



LECTURE 4: LARGE INTESTINE

❑ Objectives:

At the end of this lecture, you should describe:

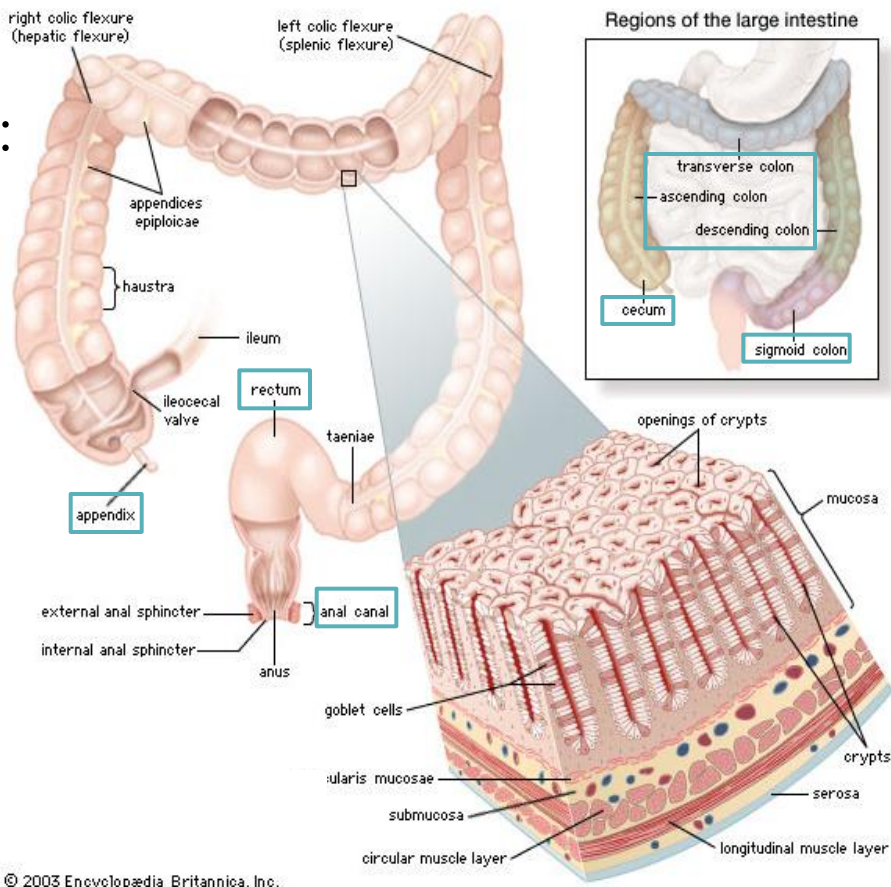
- ❖ Identify the histological structure of the 4 layers of both **colon** and **appendix**.
- ❖ Differentiate between the histological features of small and large intestine.

Contact us at:
Histology.team@gmail.com
@Histo433

LARGE INTESTINE

It is divided anatomically into:

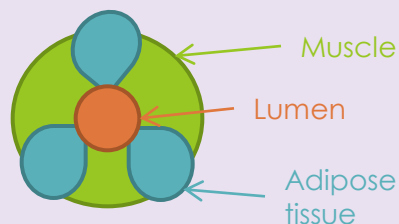
- I. **Appendix**
- II. **Cecum**
- III. **Colon**
(ascending, transverse, descending & sigmoid)
- IV. **Rectum**
- V. **Anal canal**



Notes for large intestine, colon, and appendix:

- In the colon's mucosa, there are only crypts which means there are no villi protruding into the lumen, only crypts going deep inside.
- There are more goblet cells in the epithelium of the large intestine than in the small intestine.
- "frequent" lymphatic nodules means there are not continuous.
- The appendix is a lymphoid organ, it contains more lymphatic nodules than the colon
- Food does not pass in the lumen of the appendix

• Teniae coli of the colon look something like this:



Colon

Mucosa

Shows ONLY crypts (NO villi)

- I. **Epithelium:** simple columnar epithelium with numerous goblet cells.
- II. **Lamina propria:** C.T. containing numerous **crypts**. Cells of the crypts are the same as in small intestine but **NO Paneth cells.**
 - Lymphatic nodules: frequent
- III. **Muscularis mucosae:** 2 layers of smooth muscles.

