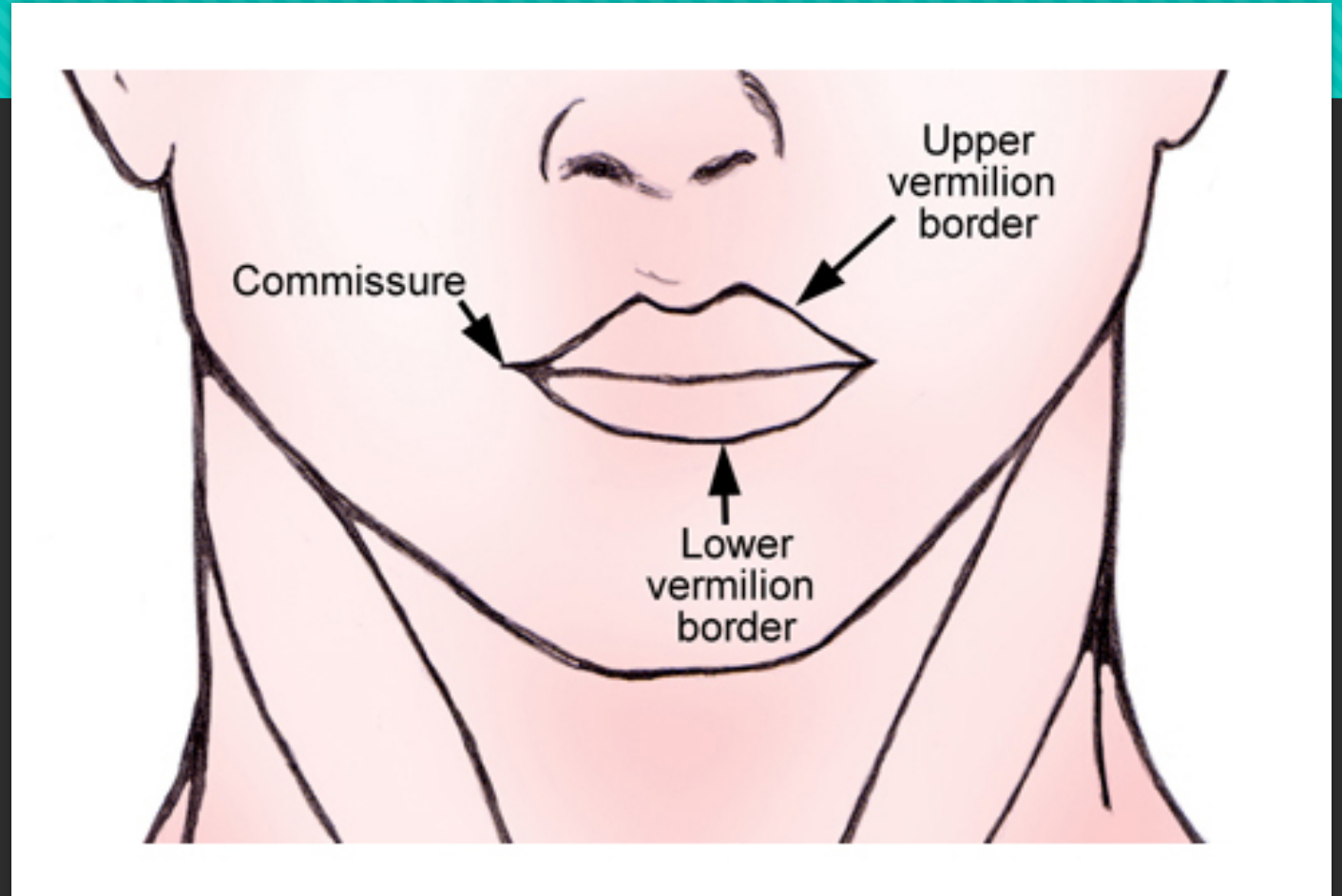


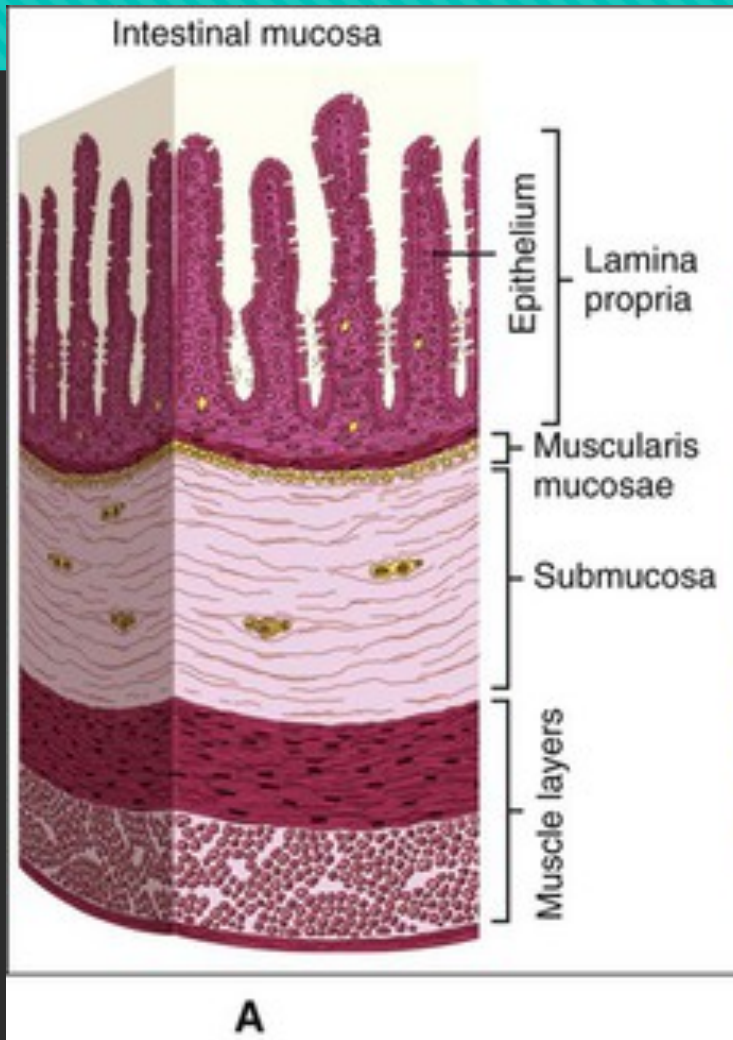
Alimentary Tract 1: Oral cavity

Oral cavity

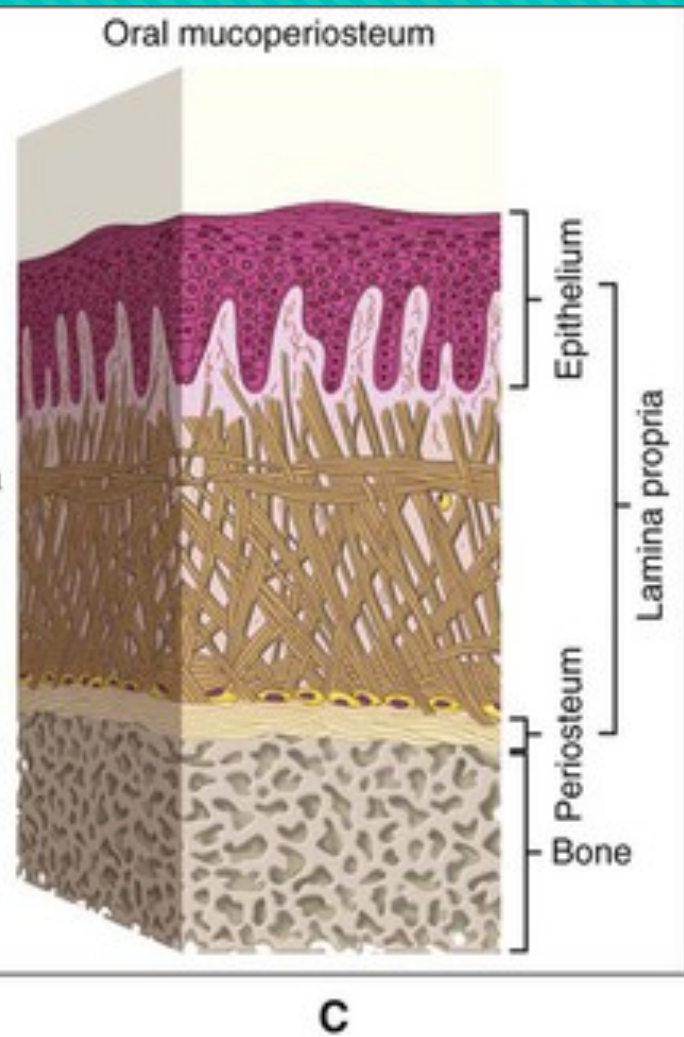
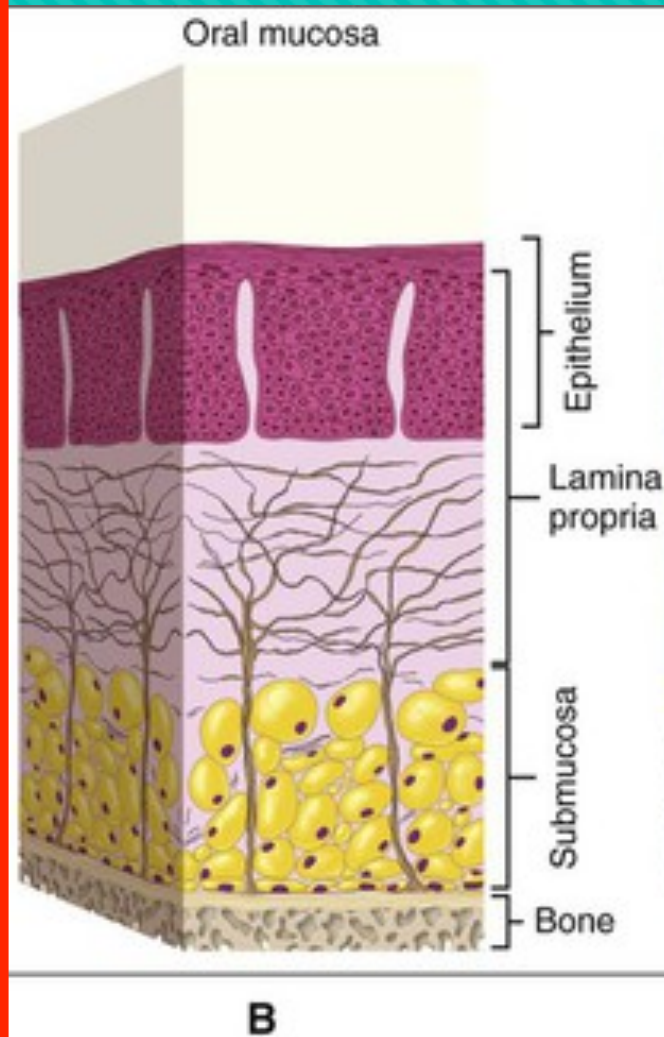
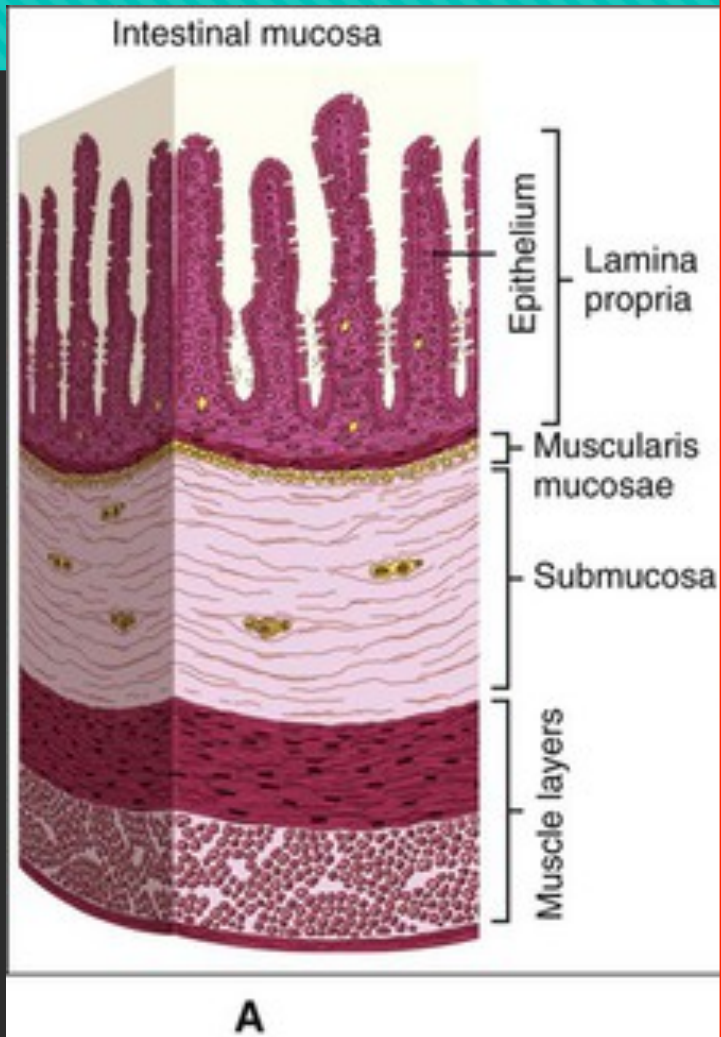
- Mucosa
- Tongue and papillae
- Taste buds
- Salivary glands



