

MODULE 9 L05

Digestive Tract: Stomach

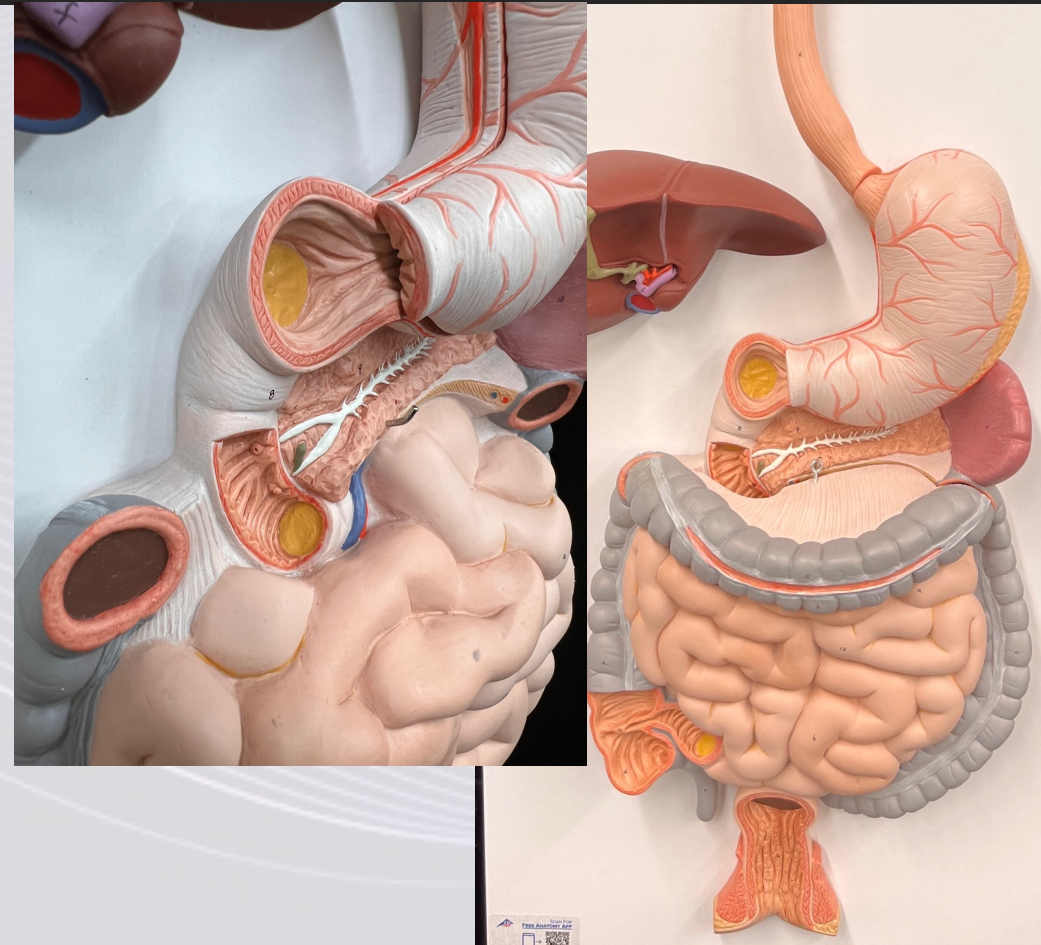
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