



DIGESTIVE SYSTEM 2

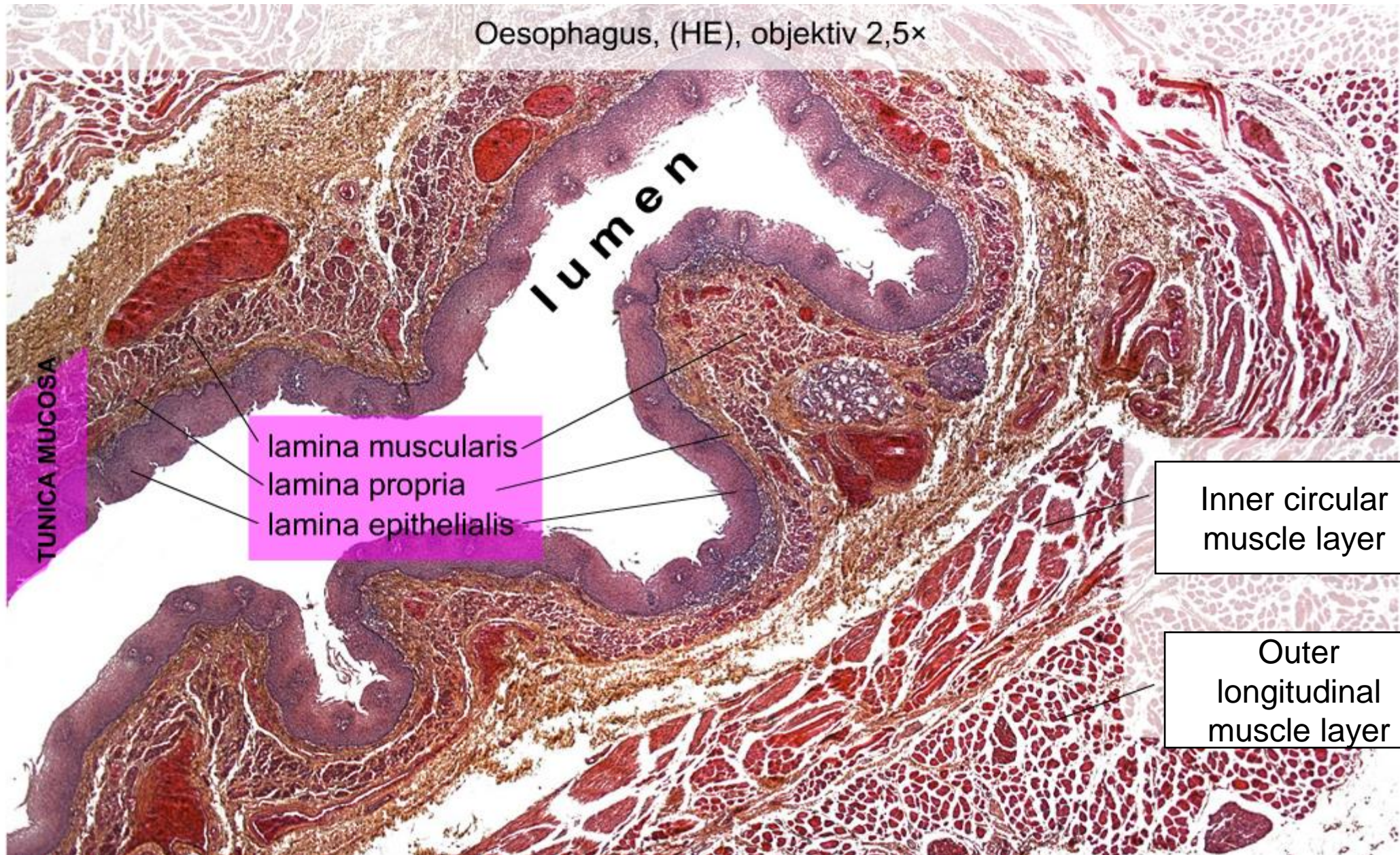
- General structure of the digestive tract
- Oesophagus
- Stomach
- Small and large intestine

Common structure of the wall of GIT tube



- **The tunica mucosa**
 - epithelial lining
 - lamina propria
/loose connect. tissue/
 - lamina muscularis mucosae
- **Tela submucosa**
/loose connect. tissue + Meissner's nerve plexus/
- **The tunica muscularis externa**
 - circular
 - myenteric nerve plexus (Auerbach)
 - longitudinal muscle
- **The tunica serosa or adventitia**
/loose connect. tissue -/+mesothelium/

Oesophagus, (HE), objektiv 2,5x



lumen

TUNICA MUCOSA

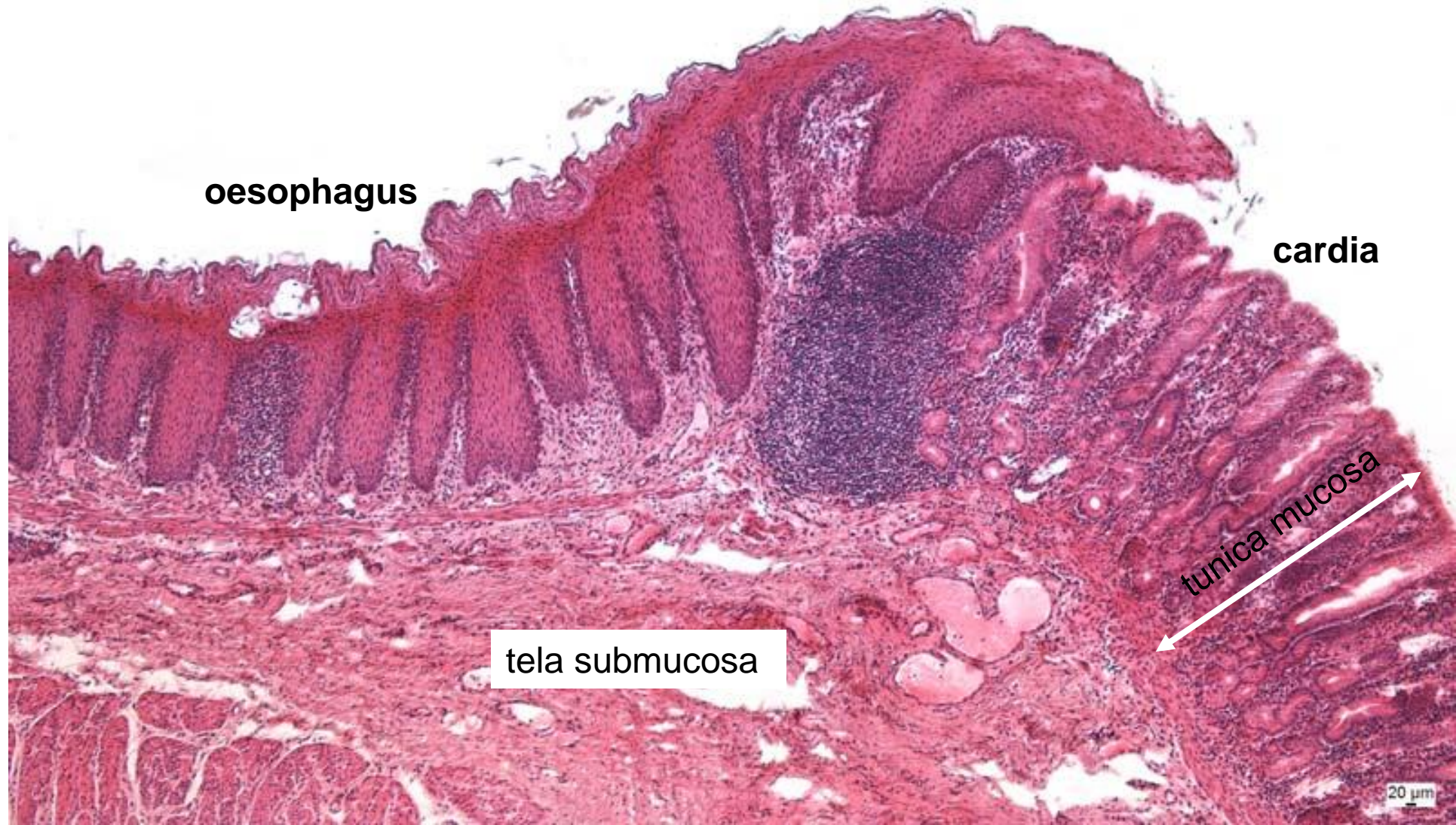
lamina muscularis
lamina propria
lamina epithelialis

Inner circular muscle layer

Outer longitudinal muscle layer

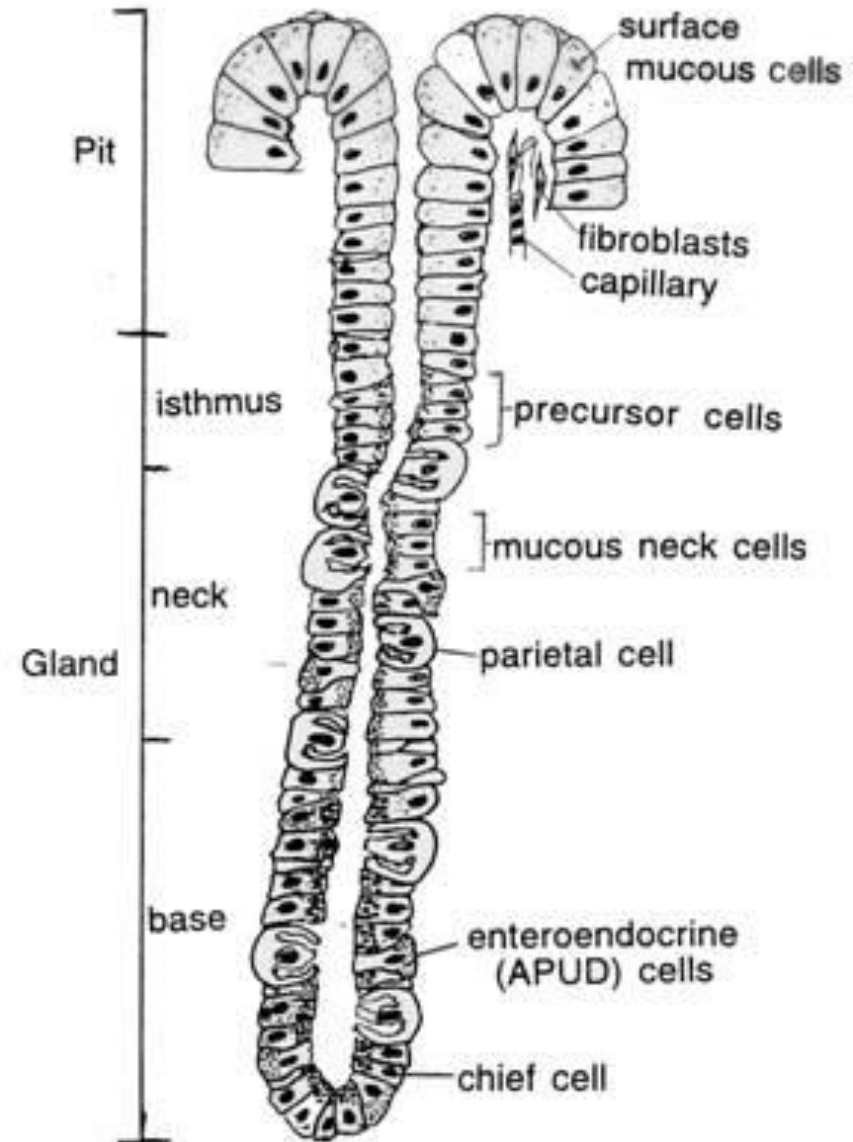
Cardia (HE)

