

General Human Anatomy & Physiology

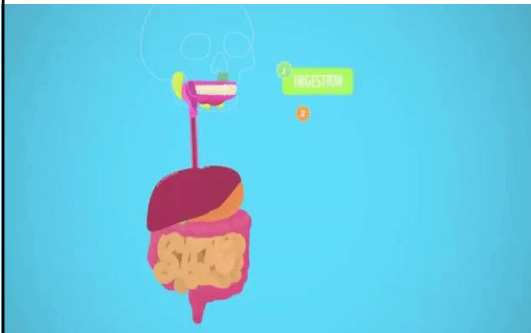
Chapter 6 The Digestive System

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2nd Year

Medical Intelligent System



- **Digestion**

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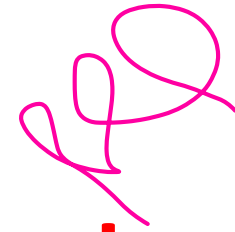
- Breakdown of ingested food

- **Absorption**

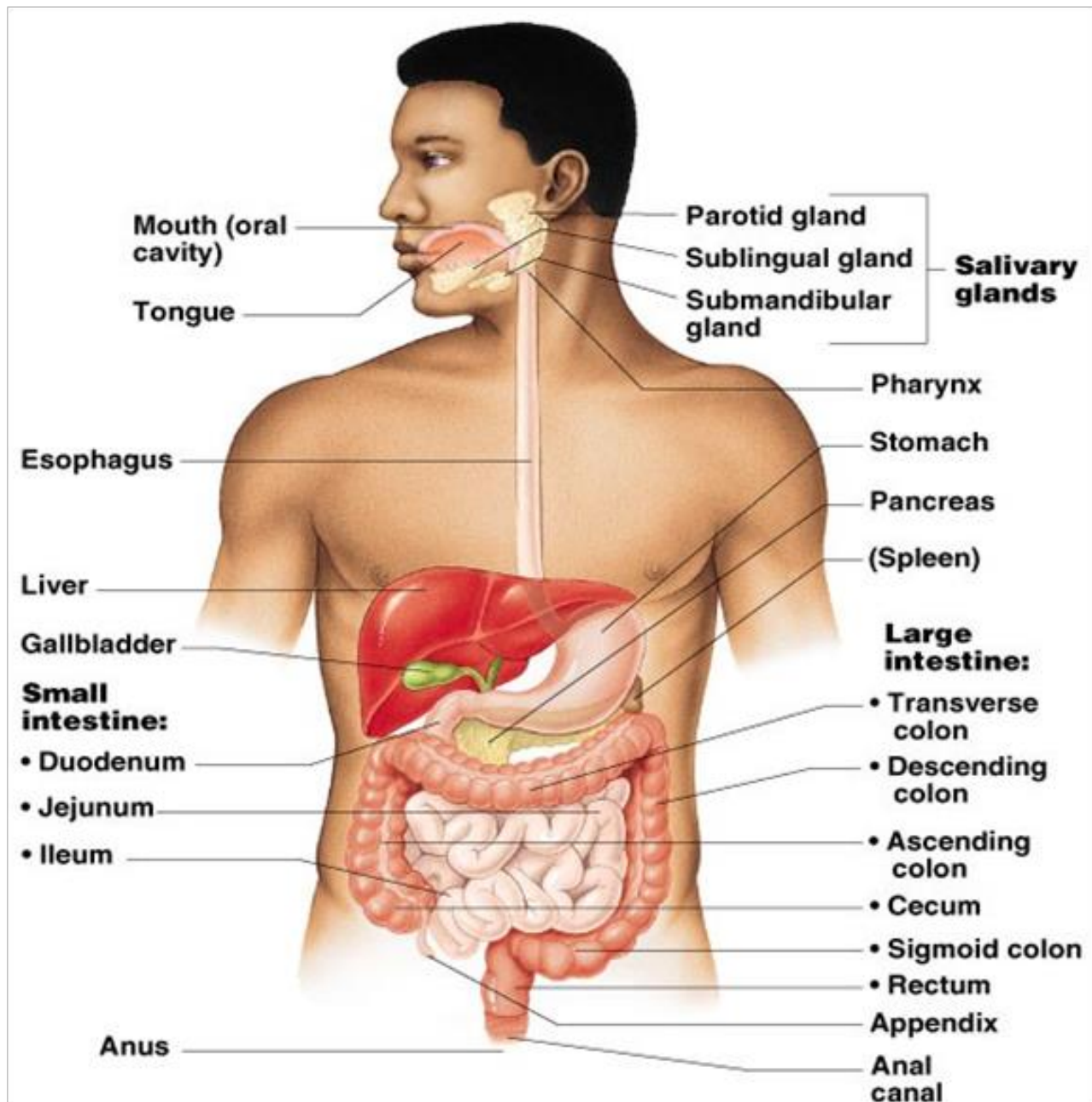
- Passage of nutrients into the blood

- **Metabolism**

- Production of cellular energy (ATP)



