



Motivational Corner:

“Step through new doors.
The majority of the time
there's something
fantastic on the other
side.”



Objectives:

By the end of this lecture, the student should be able to discuss the microscopic structure in correlation with the function of the following organs:

1. Esophagus.
2. Stomach.

1-

Integrated Esophagus & stomach.

Extra notes: Gray

Important notes: Red

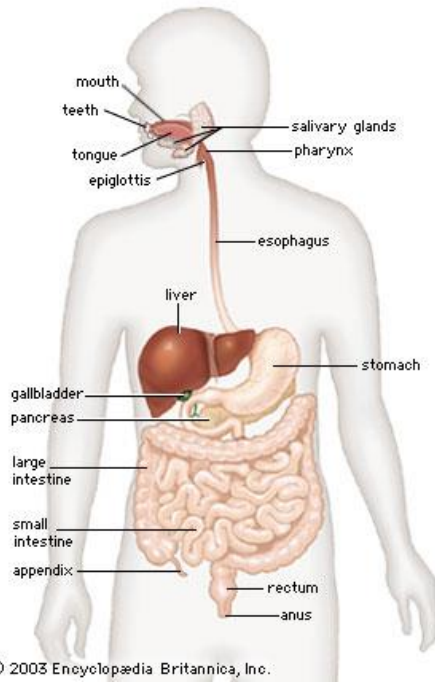
Revised by

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Alimentary Canal

Is the tubular portion of digestive system.



Subdivided into

Esophagus.

Stomach.

Small intestine (duodenum, jejunum and ileum).

Large intestine (cecum, colon, rectum, anal canal, and appendix).

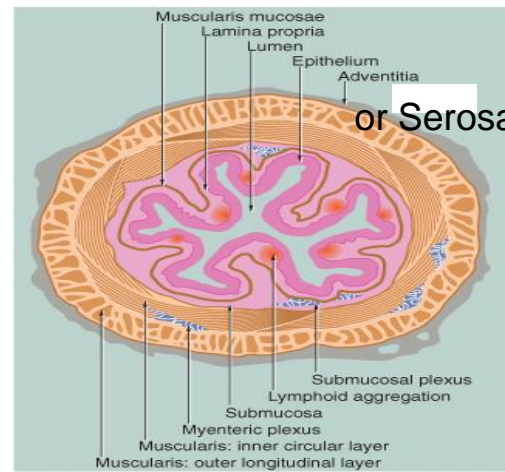
General Architecture of L/M Structure of Alimentary Canal

Mucosa.

Submucosa.

Muscularis externa.

Adventitia OR serosa.

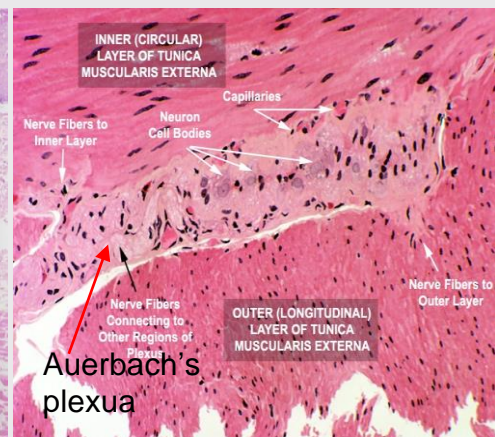
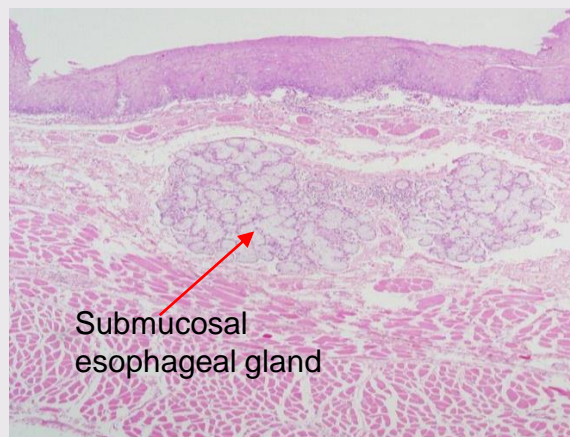
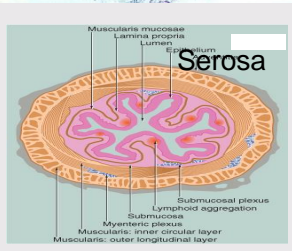




Esophagus

Four concentric layers:

Mucosa	Submucosa	Muscularis externa	Serosa or Adventitia
<p>Epithelial Lining: Non-Keratinized Stratified Squamous Epithelium.</p> <p>Lamina propria: Loose areolar C.T. with mucosal esophageal glands (secretion of mucus) in the upper and lower ends.</p> <p>Muscularis mucosae: Few layers of smooth muscle fibers.</p>	<ul style="list-style-type: none"> Loose areolar C.T. containing blood vessels, nerves, submucosal esophageal glands (secretion of mucus) Meissner's plexus of nerve fibers and nerve cells. 	<ul style="list-style-type: none"> Two muscle layers: 1-Inner circular layer. 2-Outer longitudinal layer. Upper 1/3: both layers are skeletal M. Middle 1/3: inner layer is smooth muscle Outer layer is skeletal M. Lower 1/3: both layers are smooth M. Auerbach's (myenteric) plexus in between the 2 layers 	<ul style="list-style-type: none"> Adventitia: is loose areolar C.T. not covered by mesothelium. In the thoracic part of the esophagus. Serosa: is loose areolar C.T. covered by mesothelium (simple squamous epithelium) in the abdominal part of the esophagus.



Stomach

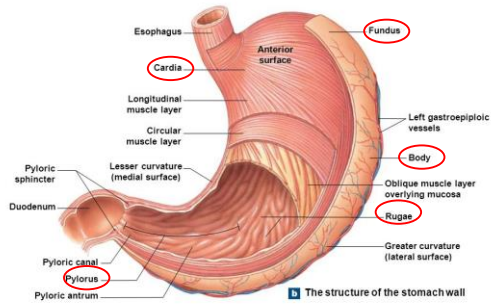


It has 4 regions:

- Cardia
- Fundus
- Body
- Pylorus

Mucosa has folds, known as **rugae** that disappear in the distended stomach.

Figure 24.12b The Stomach.



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Fundus (and Body) of Stomach

Mucosa

- Is invaded by **fundic glands**. The surface epithelium of the mucosa is simple columnar mucus-secreting cells.

Sub mucosa:

- Connective tissue containing blood vessels, nerves, and Meissner's plexus.
- **NO glands.**

Muscularis Externa:

Three smooth muscle layers: (Inner oblique - Middle circular - Outer longitudinal.) Auerbach's (myenteric) plexus.

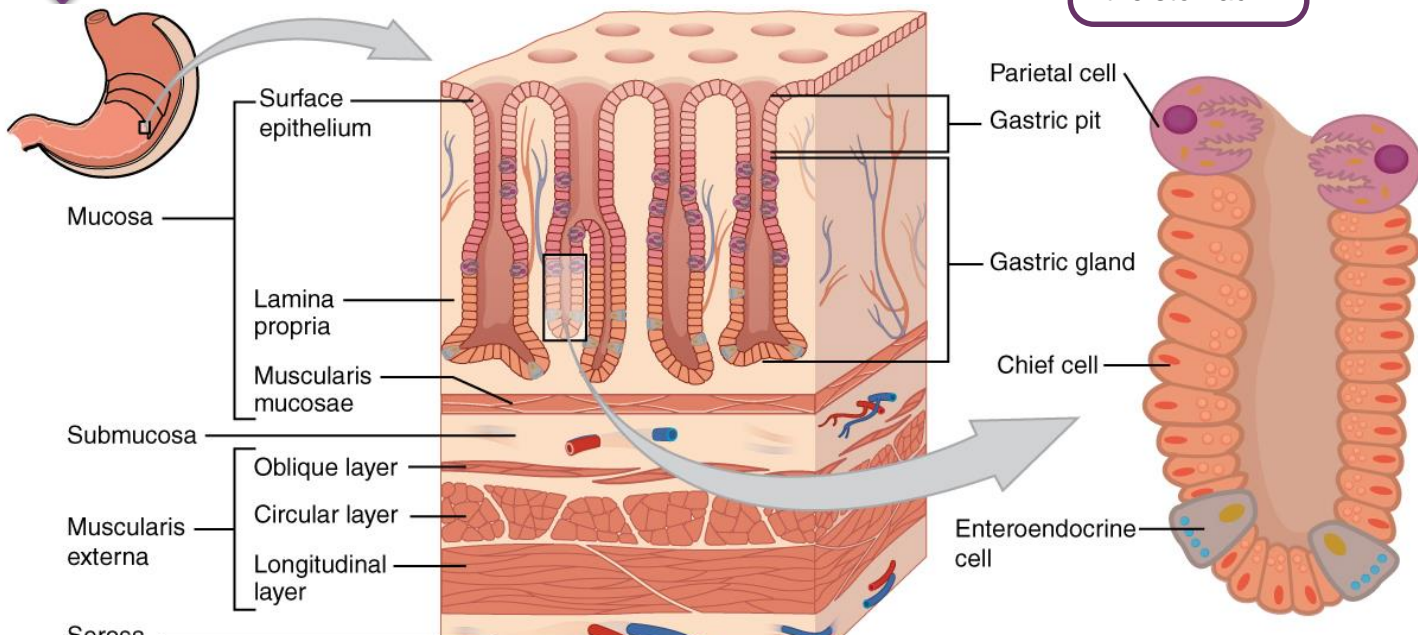
Serosa

- C.T. covered by mesothelium. (Not adventitia)