- epithelial change
- **cardiac glands** - branched tubular mucous glands

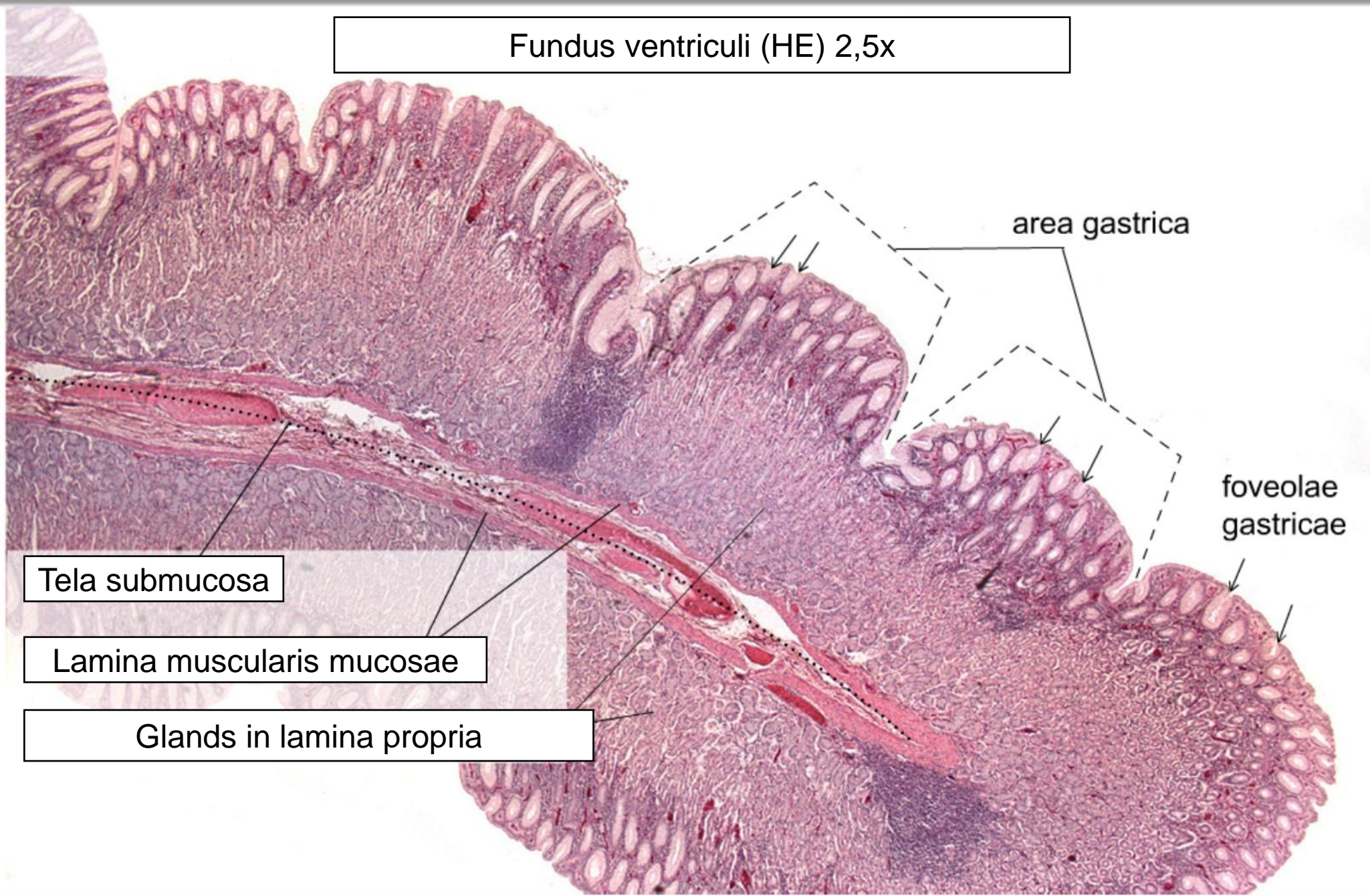


Gastric glands

- **Gll. cardiacae**
 - branched tubular mucous glands
- **Gll. gastricae propriae** (fundic glands)
 - 2 – 4 open into one gastric pit
 - simple tubular
 - isthmus, neck, body and base
 - **chief** c. /zymogenic/ - pepsinogen, lipase
 - **parietal (oxyntic)** c. /HCl,,intrinsic factor“/
 - **mucous neck cells** (acidic mucus)
 - **precursor** (undifferentiated) cells
 - **enteroendocrine cells**
- **Gll. pyloricae**
 - branched tubular mucous glands



