



DIGESTIVE SYSTEM 2

- Oesophagus
- Stomach
- Small intestine
- Large intestine inc. Appendix
- Anus

Common structure of the wall of GIT tube



- **The mucosa**
 - epithelial lining
 - lamina propria
/loose connect. tissue/
 - the muscularis mucosae
- **The submucosa**
/loose connect. tissue + Meissner's nerve plexus/
- **The muscularis**
 - circular
 - myenteric nerve plexus
 - Longitudinal smooth muscle
- **The serose or adventitia**
/loose connect. tissue -
/type of the lining/

Common structure of the wall of GIT tube

- The mucosa

- epithelial lining
- lamina propria
- the muscularis mucosae

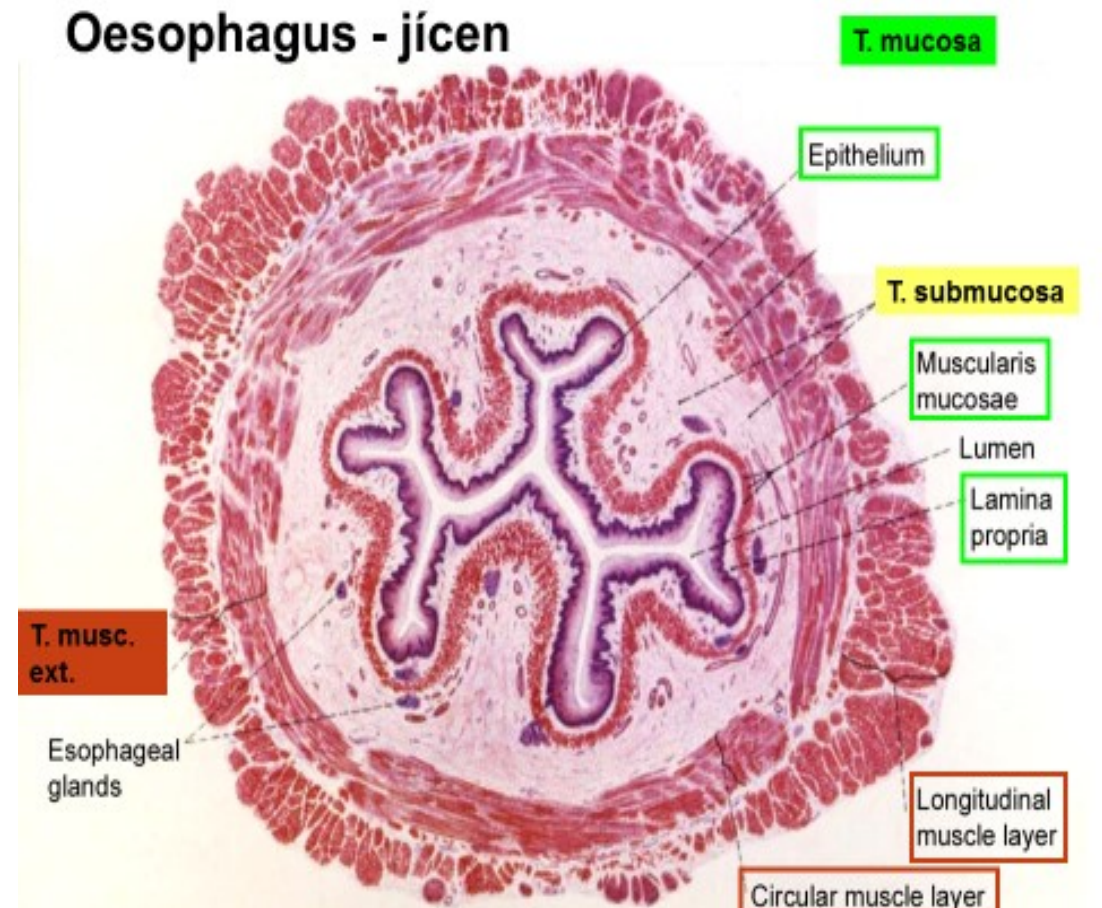
- The submucosa

- loose connect. tissue + Meissner's nerve plexus

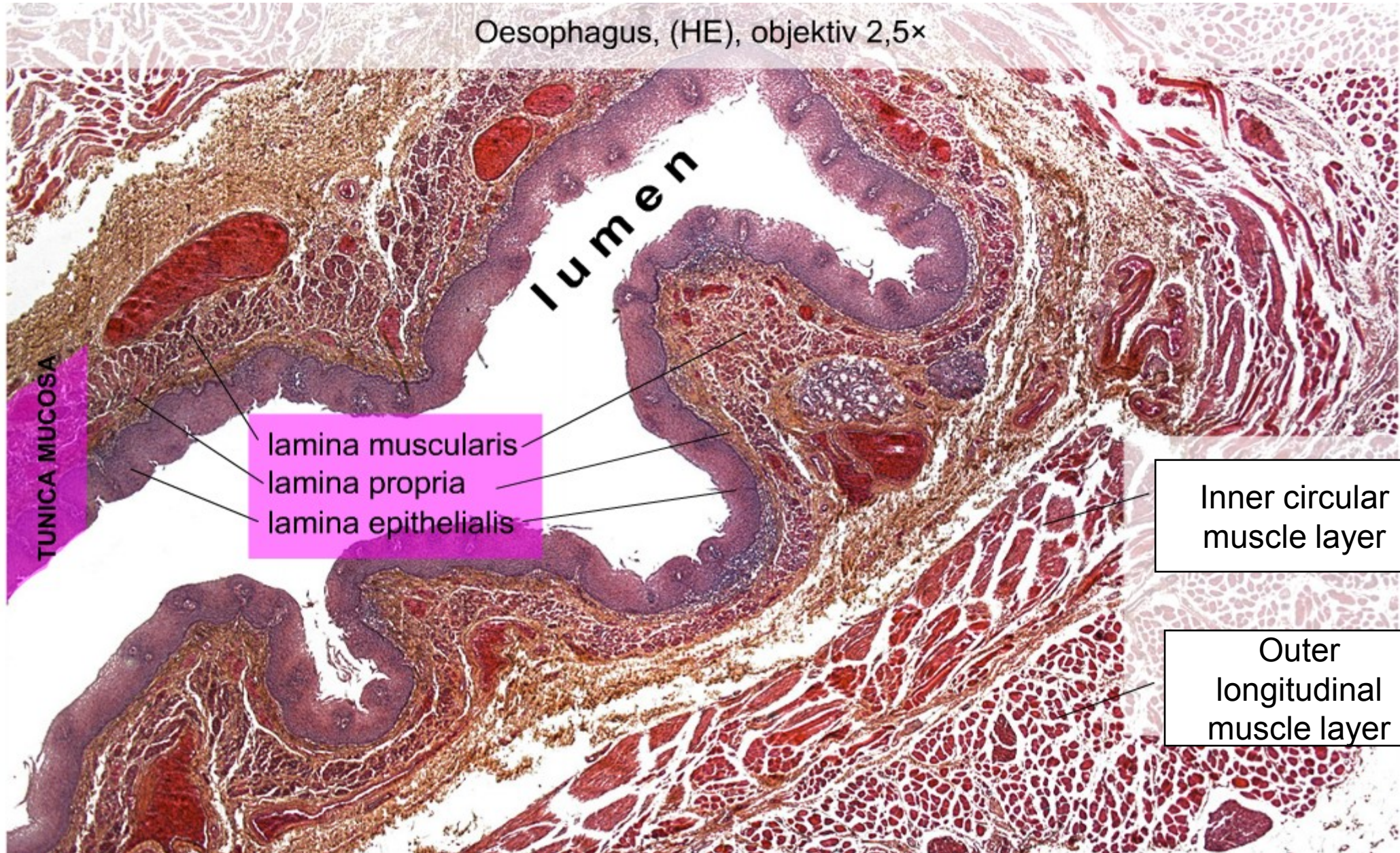
- The muscularis

- Circular and Longitudinal smooth muscle
- + plexus myentericus Auerbachi

- The serose or adventitia



Oesophagus, (HE), objektiv 2,5x



Lumen

TUNICA MUCOSA

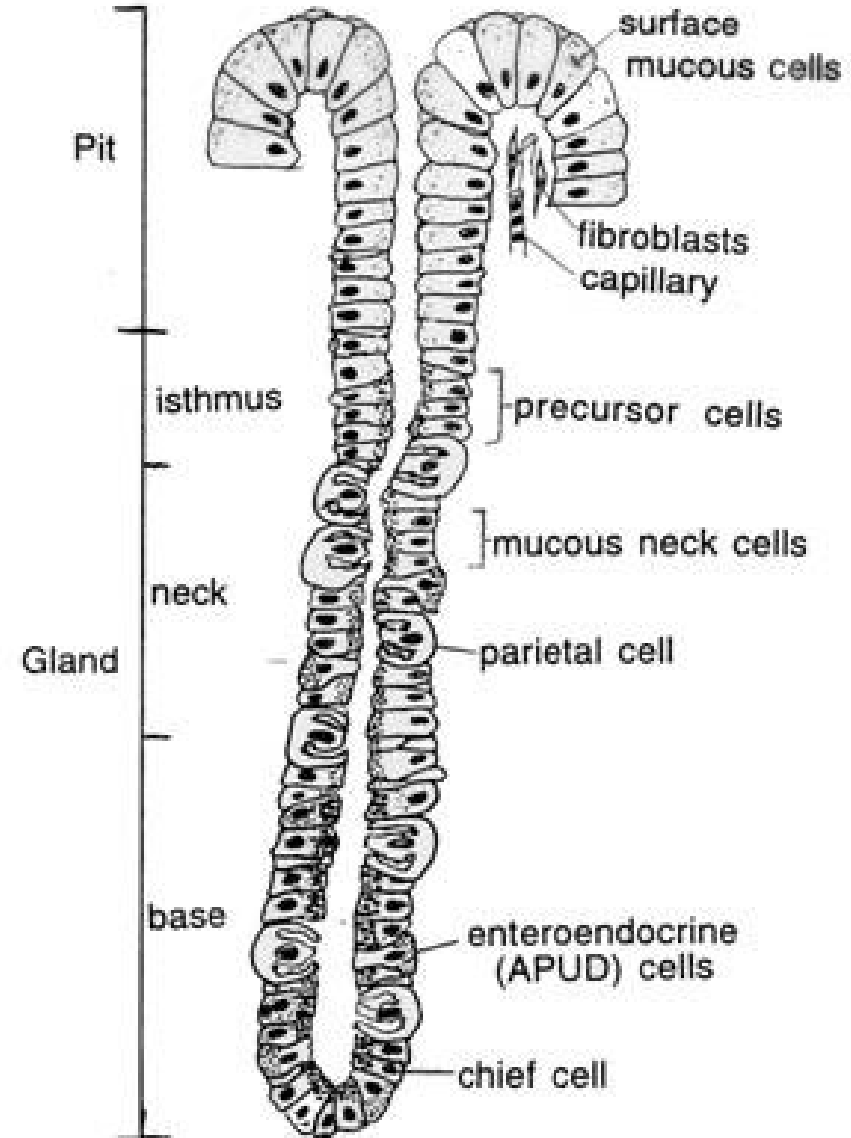
lamina muscularis
lamina propria
lamina epithelialis