submucosa

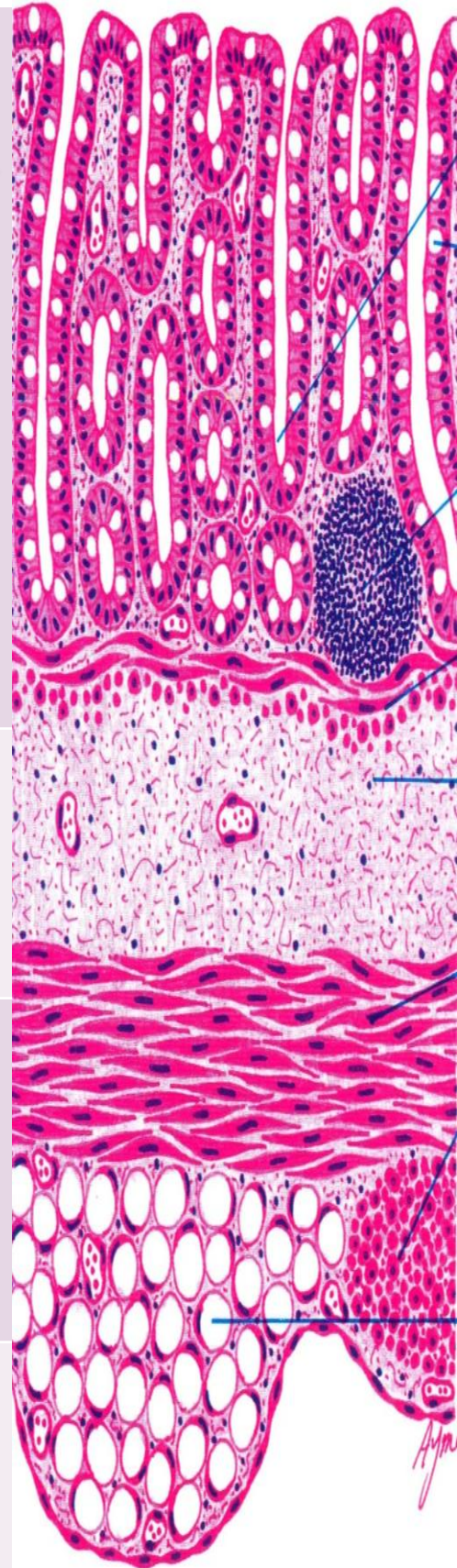
- ❑ **NO glands**

Muscularis Externa

- ❑ 2 smooth muscle layers:
 - Inner circular layer.
 - Outer longitudinal layer.
- ❑ The longitudinal layer is not continuous but in the **form of 3 ribbons (teniae coli)**

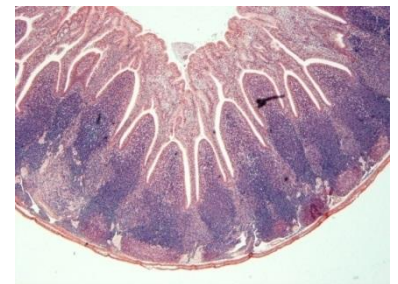
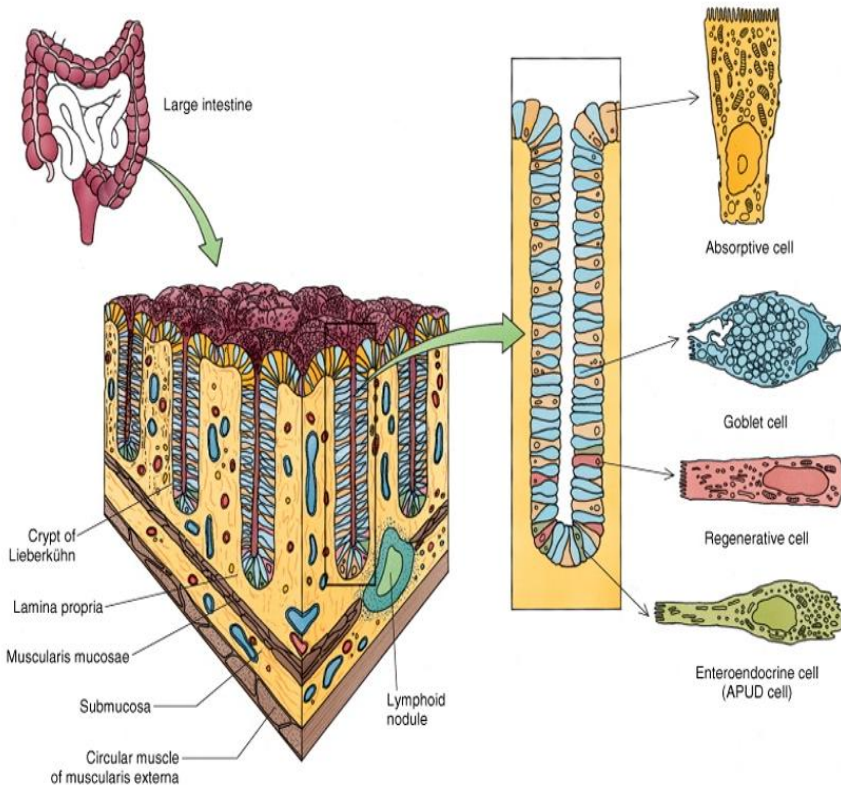
Serosa