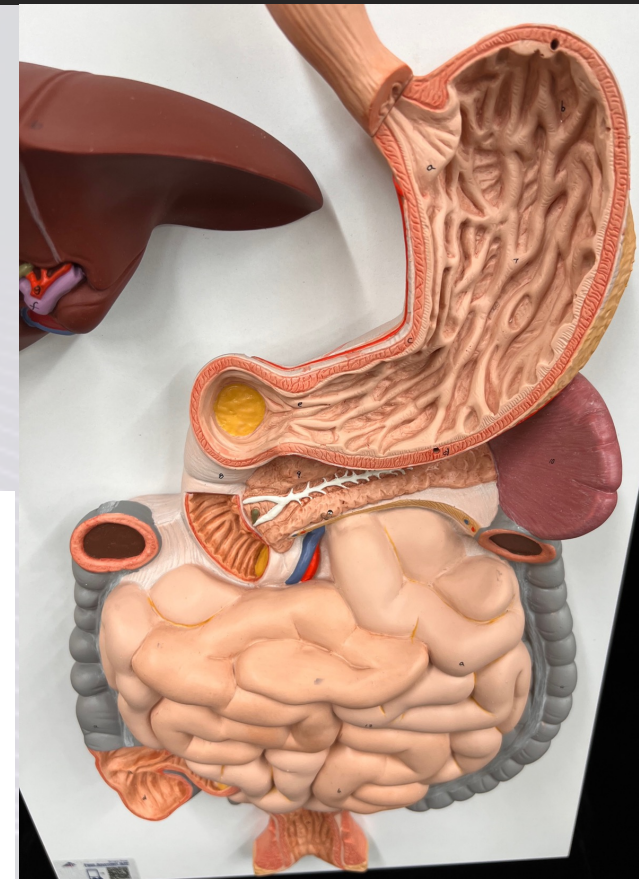
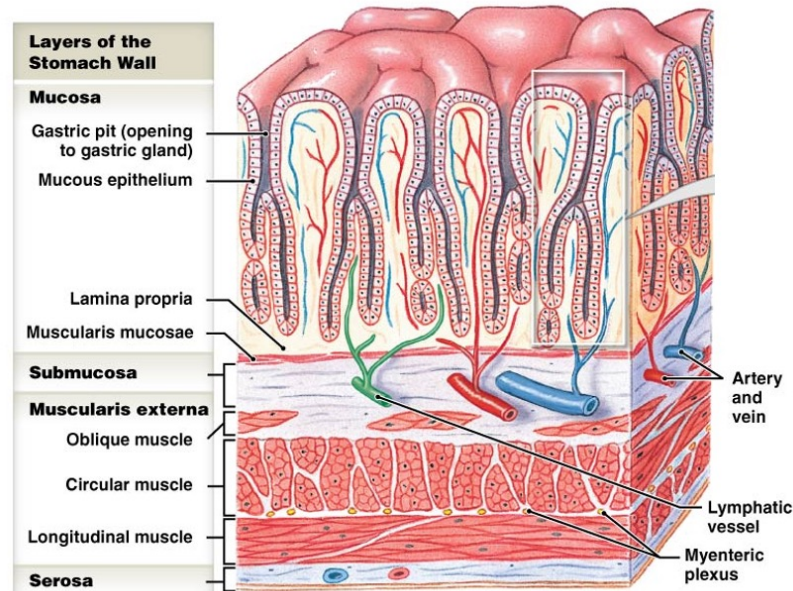
5) Stomach