Mucosa of Fundus of Stomach

- Surface Columnar Epithelium: Simple columnar epithelium: **secretes mucus.**
- Lamina propria: C.T. invaded by numerous fundic glands with lymphoid elements.
- Muscularis mucosae: 2 layers of smooth muscle fibers.

There are **NO** goblet cells in the stomach.

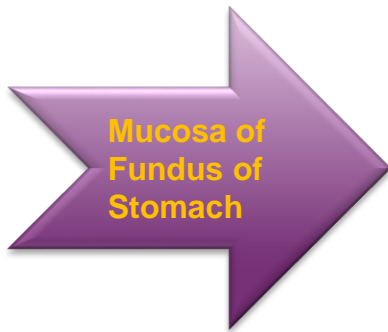




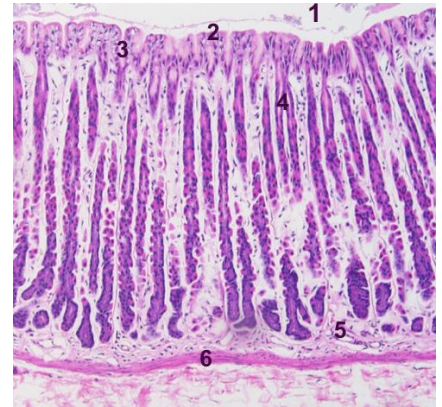
Fundic Glands

Fundic glands have:

- Short pits: **one fourth** of mucosa.
- Simple branched tubular glands.
- Are rich in parietal & chief cells.



- 1- Lumen.
- 2- Surface columnar epithelium.
- 3- Pits of fundic glands.
- 4- Fundic glands.
- 5- Lamina propria.
- 6- Muscularis mucosae.



Fundic Glands Composed of 5 cell types:

Parietal (oxyntic) cells:

Shape: pyramidal or polygonal.
Nucleus: central, round.
Cytoplasm: Deeply **acidophilic**, rich in SER and mitochondria (40% of the cell volume). C-shaped intracellular canaliculus.
 Secrete **HCl** and **gastric intrinsic factor** that helps absorption of vitamin B₁₂.

Peptic (chief) cells

The predominant cell type.
 Columnar cells.
Nucleus: basal, round.
Cytoplasm: basophilic with apical secretory granules.
 Secrete **pepsinogen**.

Mucous neck cells

Secrete **mucus**.

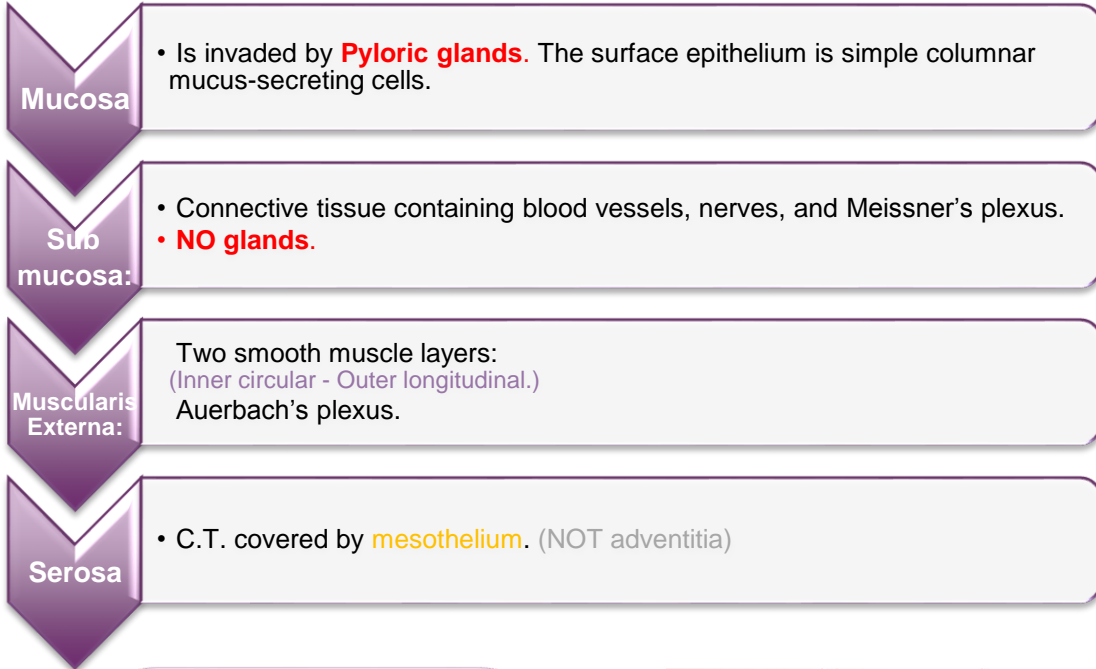
Enteroendocrine (EE) (DNES) cells:

Enterochromaffin (EC) cells: secrete **hormones** (e.g. serotonin, endorphin).

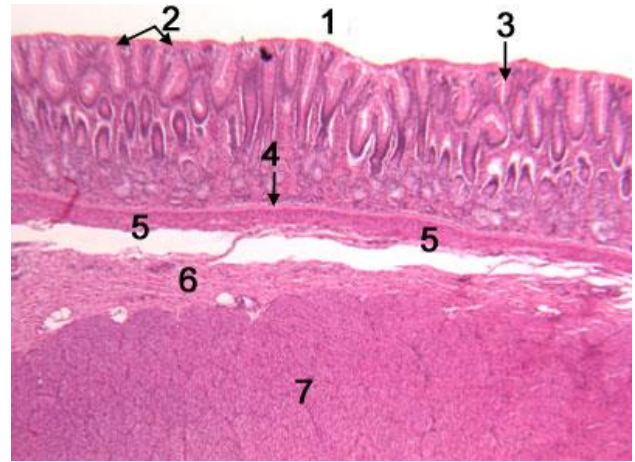
Stem cells

Regenerative cells.

+ Pylorus of stomach



- 1- Lumen.
- 2- Surface epithelium.
- 3- Pits of pyloric glands.
- 4- Lamina propria.
- 5- Muscularis mucosae.
- 6- Submucosa
- 7- Muscularis externa



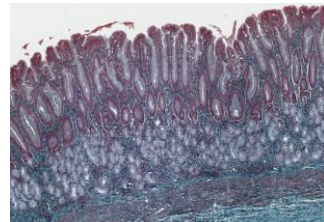
Pyloric glands have:

- Their pits are deep, about half the length of mucosa.
- They are branched and convoluted, many cross sections.



Cells of pyloric gland:

Mucus neck cells (Mucus secreting cells)	EE cells	Stem cells	Parietal cells	No peptic cells
1- The predominant cells 2- Secrete mucus.	1- EC cells 2- G cells 3- D cells 4- A cells	-	Few	Because parietal cells which secrete pepsinogen are few.



Summary



	Esophagus	Stomach	
Layers		Fundus	Pylorus
Mucosa	Non-Keratinized Stratified Squamous Epithelium.	Surface epithelium: Simple columnar mucus-secreting cells.	
		Fundic glands.	Pyloric glands.
		Short pits (1/4 of mucosa).	Deep pits (1/2 of mucosa).
Submucosa	Glands.	NO glands.	
	Meissner's plexus.		
Muscul externa	2 smooth muscle layer.	3 layers.	2 layers.
	Auerbach's plexus.		
Serosa OR adventita	Serosa in the abdominal part of the esophagus Or adventitia.	Serosa.	

5
4
3
2
1

MCQs

Q1- Which one of the following contains glands in it's submucosa ?

- a) Fundus of stomach
- b) Pylorus of stomach
- c) Esophagus

Q2- Which one of the following is the predominant cell in Fundic glands ?

- a) Mucus neck cells
- b) Parietal cells
- c) Peptic cells

Q3- which one of the following is the predominant cell in pyloric glands ?

- a) Parietal cells
- b) Mucus neck cells
- c) Enteroendocrine cells

Q4- Which one of the following cell type of funds glands help in absorption of Vitamin B12 ?

- a) Peptic cells
- b) Parietal cells
- c) Enteroendocrine cells

Q5- What type of muscle makes up the muscularis externa in the esophagus?

- a) Smooth
- b) Striated
- c) Cardiac
- d.) both a and b
- e) a, b, and c.

Thanks you for checking our work, Good luck.
-Team histology.

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HISTOLOGY
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