Inner circular muscle layer

Outer longitudinal muscle layer

Gastric glands

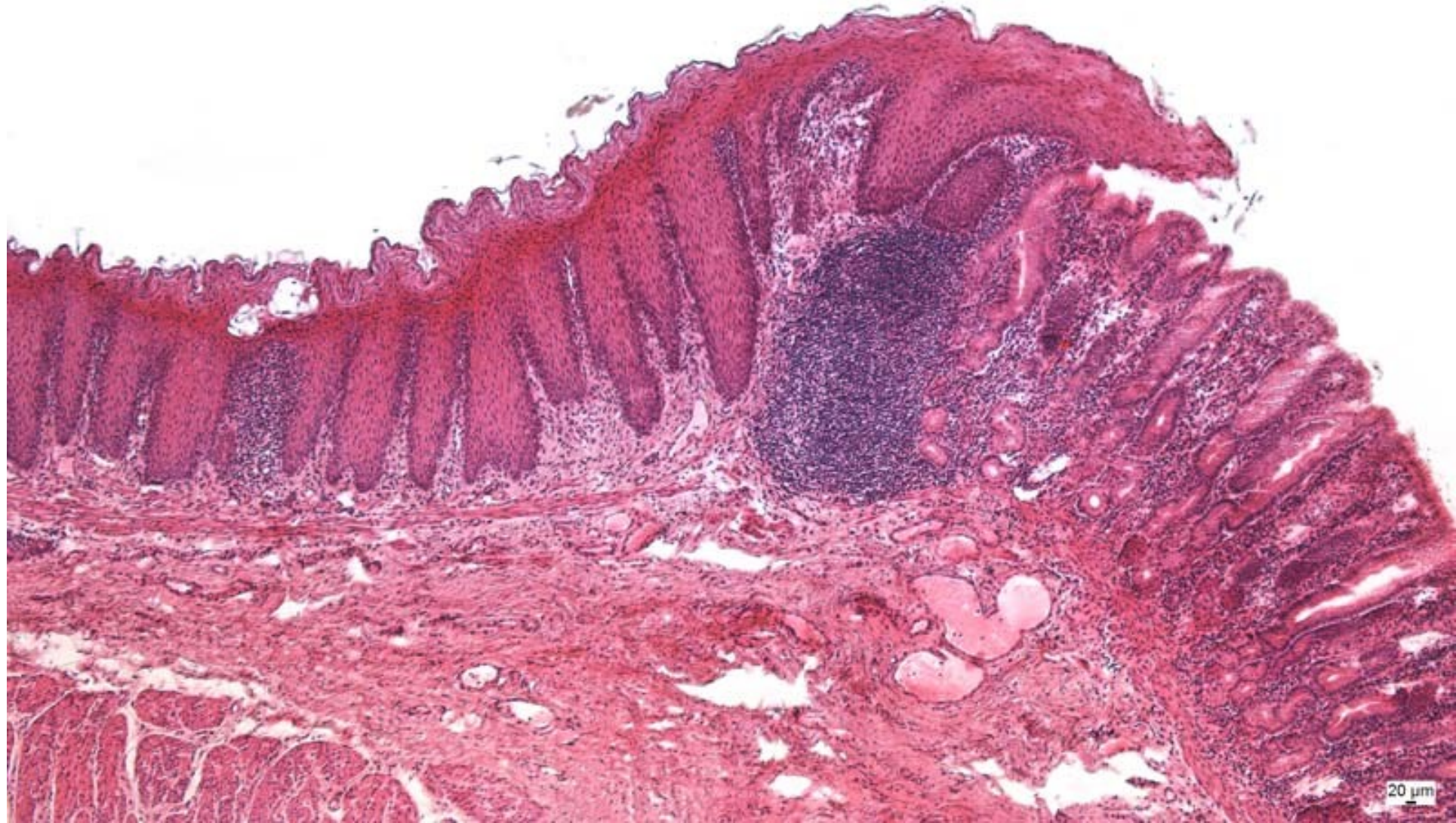
- **Gll. cardiacae**
 - branched tubular mucous glands
- **Gll. gastricae propriae** (fundic glands)
 - Simple tubular
 - Base, neck, isthmus, pit
 - **chief** c. /zymogenic/- lower part
 - **parietal (oxyntic)** c. /HCl,,intrinsic factor“/- neck
 - **mucous neck cells**
 - **enteroendocrine cells** - base
 - (undifferentiated cells)
- **Gll. pyloricae**
 - branched tubular mucous glands



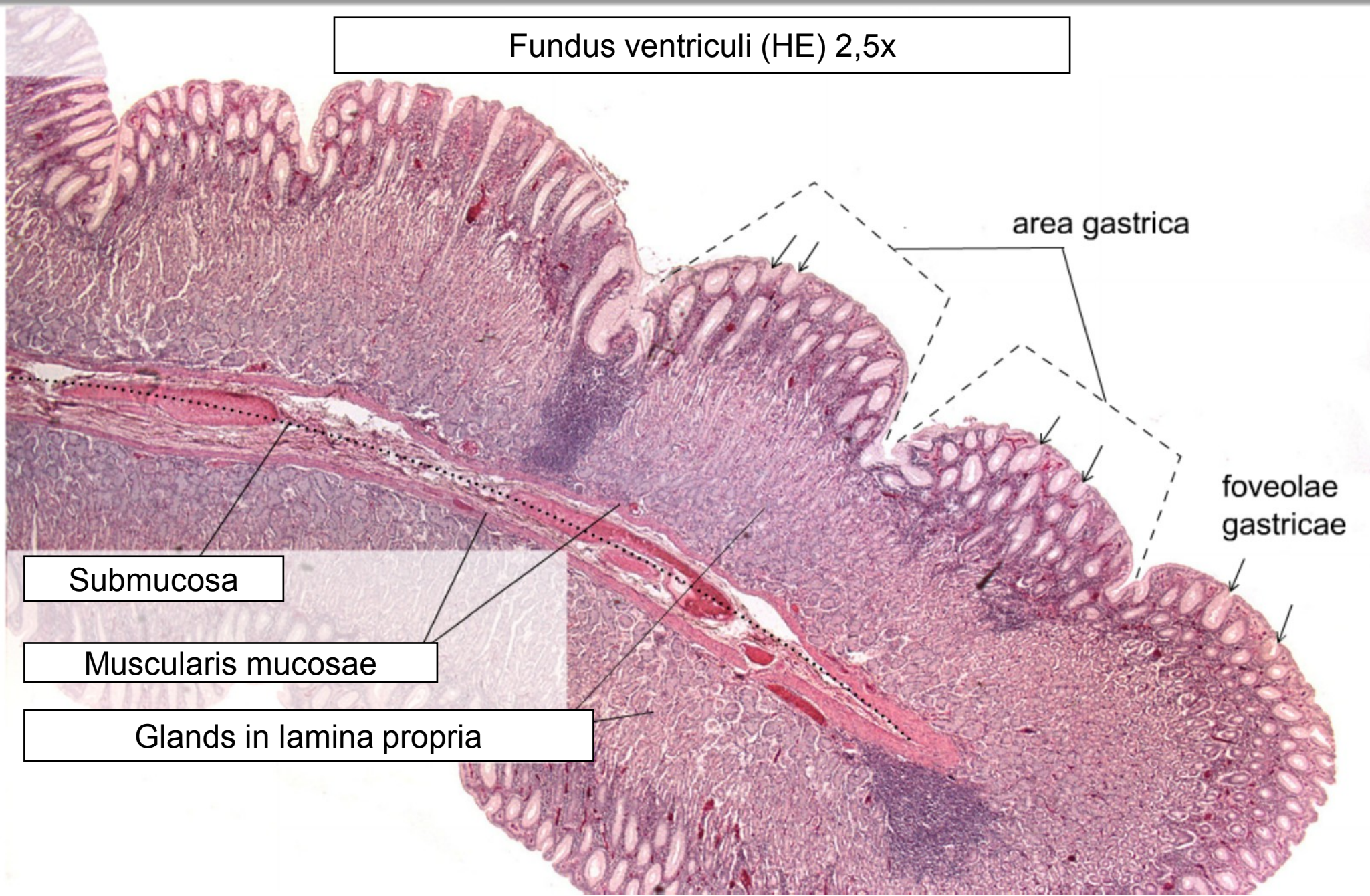
Cardia (HE)

