

Histology Team 431



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Duodenum

1. Mucosa: Shows **villi** and **crypts**

- **Epithelium**: **simple columnar epithelium with goblet cells**
- **Lamina propria**: C.T.
- **Muscularis mucosae**: 2 layers of smooth muscle cells

Intestinal villi: Each Villus is a finger-like projection of small intestinal **mucosa** and it is formed of:

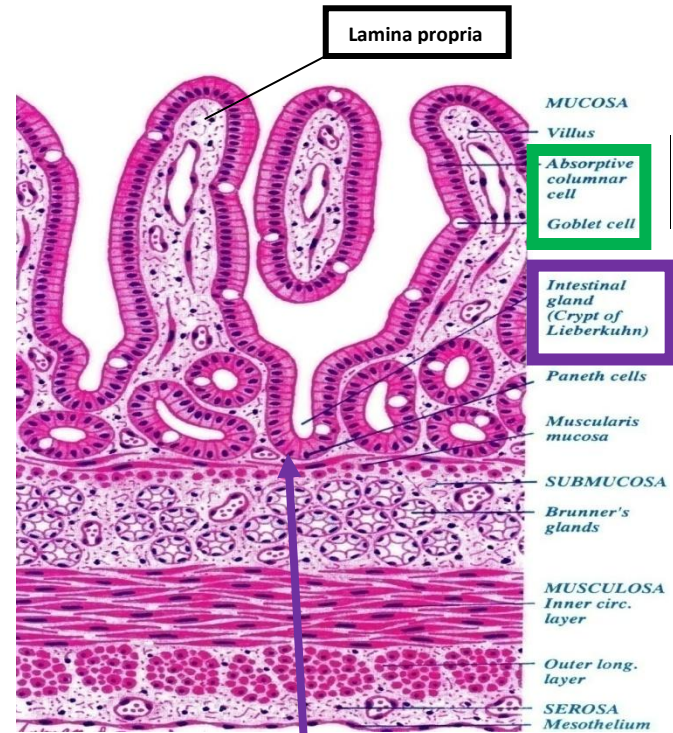
1- Central core of loose C.T. containing:

- o Lymphocytes
- o Fibroblasts
- o Smooth muscle cells
- o Capillary loops
- o **Lacteal** (blindly ending lymphatic channels)

2- Villus-covering epithelium.

• Cells Covering the Villi:

- 1- **Surface columnar absorptive cells**: They have brush border (**microvilli**). They are covered with thick glycocalyx that has digestive enzymes. They have Junction complex (tight, adhering and desmosome junctions)
- 2- **Goblet cells**: Increase toward the ileum
- 3- **Enteroendocrine cells** (DNES cells)
- 4- **M cells** (microfold cells): They phagocytose and transport antigens present in the intestinal lumen. They are mainly found within epithelium overlying lymphatic nodules of lamina propria.



Intestinal Glands (Crypts): Simple tubular glands that open between villi.

- Composed of 5 cell types:

1. **Columnar absorptive cells**.
2. **Goblet cells**: secrete **mucus**.
3. **Paneth cells**: secrete **Lysozymes** (antibacterial).
4. **Enteroendocrine cells**: secrete **hormones**.
5. **Stem cells**: regenerative cells.

2. Submucosa:

- Connective tissue containing blood vessels & **nerves**.
- Contains **Brunner's glands** (secrete mucus)