- **Organs of the Digestive System**
- Two main groups
- **Alimentary canal** – continuous coiled hollow tube
- **Accessory digestive organs**



• Organs of the Alimentary Canal

- Mouth
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine
- Anus



Stomach

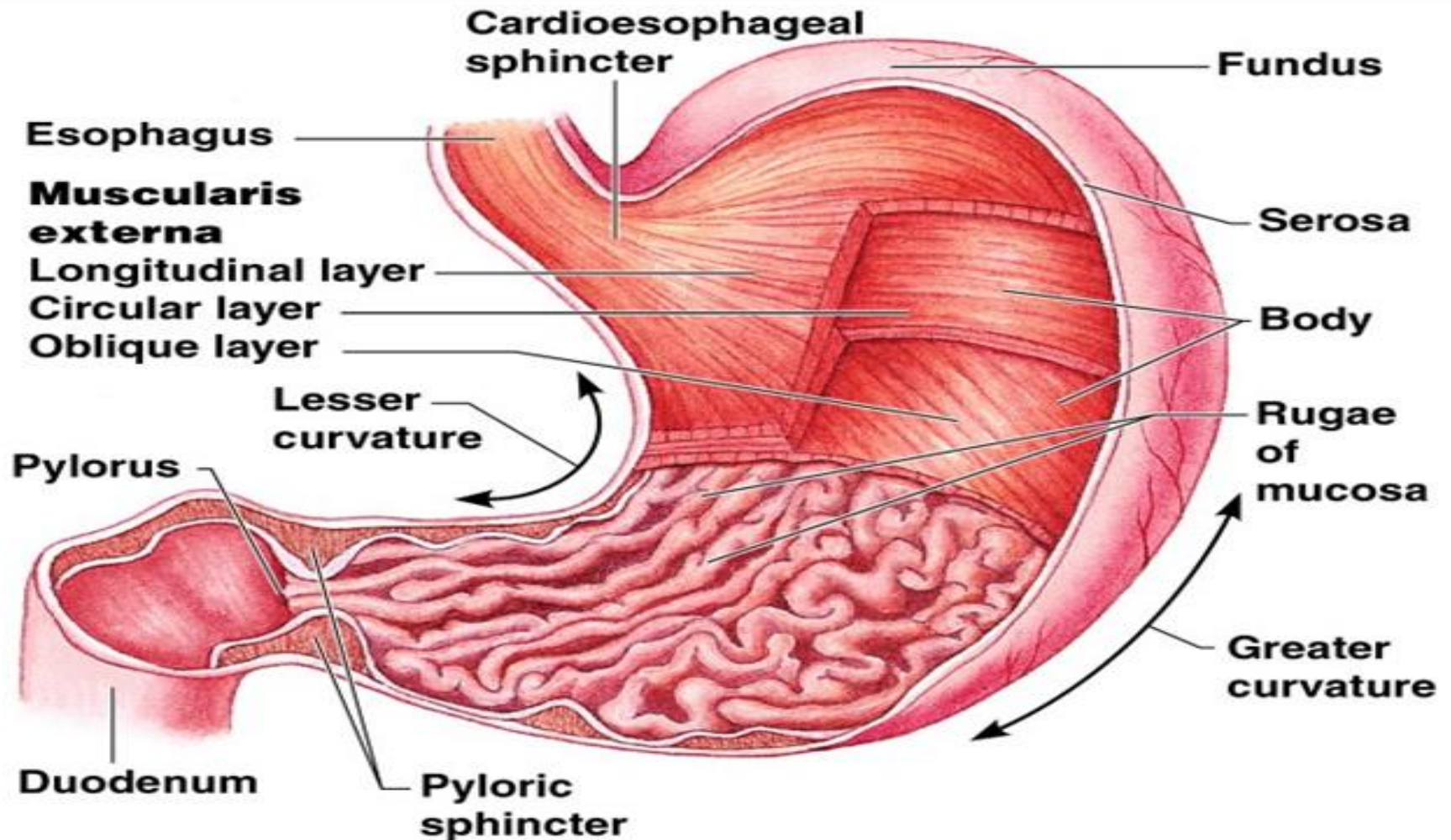
- Stomach Anatomy

Located on the left side of the abdominal cavity.