Cardiac glands

- branched tubular mucous glands



Fundus ventriculi (HE) 2,5x



area gastrica

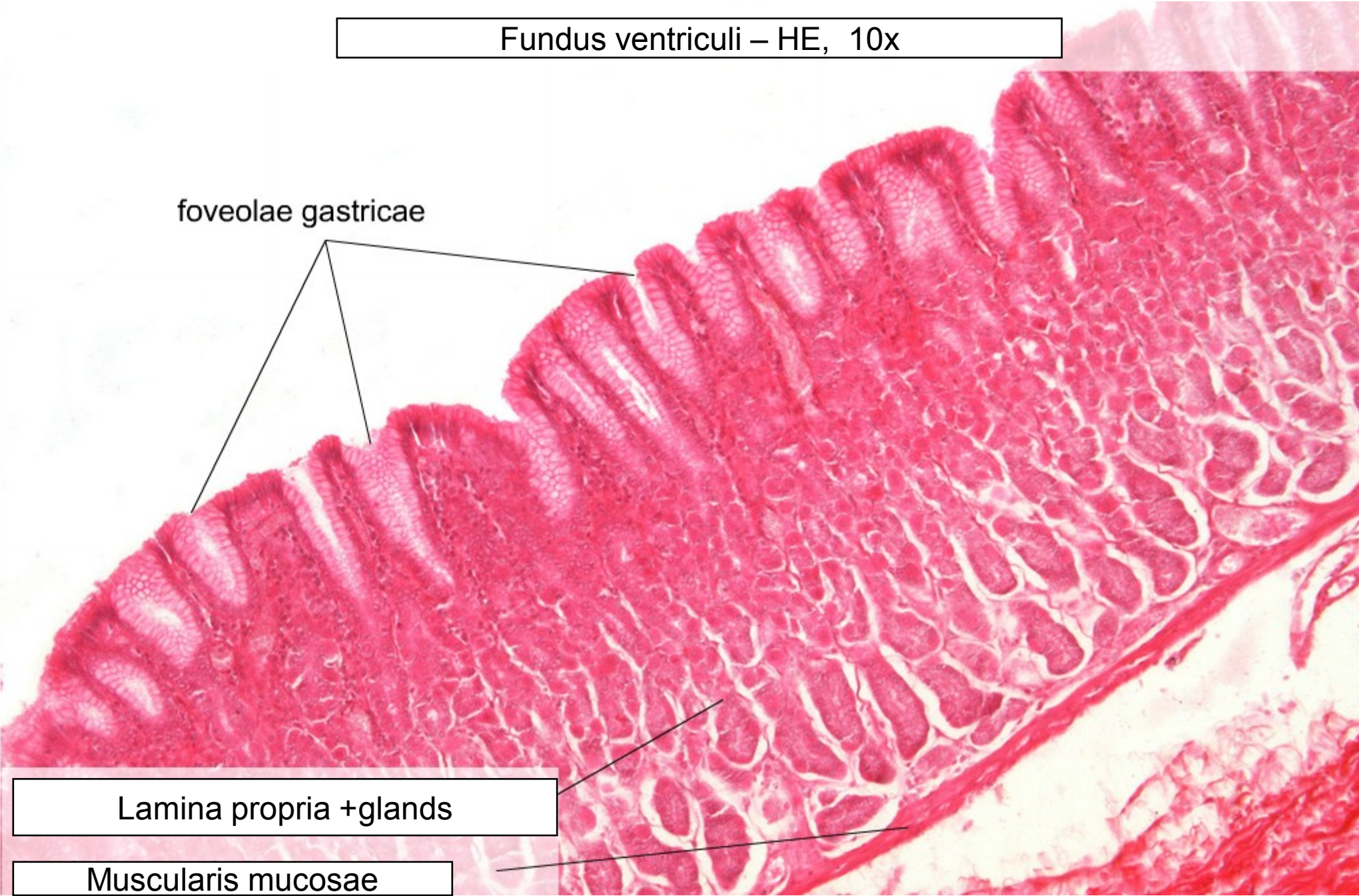
foveolae
gastricae

Submucosa

Muscularis mucosae

Glands in lamina propria

Fundus ventriculi – HE, 10x

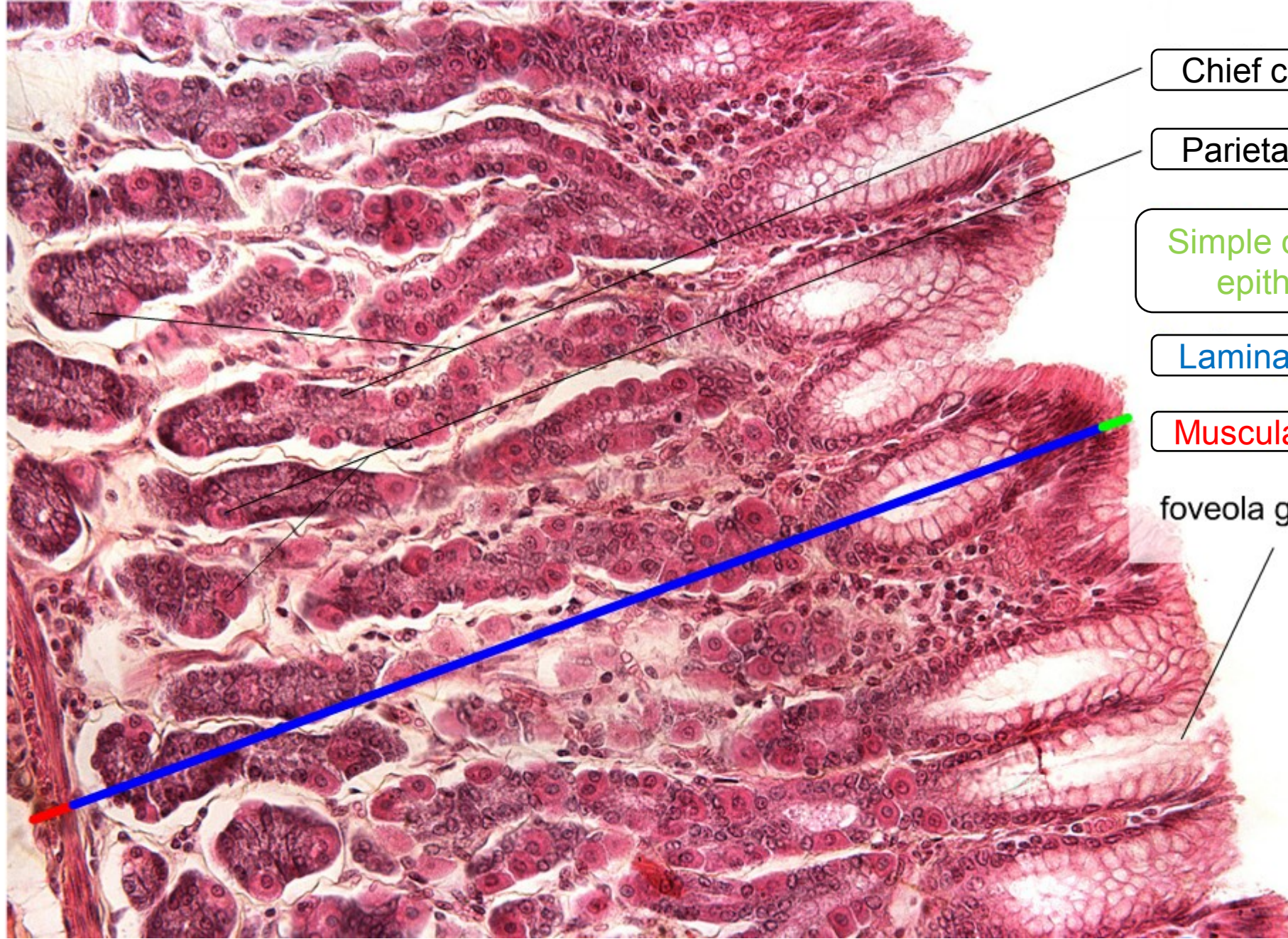


foveolae gastricae

Lamina propria +glands

Muscularis mucosae

Fundus ventriculi (HE) – gastric glands, 10x



Chief cells

Parietal cells

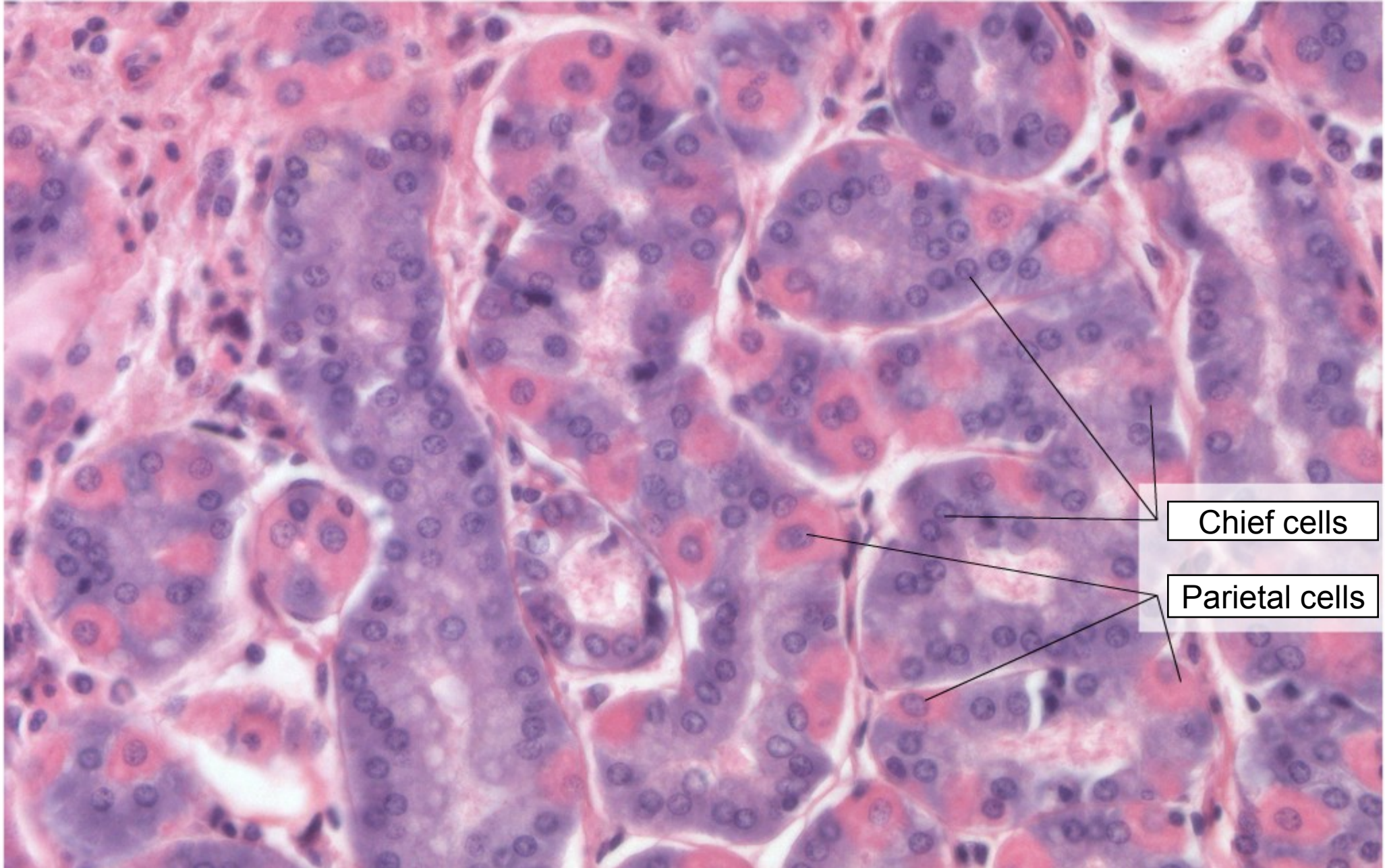
Simple columnar
epithelium

Lamina propria

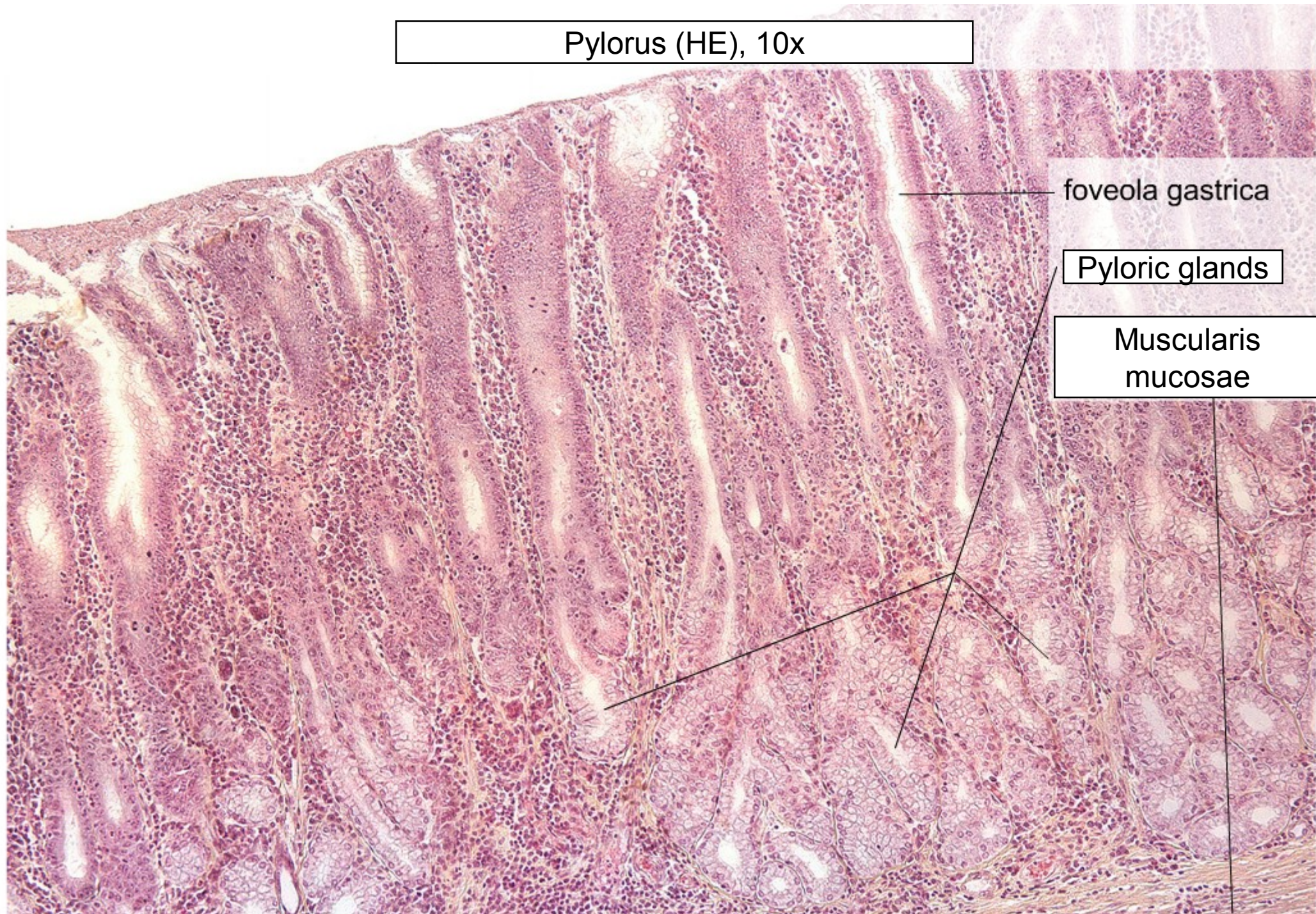
Muscularis mucosae

foveola gastrica