Mucosa

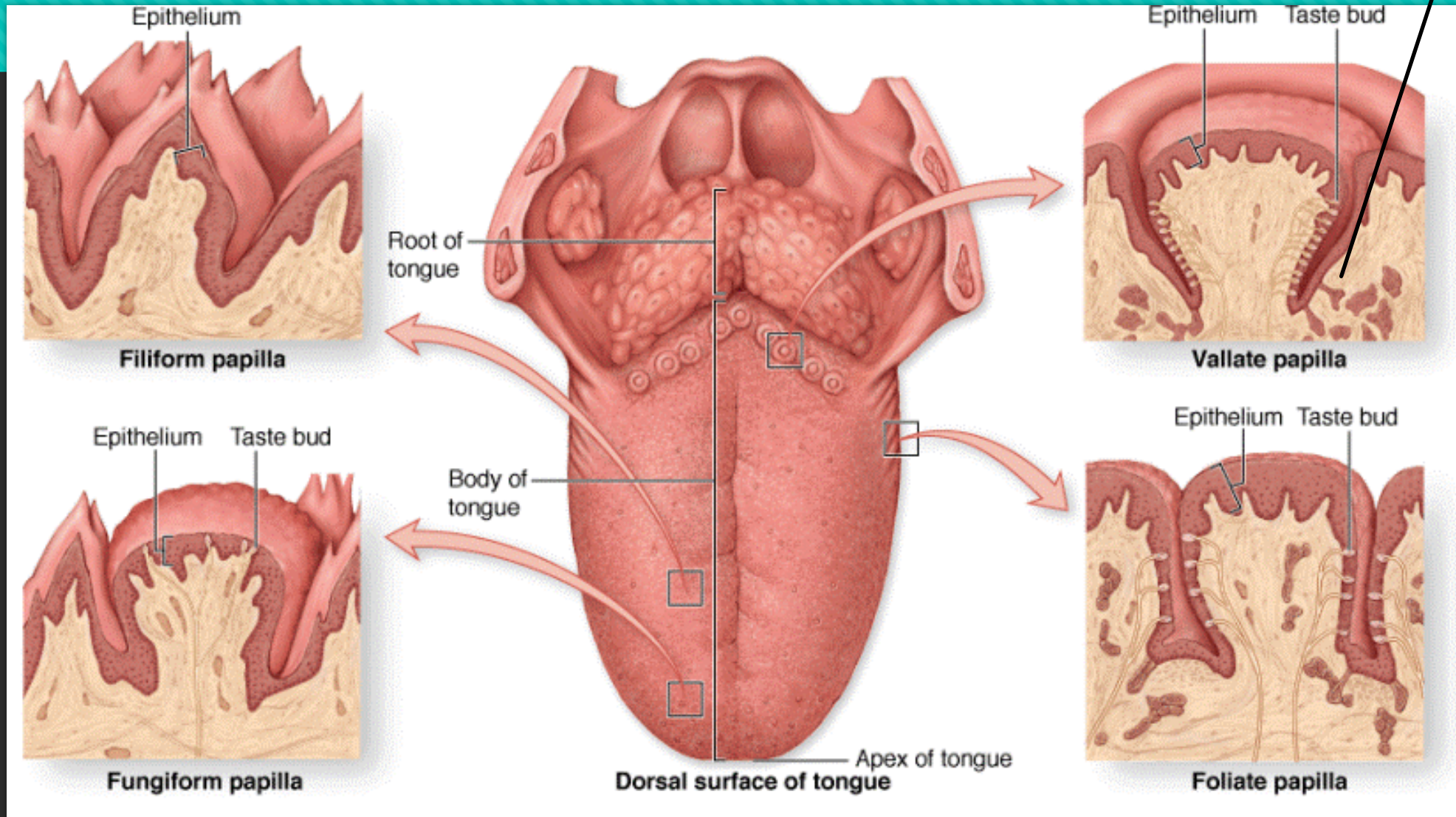


Mucosa

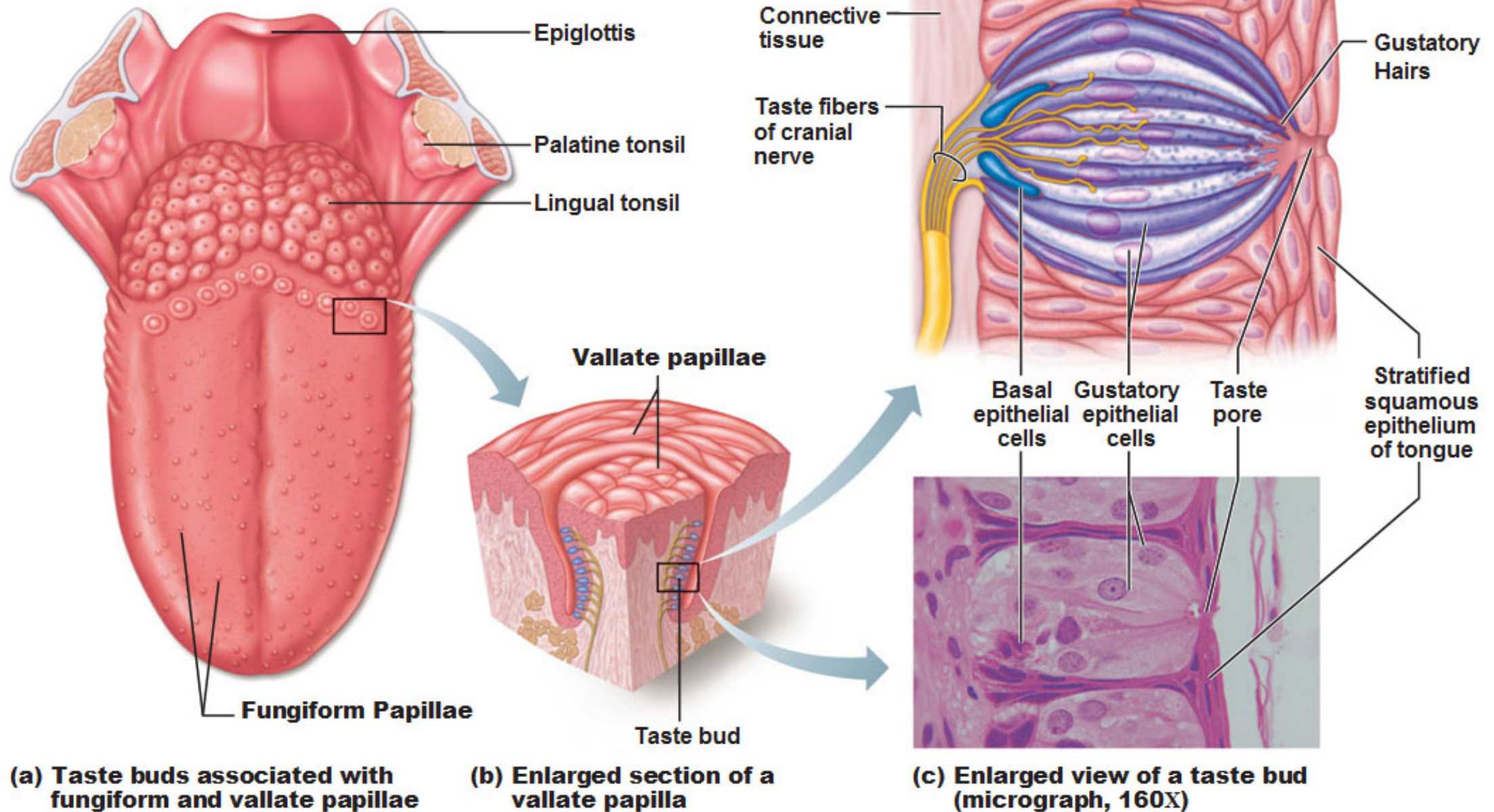


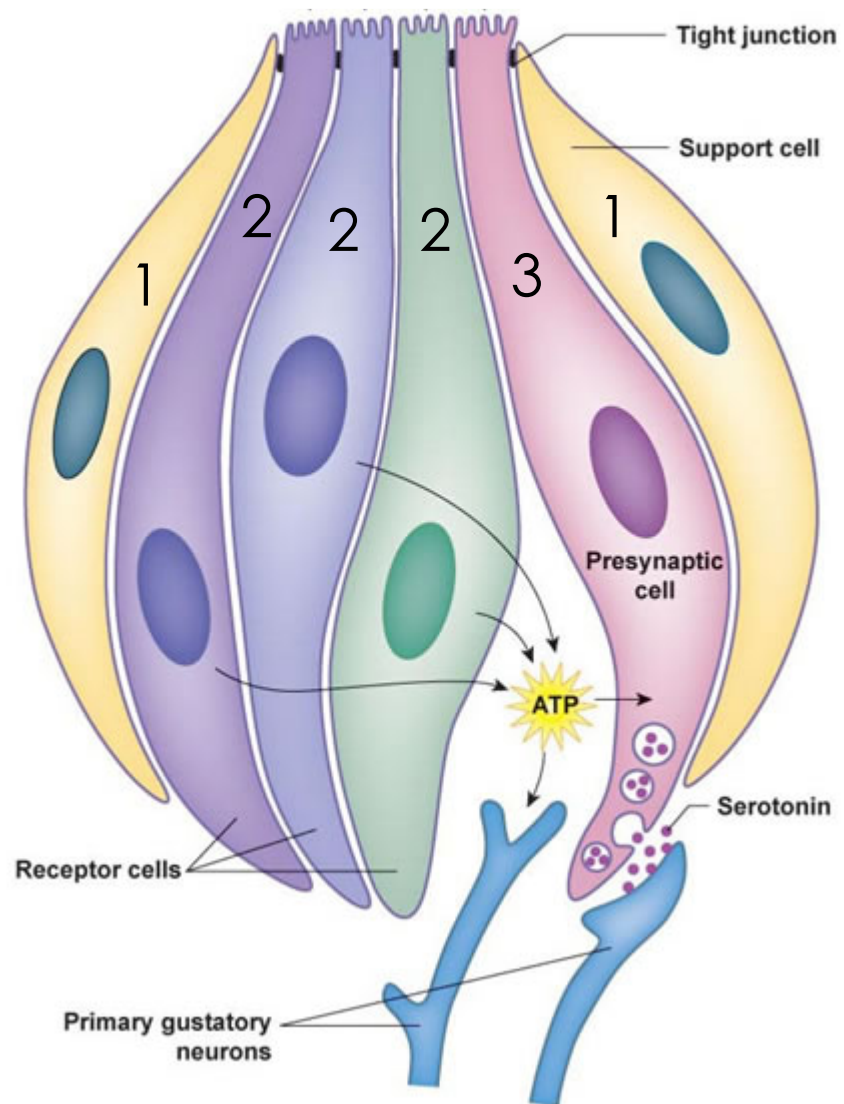
The Tongue

Von Ebner's Glands



Taste Buds



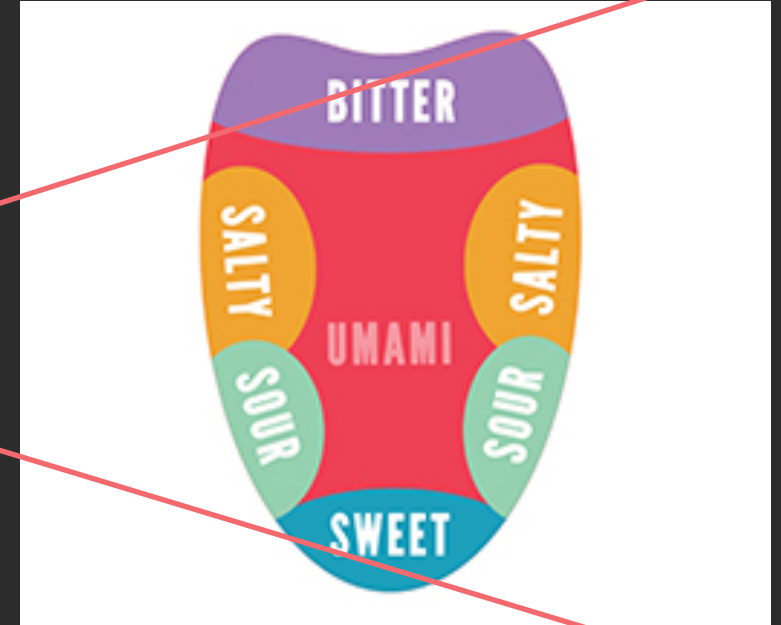
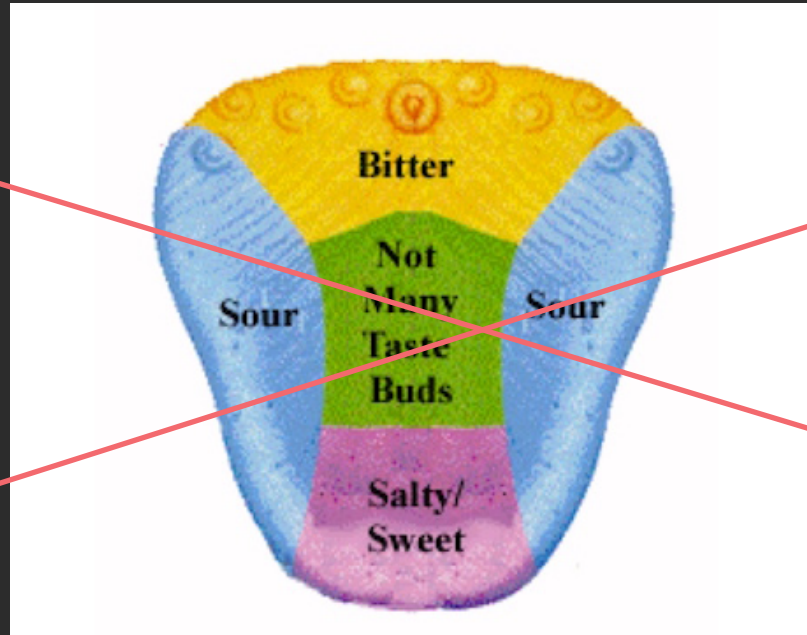
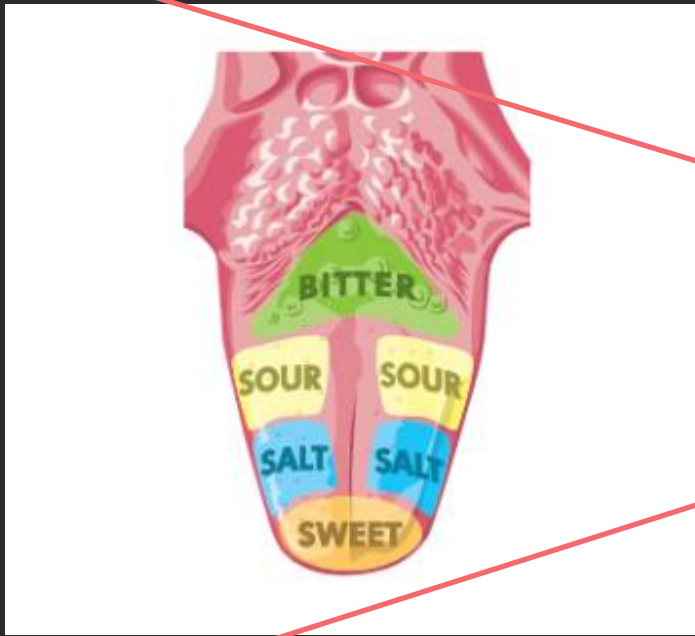