- Regions:
 - ❖ Cardia
 - ❖ Fundus
 - ❖ Body
 - ❖ Pylorus
 - Pyloric sphincter
- Major functions:
 - ❖ Mixes and churns food
 - ❖ Begins chemical breakdown of proteins
 - ❖ Releases chyme into duodenum
 - ❖ Absorbs some fat-soluble substances
 - ❖ Possesses antimicrobial functions
- Other functions:
 - ❖ Stimulates protein-digesting enzymes
 - ❖ Secretes IF



Stomach Musculature

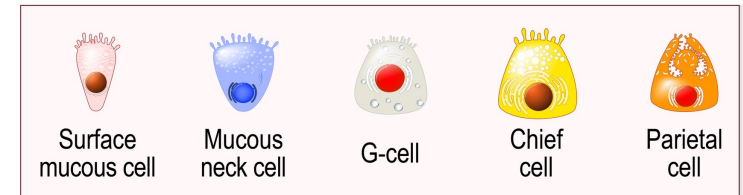
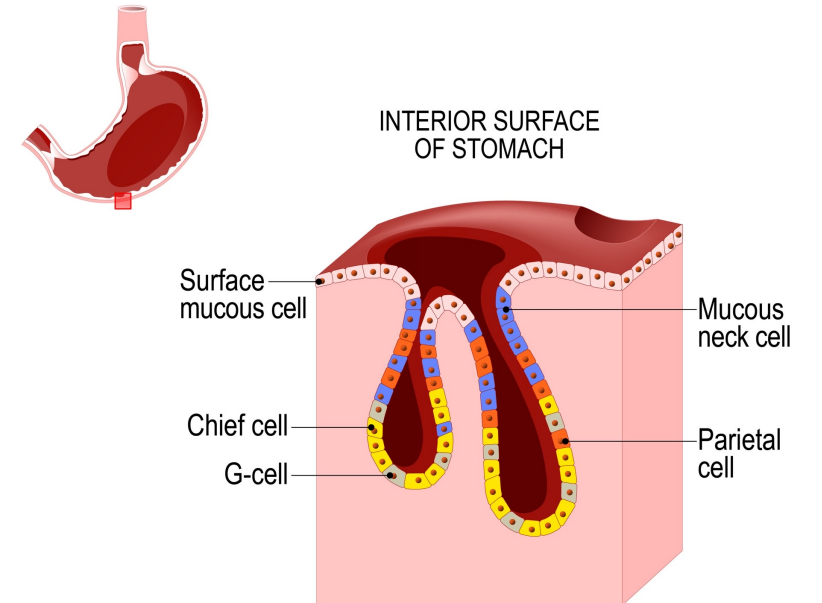
- Muscularis mucosae
 - Oblique muscle
- } Strengthen the stomach wall
Perform mixing and churning
- Rugae
 - ❖ Longitudinal folds
 - Gastric pits
 - ❖ Permit gastric lumen expansion
 - Receptive relaxation
 - ❖ Storage
 - Retropulsion
 - ❖ Type of peristalsis



Gastric Pits Cells

- Surface mucous cells
 - ❖ Secrete alkaline mucus
- Mucous neck cells
 - ❖ Secrete thin, acidic mucus
- G-cells
 - ❖ Secrete gastrin
- Chief cells
 - ❖ Secrete pepsinogen
- Parietal cells
 - ❖ Secrete HCl
 - ❖ Secrete intrinsic factor (IF)

Digestive glands



Stomach Digestive Properties

- Gastrin
 - ❖ Production site: G cells of stomach
 - ❖ Production stimulus:
 - Presence of peptides and aa in stomach
 - ❖ Target organ:
 - Stomach - ↑ secretion by gastric glands
Promotes gastric emptying
 - Small intestine – promotes muscle contraction
 - Ileocecal valve – relaxes valve
 - Large intestine – triggers mass movements
- Somatostatin
 - ❖ Production site: stomach and duodenum
 - ❖ Production stimulus: presence of food in stomach
Sympathetic stimulation
 - ❖ Target organ:
 - Stomach – restricts all gastric secretions, gastric motility and emptying
 - Pancreas – restricts pancreatic secretions
 - small intestine – reduces intestinal absorption by reducing blood flow

Stomach Digestive Properties (cont.)

- Histamine
 - ❖ Production site: stomach
 - ❖ Production stimulus: presence of food in stomach
 - ❖ Target organ:
 - Stomach – stimulate parietal cells to secrete HCl
- Serotonin
 - ❖ Production site: stomach
 - ❖ Production stimulus: presence of food in stomach
 - ❖ Target organ:
 - Stomach – contracts stomach muscles
- Ghrelin
 - ❖ Production site: stomach
 - ❖ Production stimulus: fasting state
 - ❖ Target organ:
 - Hypothalamus – regulates food intake

Gastric Secretion

1. Cephalic phase
 - Smell
 - Taste
 - Sight
 - Thought
2. Gastric phase
 - Local neural and hormonal mechanisms
 - Triggered by entry of food into stomach
3. Intestinal phase
 - Excitatory
 - a) Gastrin is released when food enters the duodenum
 - b) Excites gastric juice secretion
 - Inhibitory
 - a) Enterogastric reflex – inhibits gastric secretion
 - b) Closes pyloric sphincter