Fundus ventriculi (HE) 2,5x



area gastrica

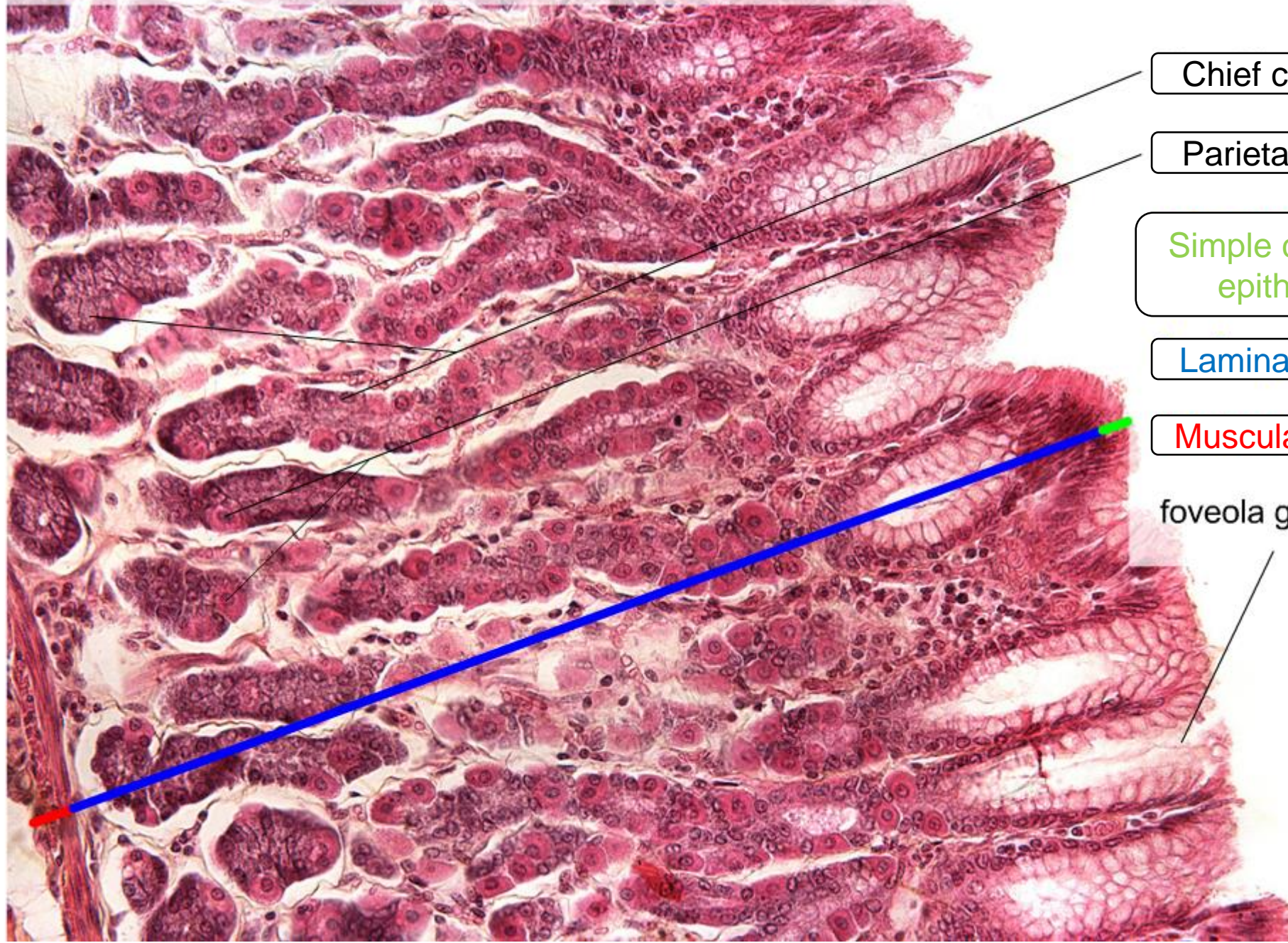
foveolae gastricae

Tela submucosa

Lamina muscularis mucosae

Glands in lamina propria

Fundus ventriculi (HE) – gastric glands, 10x



Chief cells

Parietal cells

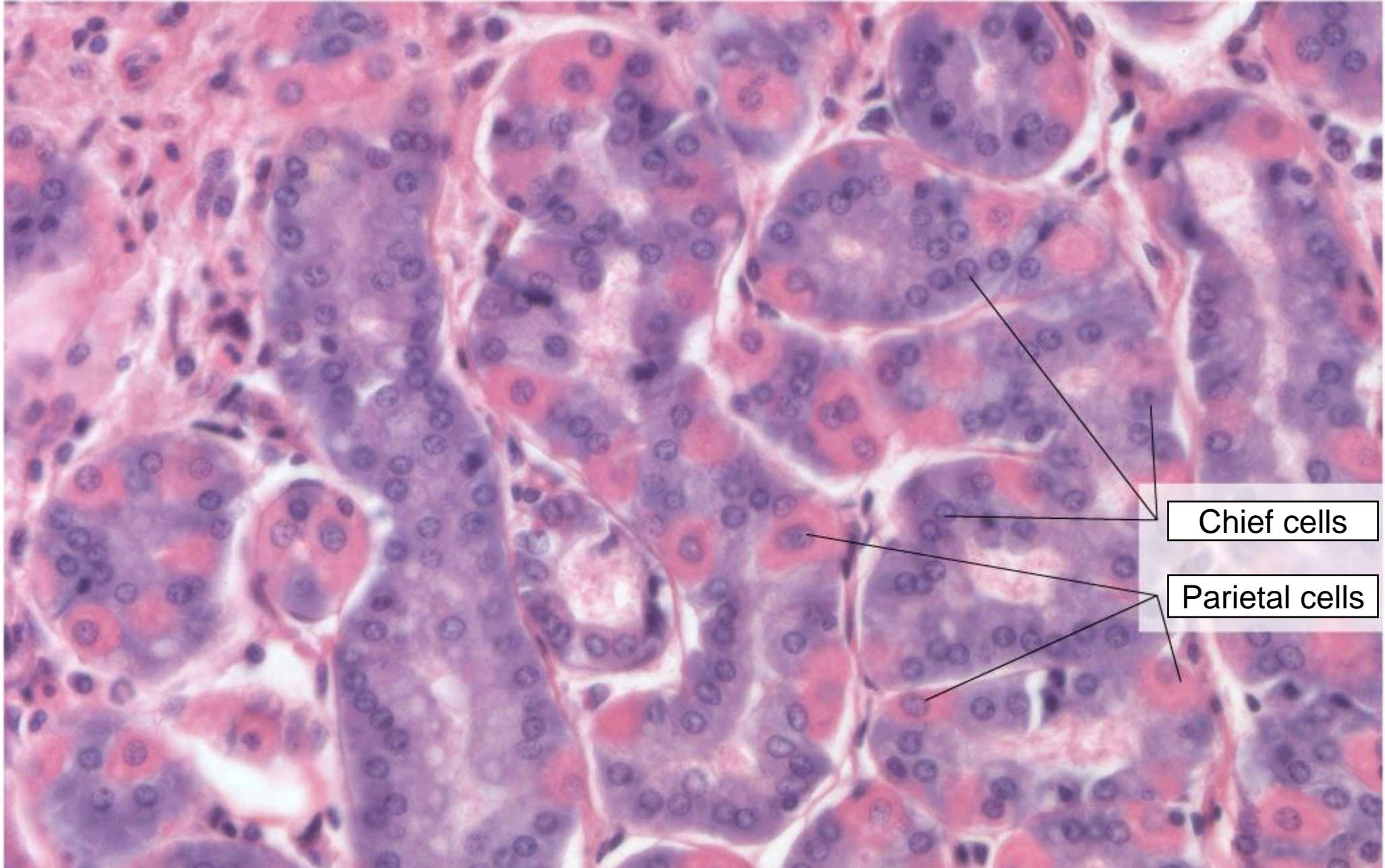
Simple columnar
epithelium

Lamina propria