Salty: Na^+

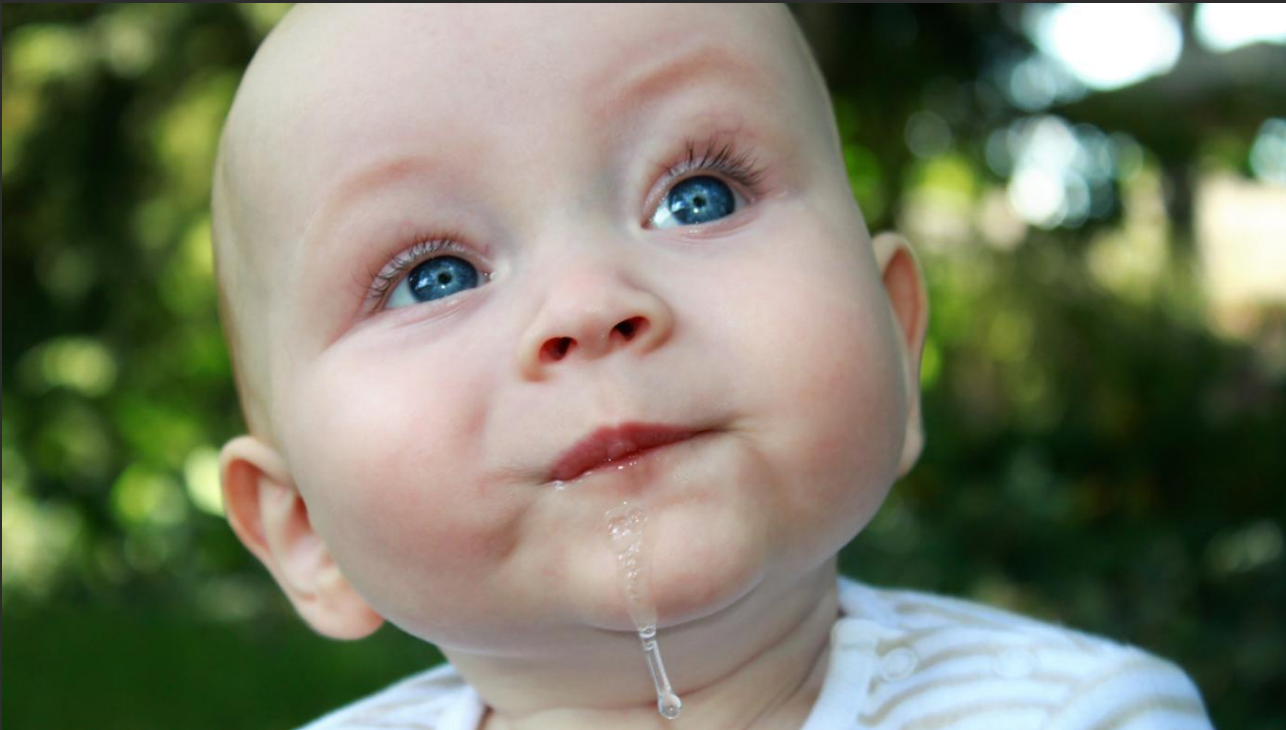
Sour: H^+

Sweet, bitter, umami: G-protein coupled

One cell, one taste. One taste bud, all tastes



Salivary Glands produce... saliva



Water

Ions

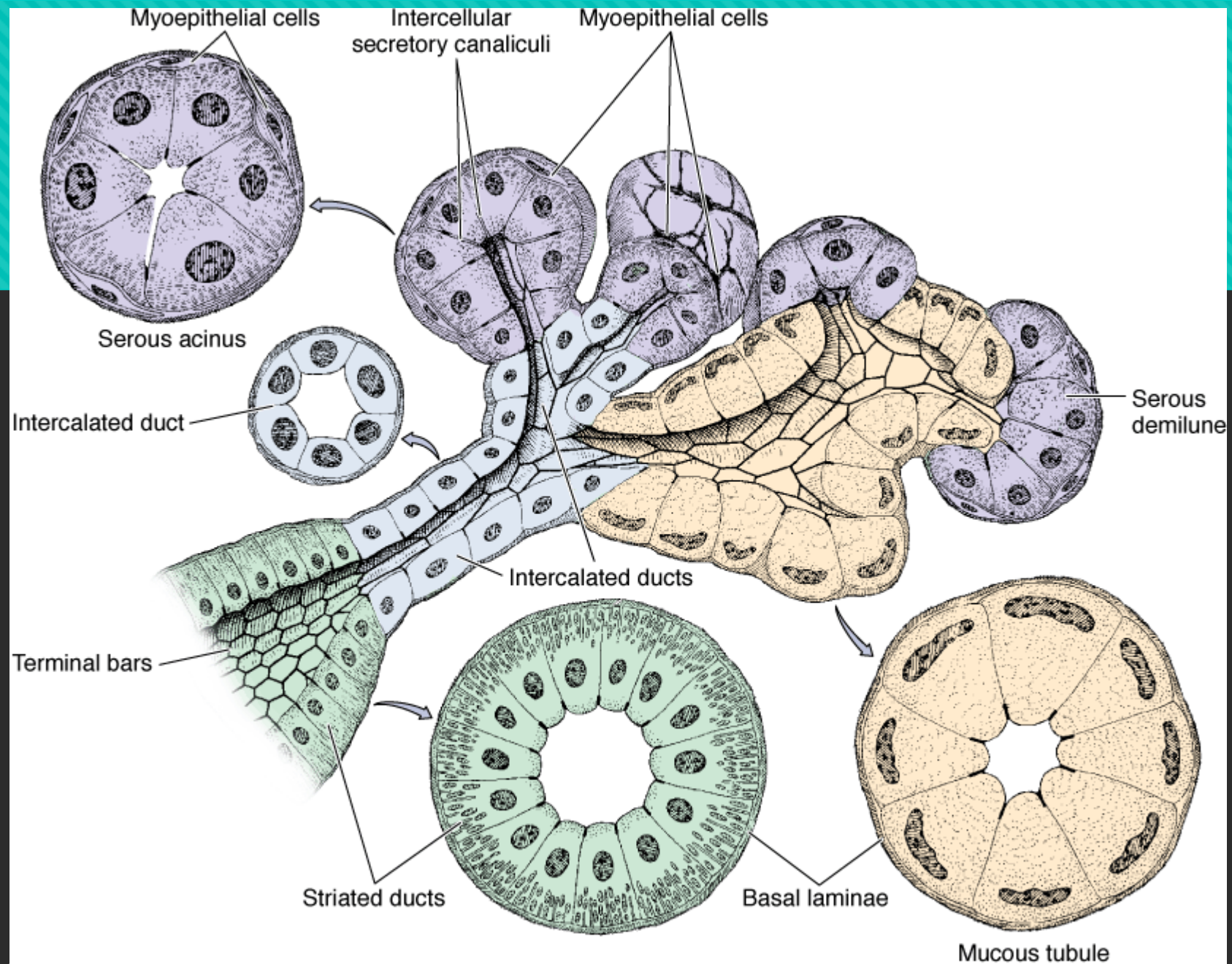
Enzymes

Antibacterial and defense proteins

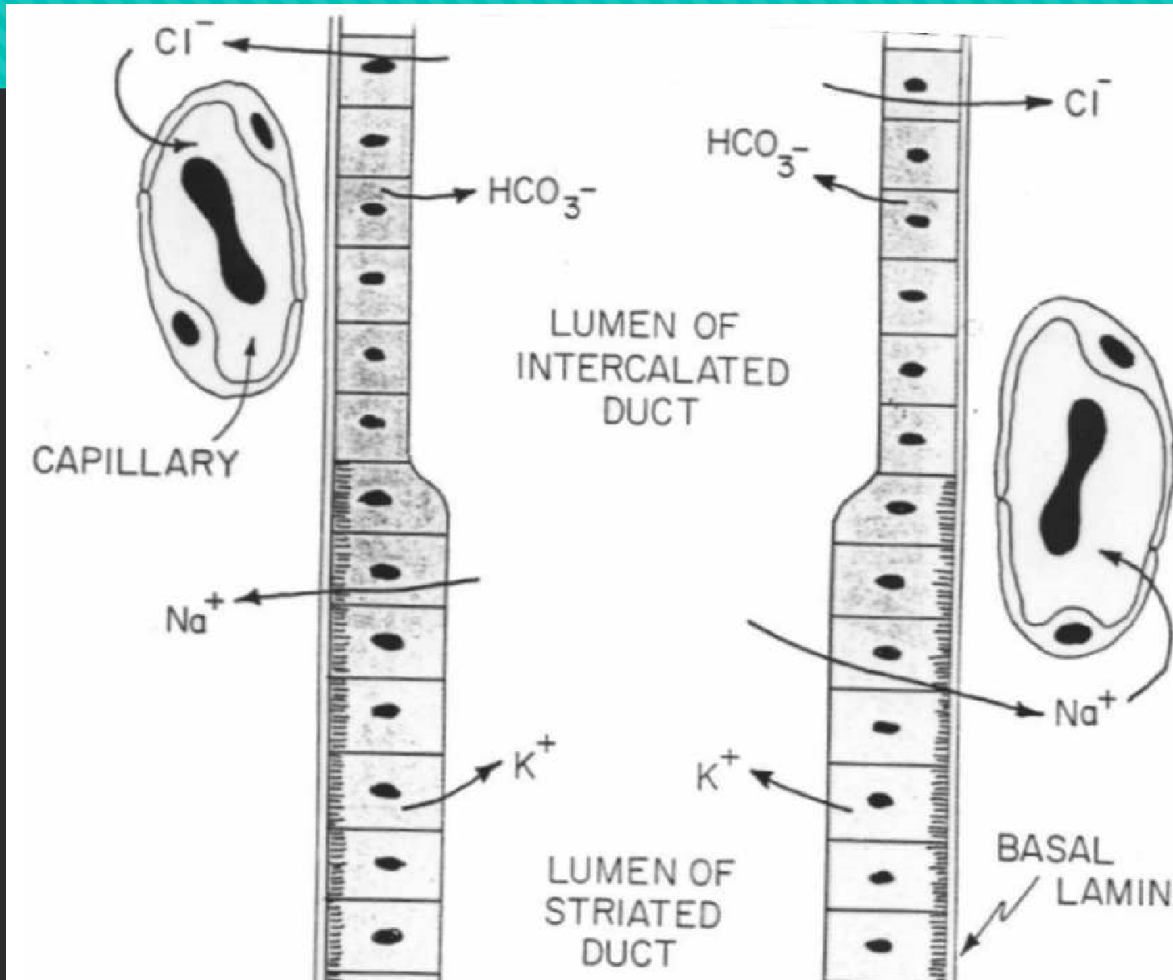
Epidermal Growth Factor

Mucins - glycoproteins

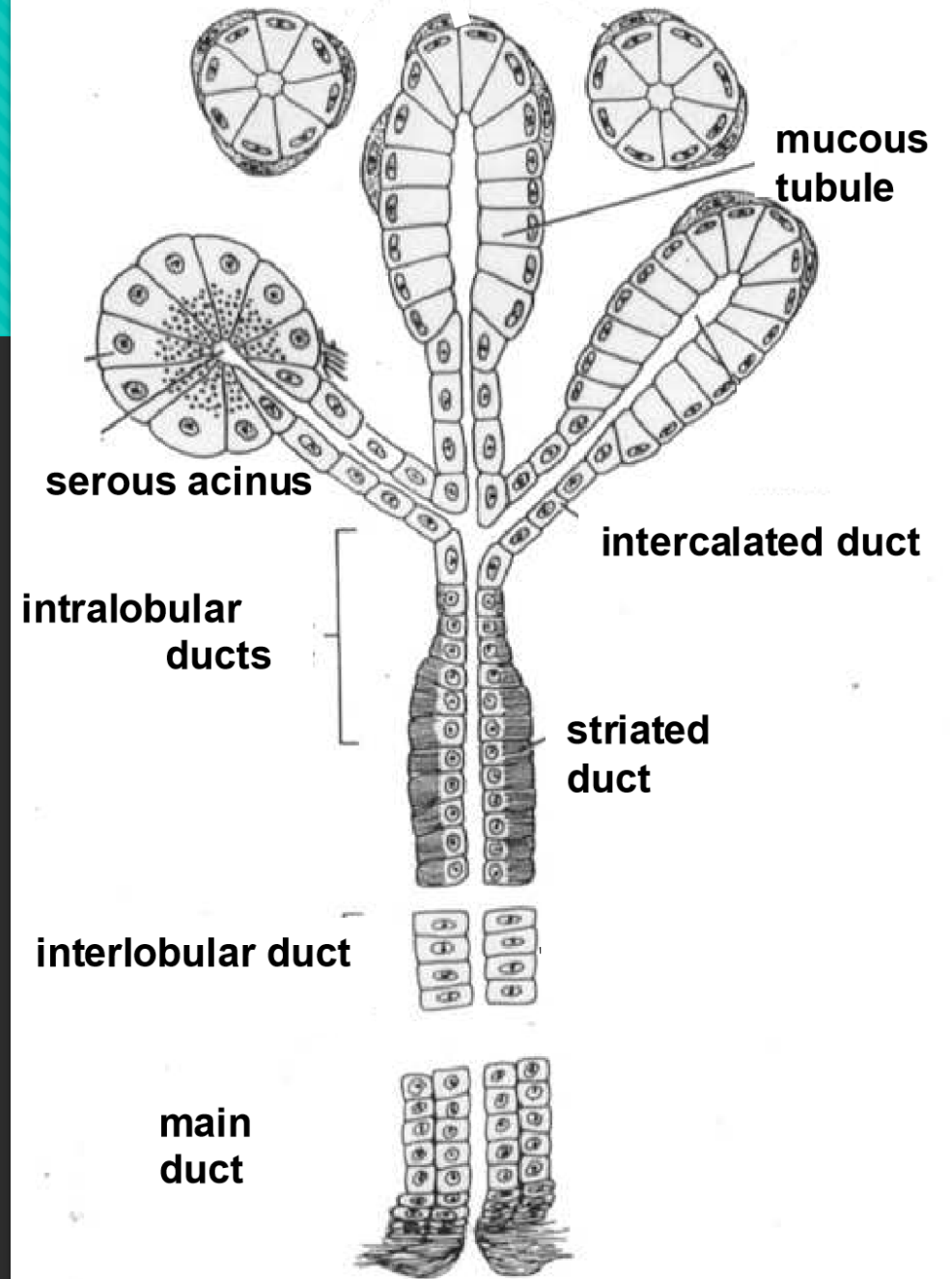
Glands

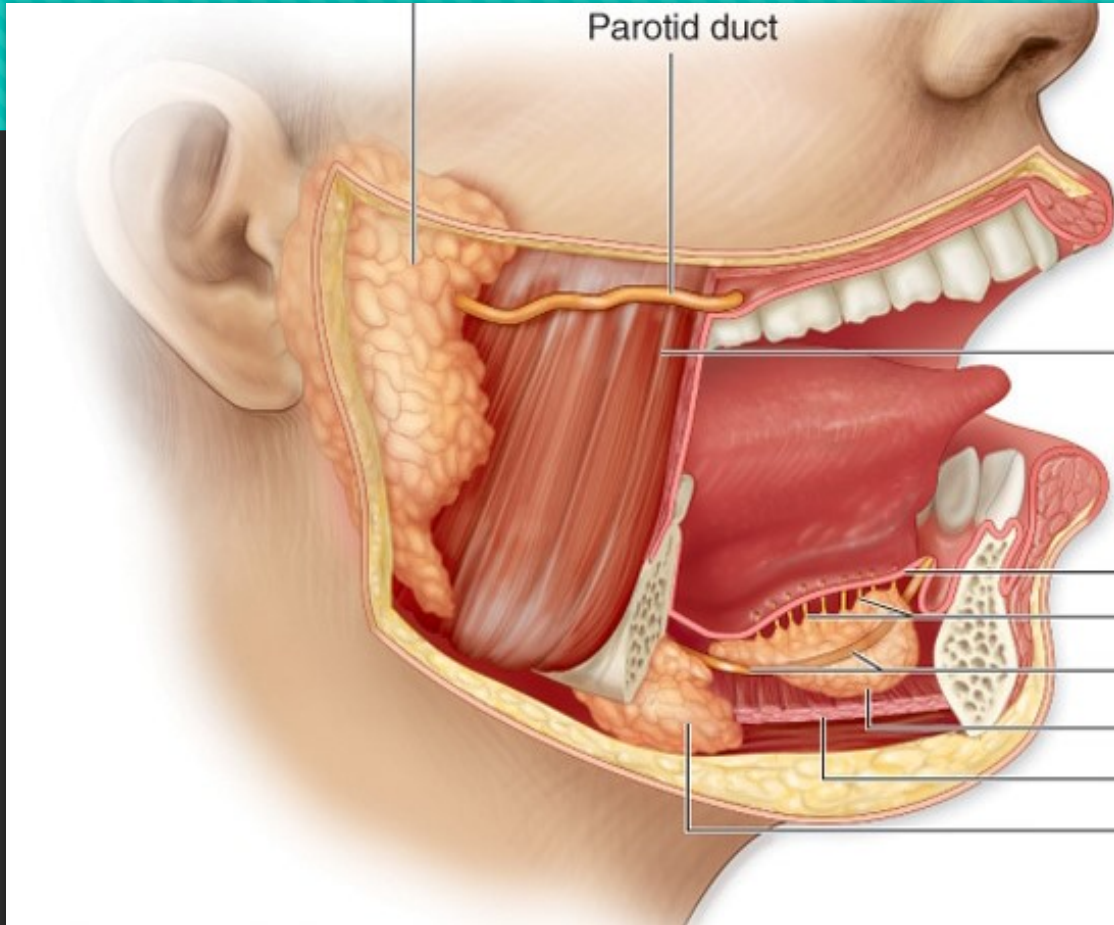


Gland ducts



Lobule





Parotid Gland

- Serous

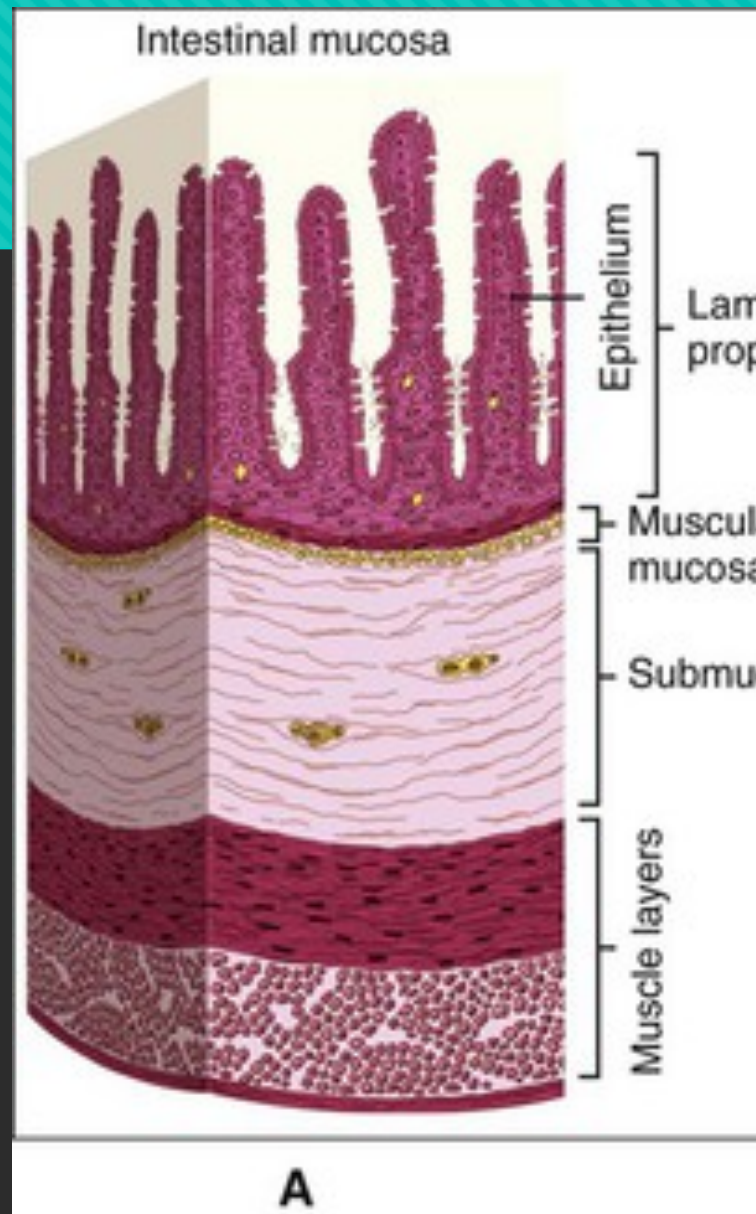
Sublingual

- Mucous
- Some serous demilunes, but no acini

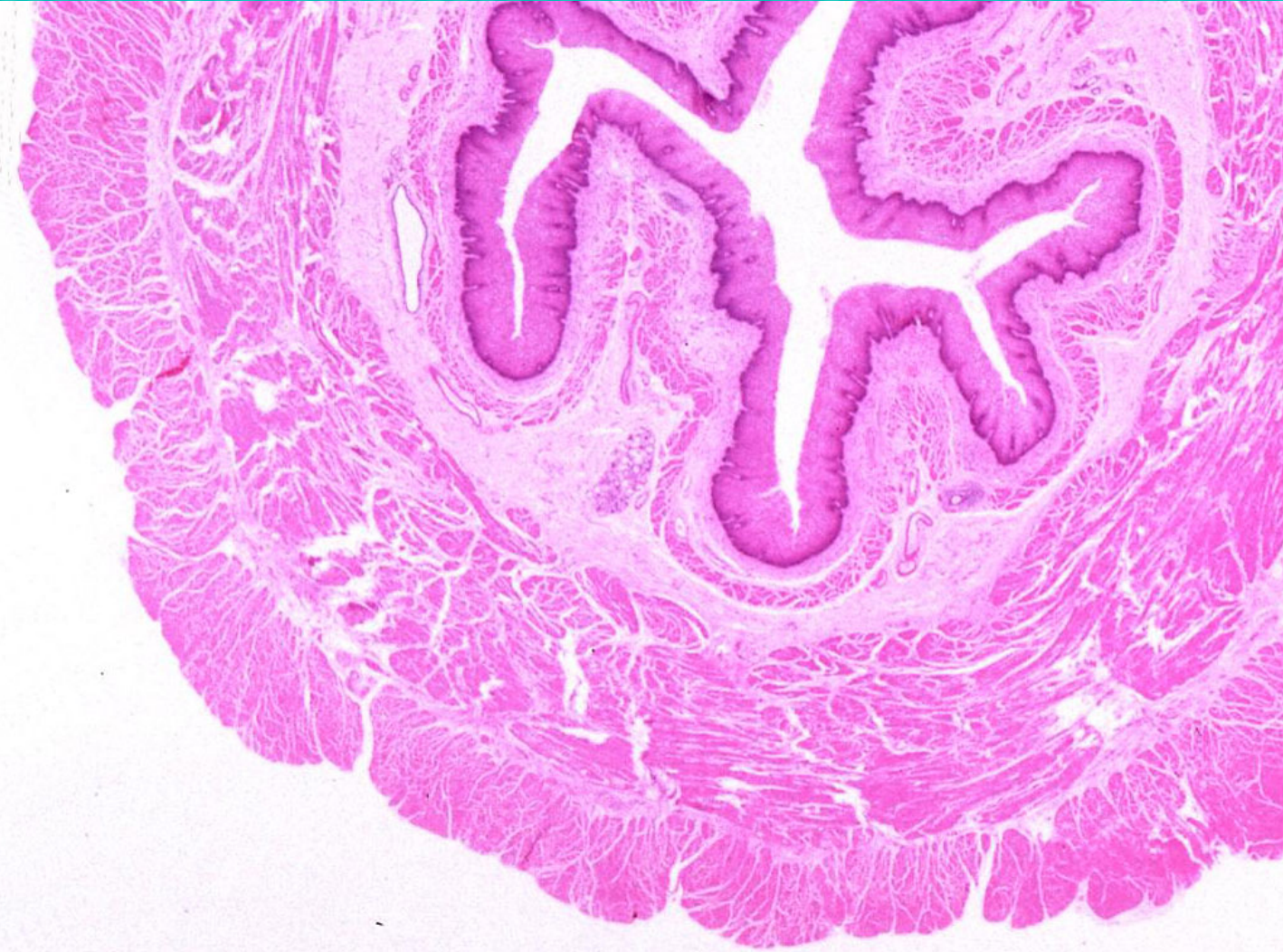
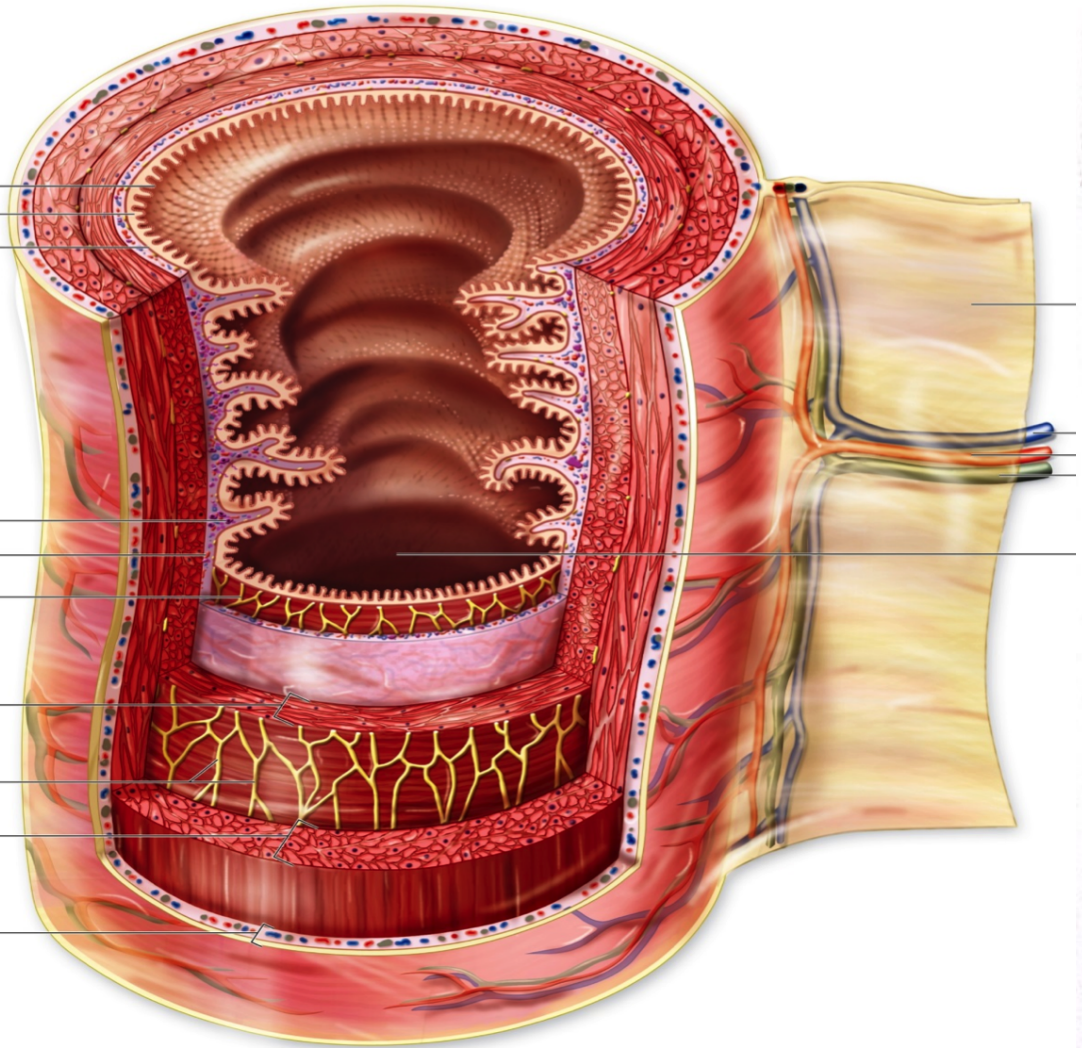
Submandibular