Food enters at the cardioesophageal sphincter



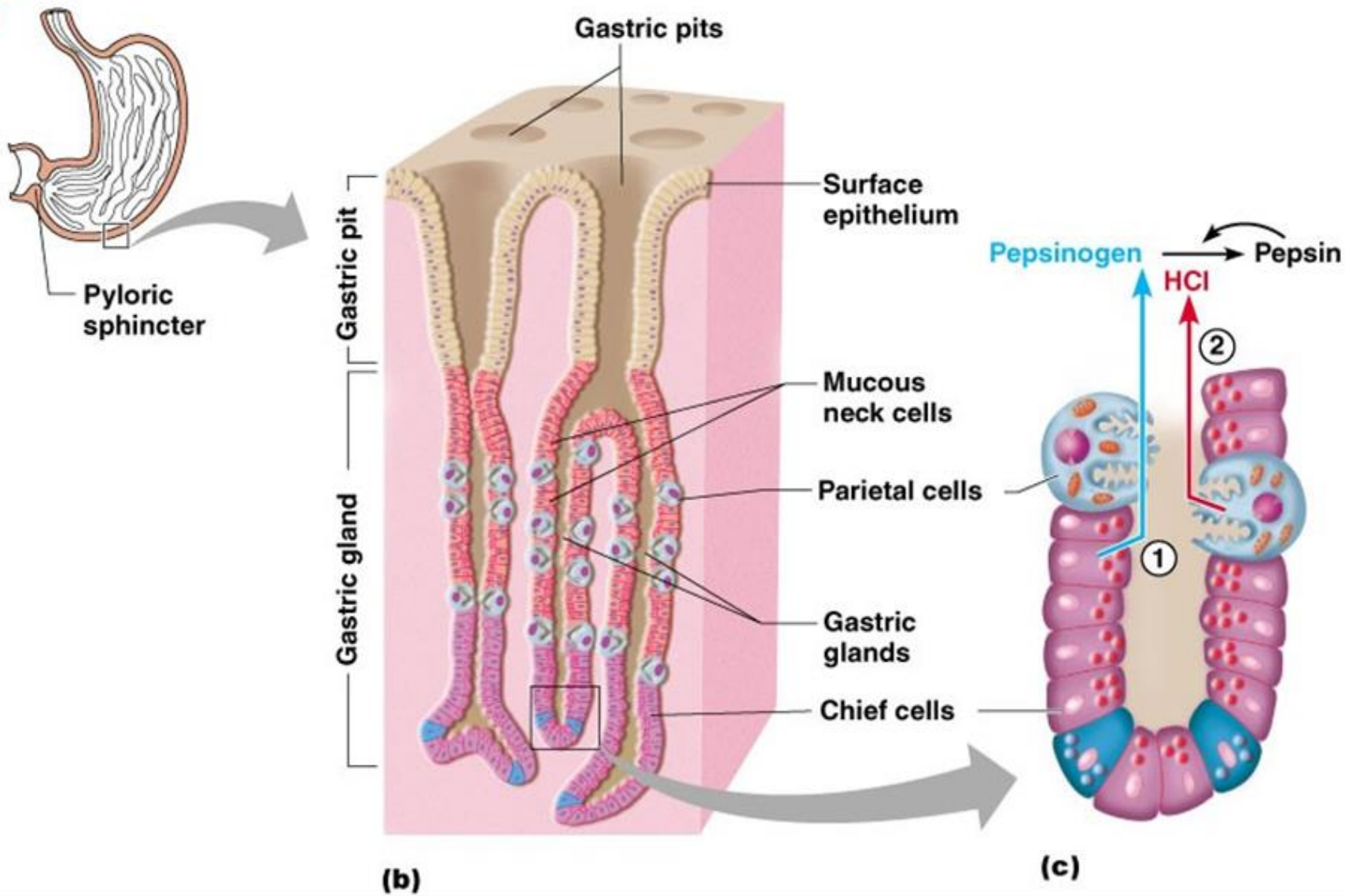
Stomach Anatomy



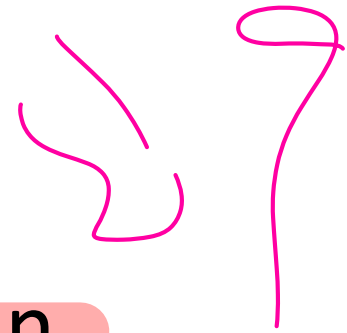
(a)

Stomach Functions

- Acts as a storage tank for food
- Site of food breakdown
- Chemical breakdown of protein begins
- Delivers chyme (processed food) to the small intestine