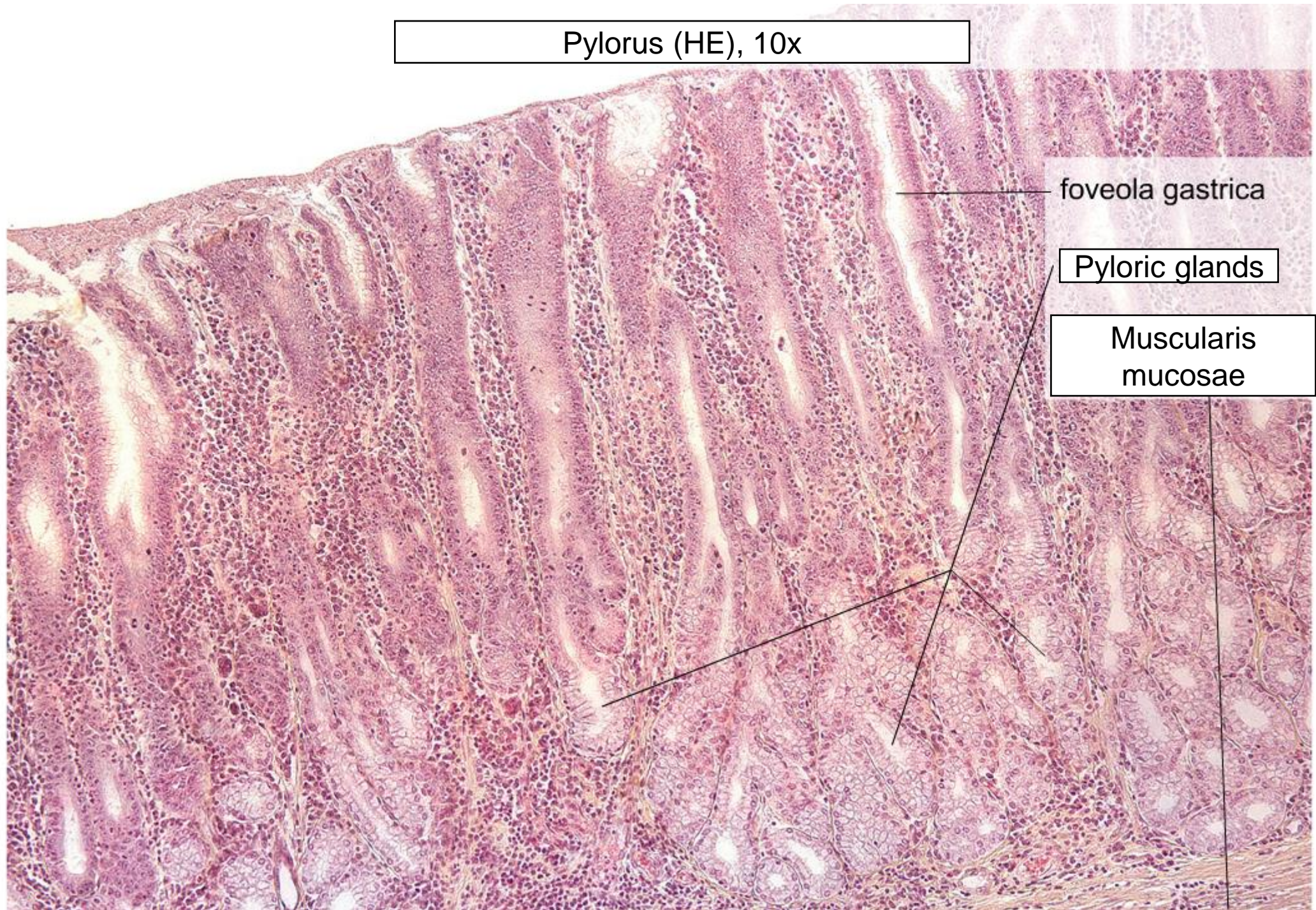
Muscularis mucosae

foveola gastrica

Fundus ventriculi – gastric glands (HE), 20x

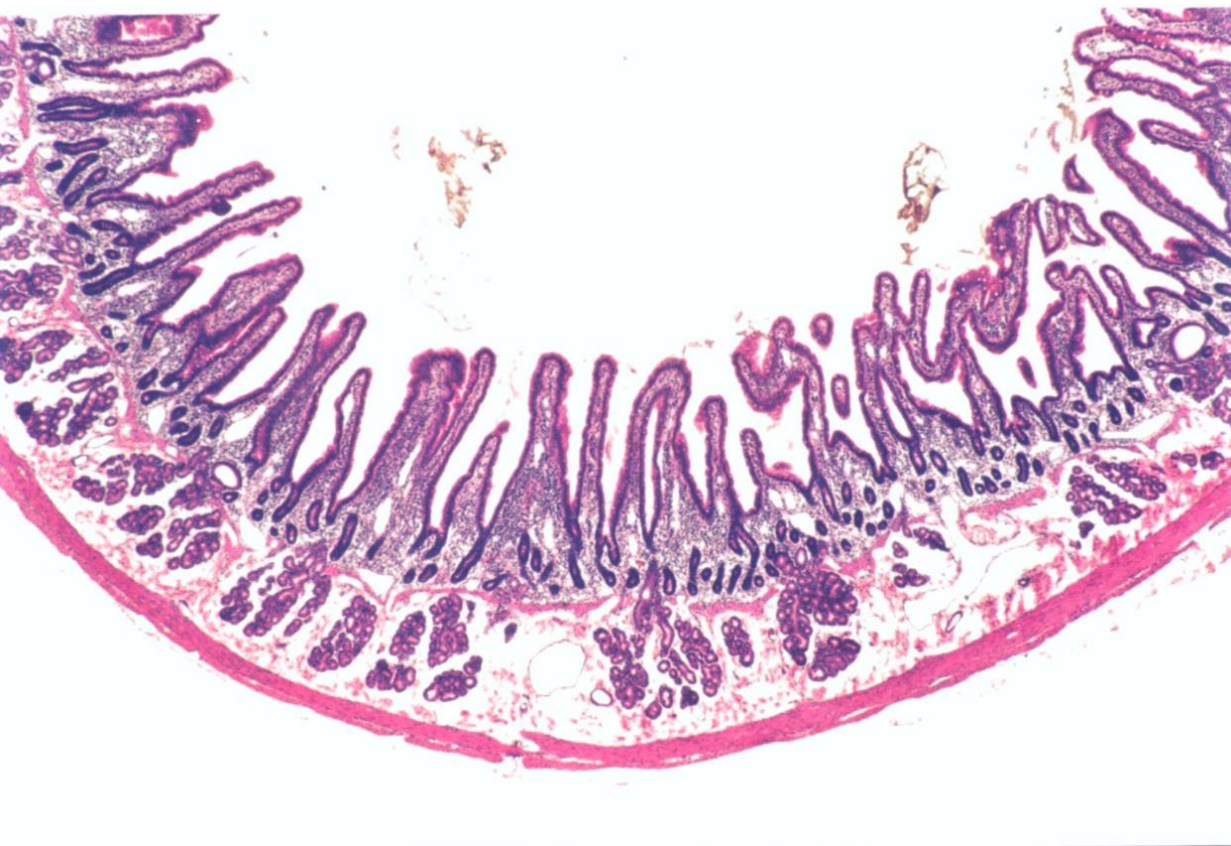


Pylorus (HE), 10x

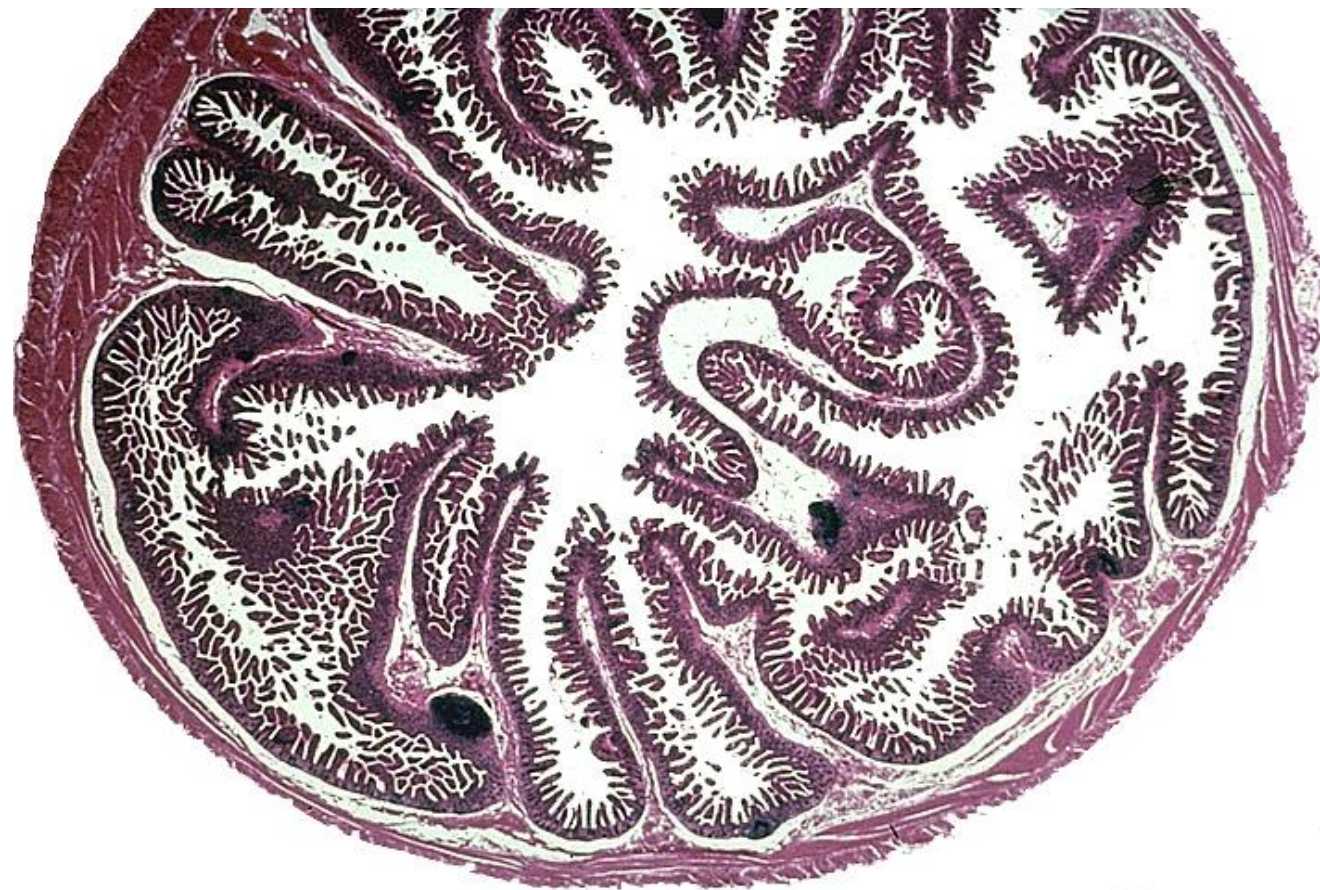


Small intestine

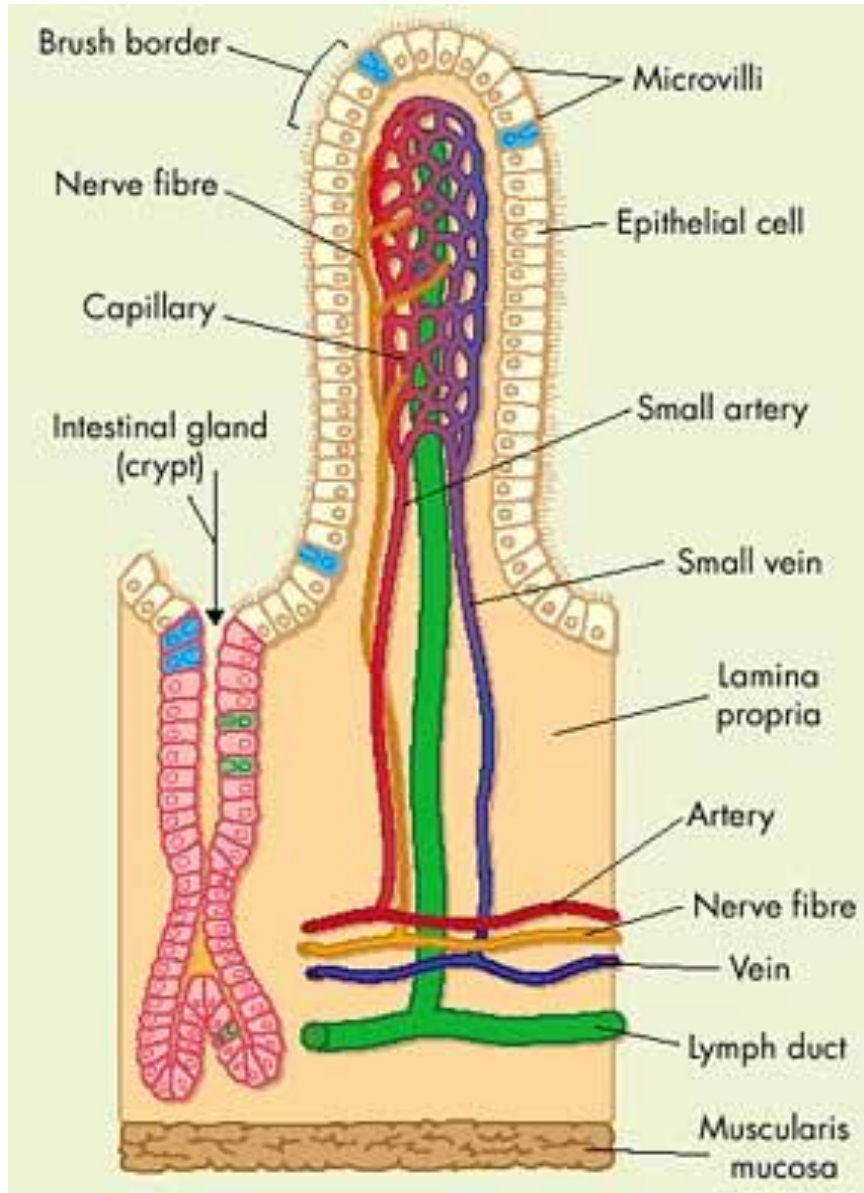
duodenum



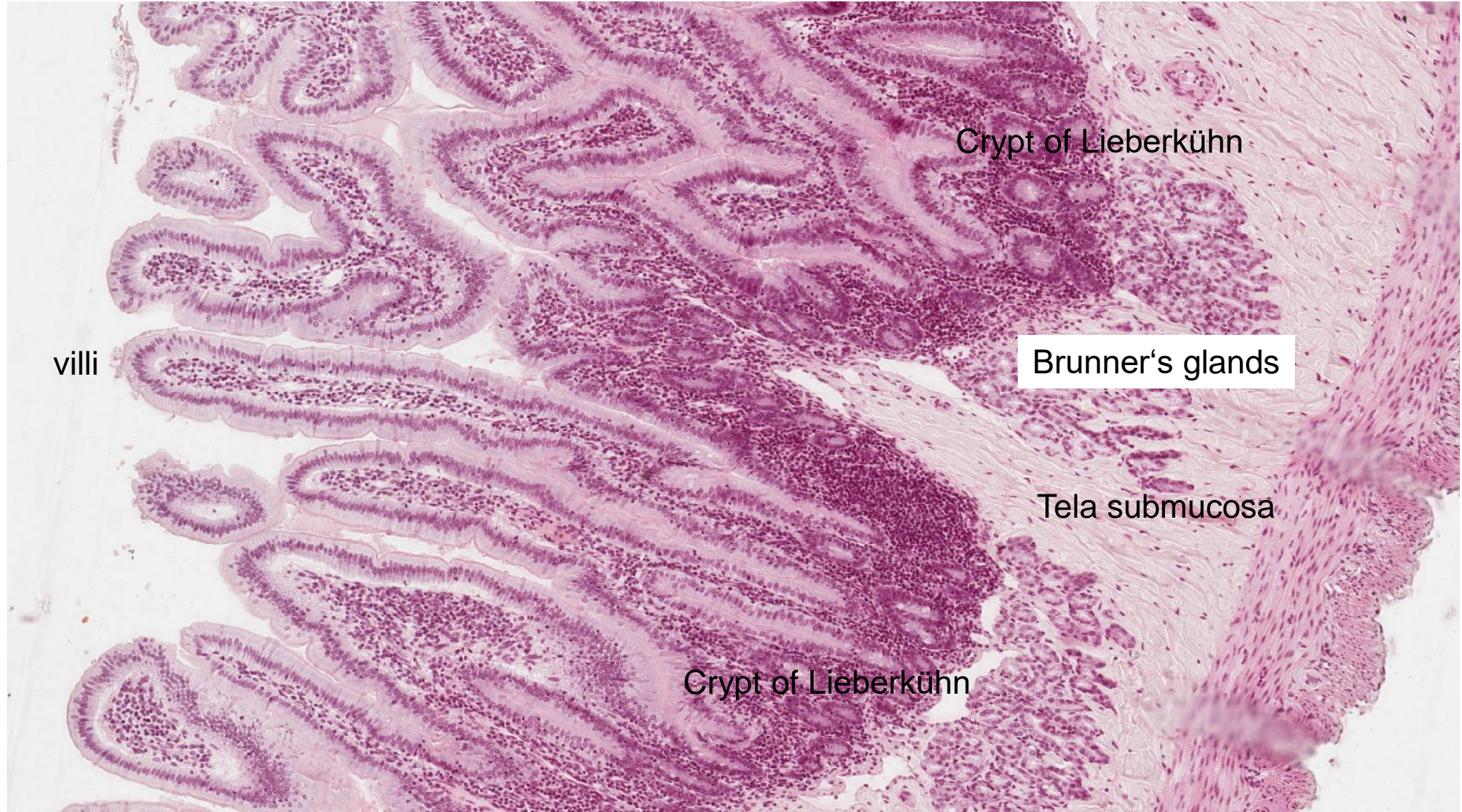