- Mixed: 80-90% serous, 10-20% mucous

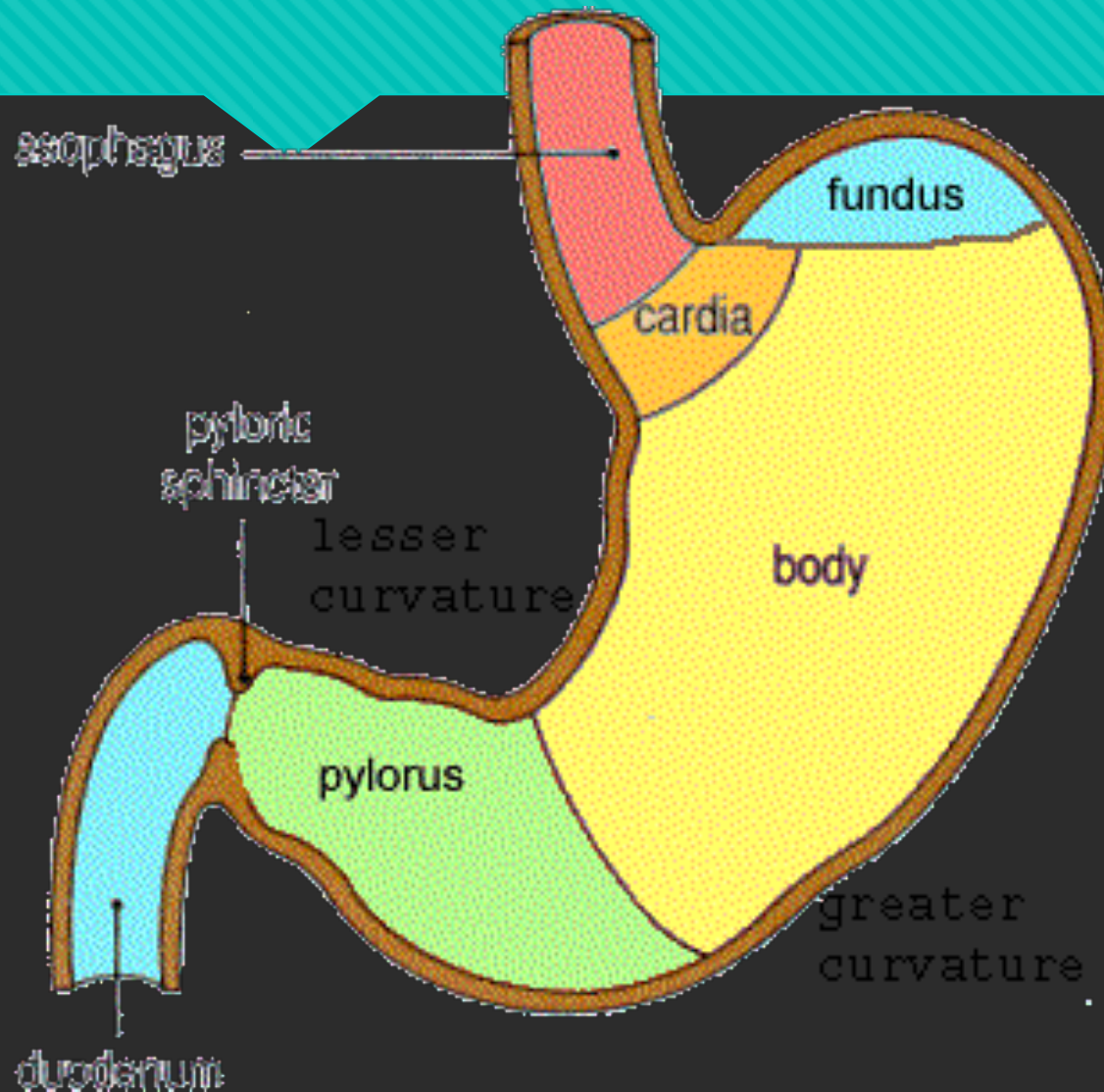
Alimentary Tract 2: Esophagus to Anal Canal



Esophagus



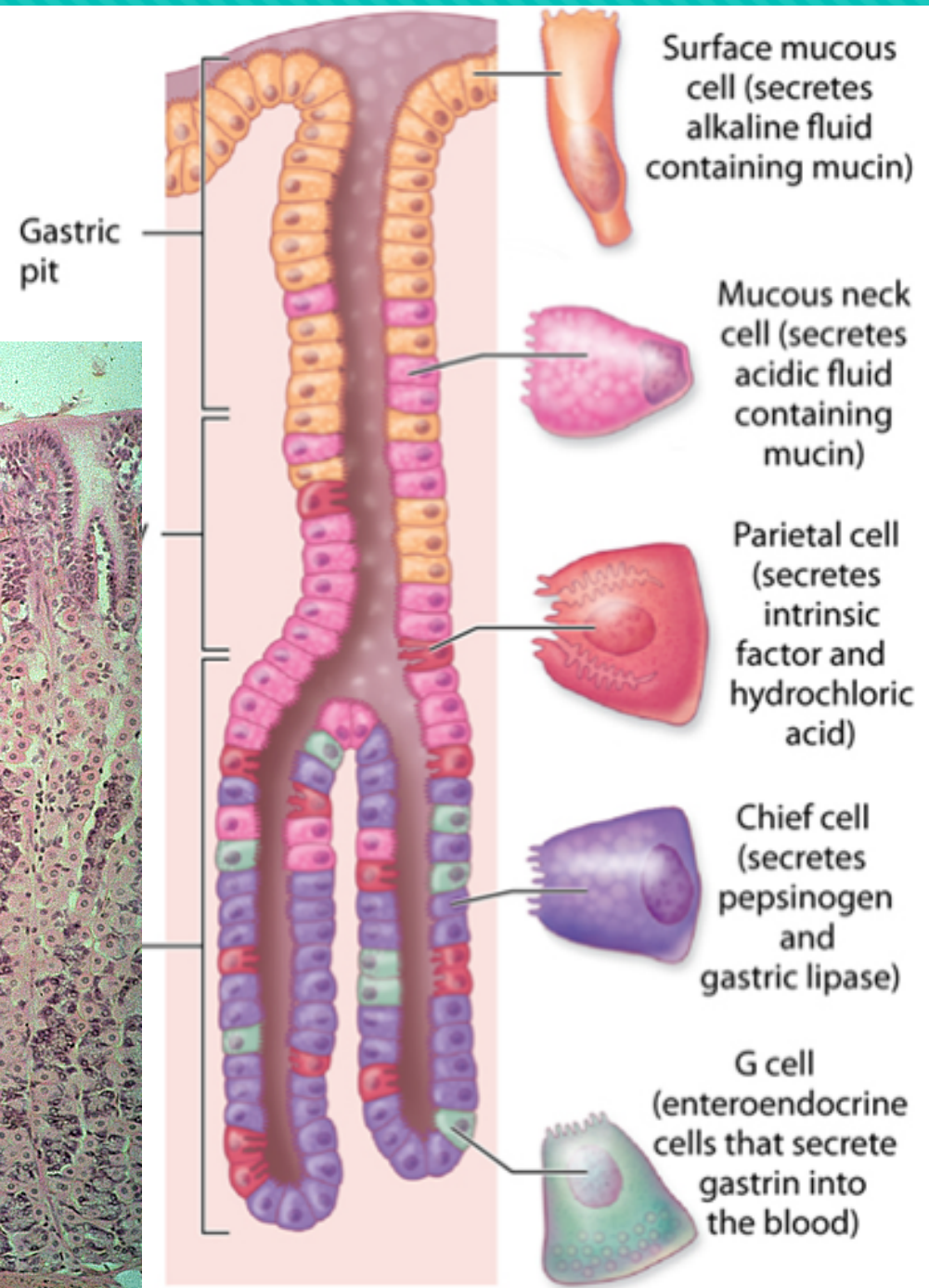
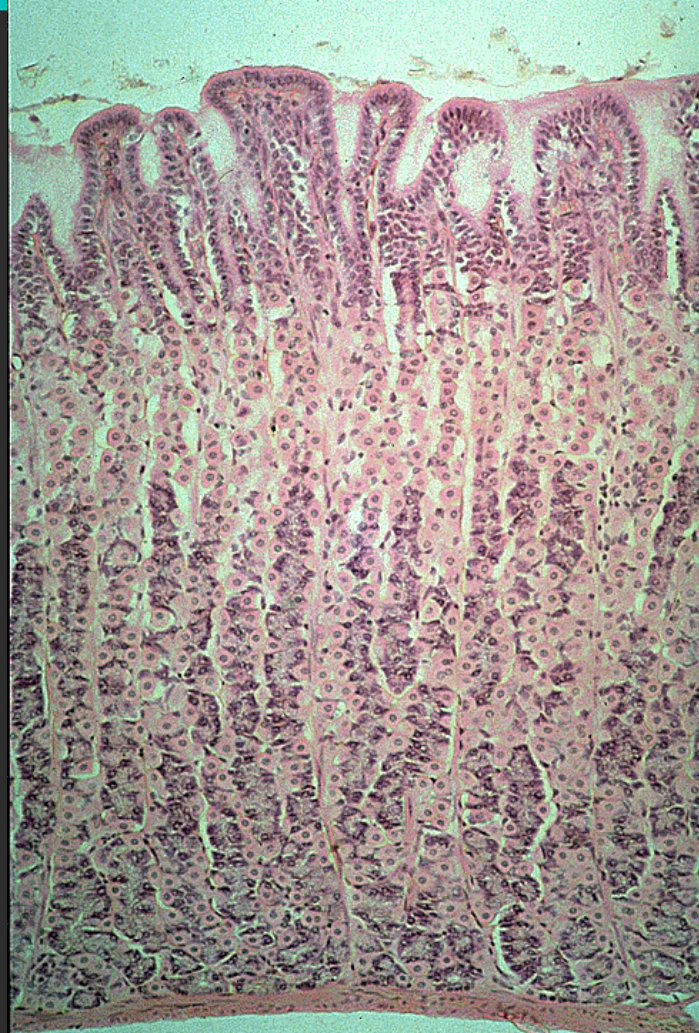
Stomach



- Simple Columnar epithelium – protective layer
- Gastric pits
- Lamina propria tightly packed with glands
- Additional innermost oblique layer

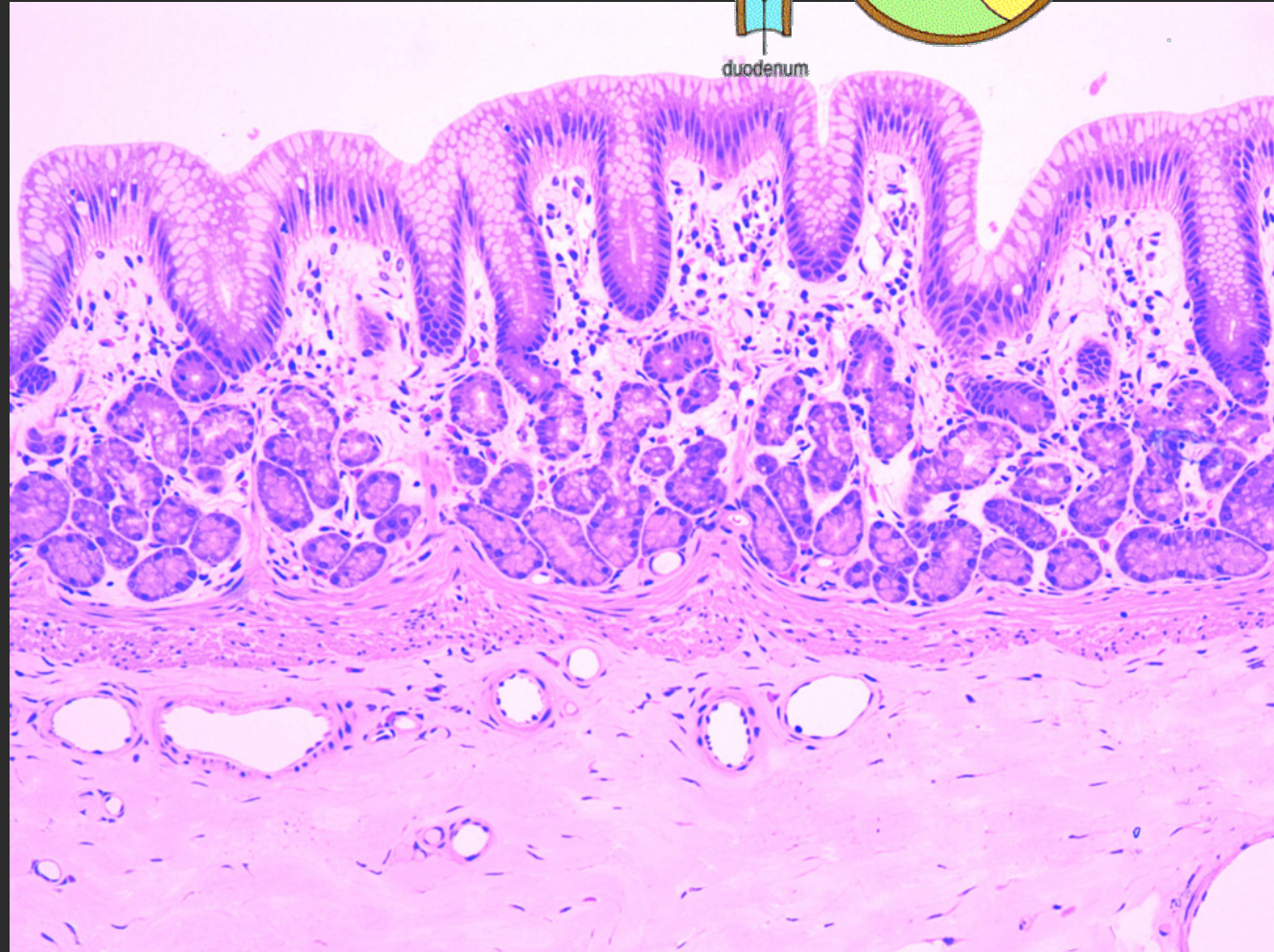
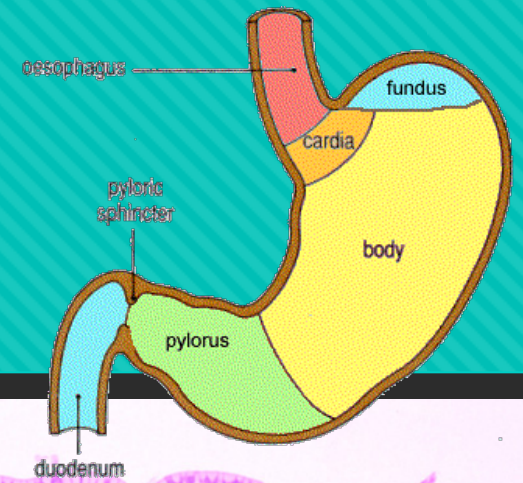
Body/Fundus - Fundic Glands

- Isthmus, neck, base
- 6 cell types
 - Surface mucous cell
 - Gastric stem cell
 - Mucous neck cell
 - Parietal cell
 - Chief cell
 - G cell (enteroendocrine cell)



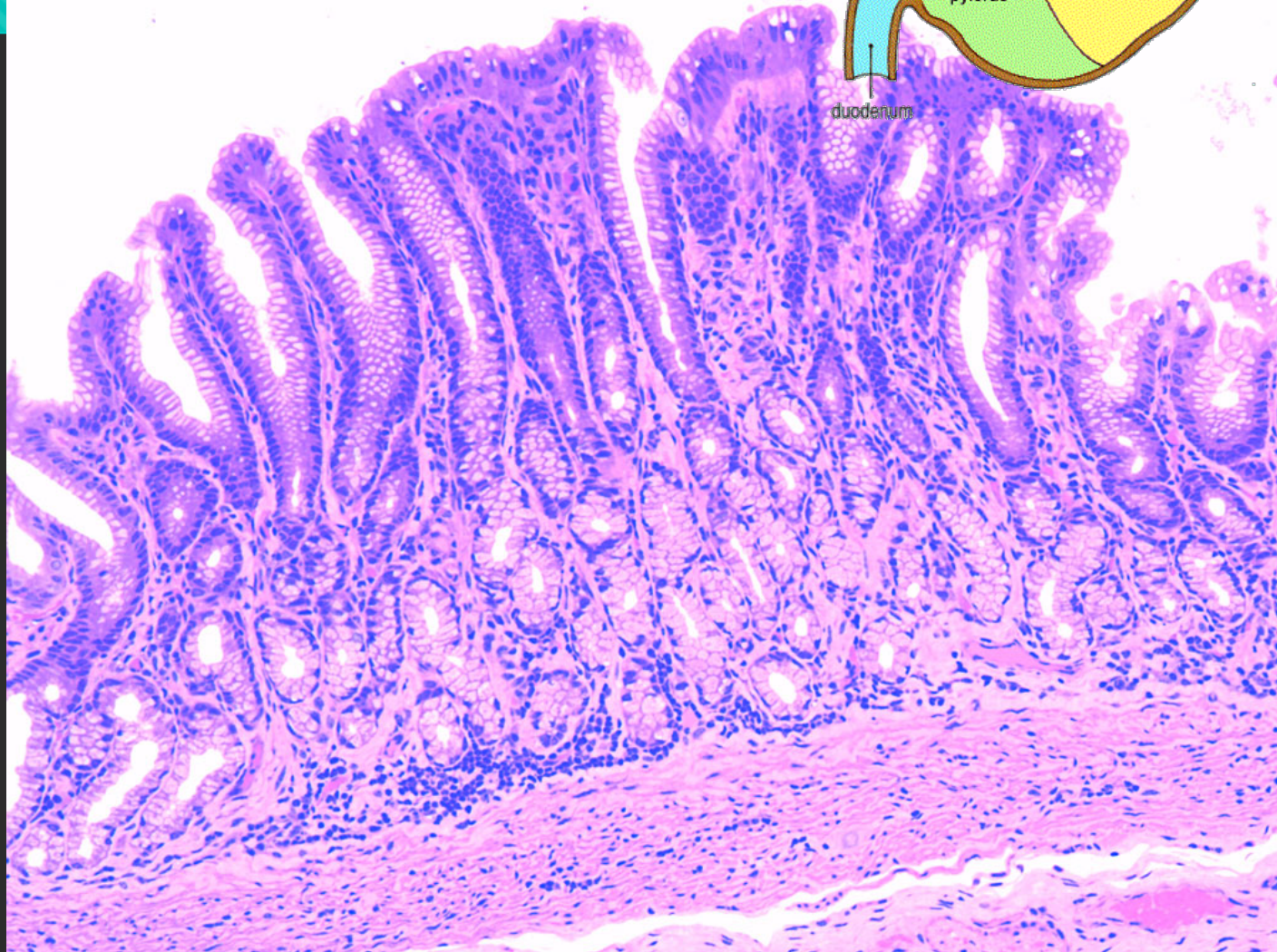
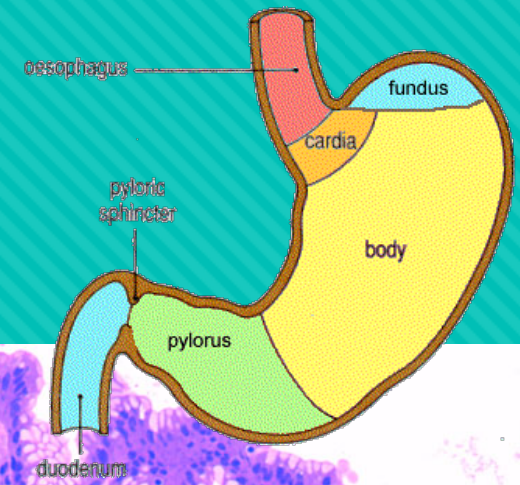
Cardia

- Shallow irregular pits
- Convoluted tubular cardiac glands
 - Mucous secretory cells (similar to mucous neck cells)
 - Occasional parietal and G cells