Small Intestine

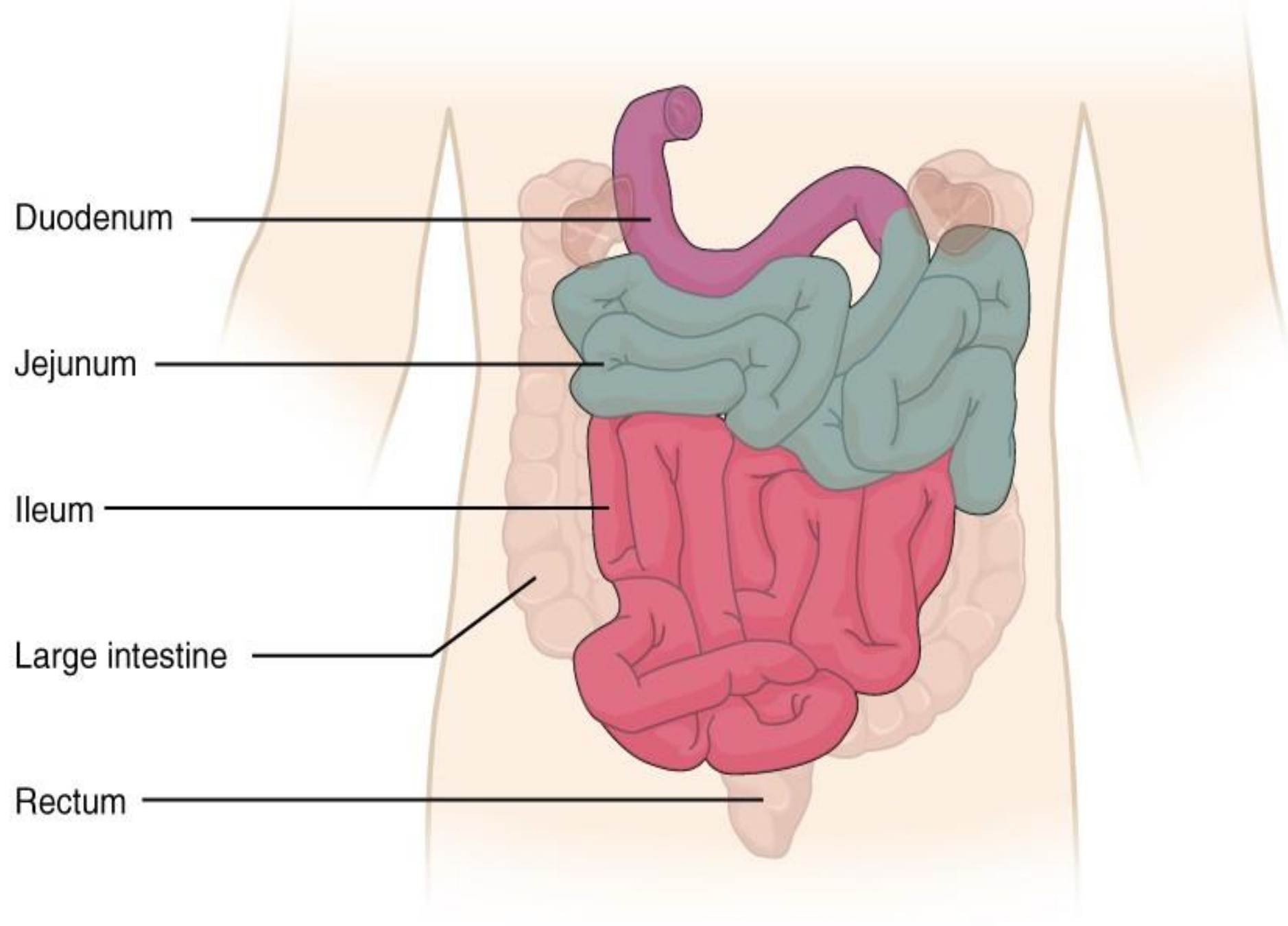


- The body's major digestive organ
- Site of nutrient absorption into the blood
- Muscular tube extending from the pyloric sphincter to the ileocecal valve
- Suspended from the posterior abdominal wall by the mesentery