Fundus ventriculi – gastric glands (HE), 20x



Pylorus (HE), 10x

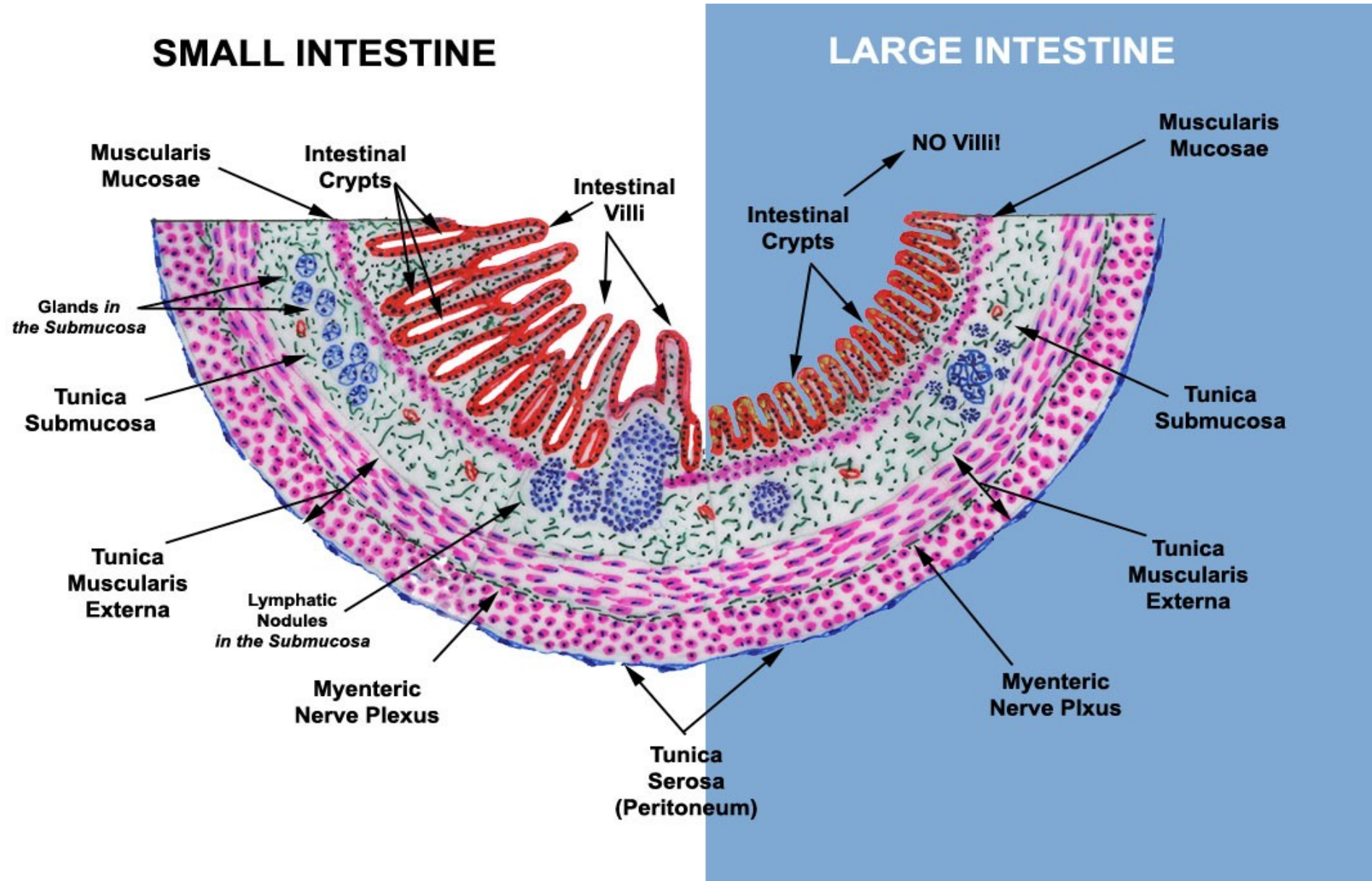


foveola gastrica

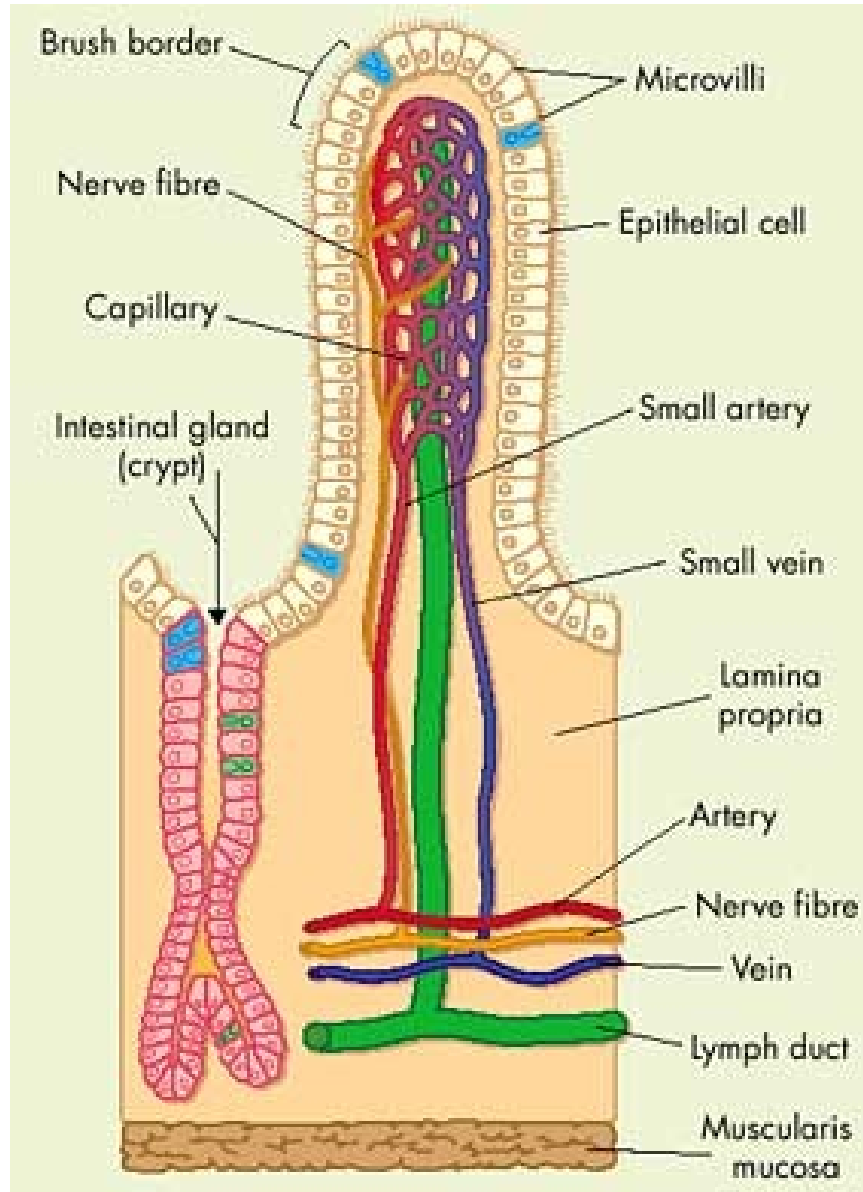
Pyloric glands

Muscularis
mucosae

Schematic structure of the wall of the intestine

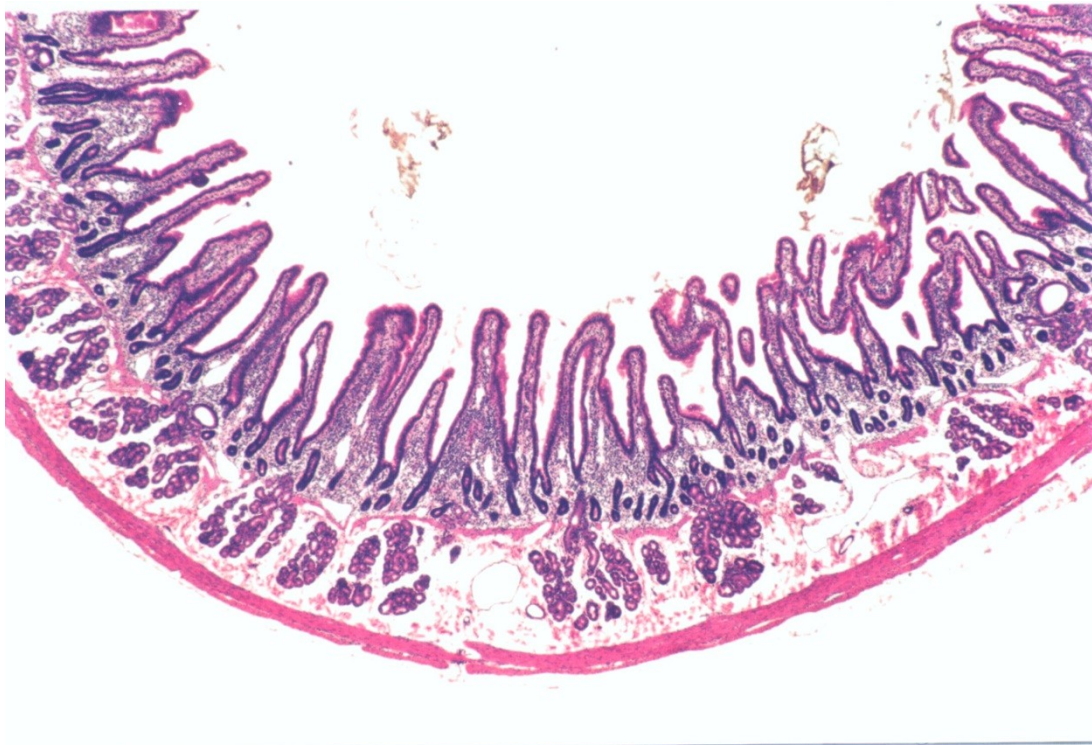


- Intestinal villi
- Crypt of Lieberkhün



Small intestine

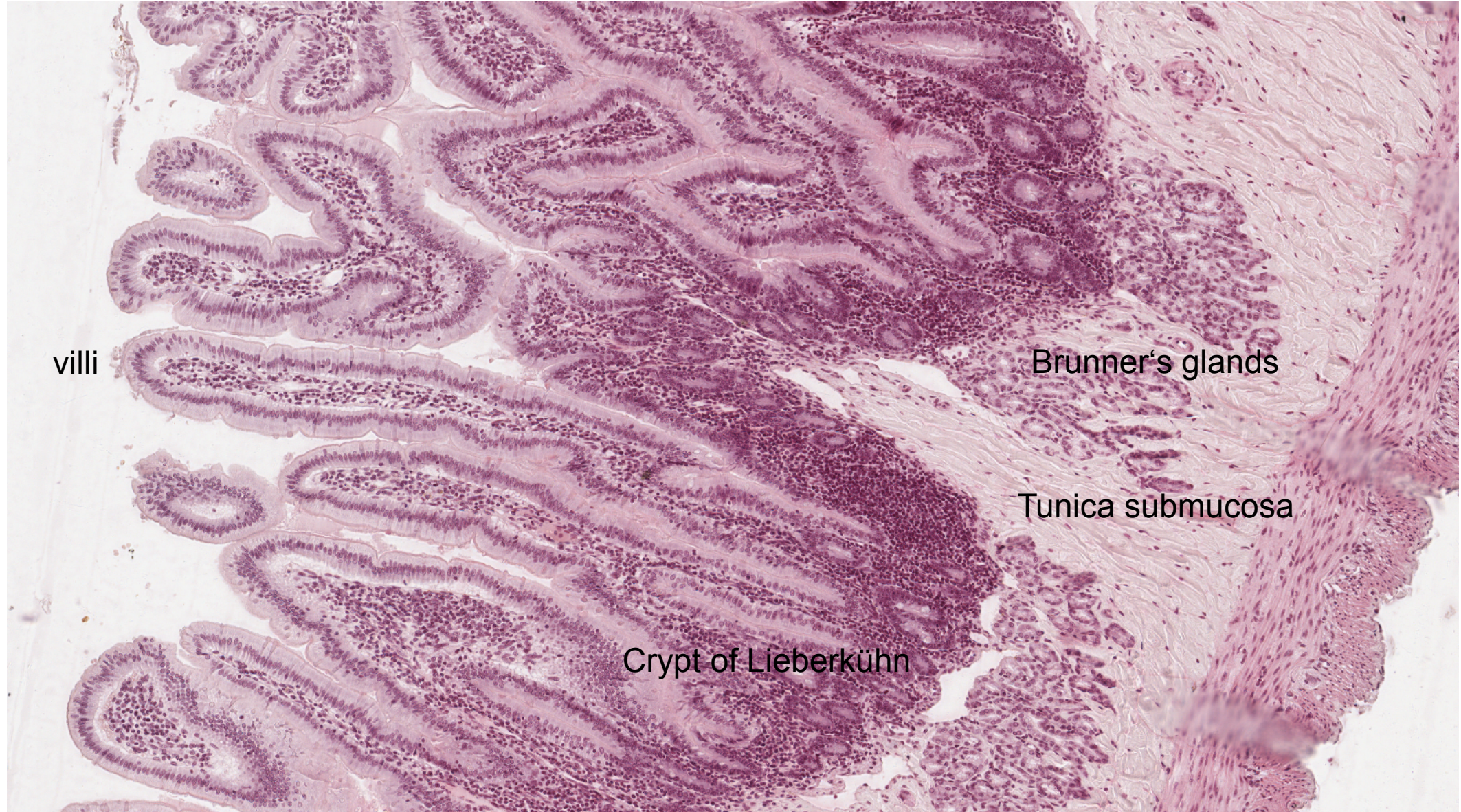
duodenum



jejunum



Duodenum



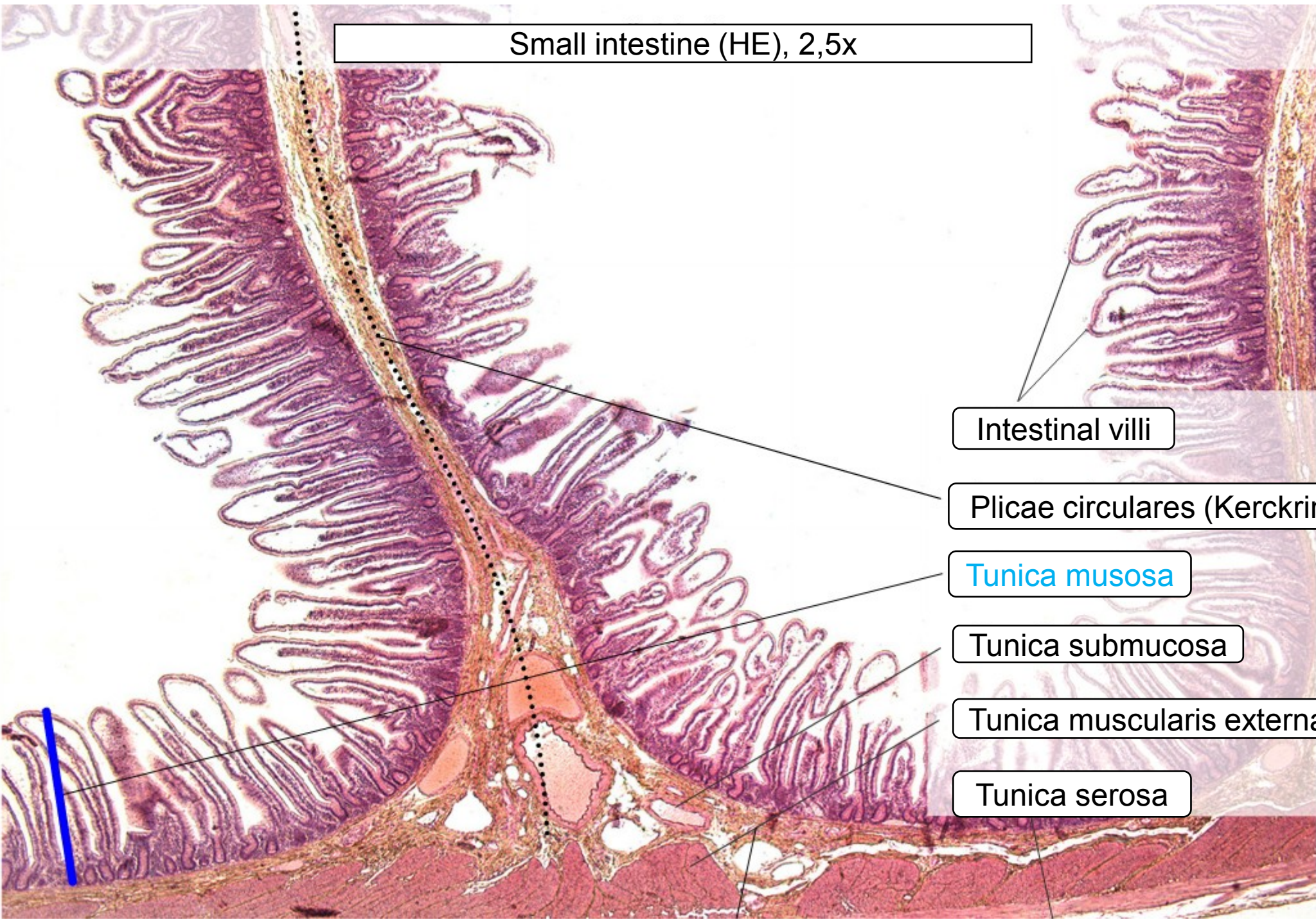
villi

Brunner's glands

Tunica submucosa

Crypt of Lieberkühn

Small intestine (HE), 2,5x



Intestinal villi

Plicae circulares (Kerckring's)