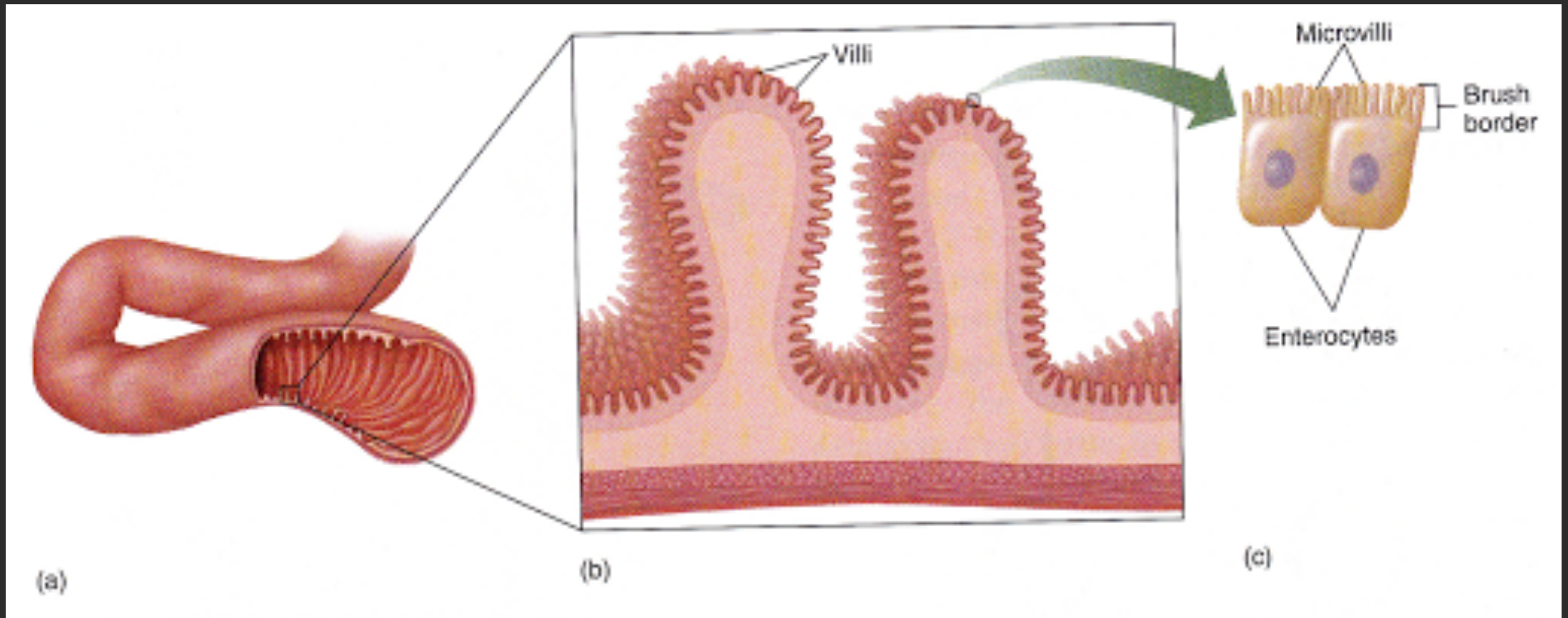


Pylorus – Pyloric Glands

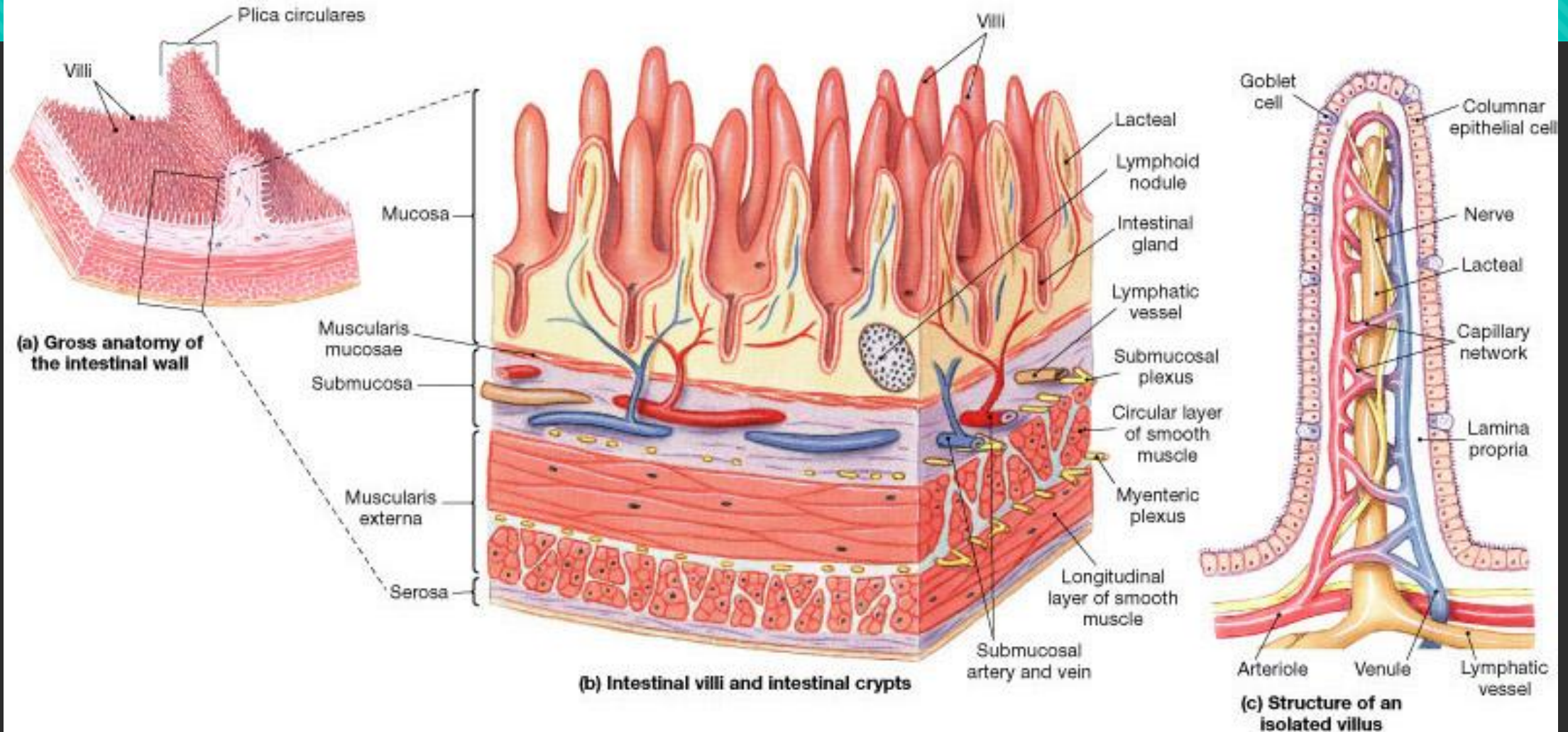
- Deep pits
- Tubular branched pyloric glands
 - Numerous mucus cells and G cells
 - Occasional parietal cells
- Thick muscularis externa (sphincter)



Intestines



Intestinal Villi and Crypts



Intestinal Villi and Crypts



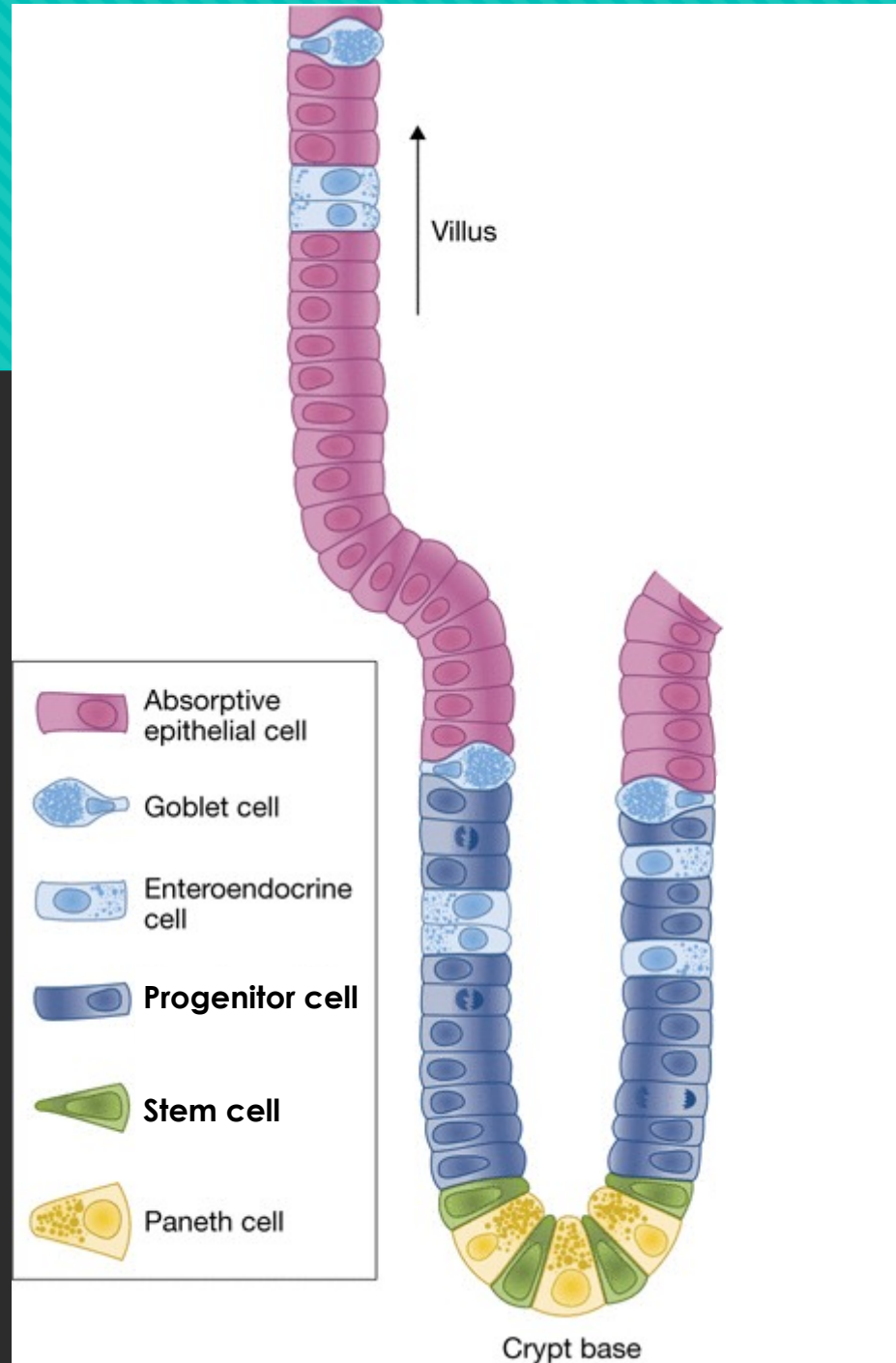
Enterocytes: Absorption and release, chylomicrons