jejunum



- Intestinal villus
- Crypt of Lieberkhün



Duodenum



villi

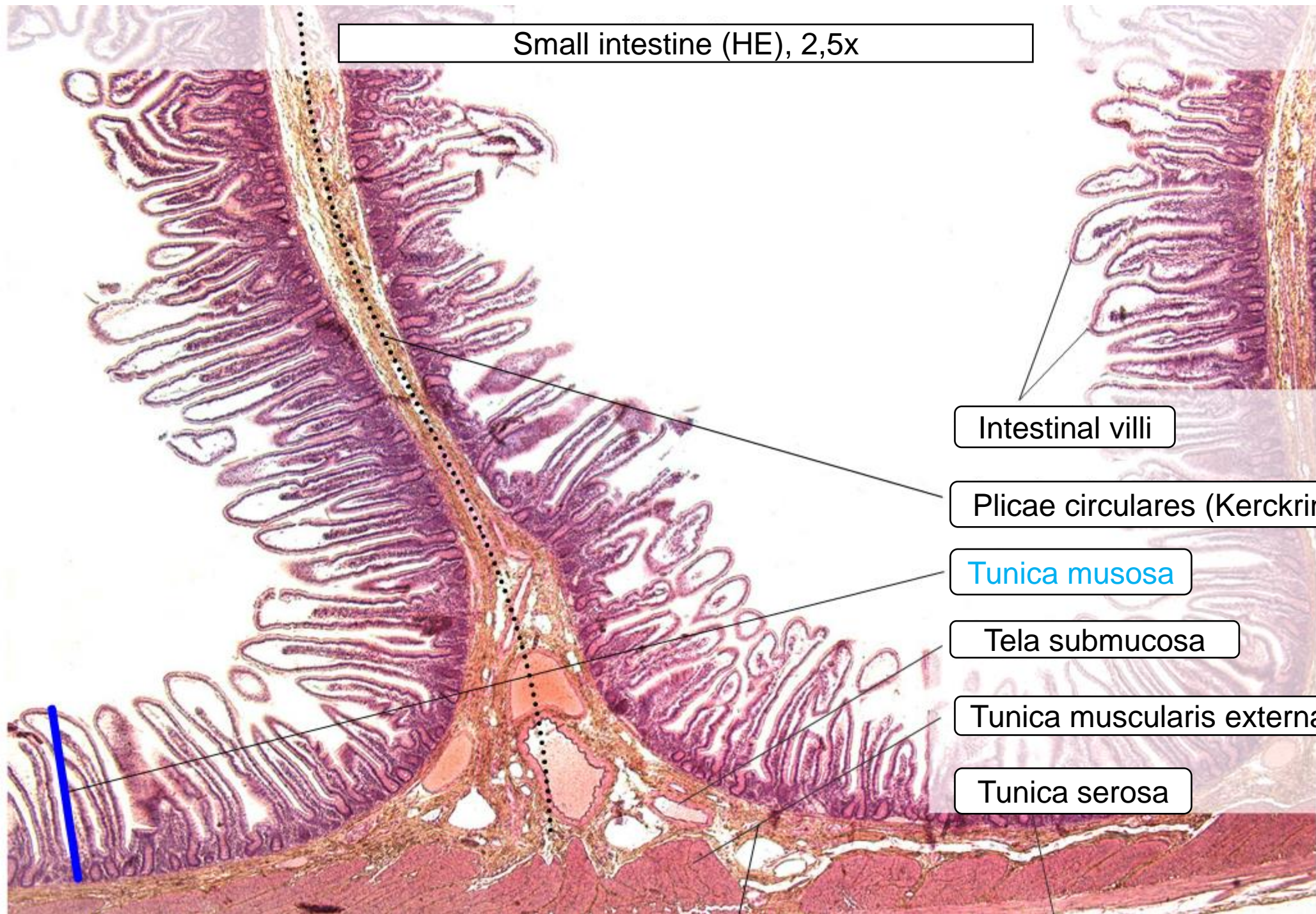
Crypt of Lieberkühn

Brunner's glands

Tela submucosa

Crypt of Lieberkühn

Small intestine (HE), 2,5x



Intestinal villi

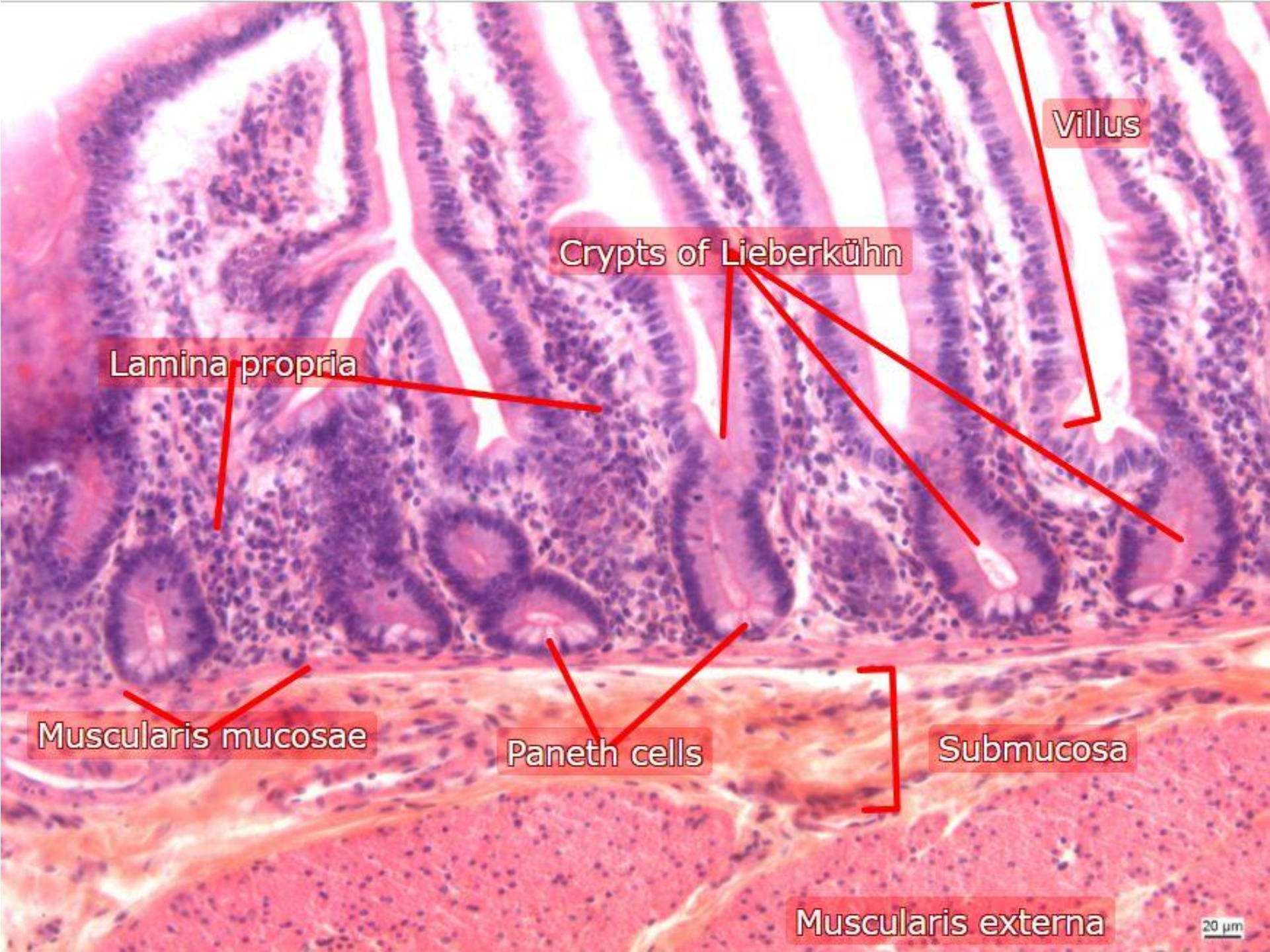
Plicae circulares (Kerckring's)