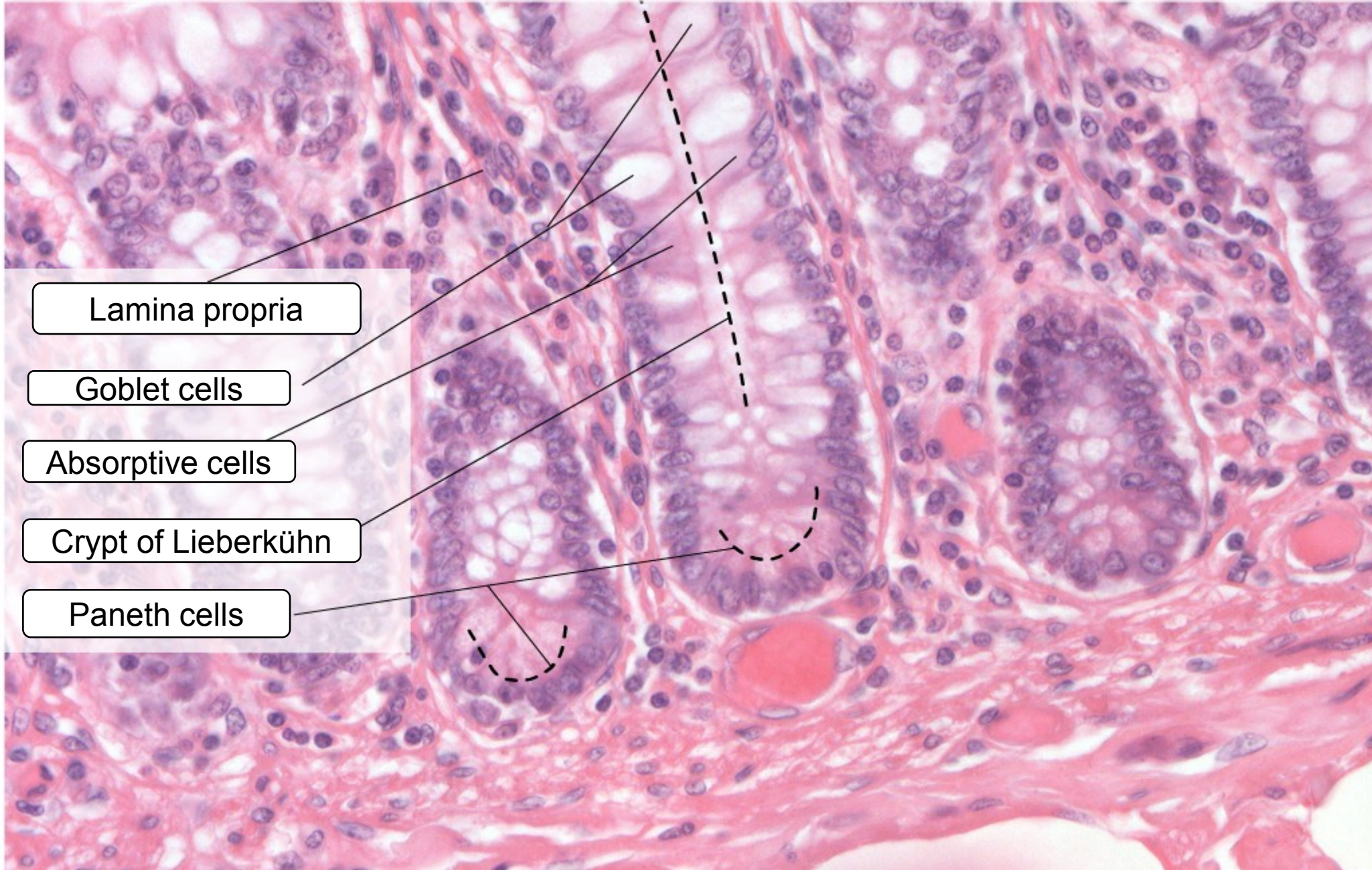
Tunica musosa

Tunica submucosa

Tunica muscularis externa

Tunica serosa

Small intestine – Paneth cells, (HE), 40x



Lamina propria

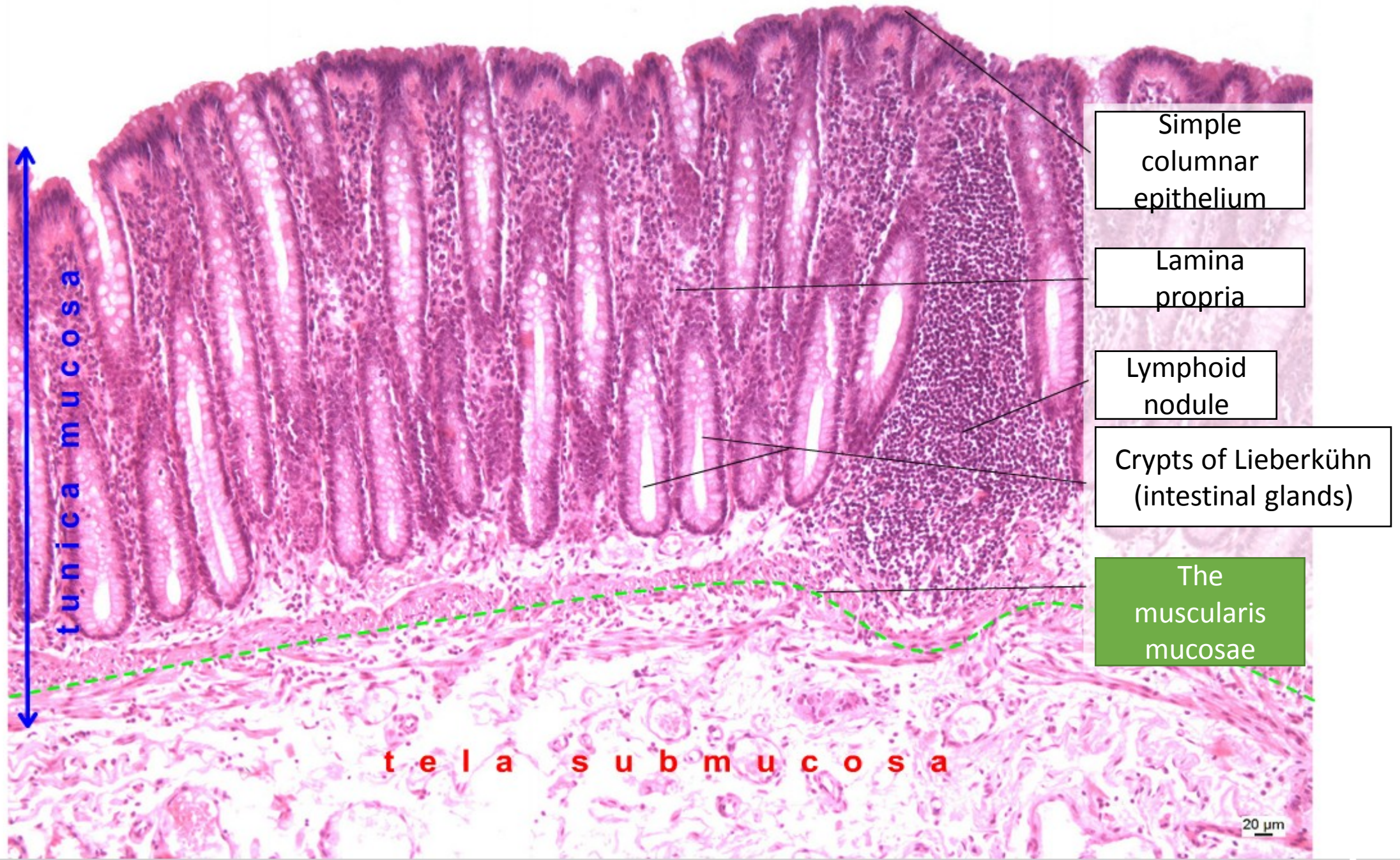
Goblet cells

Absorptive cells

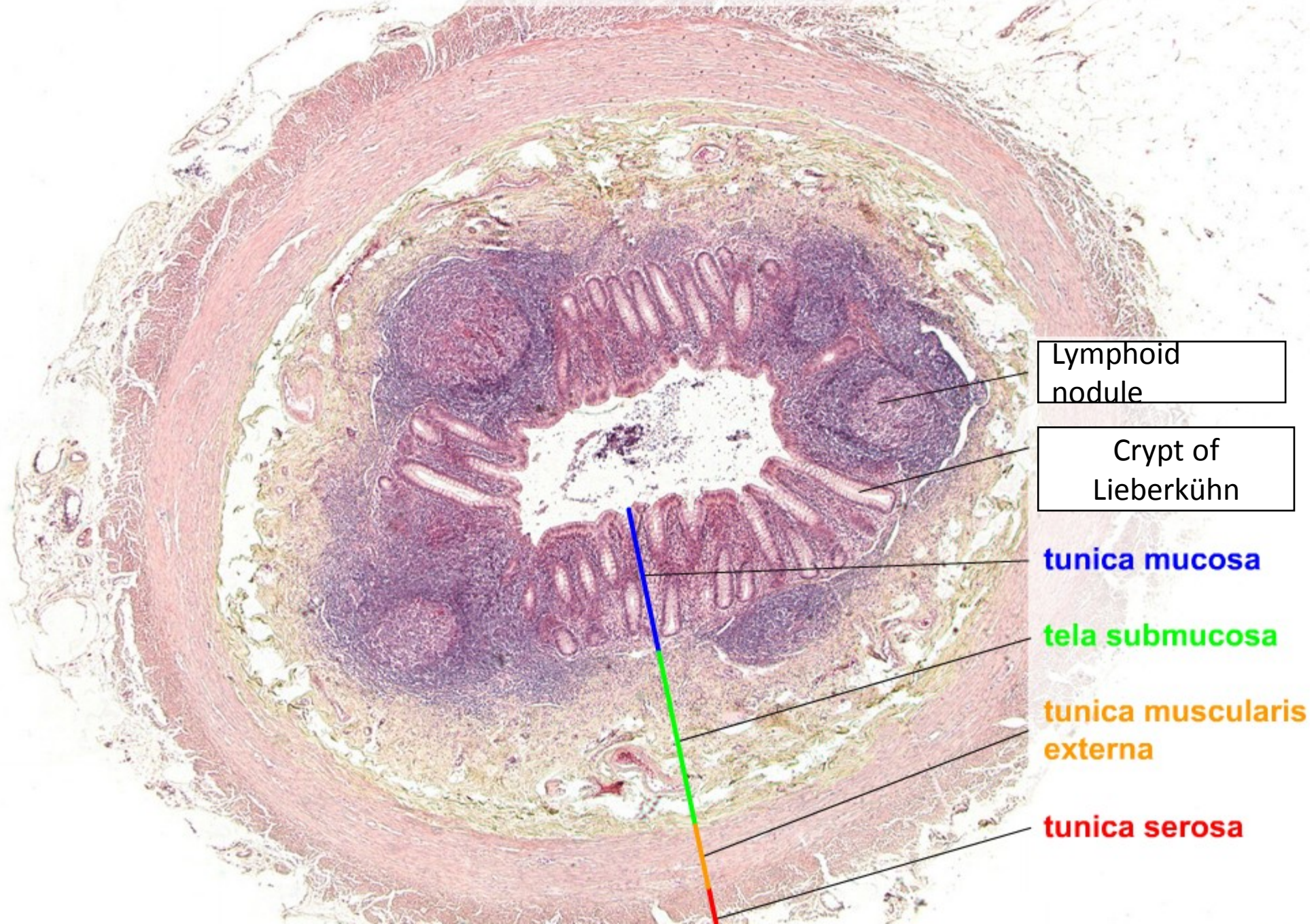
Crypt of Lieberkühn

Paneth cells

Intestinum crassum, (HE), objektiv 2,5×



Appendix – přehled, (HEŠ), objektiv 2,5×



Lymphoid
nodule

Crypt of
Lieberkühn

tunica mucosa

tela submucosa

tunica muscularis
externa

tunica serosa

Anus

Hemorrhoidal zone

- epithelium replacement
- the muscularis muc. ends



2.