Lubricating mucus

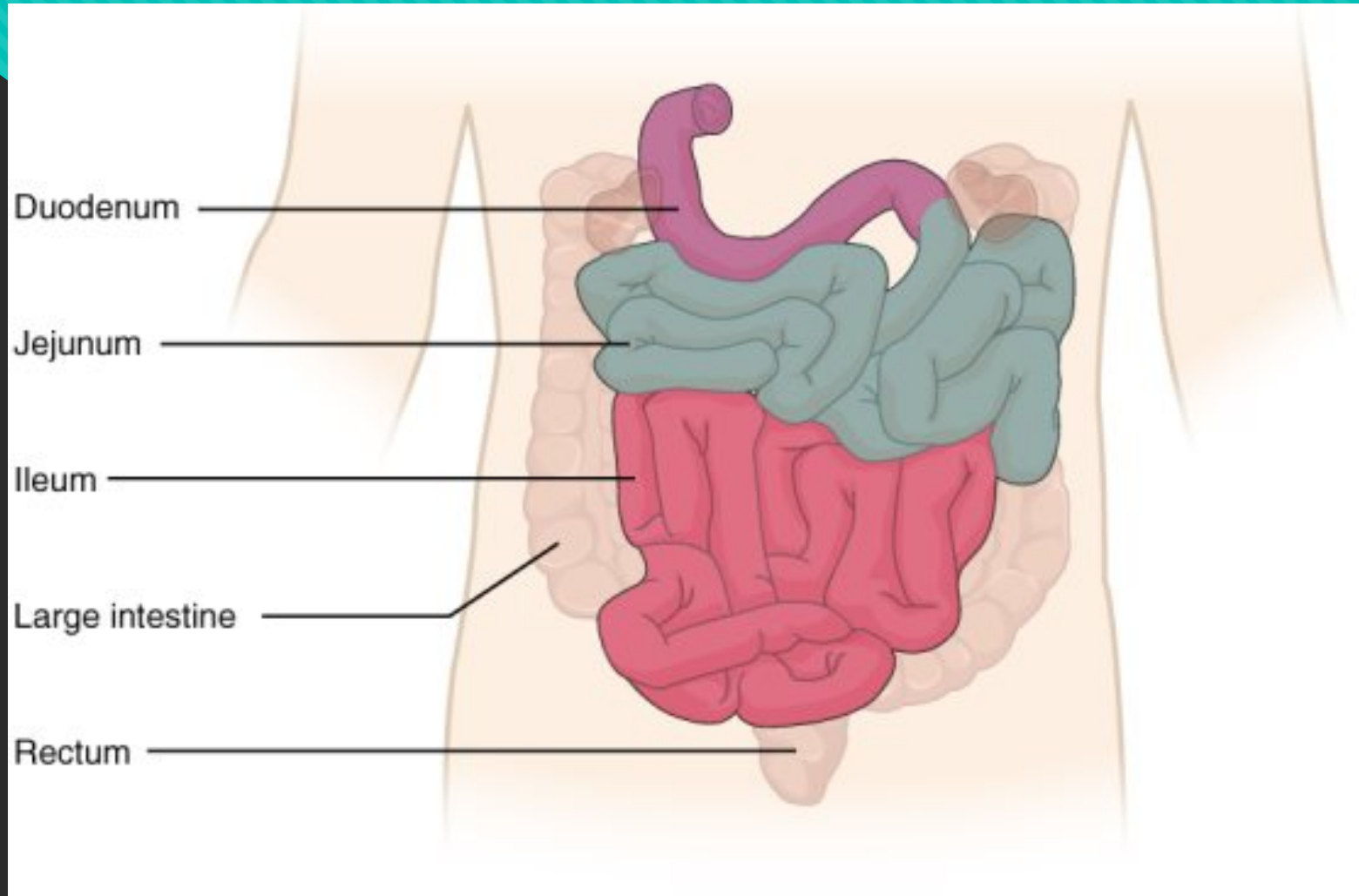
Proliferating and differentiating cells

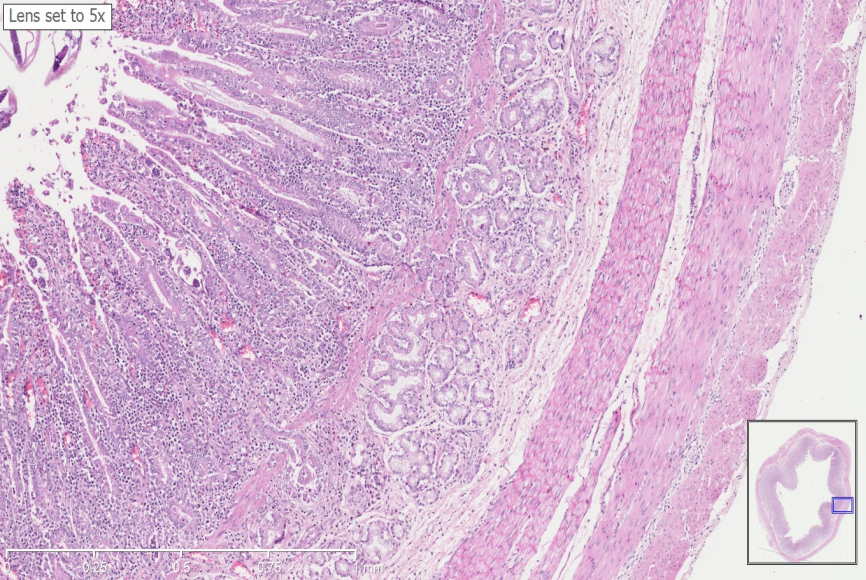
Regenerating intestinal epithelium

Antibacterial proteins, IgA, phagocytose bacteria and unicellular paracites



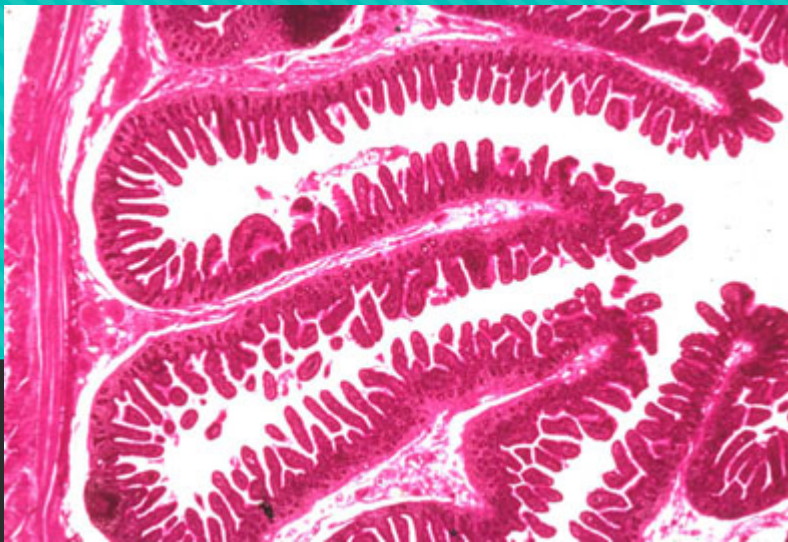
Small Intestine





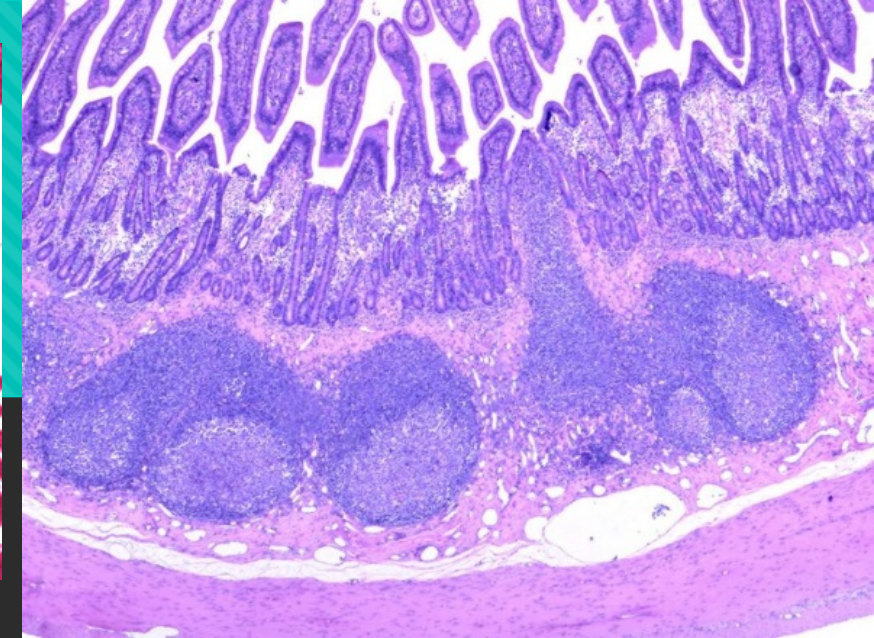
Duodenum

- Digestion
- Bile and pancreatic juice
- Brunner's glands
 - Alkaline fluid



Jejunum

- Absorption



Ileum

- Absorption
- Peyer's patches

Villi

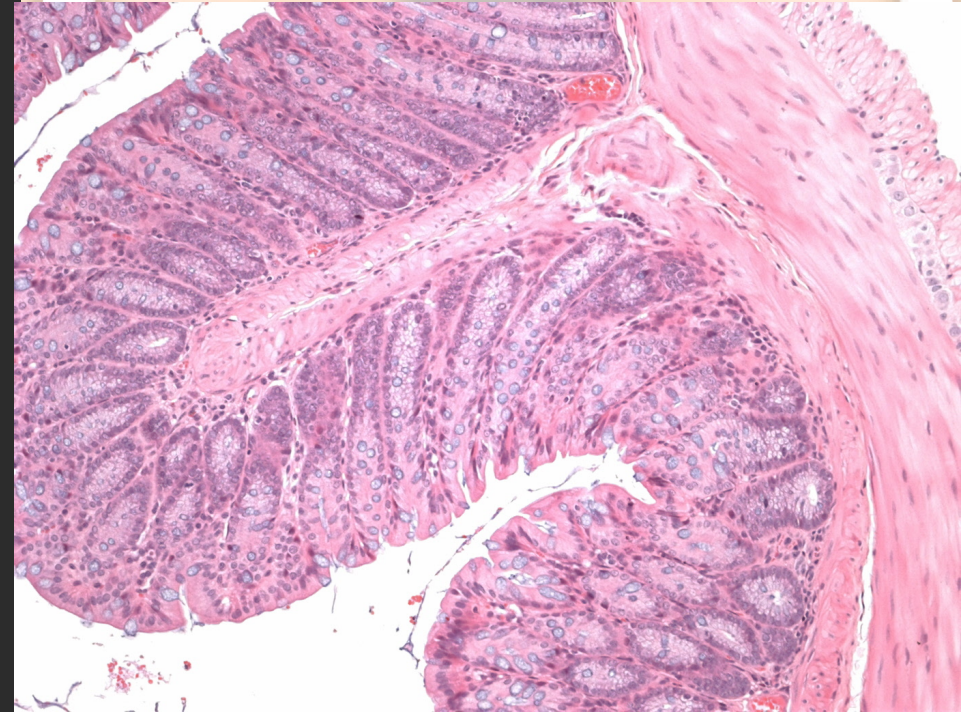
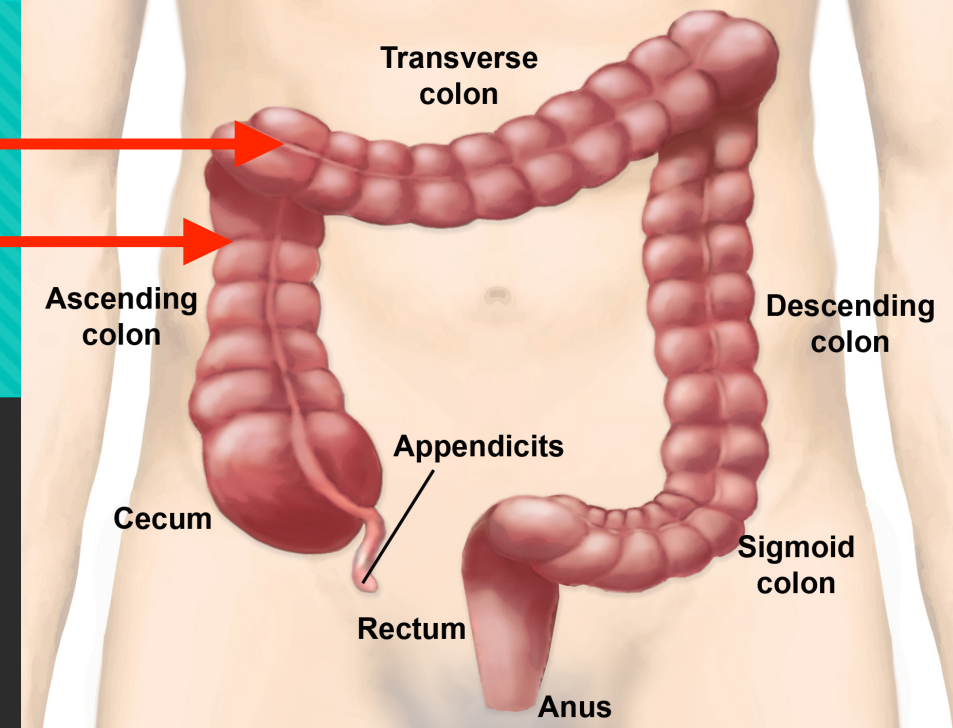
Goblet cells

Large intestine

- Ions and water, produce mucus
- No paneth cells

Villi

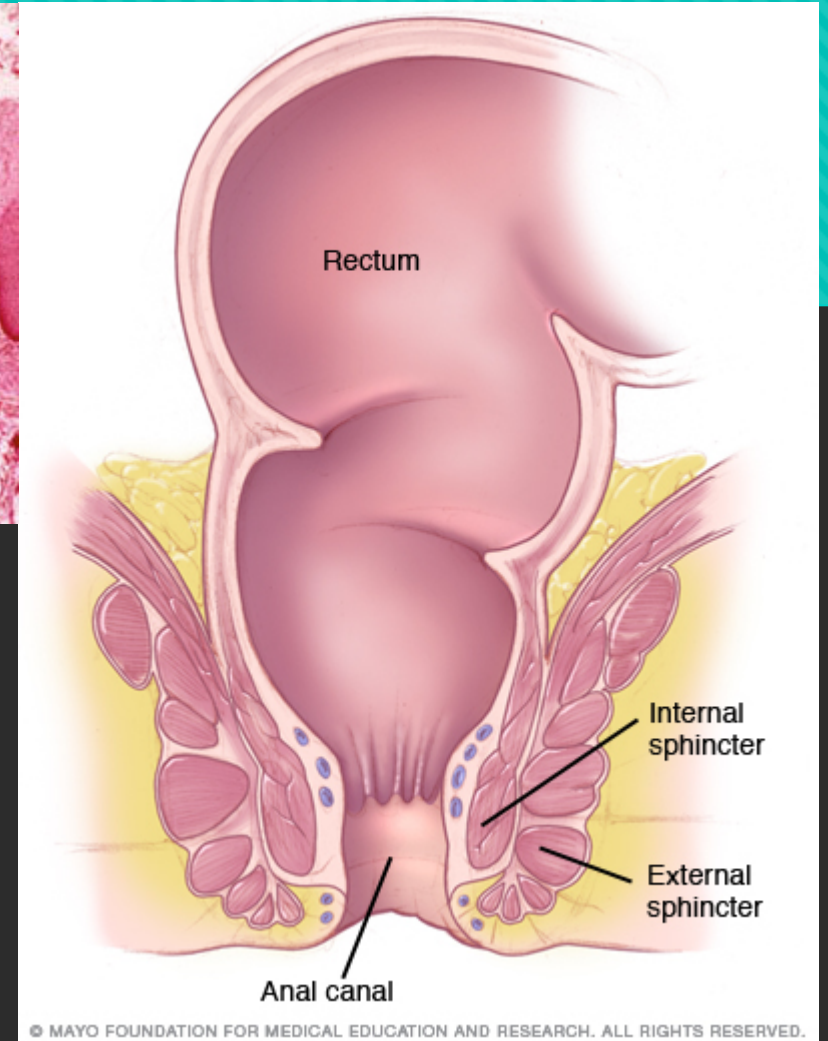
Goblet cells



Anal Canal

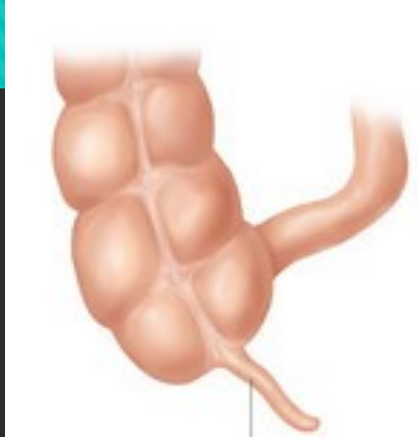


- Anal columns
- Rectoanal junction
- Mucous anal glands
- Rich venous plexuses
- Sphincters

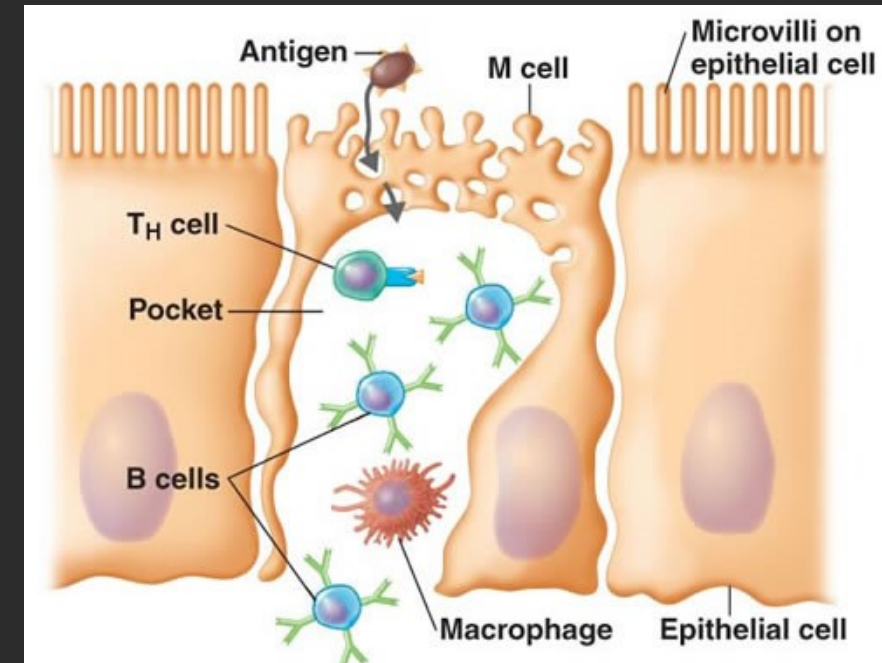
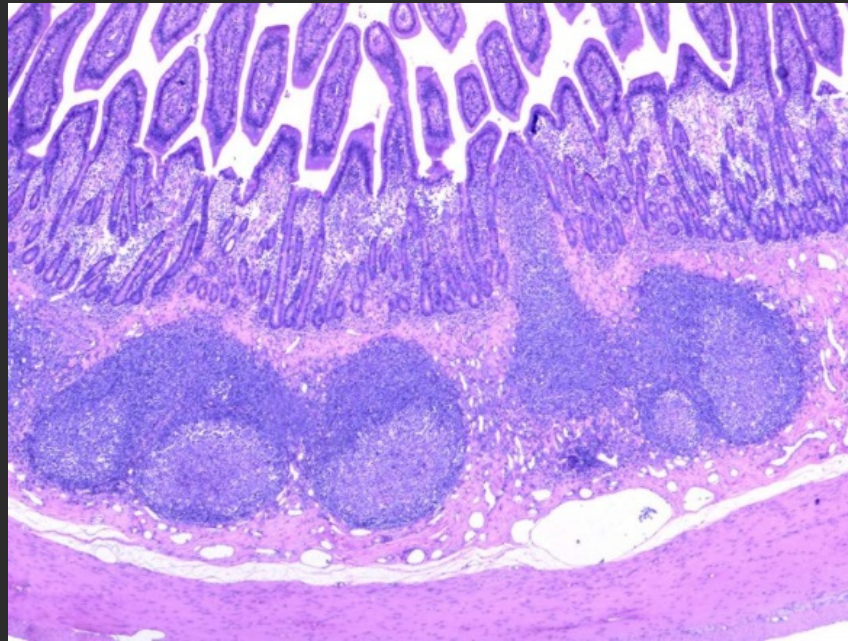


GALT – Gut-Associated Lymphoid Tissue

- Diffuse lymphoid tissue
- Solitary lymphoid nodules
- Aggregations of nodules and diffuse tissue
 - Peyer's patches
 - Appendix

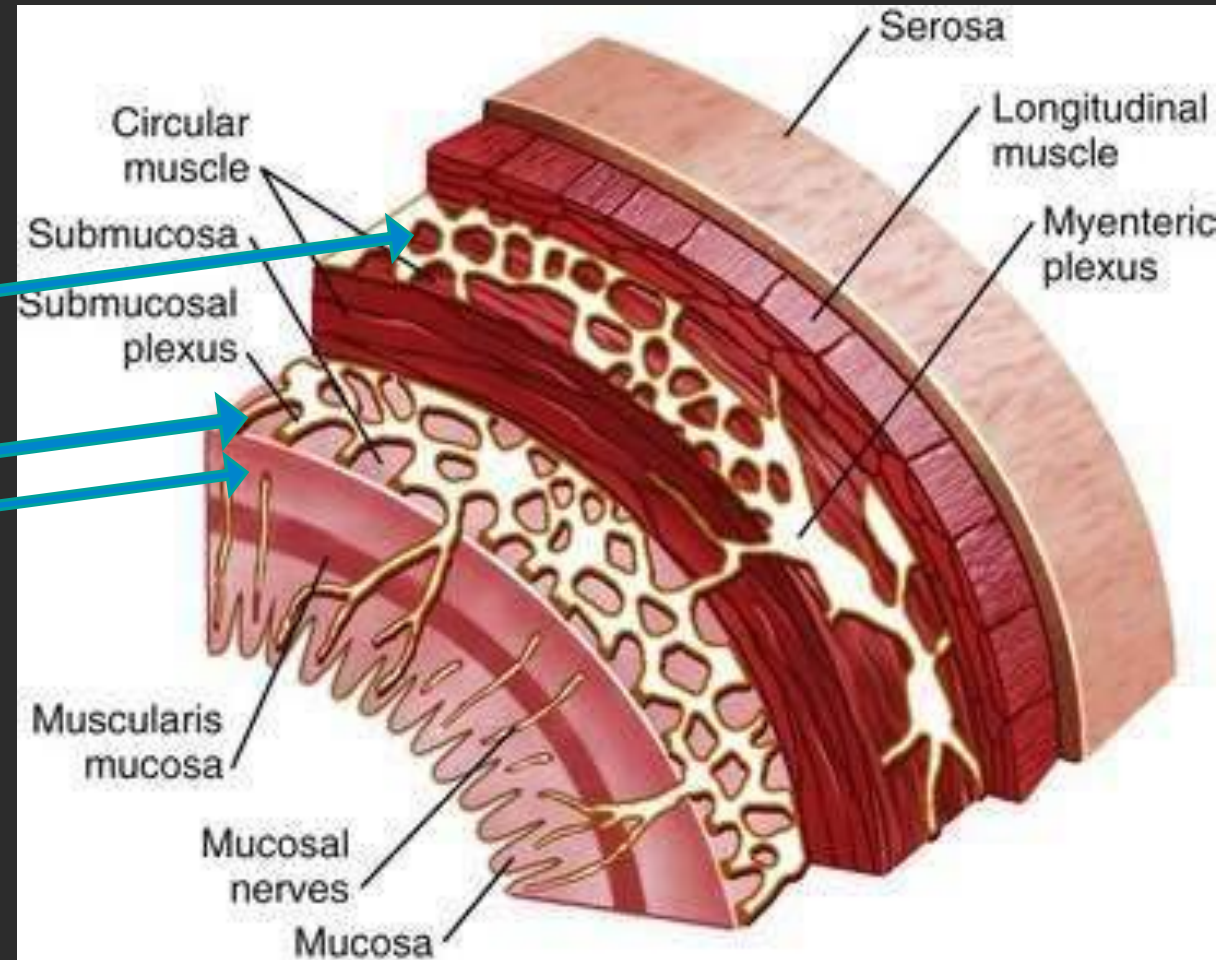


- In mucosa and submucosa
- Paneth cells
- Continuous outer layer



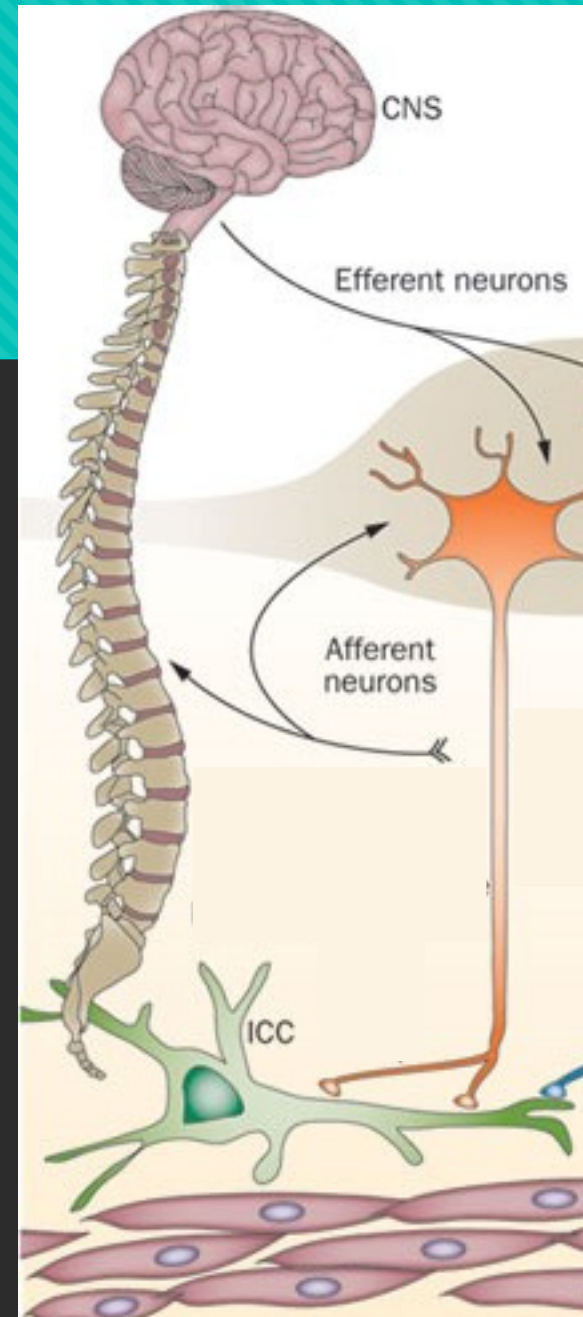
Enteric nervous system - ENS

- Myenteric plexus: Auerbach's plexus
- Submucosal:
 - Outer: Schabadasch's plexus
 - Inner: Meissner's plexus
- Ganglionic nerve cells + glial cells

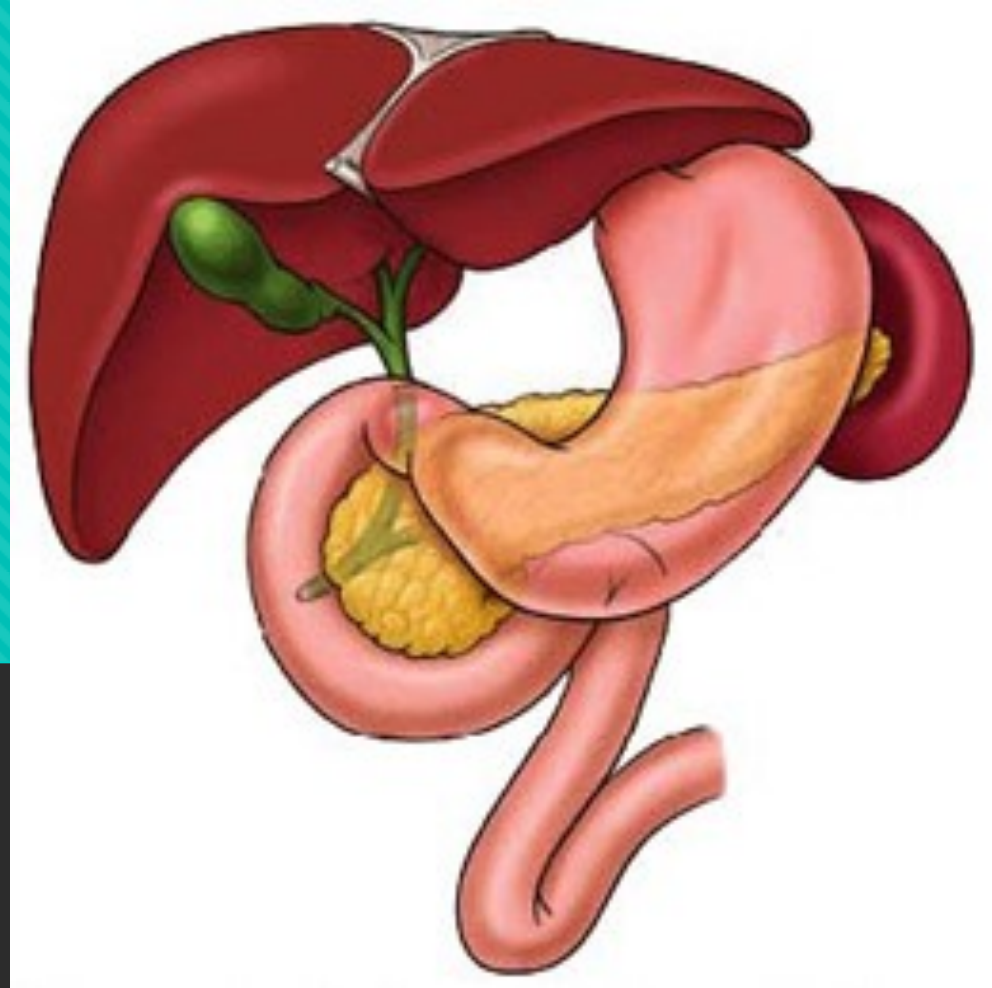


Interstitial cells of Cajal

- Location: Muscularis externa
- Gap junctions
 - Pacemaker
 - Mediate propagation