- ❑ C.T. covered by mesothelium
- ❑ Has fat-filled pouches called **Appendices Epiploicae**
- ❑ (no adventitia)

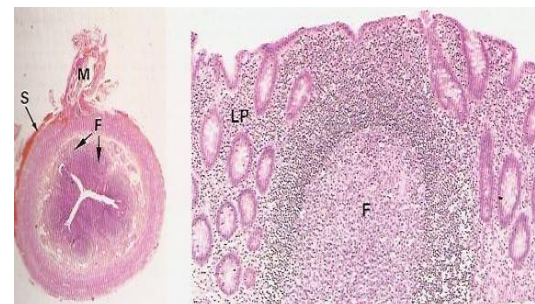


Vermiform Appendix

- Similar to the colon, but with much smaller diameter, shallow crypts, more lymphoid nodules, and more DNES cells.
- Cells lining the crypts are:
 - **Surface absorptive cells.**
 - **Goblet cells.**
 - **Enteroendocrine cells.**
 - **M-cells.**
 - **Stem cells.**
- It is invested by serosa.



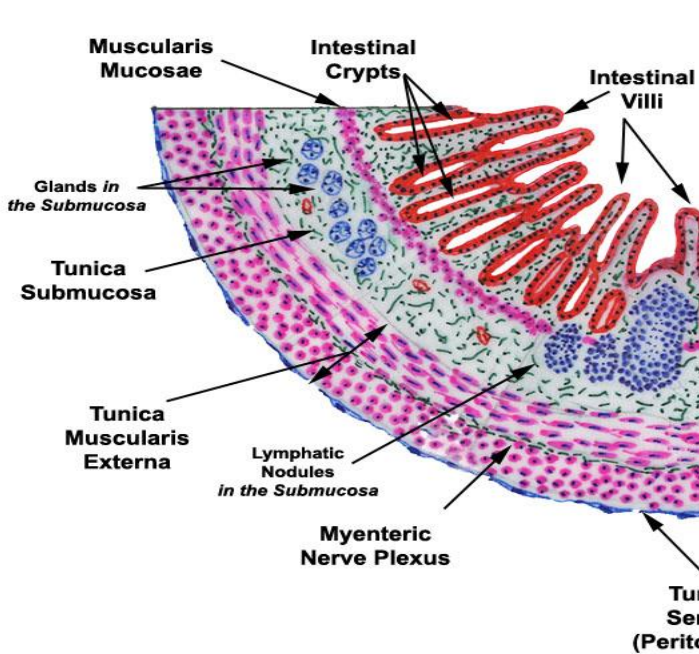
Rabbit appendix



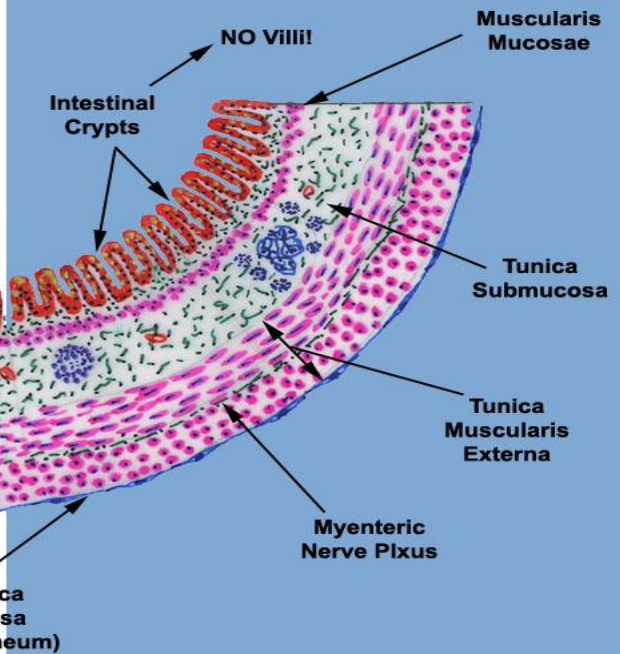
Human appendix

<u>SUMMARY</u>	<u>Small Intestine</u>	<u>Large Intestine</u>
Mucosa	<ul style="list-style-type: none"> Shows villi AND crypts Epithelium: simple columnar epithelium with goblet cells Contains paneth cells 	<ul style="list-style-type: none"> Shows ONLY crypts Epithelium: simple columnar epithelium with numerous goblet cells NO paneth cells
Submucosa	<ul style="list-style-type: none"> Contains Brunner's glands 	<ul style="list-style-type: none"> NO glands
Muscularis Externa	<ul style="list-style-type: none"> 2 smooth muscle layers: <ul style="list-style-type: none"> Inner circular Outer longitudinal 	<ul style="list-style-type: none"> 2 smooth muscle layers: <ul style="list-style-type: none"> Inner circular Outer longitudinal The longitudinal layers is not continuous, it is in the form of 3 ribbons (teniae coli)
Serosa or adventitia	<ul style="list-style-type: none"> Serosa covers all duodenum except for the 2nd and 3rd parts which are covered with adventitia 	<ul style="list-style-type: none"> Serosa only

SMALL INTESTINE



LARGE INTESTINE



Summary

Where do submucosa GLANDS exist in GIT?

- ONLY in esophagus and duodenum

What is the type of epithelium of mucosa of duodenum?

- Simple columnar epithelium with goblet cells

Mention two features about Paneth cells?

- Exist only in duodenum
- Secrete antibacterial agents (Lysozymes)

What does submucosa of duodenum contain?

- Brunner's glands, and It secretes mucus

Mention a feature about jejunum?

- Has neither brunner's glands nor peyer's patches

Where are Peyer's patches located?

- In anti-mesentery of ileum (origin in lamina propria and extend to submucosa)

Where is the difference between colon and appendices?

- Similar to the colon, but with much smaller diameter, shallow crypts, more lymphoid nodules, and more DNES cells.

Summary

What is the difference between small and large intestines mucosa?

Small intestine has villi and crypts

Large intestine has crypts ONLY

What is the difference between types of cells in small and large intestines crypts?

- The only difference large intestine has **NO paneth cells**