3. Muscularis Externa:

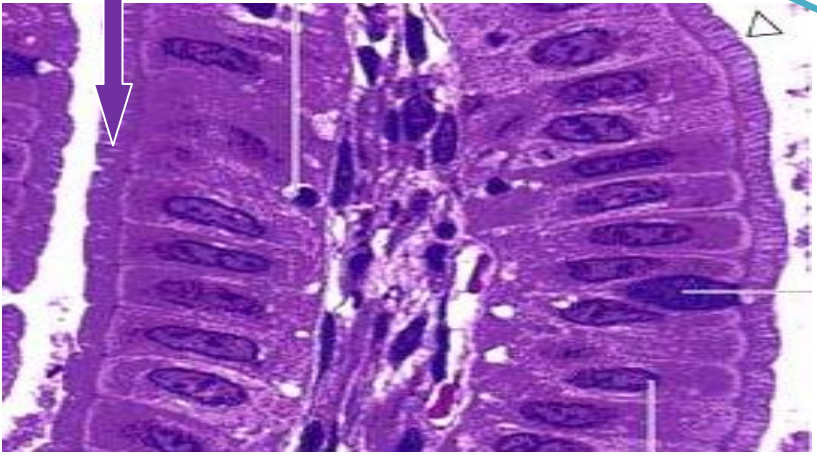
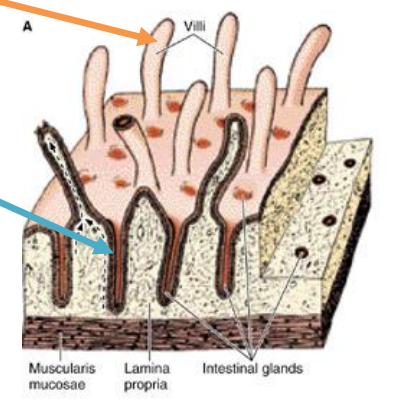
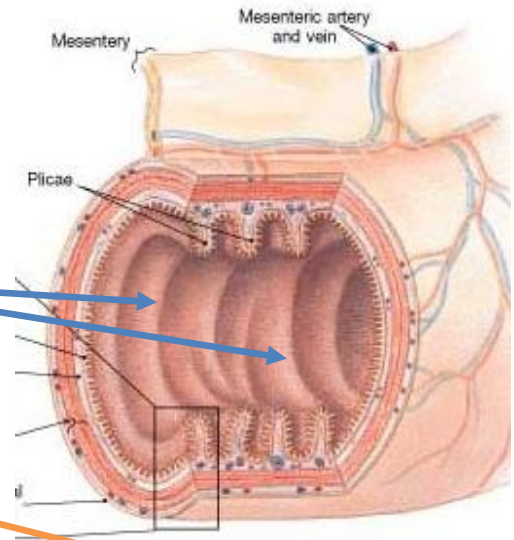
- 2 smooth muscle layers: **Inner circular layer** and **Outer longitudinal layer**.

4. Serosa or Adventitia:

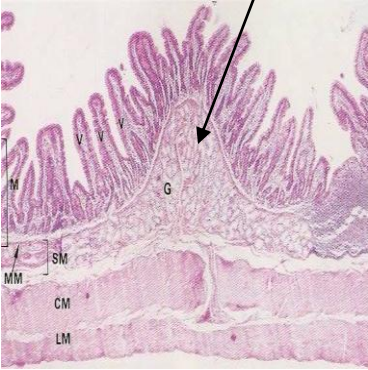
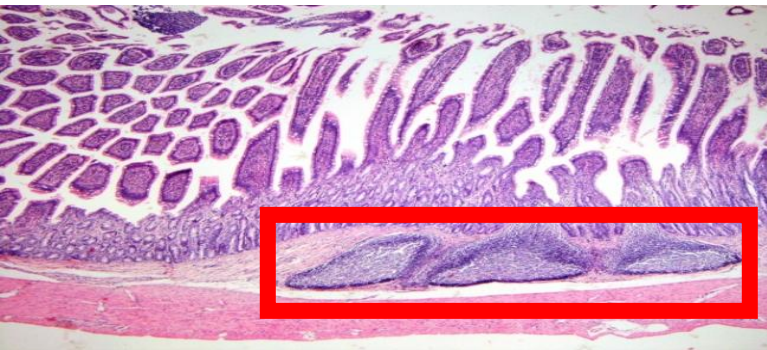
- **Except for the 2nd & 3rd parts of the duodenum, which have adventitia, the entire small intestine is invested by a serosa.**

To increase surface area the mucosa has:

- 1- **Plicae circularis** : Folds of mucosa and submucosa
- 2- **Villi**: Folds of mucosa.
- 3- **Intestinal crypts** (crypts of Lieberkühn)
- 4- **Microvilli** (Brush border)



Regional differences of small intestine

Duodenum	Jejunum	Ileum
<p>Its submucosa has Brunner's glands.</p> 	<p>has neither Brunner's glands nor Peyer's patches.</p>	<p>Its lamina propria, opposite the attachment of the mesentery, has lymphoid nodules (Peyer's patches) that extend to the submucosa.</p> 

QUESTIONS

1- Which one of the following cells secrete Lysozomes?

- A- Enteroendocrine cells.
- B- Stem cells.
- C- Paneth cells.
- D- Goblet cells.

2-In which part of the Small Intestine we can find Peyer's patch?

- A- Duodenum.
- B- Ileum.
- C- Jejunum.

1-C , 2-B