Digestive systém II



Preparáty:

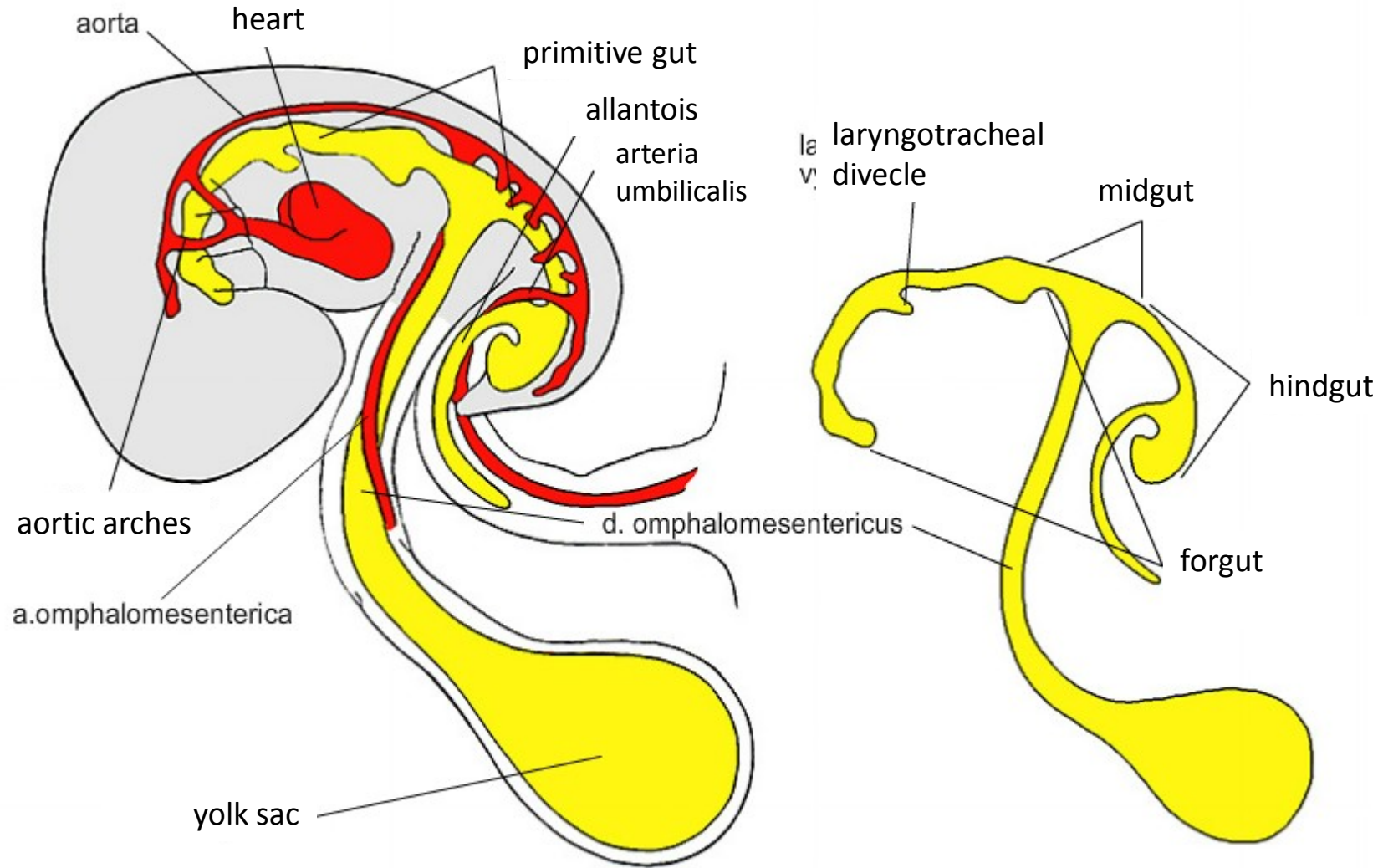
11. Oesophagus (HE)
12. Cardia(HE)
13. Fundus ventriculi(HE)
14. Pylorus (HE)
15. Duodenum (HE)
16. Small intestine (HE)
17. Large intestine (HE)
18. Appendix (HE)
19. Anus (HE)



Atlas EM:

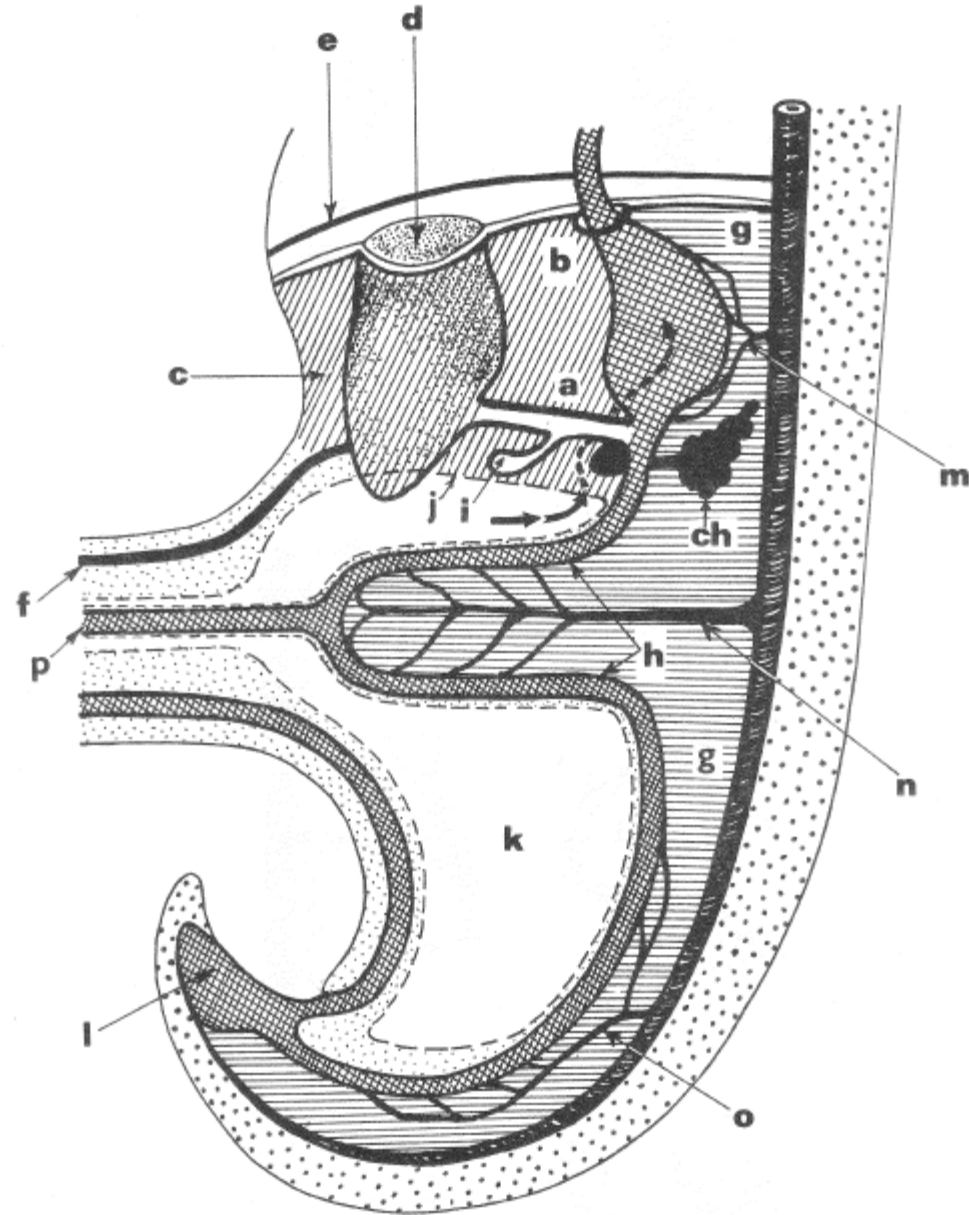
Striated border – surface of enterocytes (28)

Primitive gut – embryo, day 26



Embryo, week 5

- a - pars hepatoduodenalis omenti minoris
- b - pars hepatogastrica omenti minoris
- c - mesohepaticum ventrale ⇨ lig. falciforme
- d - liver
- e - diaphragm
- f - vena umbilicalis
- g - mesogastrium dorsale
- h - mesenterium dorsale
- ch - divertikulum pancreaticum dorsale
- i - pars cystica hepatis
- j - lower margin of ventral mesentery
- K - peritoneal cavity
- L - cloaca
- m - a. coeliaca
- n - a. mesenterica sup.
- o - a. mesenterica inf.

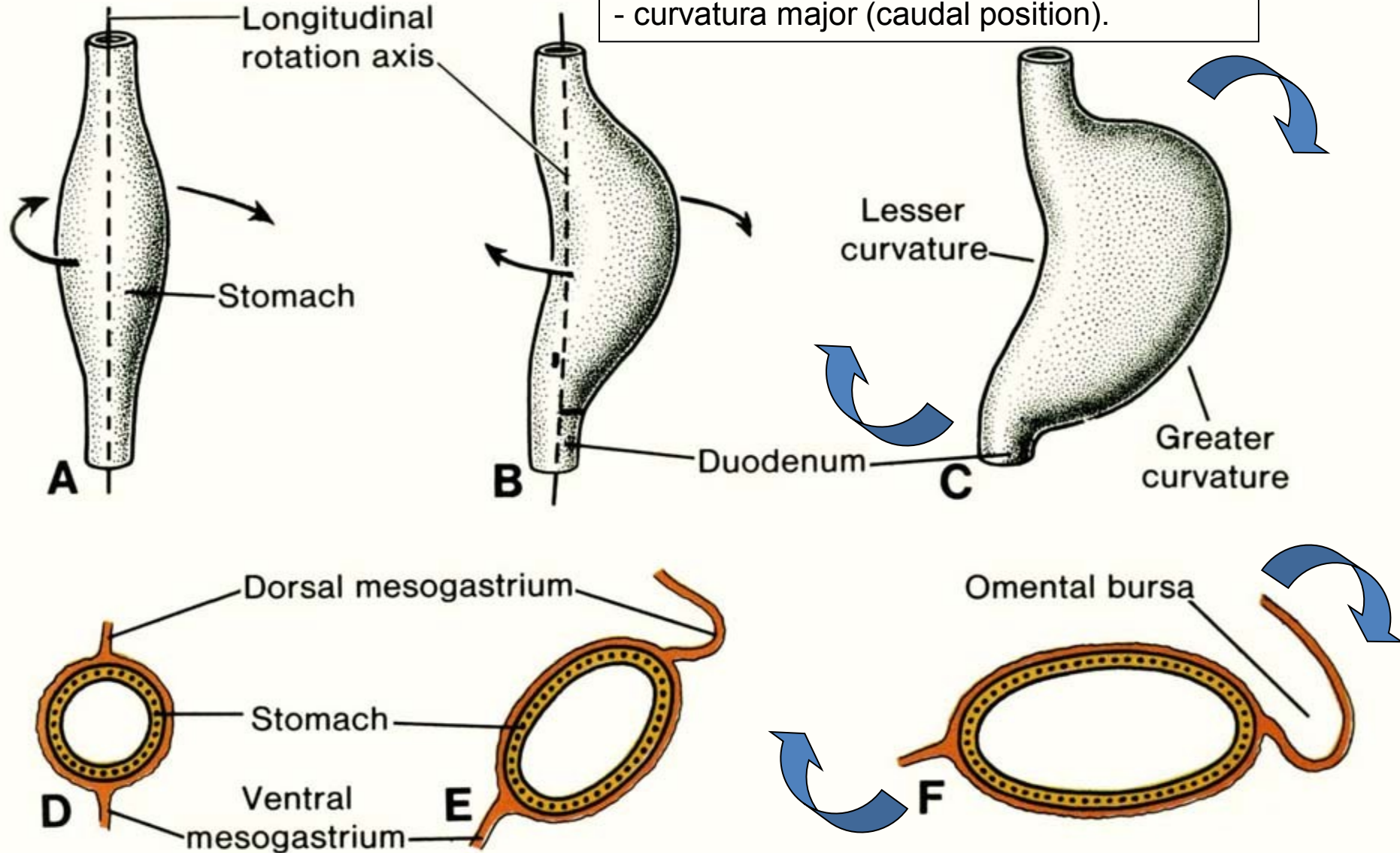


Rotation around longitudinal axis:

- left side → ventrally,
- right side → dorsally.

Uneven growth of ventral and dorsal wall:

- curvatura minor (to the right),
 - curvatura major (to the left).
- Rotation around sagittal axis :
- curvatura minor (cranial position),
 - curvatura major (caudal position).