Tunica musosa

Tela submucosa

Tunica muscularis externa

Tunica serosa



Villus

Crypts of Lieberkühn

Lamina propria

Muscularis mucosae

Paneth cells

Submucosa

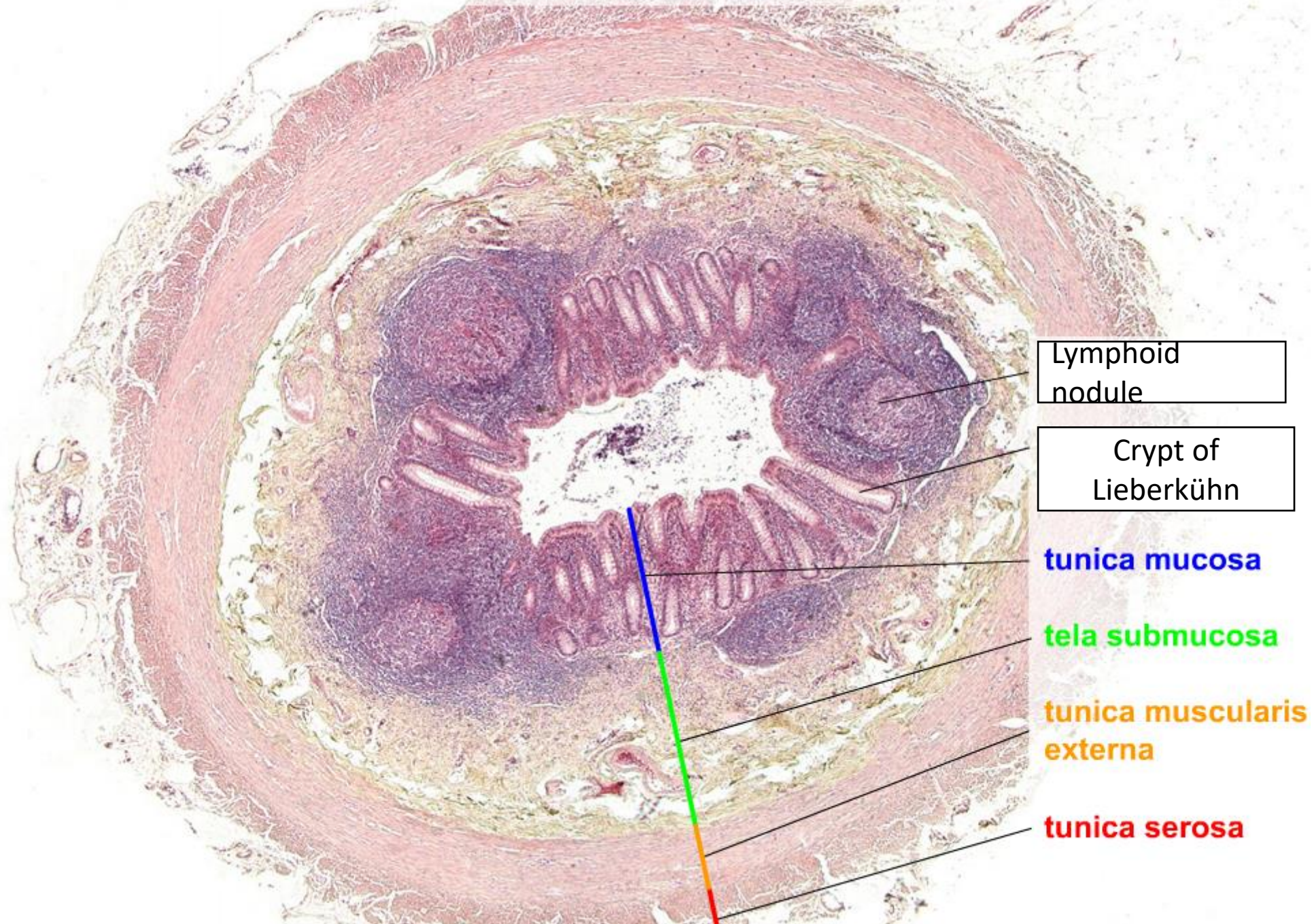
Muscularis externa

20 μm

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



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



Lymphoid
nodule

Crypt of
Lieberkühn

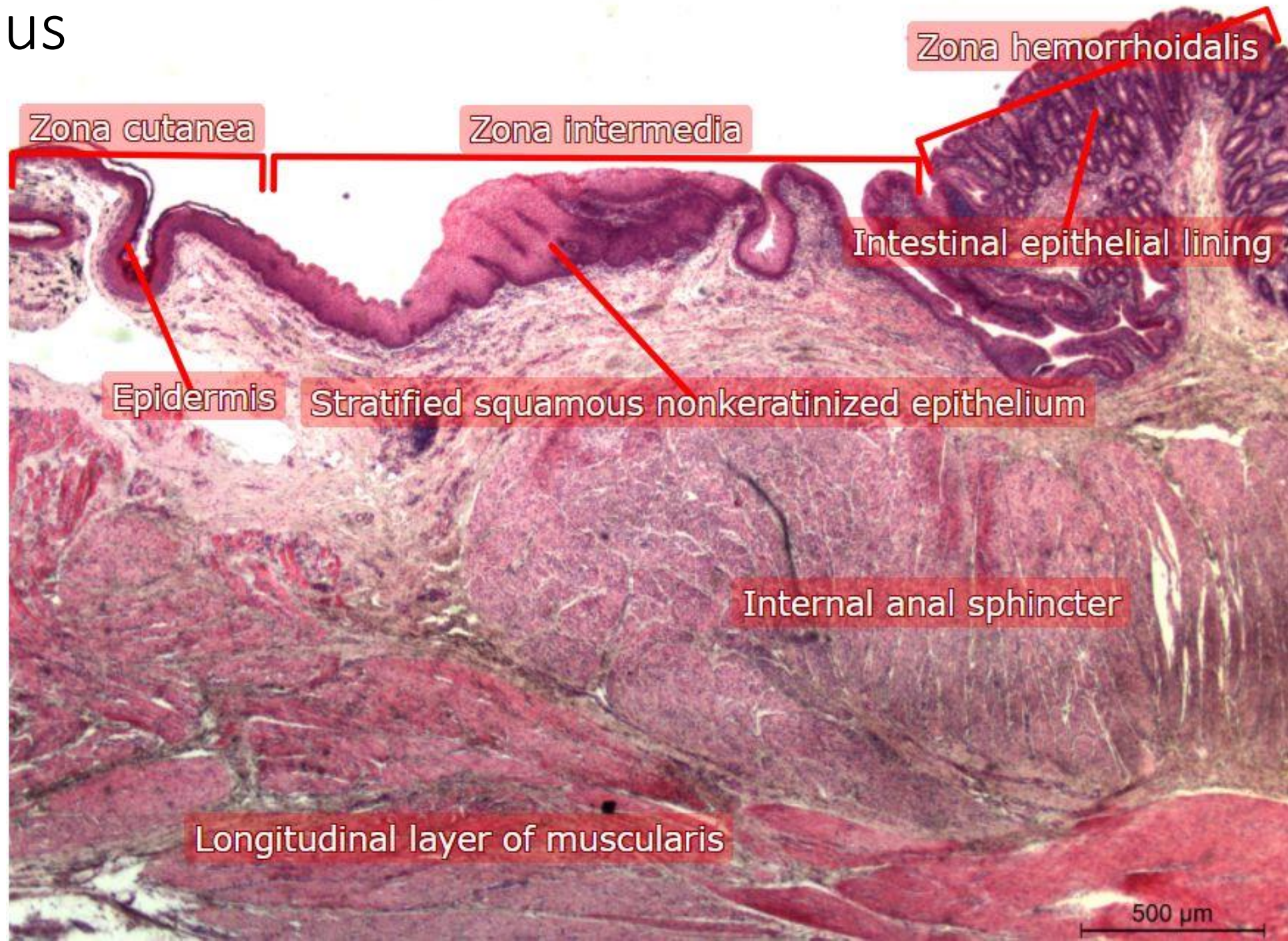
tunica mucosa

tela submucosa

tunica muscularis
externa

tunica serosa

Anus



Digestive system II



Slides:

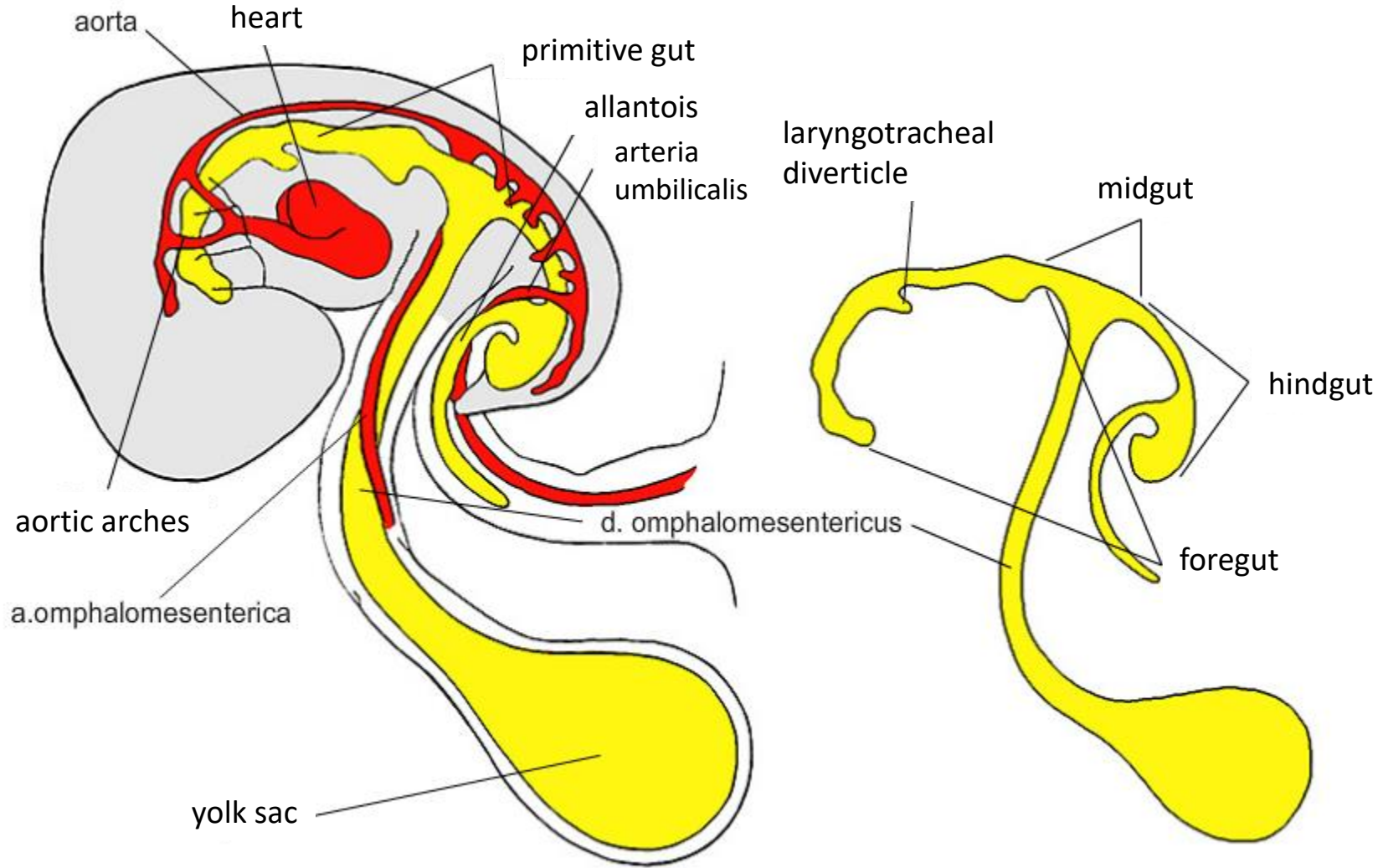
11. Oesophagus (HE)
12. Cardia(HE)
13. Fundus ventriculi(HE)
14. Pylorus (HE)
15. Duodenum (HE)
16. Small intestine (HE)
17. Large intestine (HE)
18. Appendix (HE)
- (19. Anus (HE))