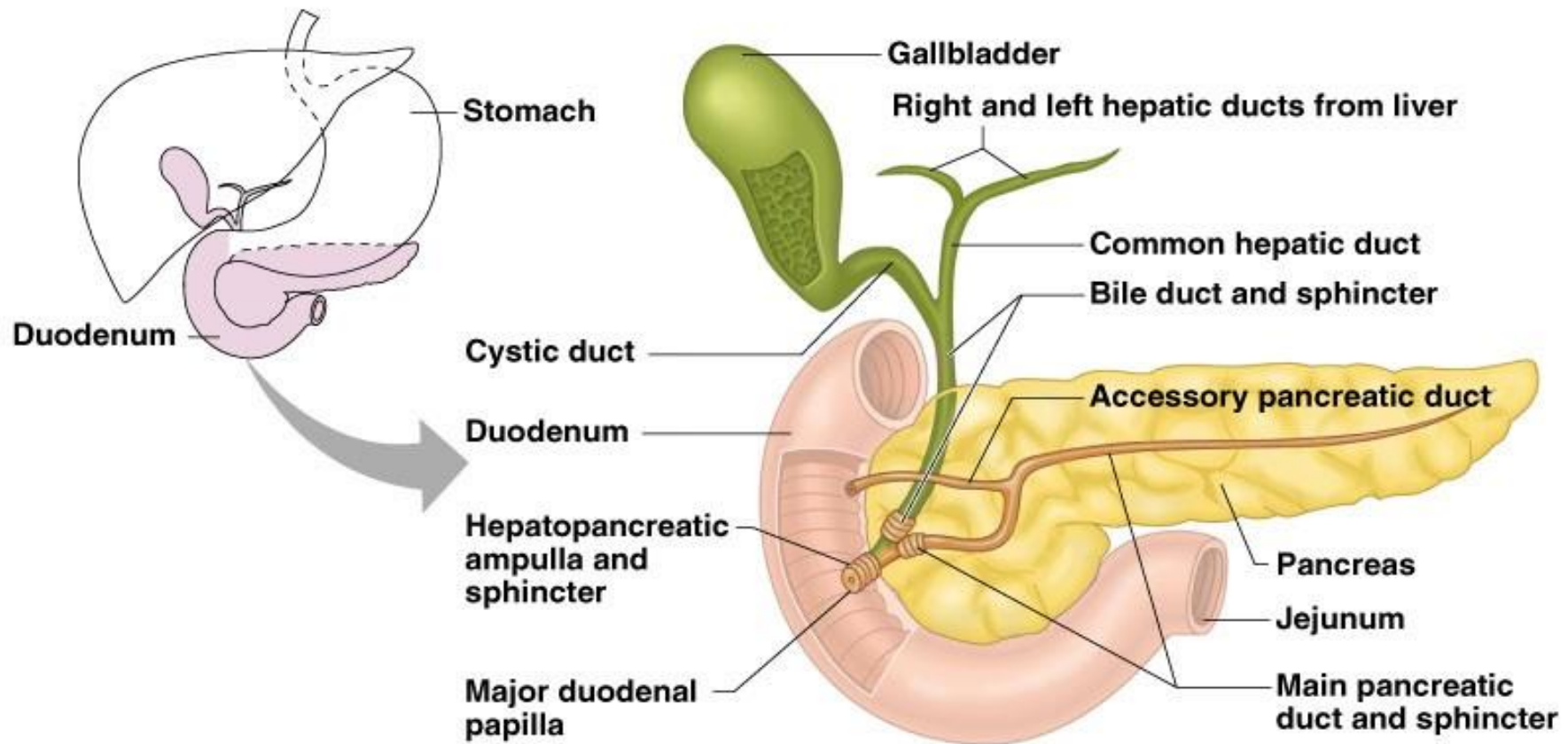
Subdivisions of the Small Intestine

- Duodenum
 - Attached to the stomach
 - Curves around the head of the pancreas
- Jejunum
 - Attaches anteriorly to the duodenum
- Ileum
 - Extends from jejunum to large intestine



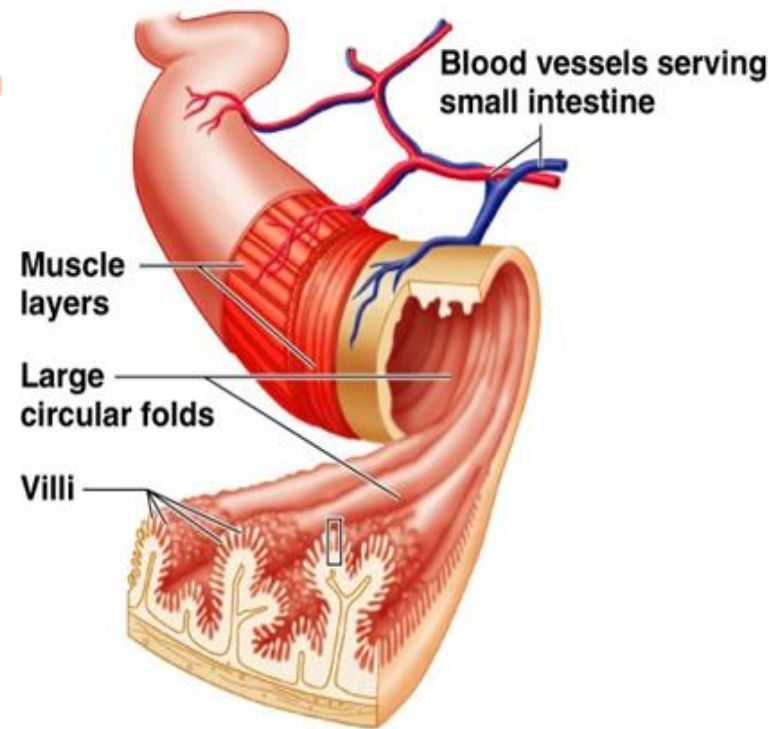


Chemical Digestion in the Small Intestine



Villi of the Small Intestine

- Fingerlike structures formed by the mucosa
- Give the small intestine more surface area