Alimentary Tract 3: Liver and Pancreas



Pancreas

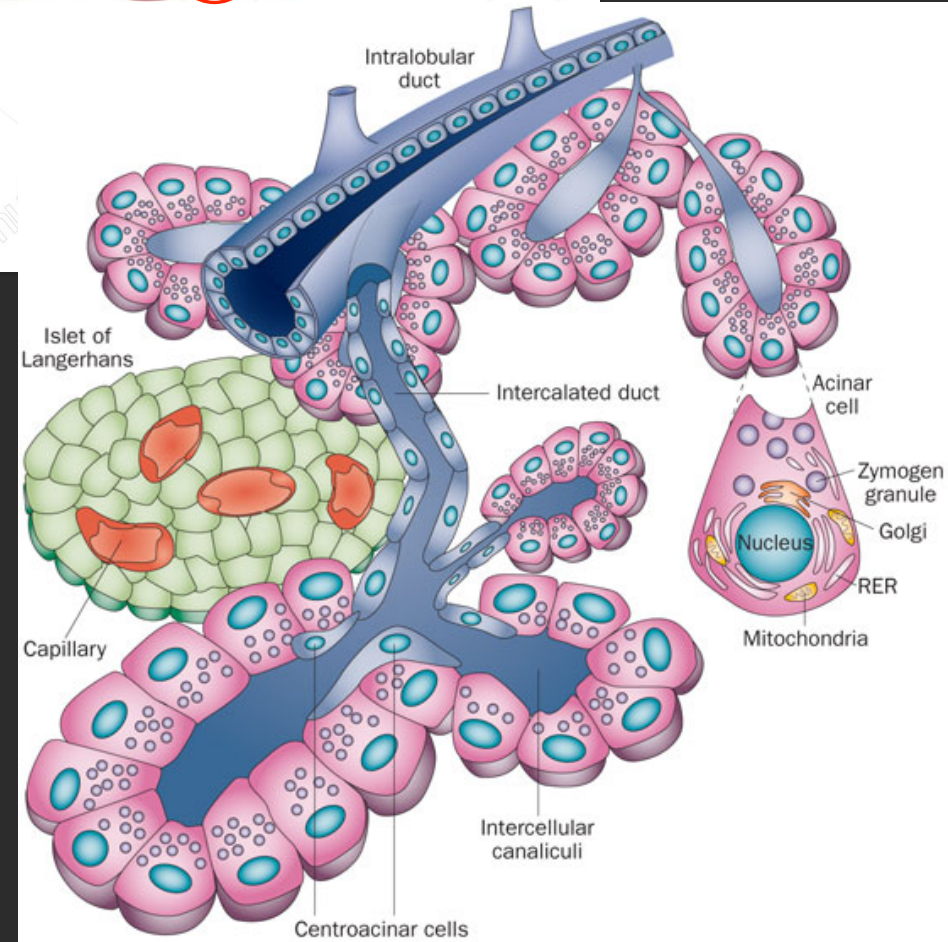
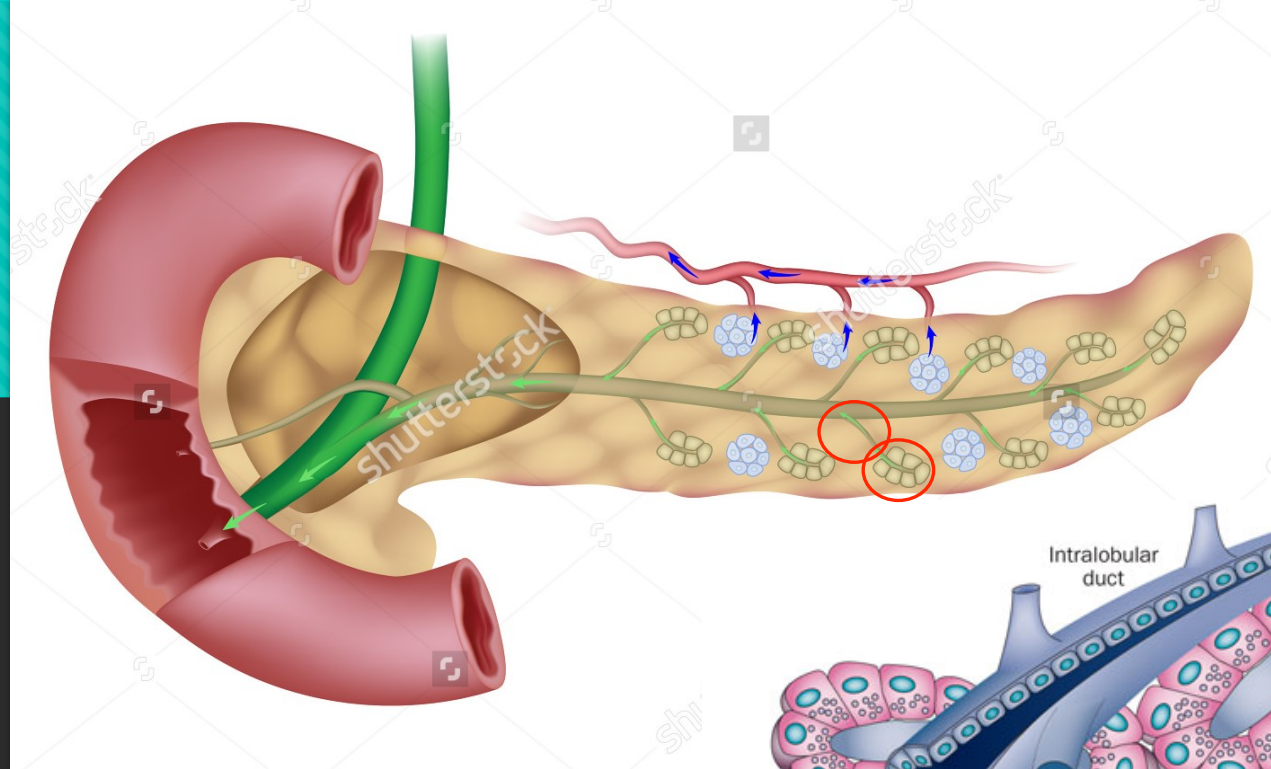
- Compound lobular gland
- Exocrine and endocrine

- Acinus

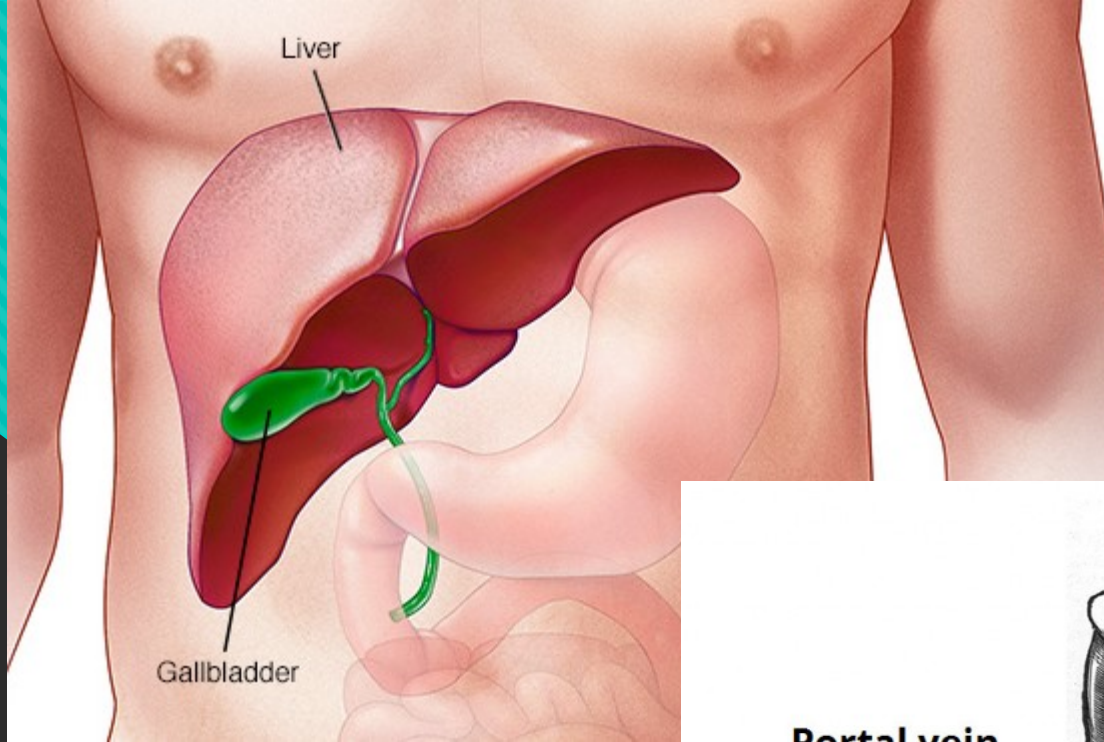
- Acinar (pancreatic exocrine) cells
 - Centroacinar cells
 - Basal Lamina
 - Surrounded by capillaries

- Ducts:

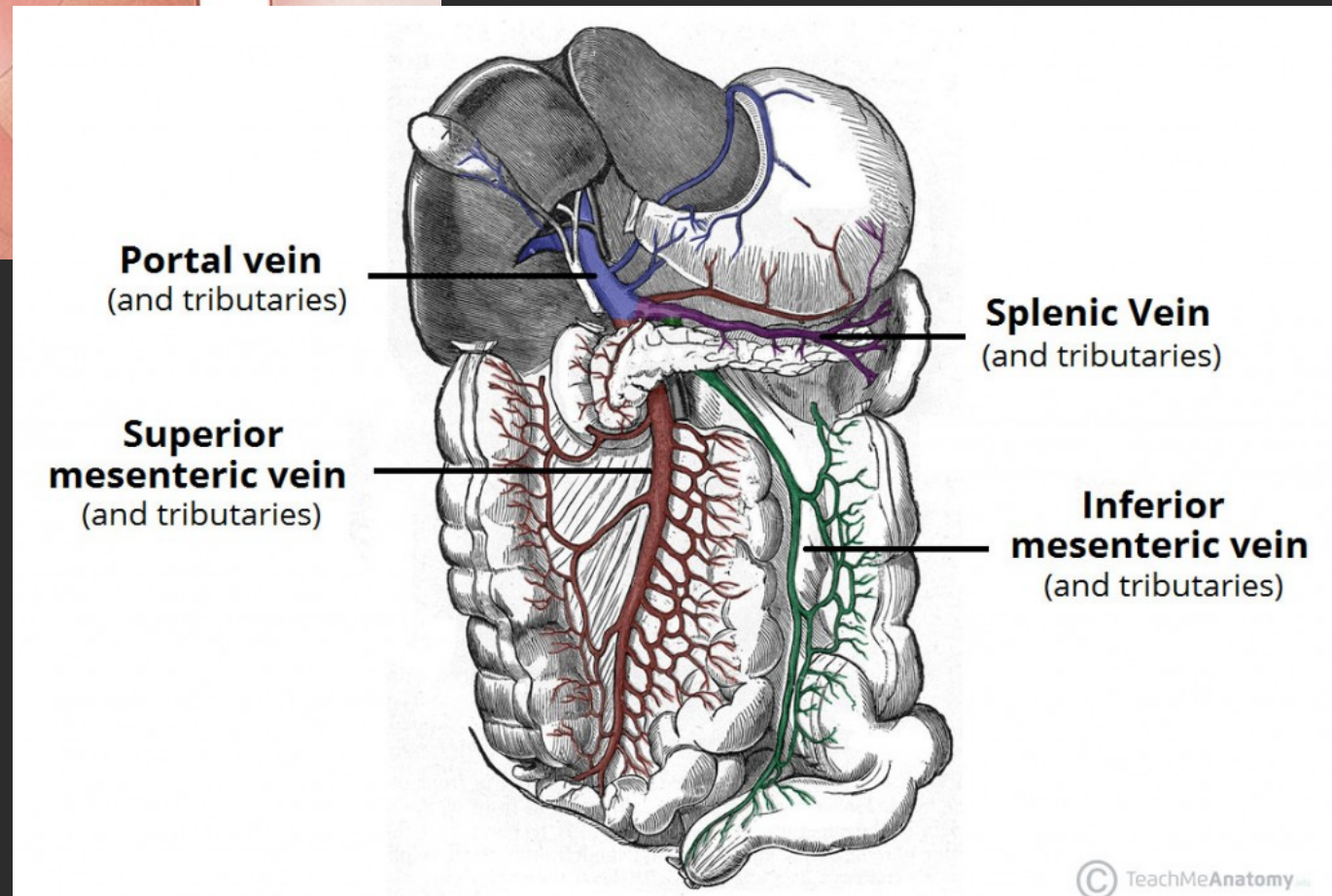
- Intercalated
 - Intralobular
 - Interlobular
 - Principal: Two