Atlas EM:

- Intestinal epithelium (62)
- Goblet cell in epithelium of intestinal mucosa (63)
- Bottom of crypt of Lieberkühn (64)

Primitive gut – embryo, day 26



Development of the stomach

Rotation around longitudinal axis:

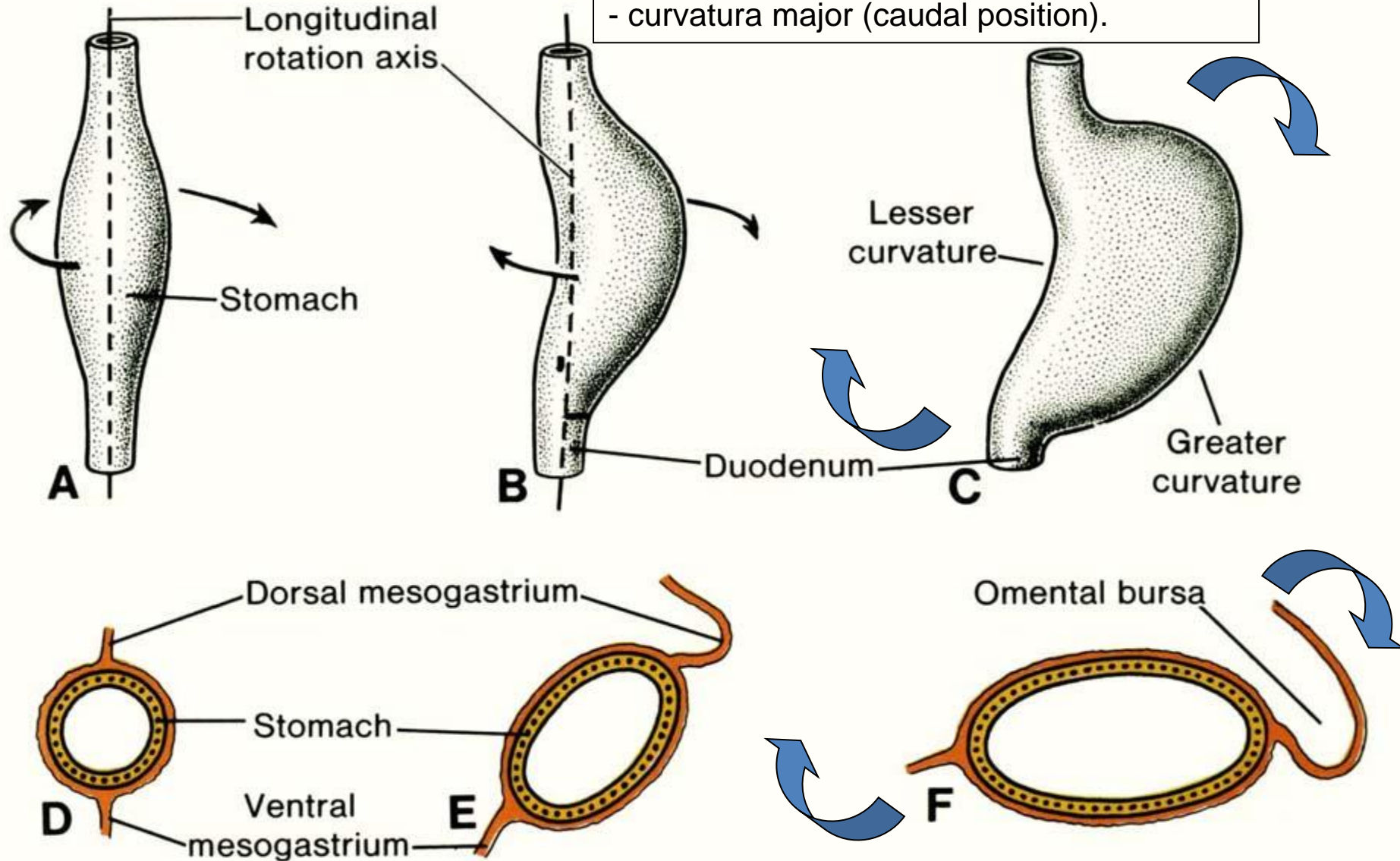
- left side → ventrally,
- right side → dorsally.

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).