(a) Small intestine



Digestion in the Small Intestine

Enzymes from the brush border

- *break double sugars into simple sugars

- *complete some protein digestion

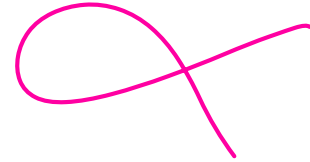
Pancreatic enzymes play the major digestive function

- *Help complete digestion of starch (pancreatic amylase)

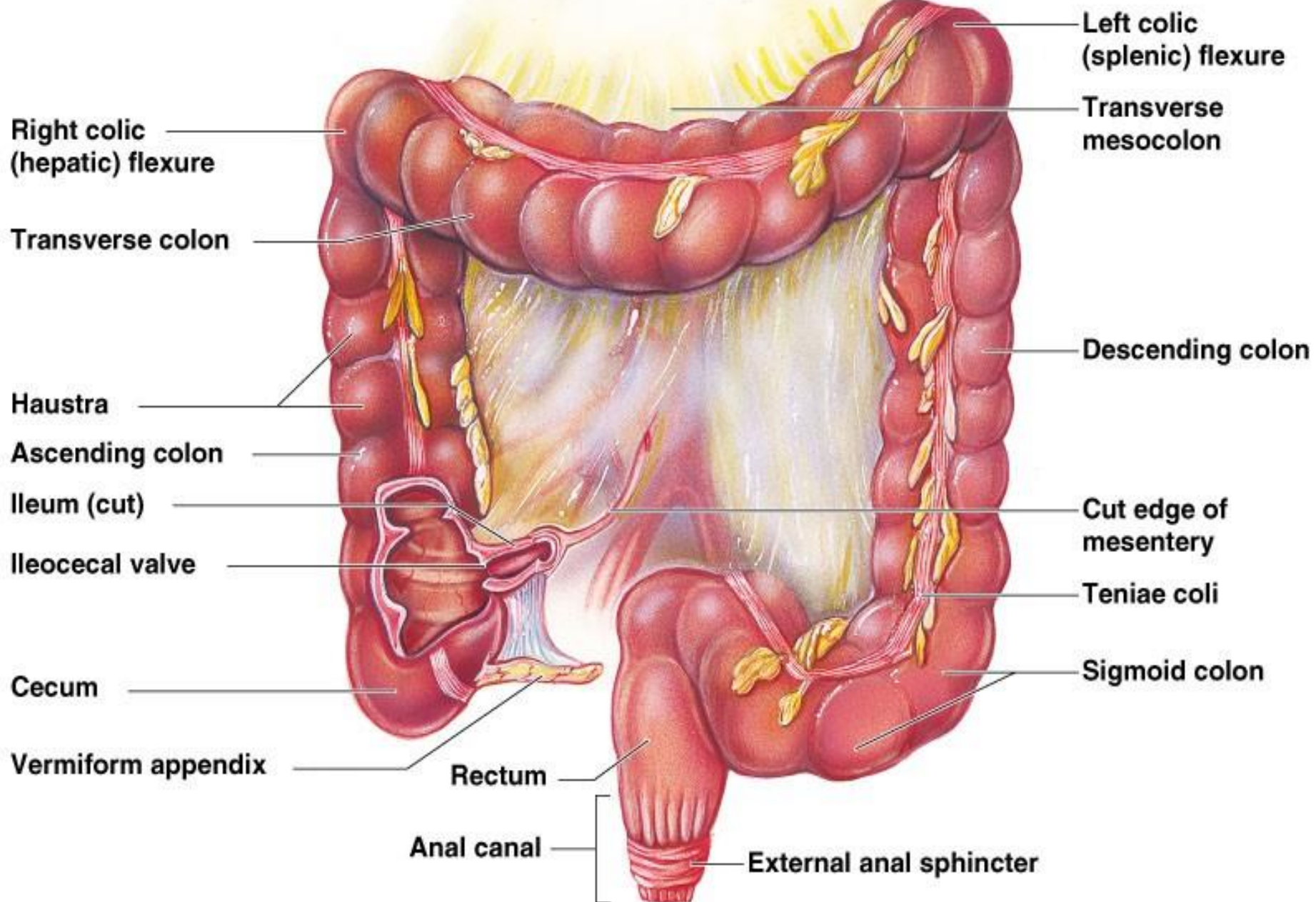
- *Carry out about half of all protein digestion (trypsin, etc).