What is the difference between small and large intestines submucosa?

- There are NO glands in large intestine submucosa

What is the difference between small and large intestines muscularis externa?

- The outer longitudinal muscles are **discontinuous in large intestine due to presence of teniae coli**

What is the difference between small and large intestines serosa?

- Large intestine Has fat-filled pouches called **Appendices Epiploicae**

MCQs

1. Which one of these structures is not involved in increasing surface area the mucosa

- a) Plicae circulares
- b) Lymphoid nodules
- c) Villi
- d) Microvilli

2. Which one of these layers does not participate in mucosa of duodenum

- a) Serosa
- b) Epithelium
- c) Lamina propria
- d) Muscularis mucosae

3. Only part that contains submucosal glands in the GIT?

- a) Esophagus
- b) Stomach
- c) Duodenum
- d) A and C

4. One of these glands is present in the crypts and the villi

- a) Paneth cells
- b) Stem cells
- c) Goblet cells
- d) Brunner's gland

5. Where can we find the Brunner's gland

- a) Submucosa of duodenum
- b) Jejunum
- c) Ileum
- d) Mucosa of esophagus

6. Which of the following structures is not found in colon?

- a) Mucosa
- b) Submucosa
- c) peyer's patches
- d) Muscularis externa

7. Which of the following structures has NO villi in the mucosa?

- a) duodenum
- b) ileum
- c) jejunum
- d) Sigmoid colon

8. Which of the following structures lack of paneth cells?

- a) appendix
- b) jejunum
- c) duodenum
- d) ileum

5-a 1-b 2-a 3-d 4-c
6-c 7-d 8-a

MCQs

9. Which of the following is a feature of ascending colon

- a) Has villi
- b) Appendices Epiploicae are absent
- c) Continues longitudinal muscle
- d) No paneth cells

10. Which one of these structures does not participate in submucosa of colon?

- a) Nerves
- b) glands
- c) Connective tissue
- d) Blood vessels

11. Only part that contains teniae coli is?

- a) Esophagus
- b) Large intestine
- c) Duodenum
- d) A and C

12. One of these cells is presented in the crypts only?

- a) Columnar cells
- b) Stem cells
- c) Goblet cells
- d) DNES cells

13. Where can we find the Appendices Epiploicae ?

- a) Submucosa of duodenum
- b) Jejunum
- c) Transverse colon
- d) Mucosa of esophagus

14. Which of the following structures is not found in jejunum?

- a) Mucosa
- b) Submucosa
- c) peyer's patches
- d) Muscularis externa

15. Which of the following structures has villi in the mucosa?

- a) duodenum
- b) ileum
- c) jejunum
- d) All of them

16. Which of the following structures has paneth cells?

- a) appendix
- b) jejunum
- c) duodenum
- d) B and C

9-d
13-c

10-b
14-c

11-b
15-d

12-b
16-d