goblet Cells
- Paneth cells

**Mouse**
- Lamina Propria
- Goblet Cells
- Intestinal Glands
Ileum with Paneth Cells-red granules

Pancreas
Paneth cells: Lysozyme, defense
Peyer’s patches: lymphoid, cellular defense

Mucosa associated lymphoid tissue: Peyer’s patch in the small intestine
Colon (Large Intestine): columnar epithelial cells lining mucosa with no villi and numerous goblet cells

Human

Mouse

Goblet Cells

Lamina Propria

Goblet Cells
PAS stain for mucin in colon

Alcian Blue at pH 2.5 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.
A 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

Central vein

Inferior vena cava to Heart
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