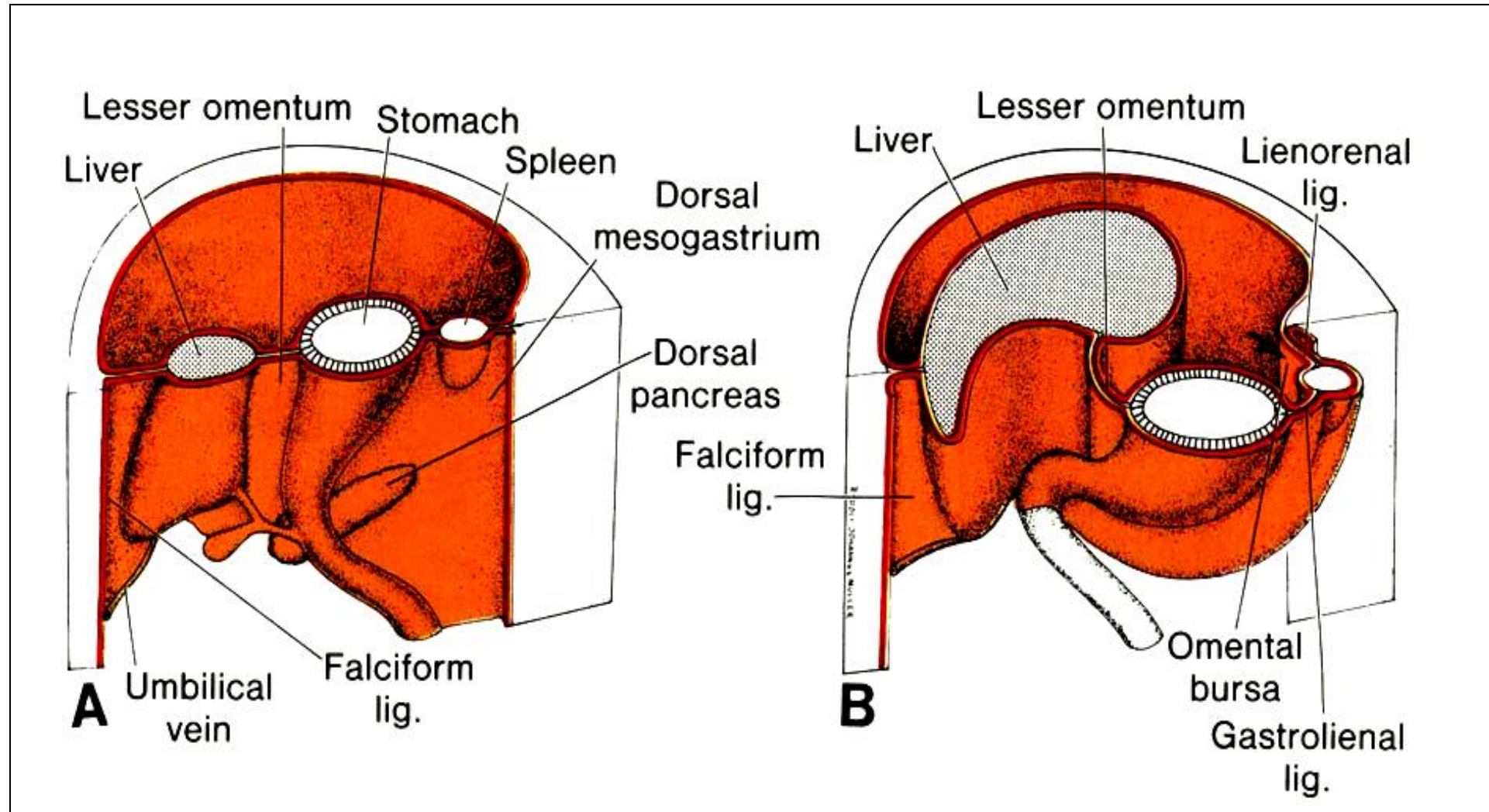
Mesenterium dorsale

Mesogastrium dorsale = omentum majus

Mesoduodenum dorsale

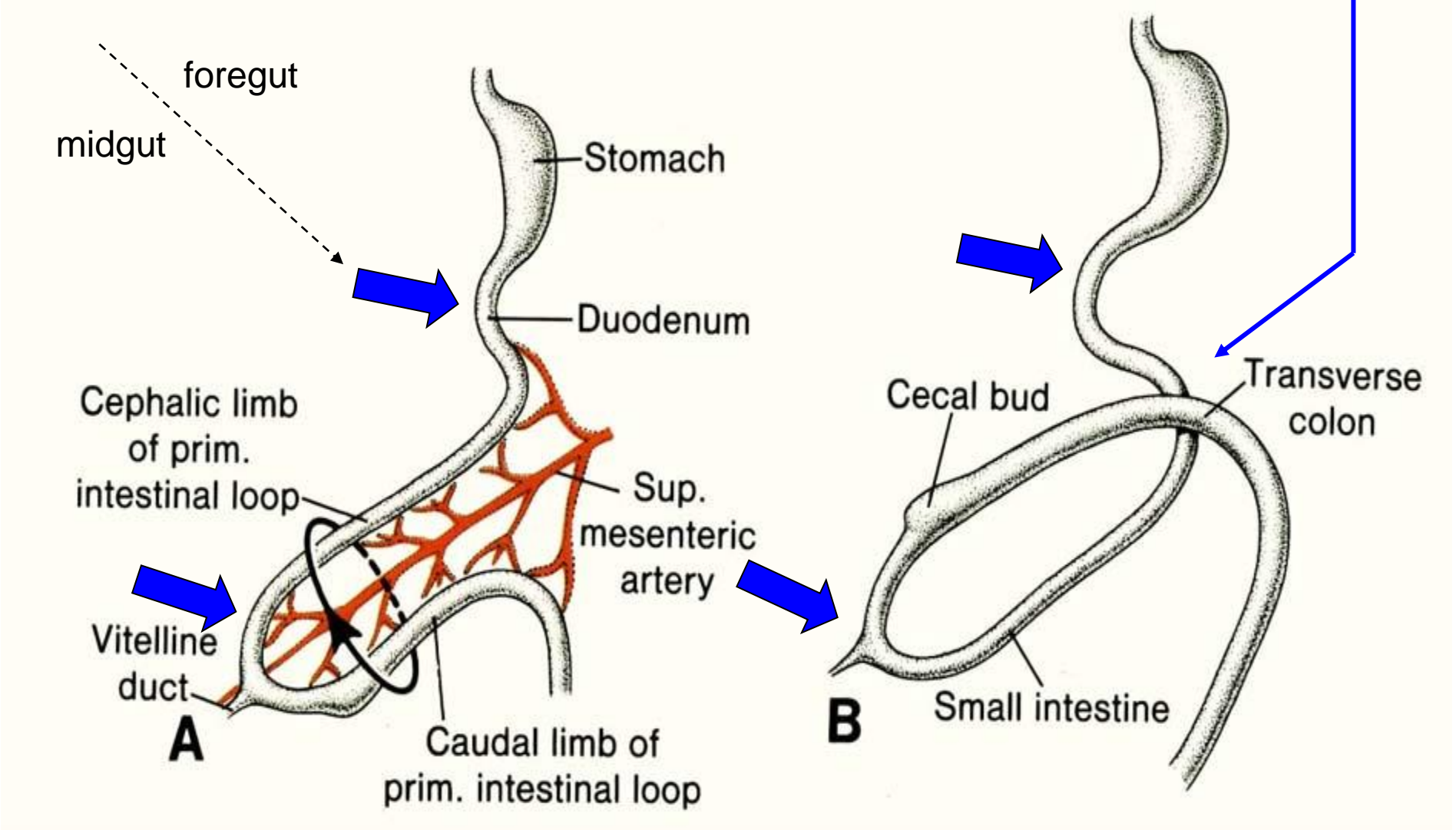
Mesenterium dorsale

Mesocolon dorsale



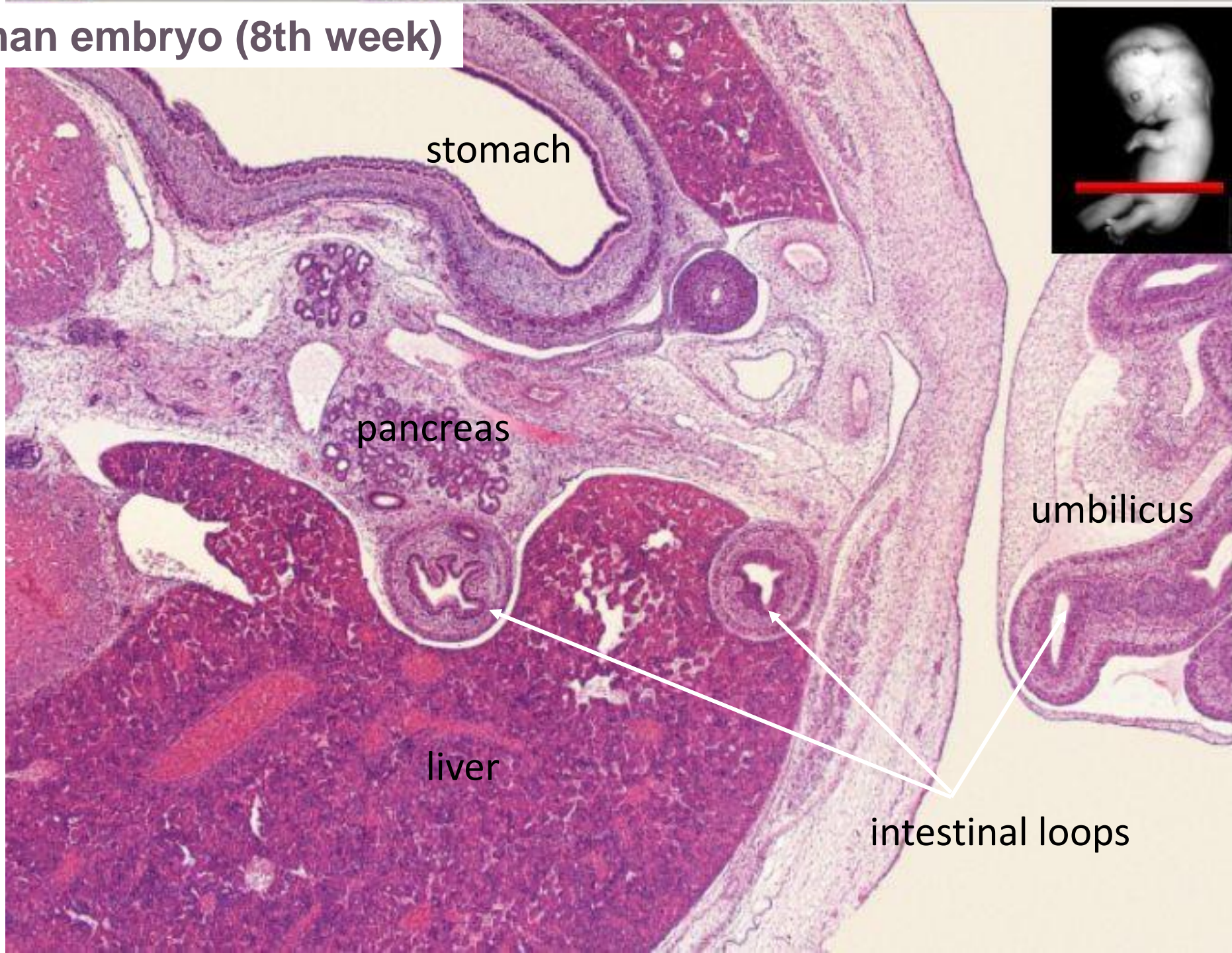
Duodenal loop and umbilical loop

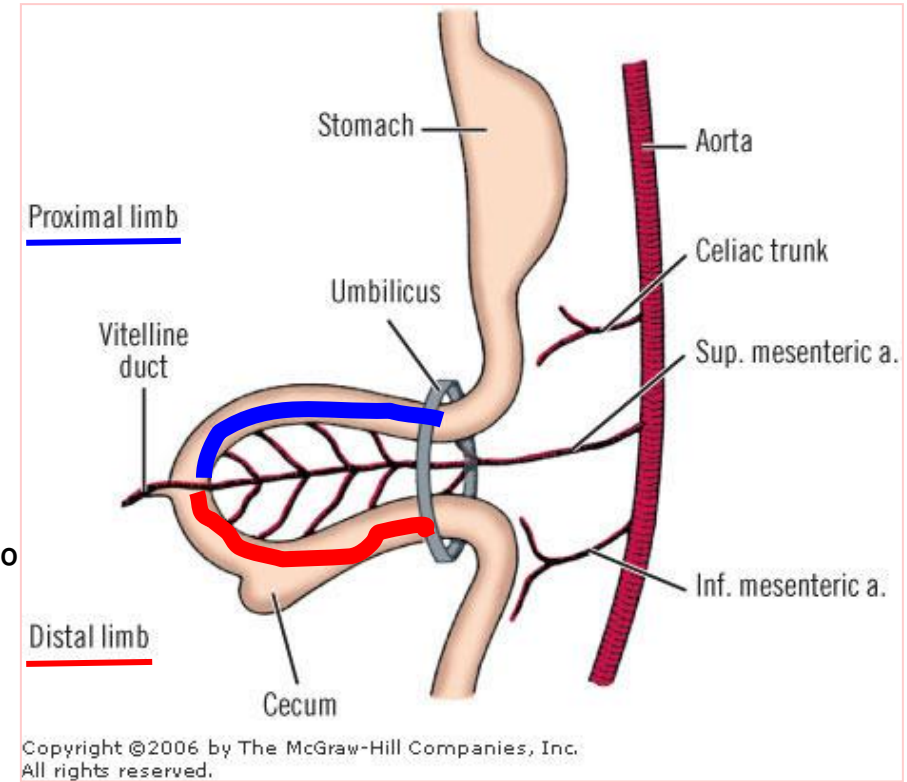
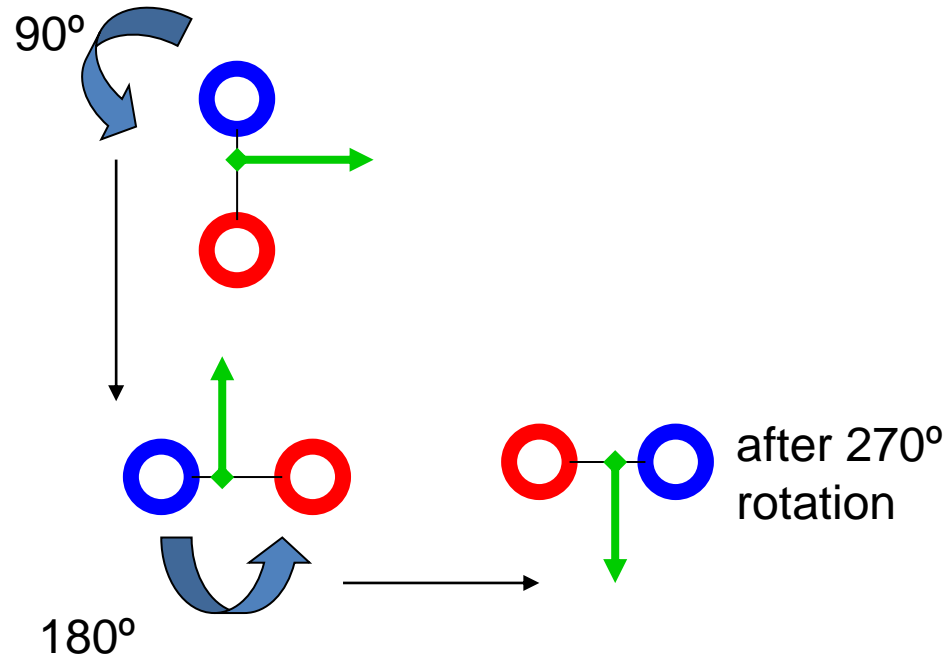
Flexura duodenojejunalis



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

Human embryo (8th week)





- 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