- *Responsible for fat digestion (lipase)

Large Intestine



- Larger in diameter, but shorter than the small intestine
- Frames the internal abdomen



Functions of the Large Intestine

CD10h

- Absorption of water
- Eliminates indigestible food from the body as feces
- Does not participate in digestion of food
- Goblet cells produce mucus to act as a lubricant

- **Structures of the Large Intestine**

- **Cecum** – saclike first part of the large intestine

- **Appendix**

- Accumulation of lymphatic tissue that sometimes becomes inflamed (appendicitis)
- Hangs from the cecum

Structures of the Large Intestine

- **Colon**

- Ascending

- Transverse

- Descending

- S-shaped sigmoidal

- **Rectum**

- **Anus** – external body opening



Food Breakdown and Absorption in the Large Intestine



- No digestive enzymes are produced
 - Resident bacteria digest remaining nutrients
- Produce some vitamin K and B
- Release gases
- Water and vitamins K and B are absorbed
 - Remaining materials are eliminated via feces

Accessory Digestive Organs

- Salivary glands
- Teeth
- Pancreas
- Liver
- Gall bladder



Salivary Glands

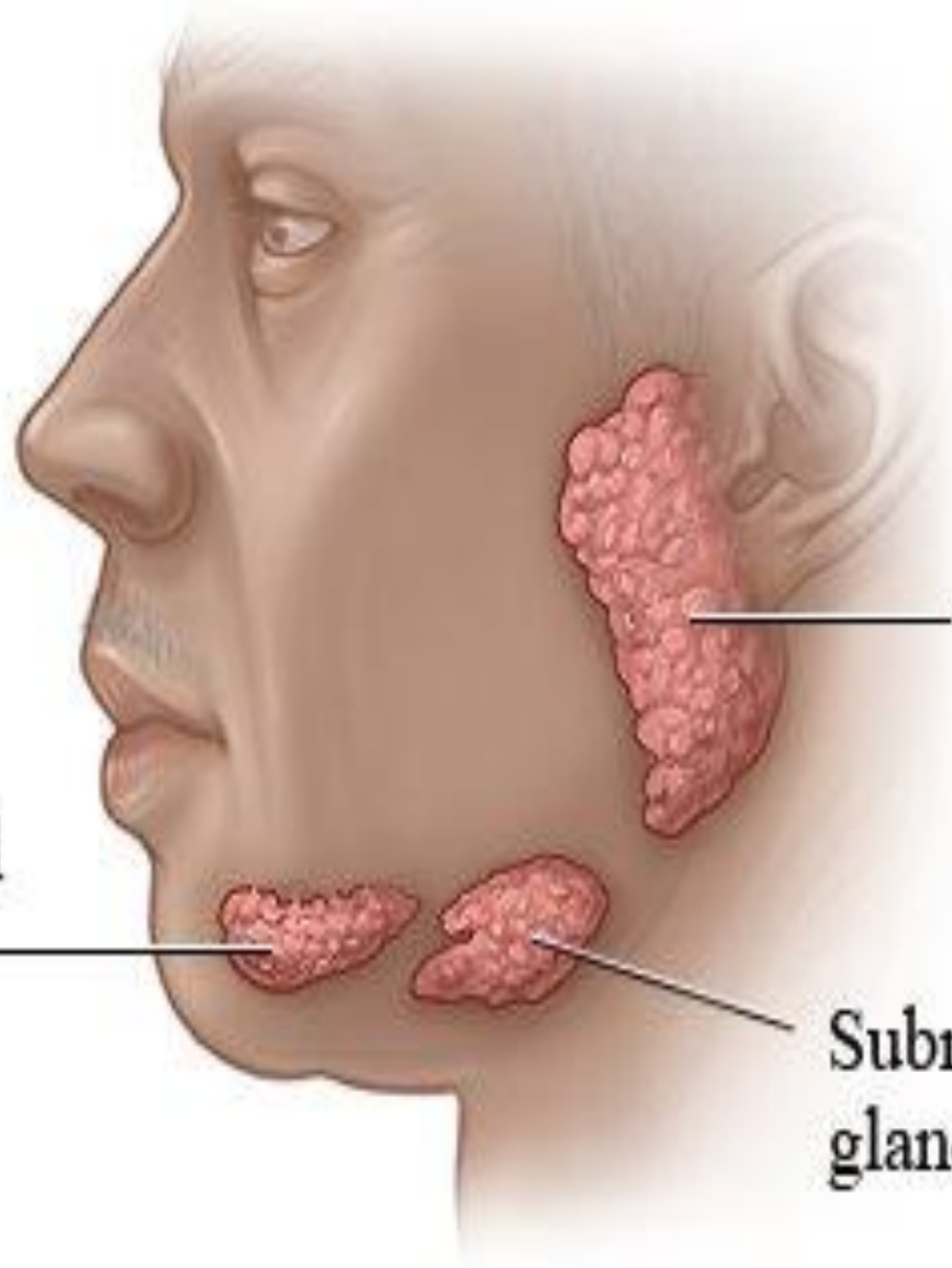


- Saliva-producing glands
- Parotid glands – located anterior to ears
- Submandibular glands
- Sublingual glands