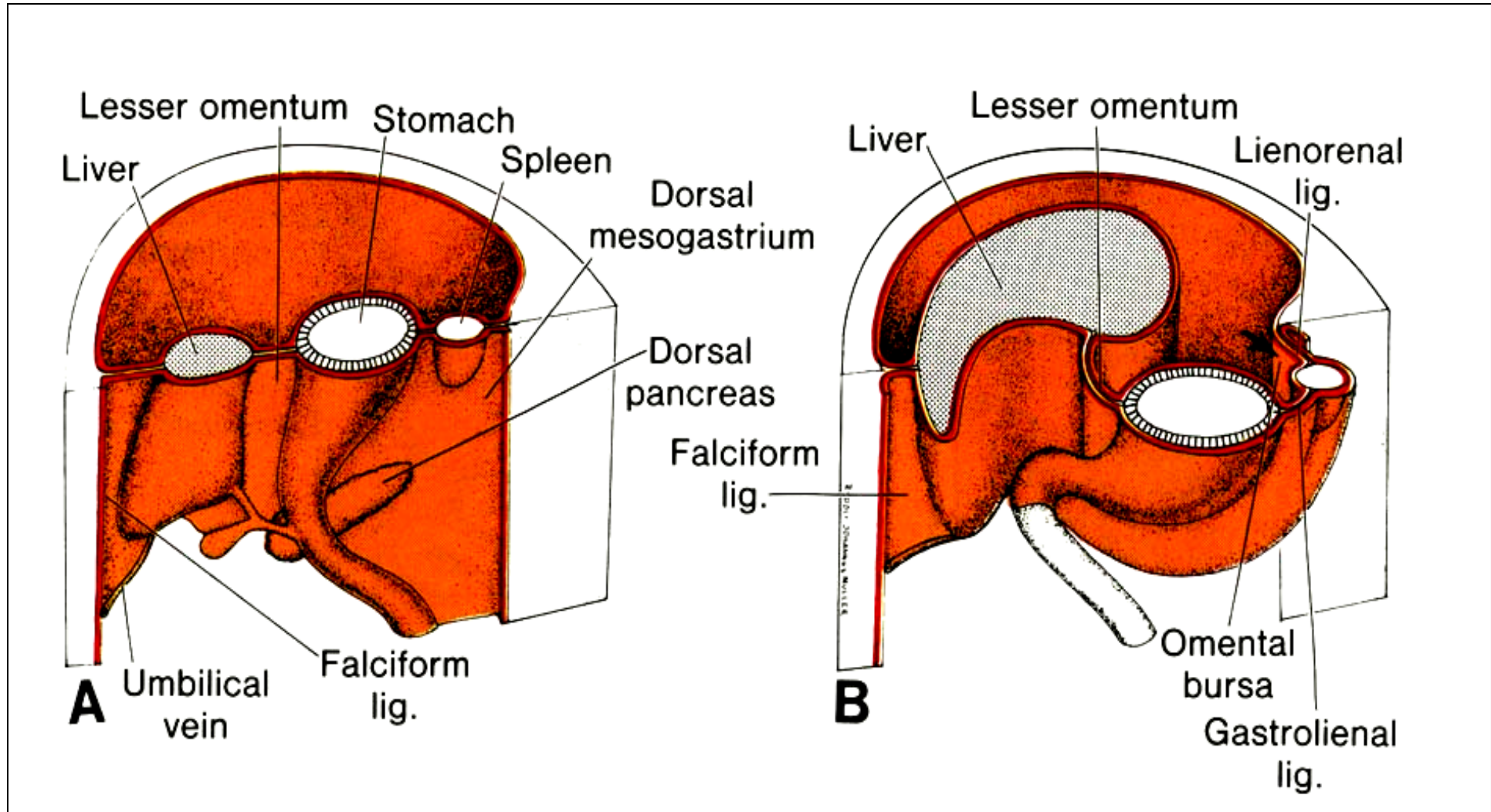
Mesenterium dorsale

Mesogastrium dorsale = omentum majus

Mesoduodenum dorsale

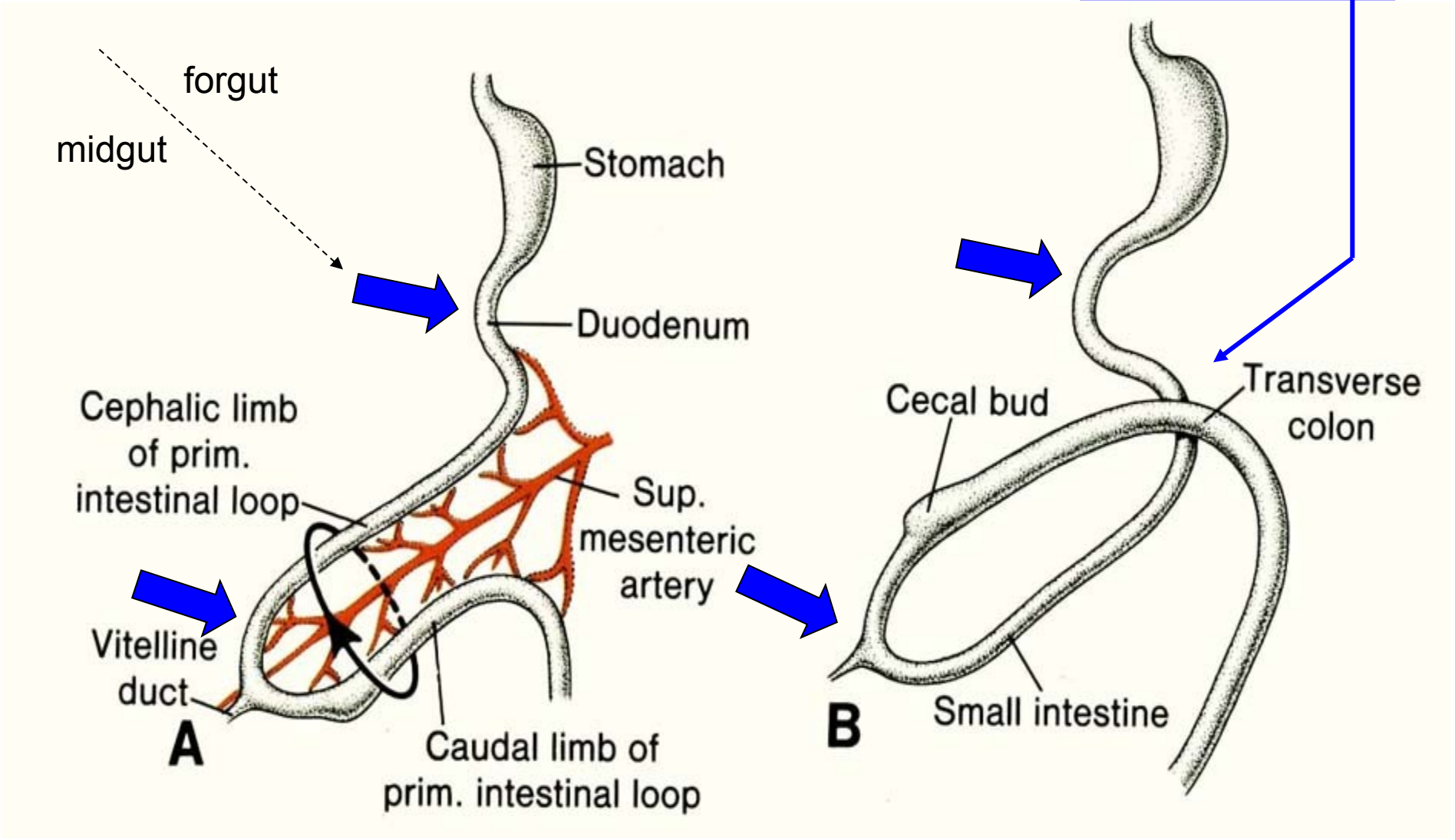
Mesenterium dorsale

Mesocolon dorsale

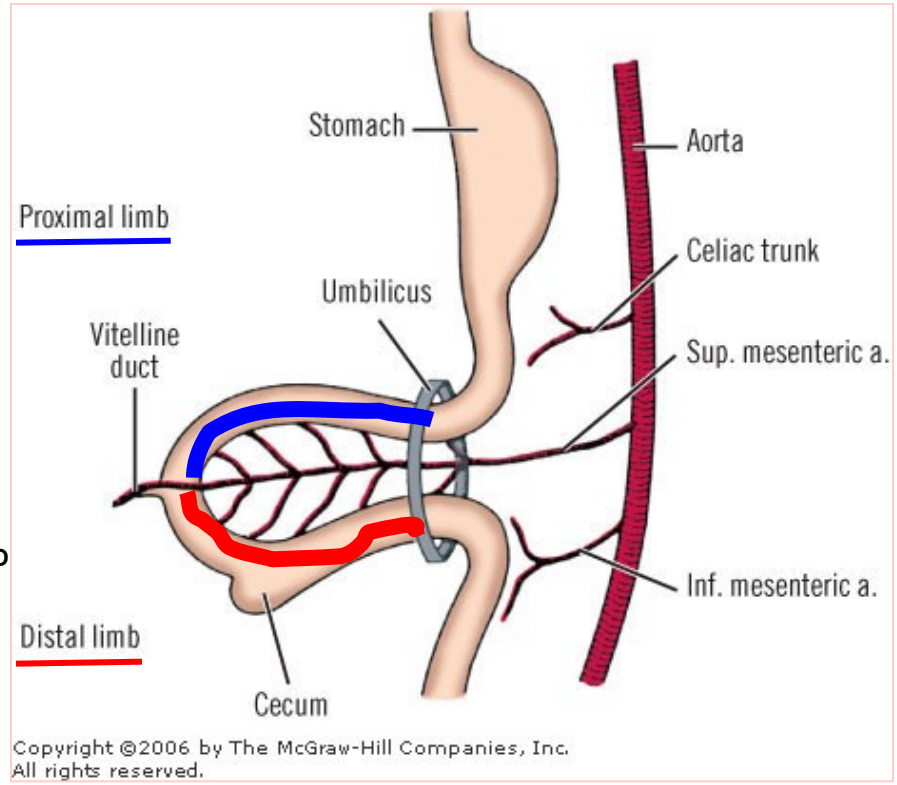
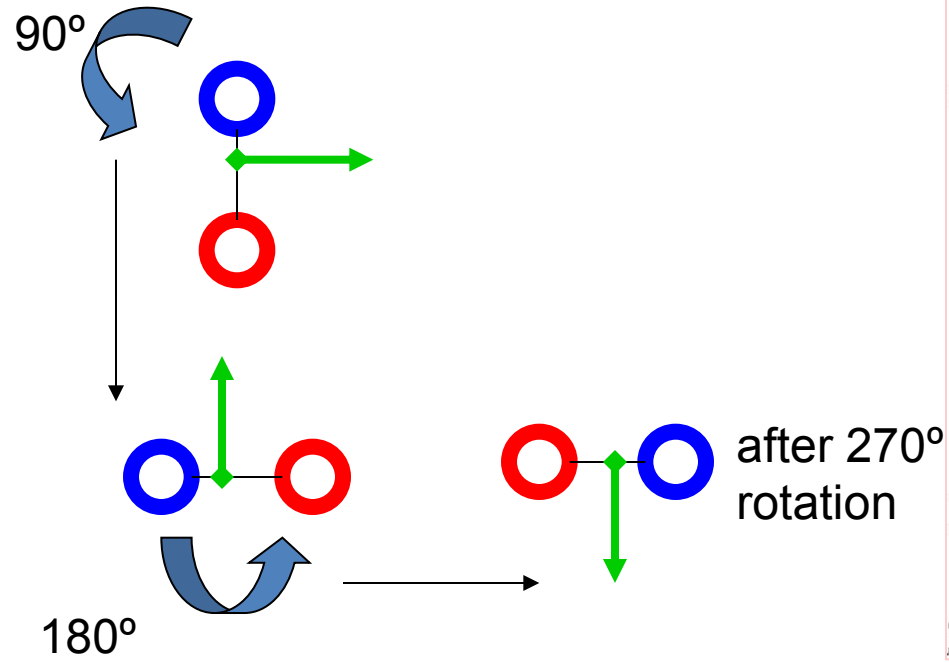


Duodenal loop and umbilical loop

Flexura duodenojejunalis

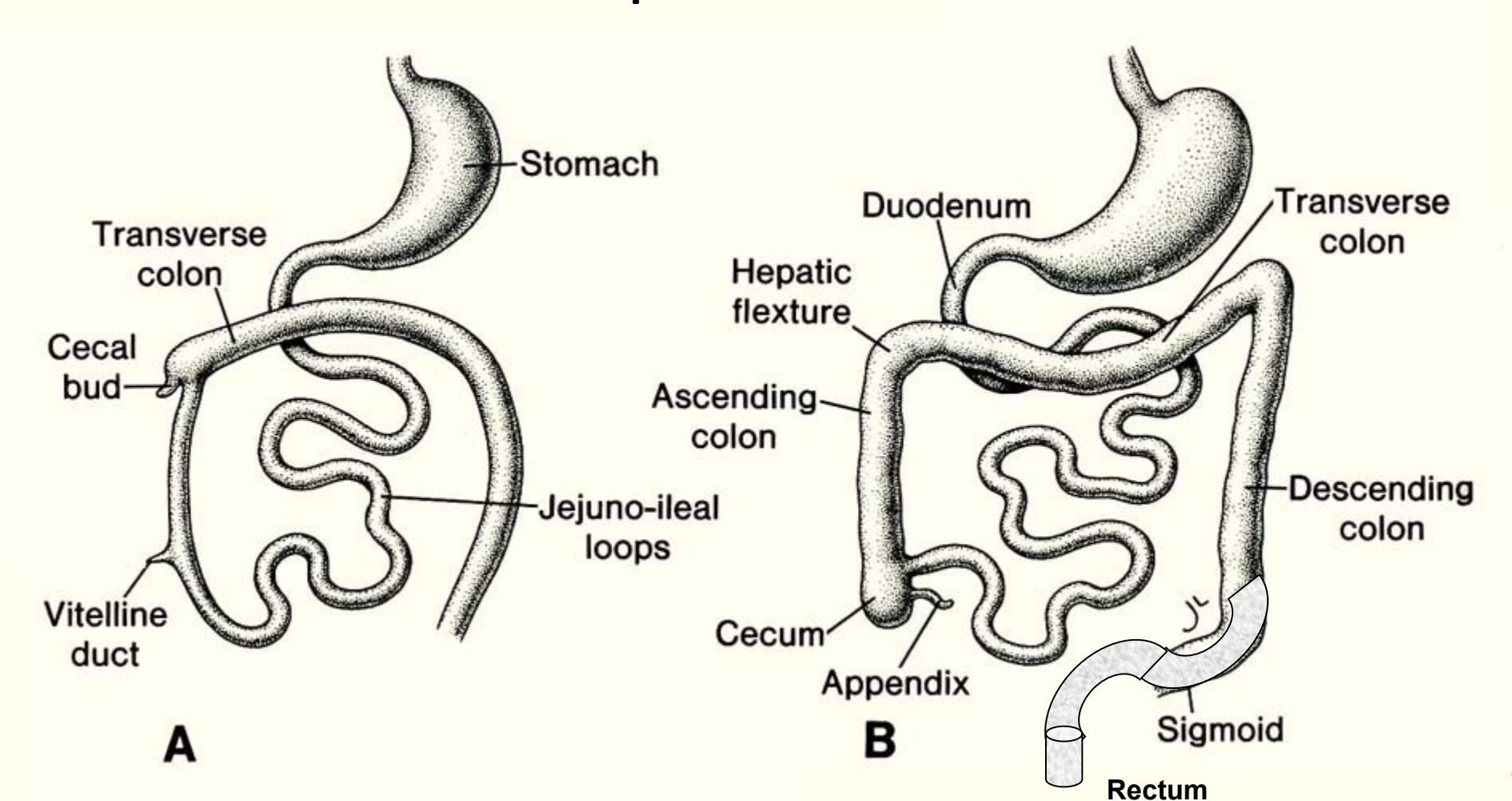


Umbilical loop herniates into the umbilical cord (**physiologic herniation**, in week 6-10)