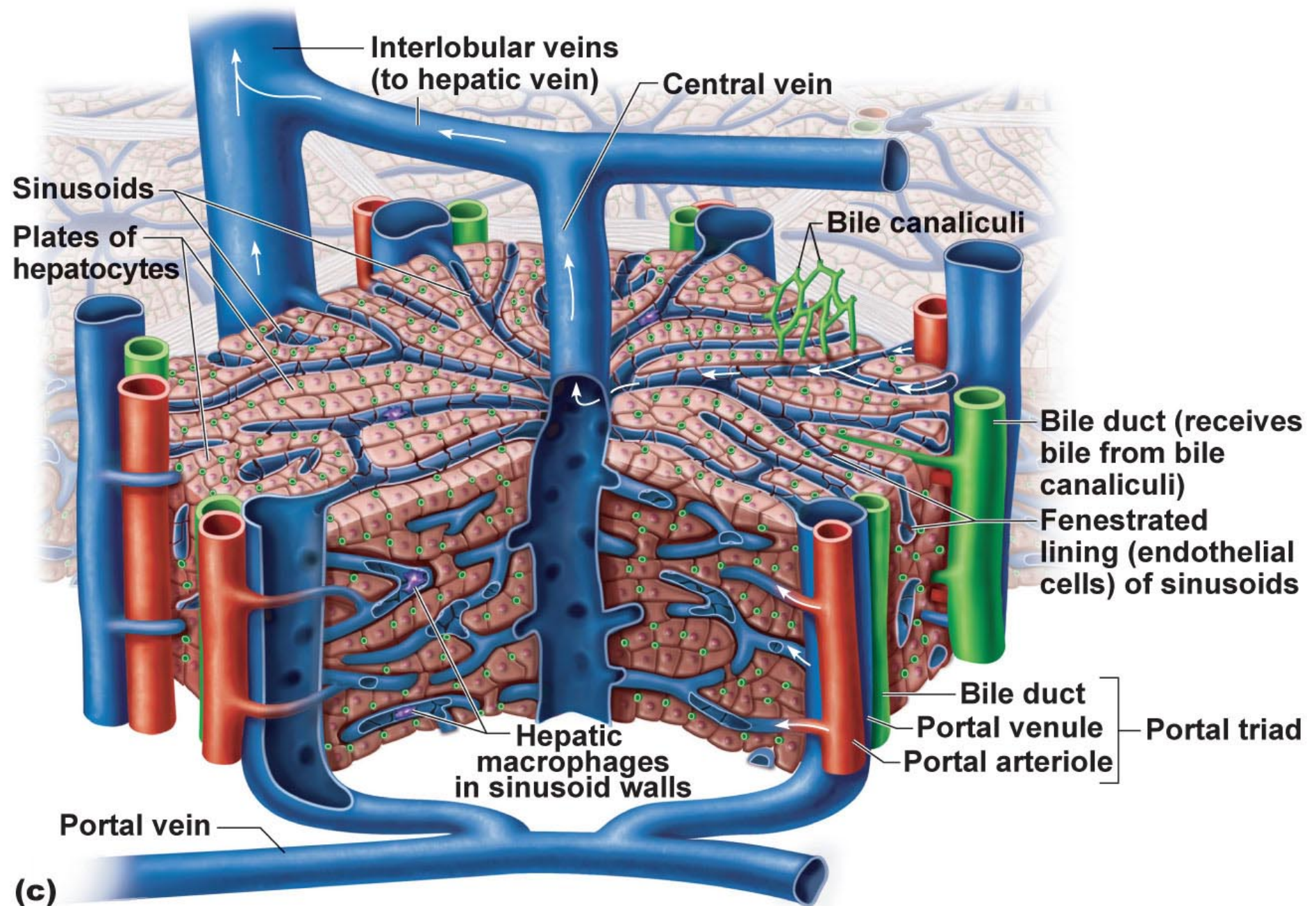


Liver

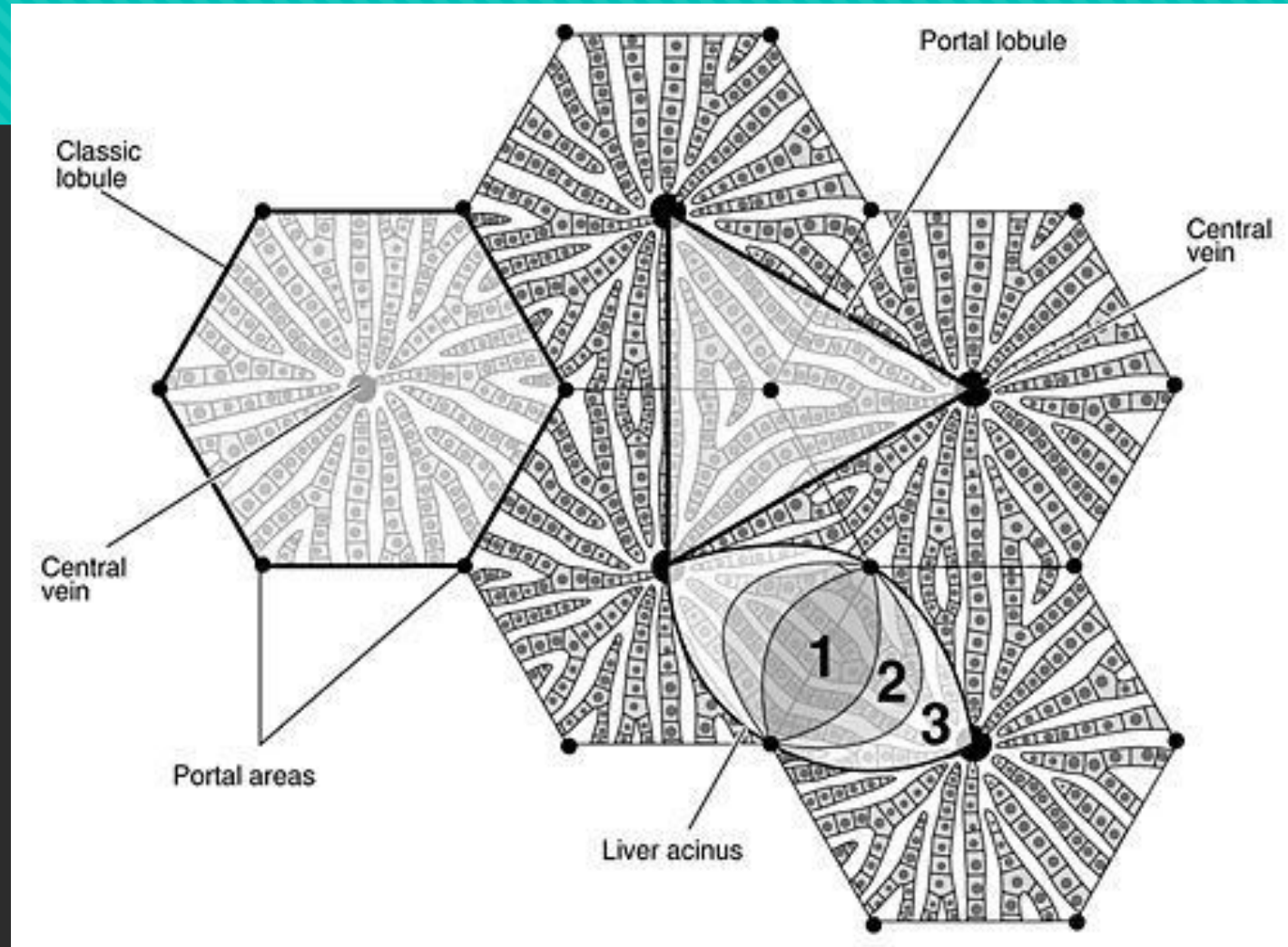


- Large compound gland
- Metabolic center



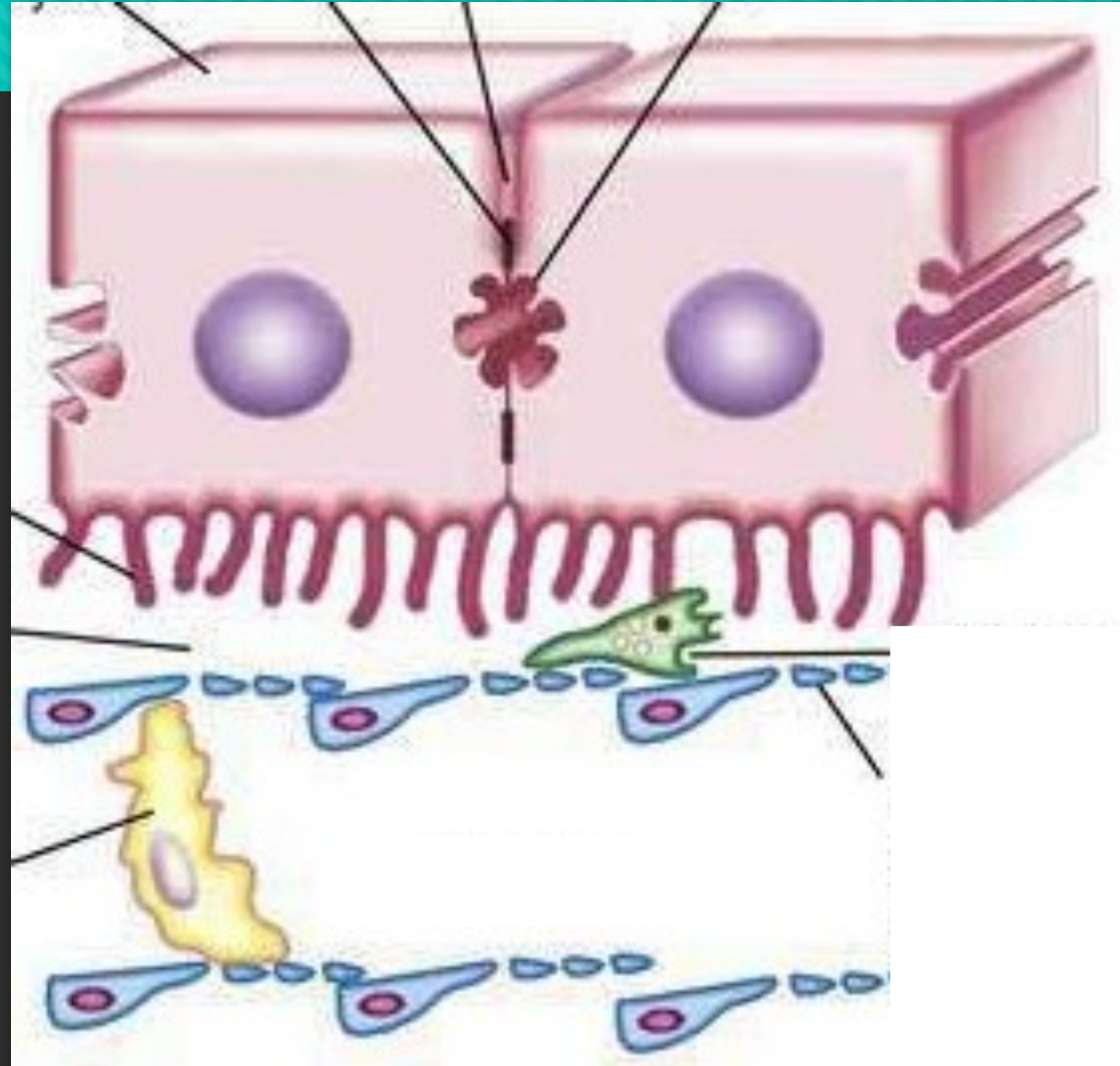


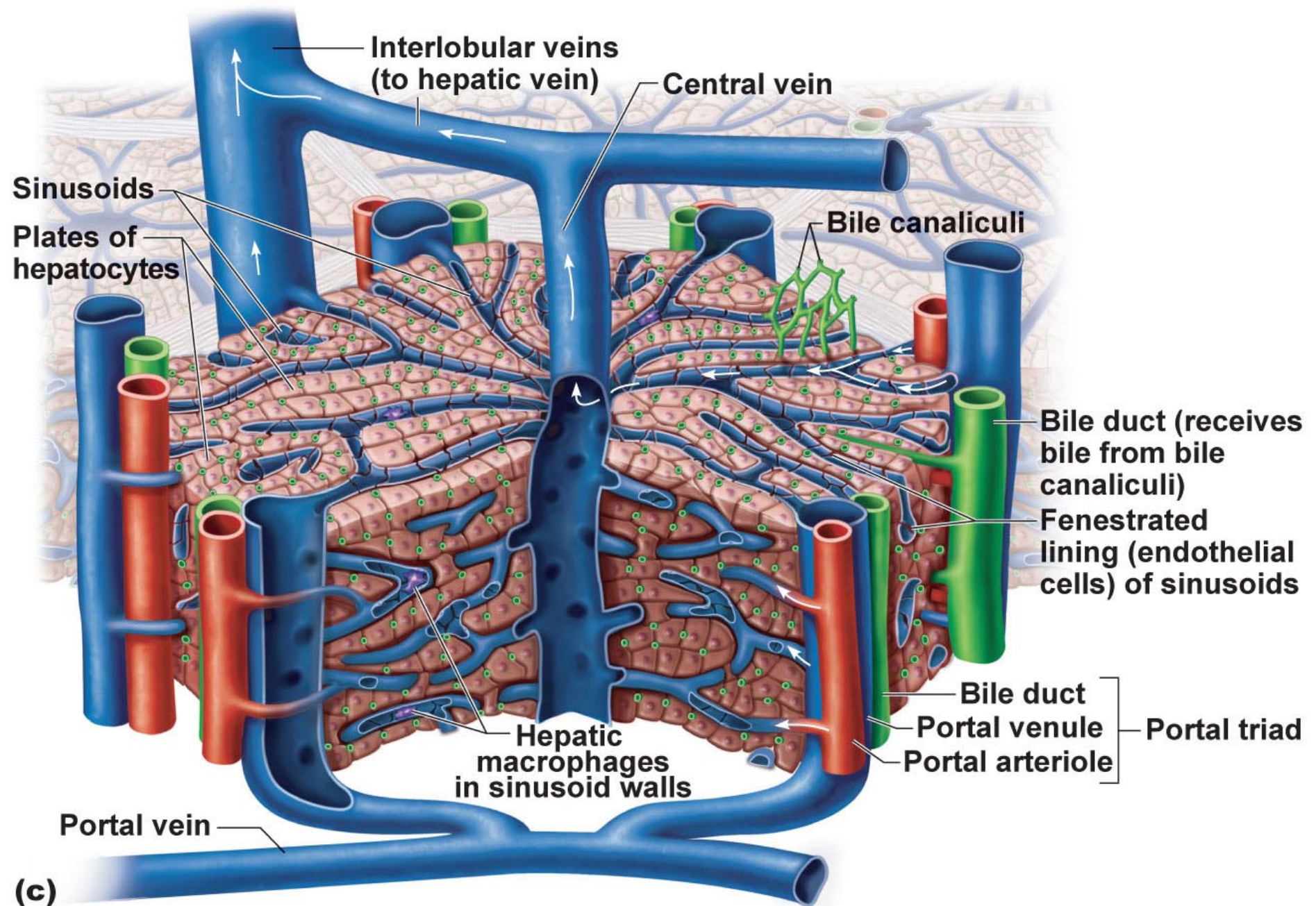
- Classic Lobule
- Portal Lobule
- Hepatic Acinus



Hepatocyte

- Glucose
- Lipid
- Plasma proteins
- Detoxification
- Hormones
- IgA
- Bile

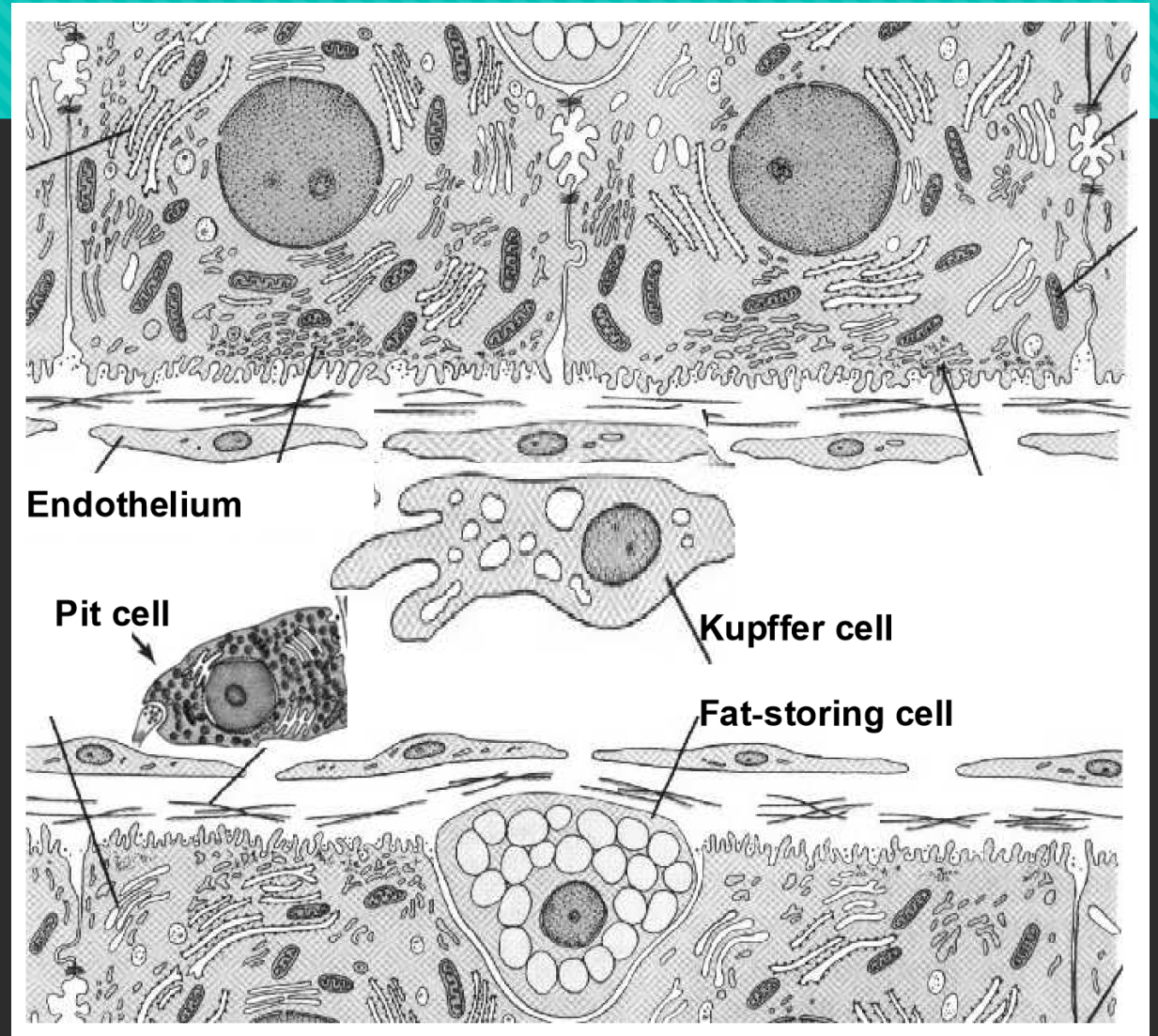




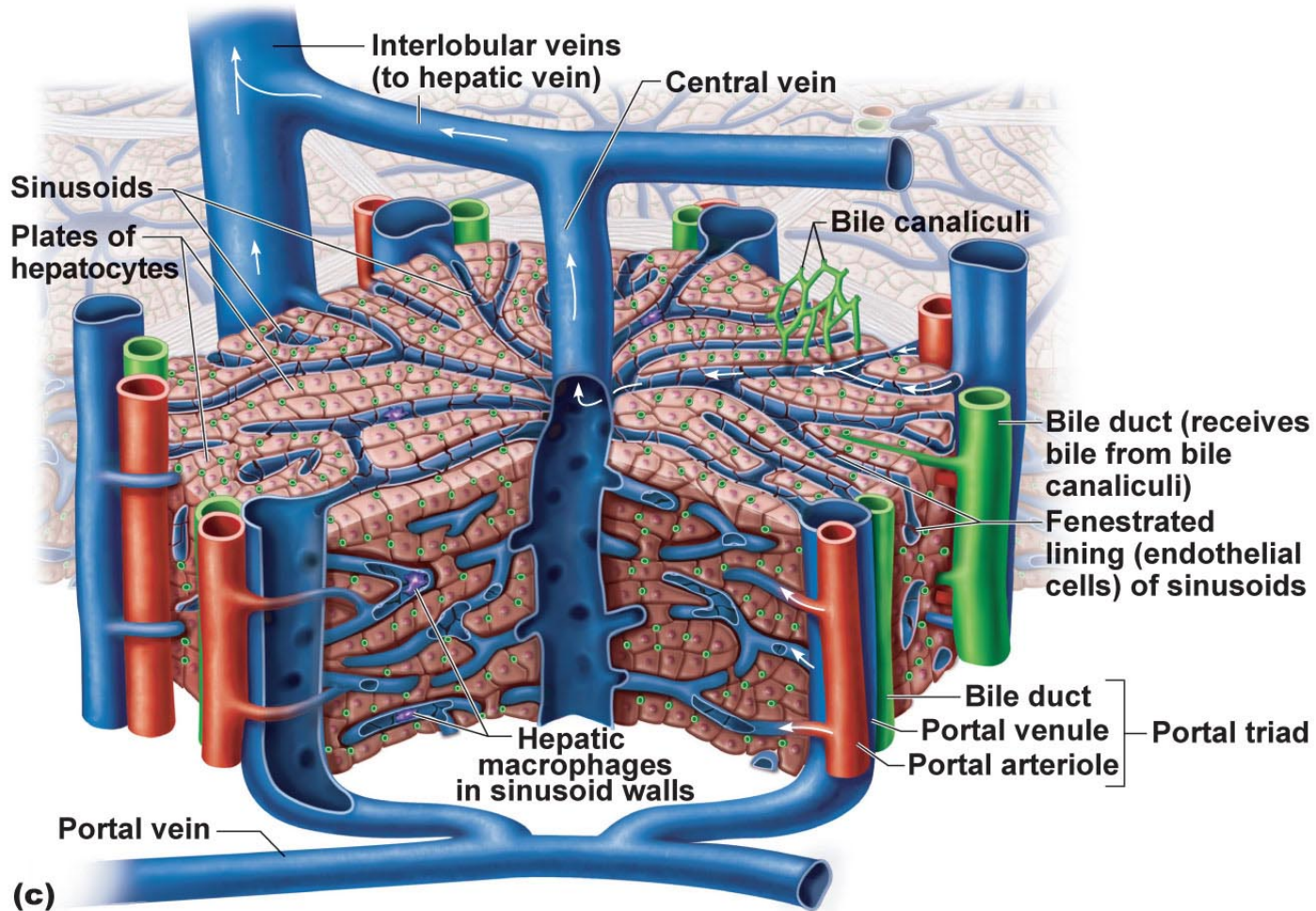
(c)

Hepatic sinusoids

- Cells i sinusoids
 - Endothelial cells
 - Kupffer cells
 - Stellar (fat storing) cells
 - Pit cells



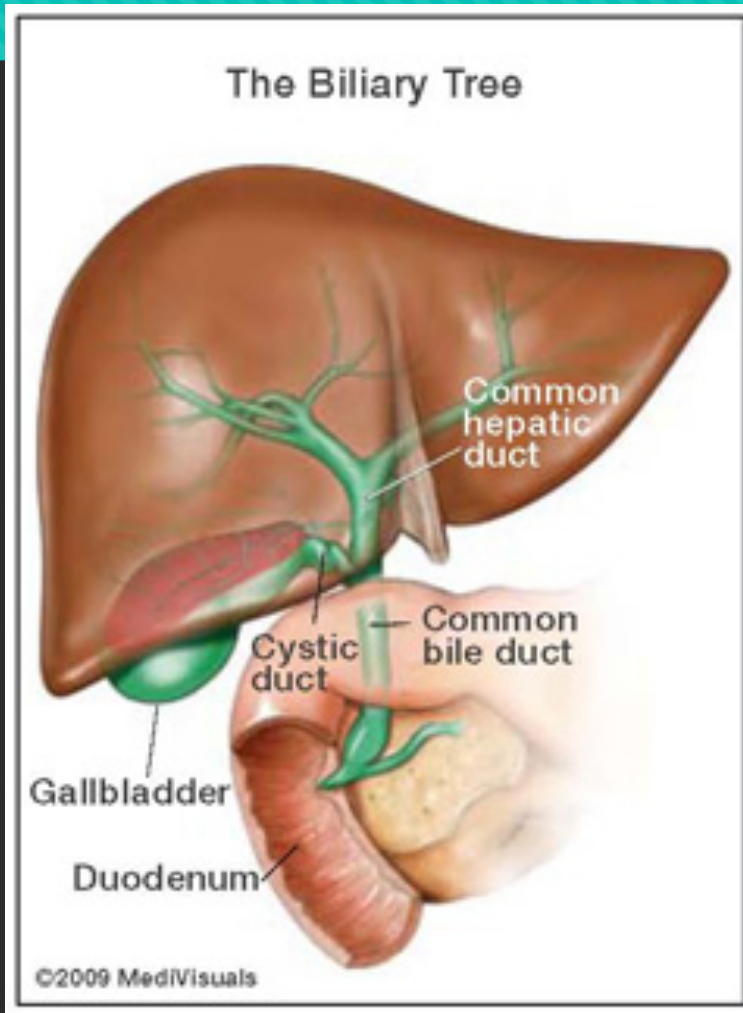
Bile ducts



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- Bile canaliculi
- Bile ductules (cholangioles)
 - Cholangiocytes
 - Ovoid cells
- Interlobular bile ducts

Biliary tree



- Simple columnar epithelium
- Layer of smooth muscle
- Fibrous adventitia / serosa