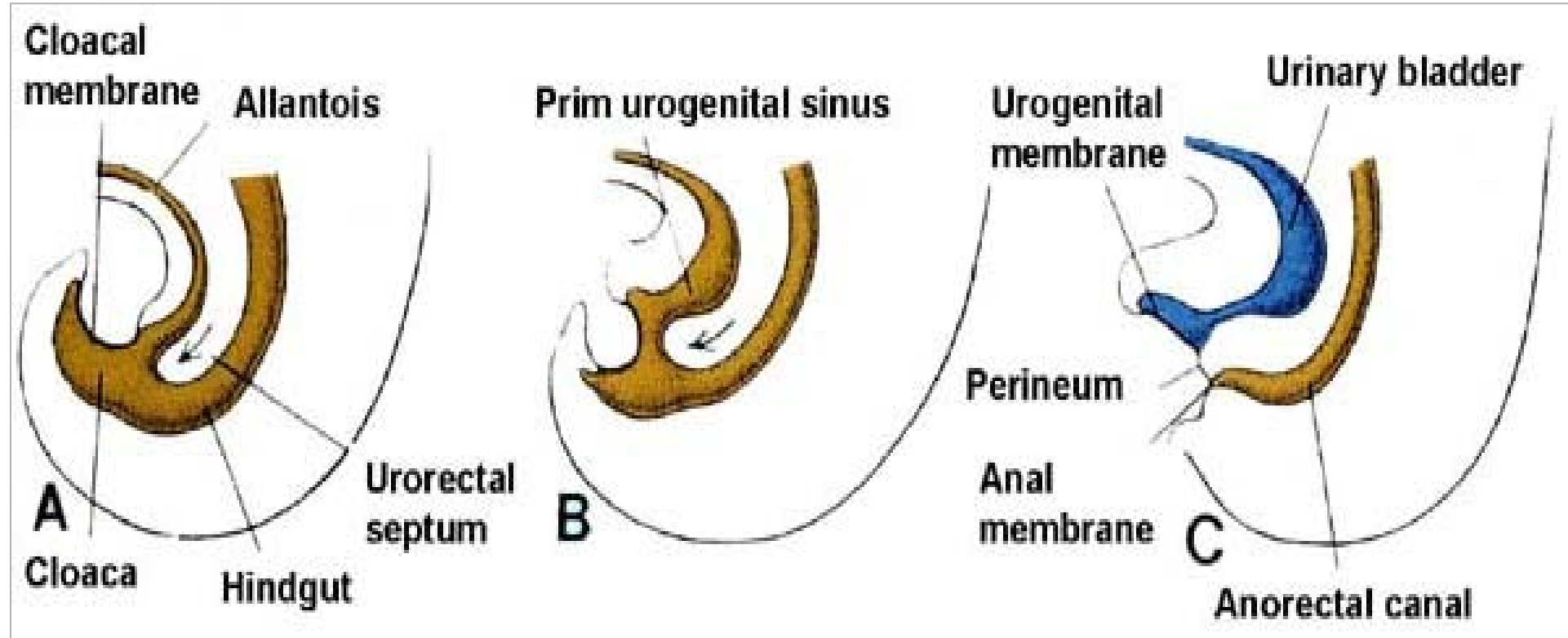


- In the umbilical cord, the midgut loop rotates 90° counter-clockwise around the axis of the superior mesenteric artery.
- Upon returning, the gut undergoes another 180° counter-clockwise rotation, placing the cecum and appendix near the right lobe of the liver.
- The total rotation of the gut is 270°.

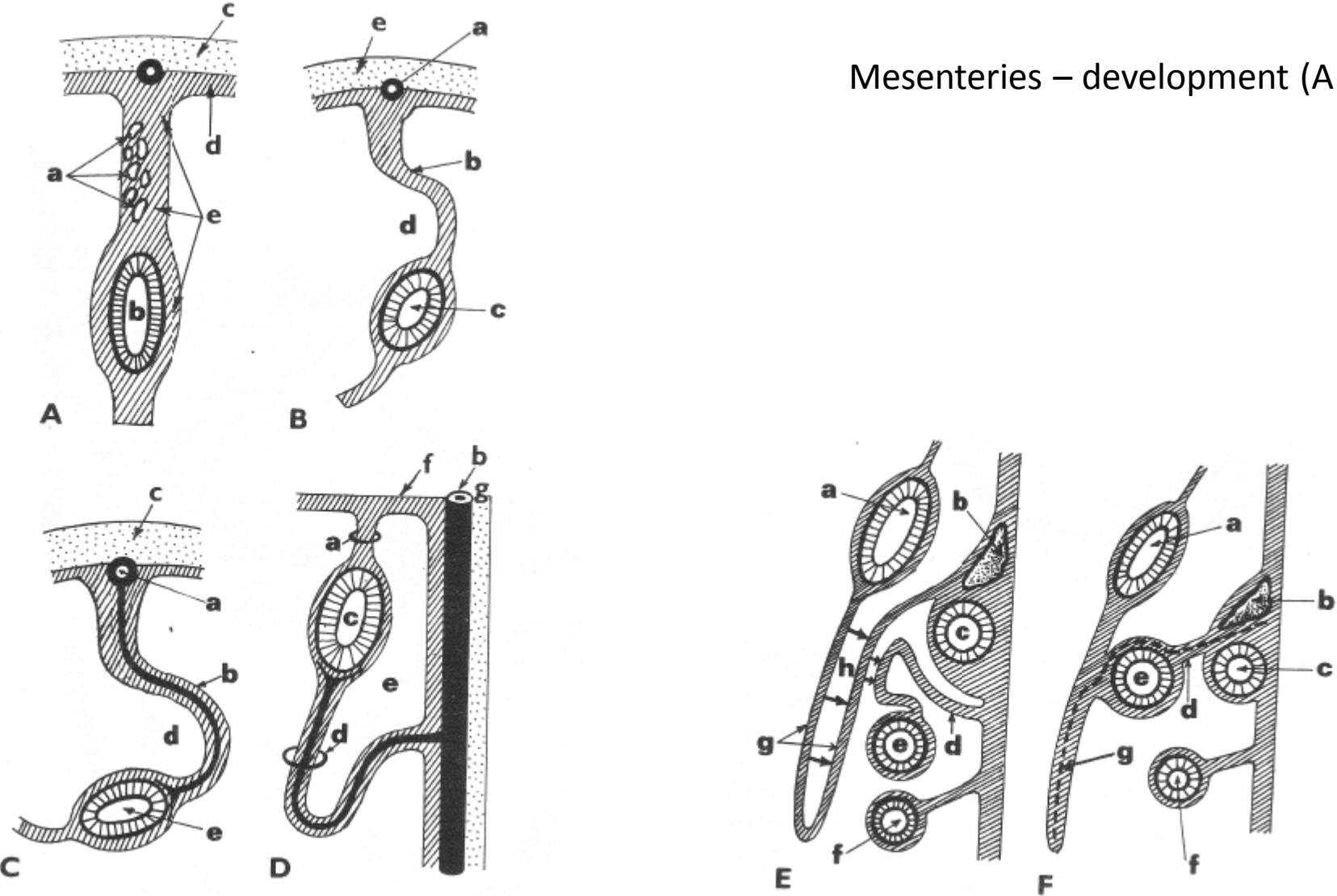
Development of intestines



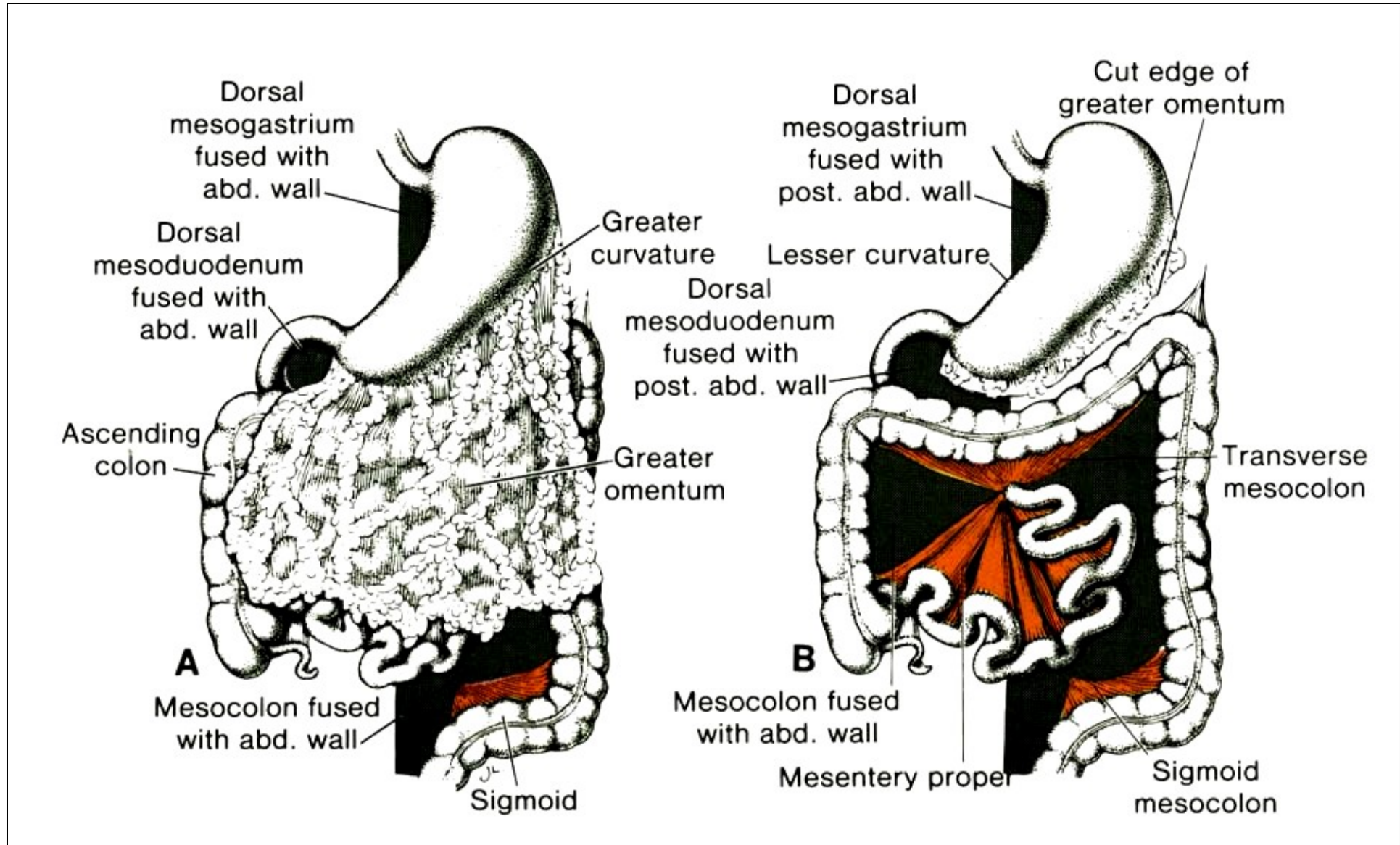
Development of rectum



Mesenteries – development (A – E)



Omentum majus – duplicature of dorsal mezogastrium; both layers fuse into membrane (omentum), which „hangs“ from curvatura major though colon transversum and intestine loops



Mesenterium proprium and mesocolon