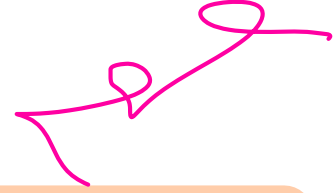
Sublingual
gland

Parotid
gland

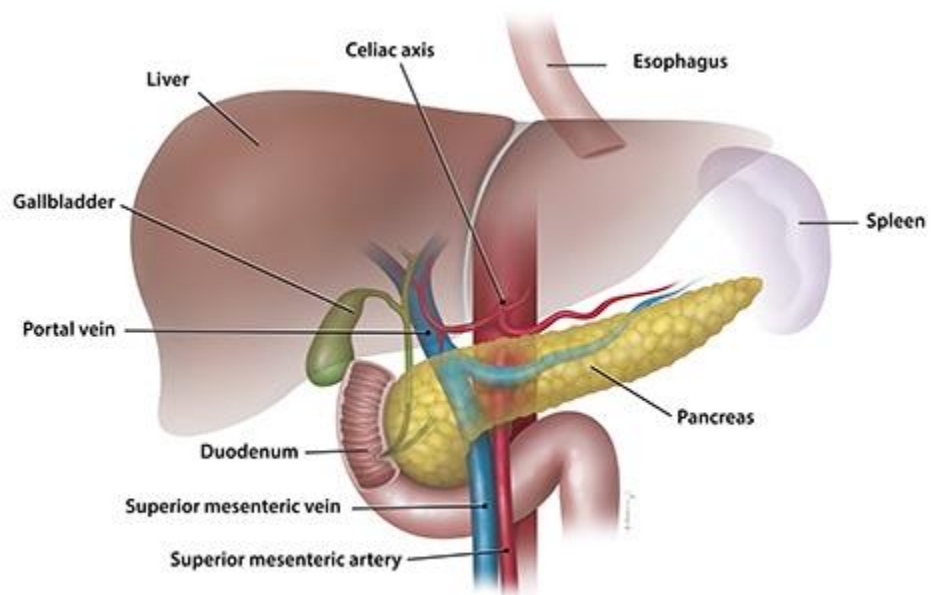
Submandibular
gland



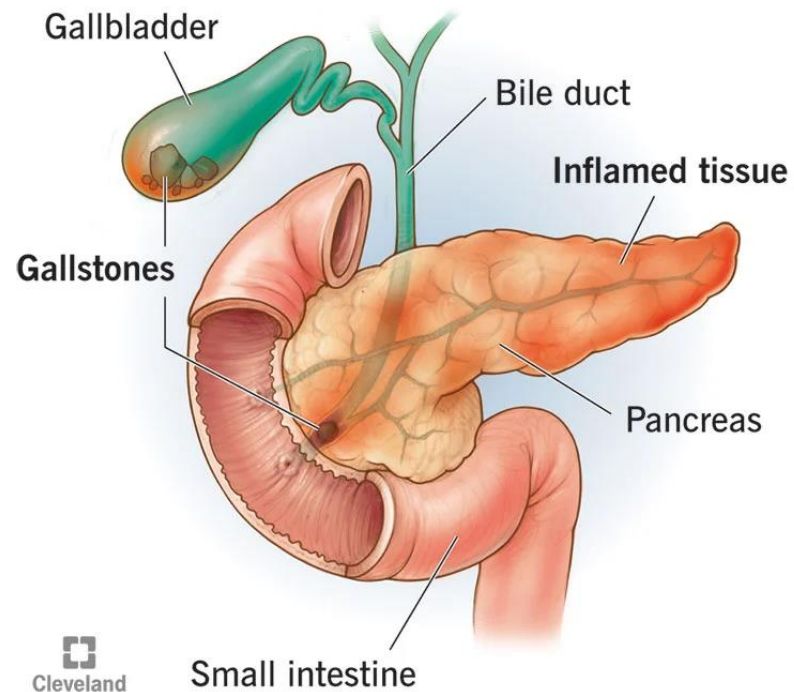
Pancreas



- Produces a wide spectrum of digestive enzymes that break down all categories of food
- Enzymes are secreted into the duodenum
- Alkaline fluid introduced with enzymes neutralizes acidic chyme
- Endocrine products of pancreas
 - Insulin
 - Glucagon



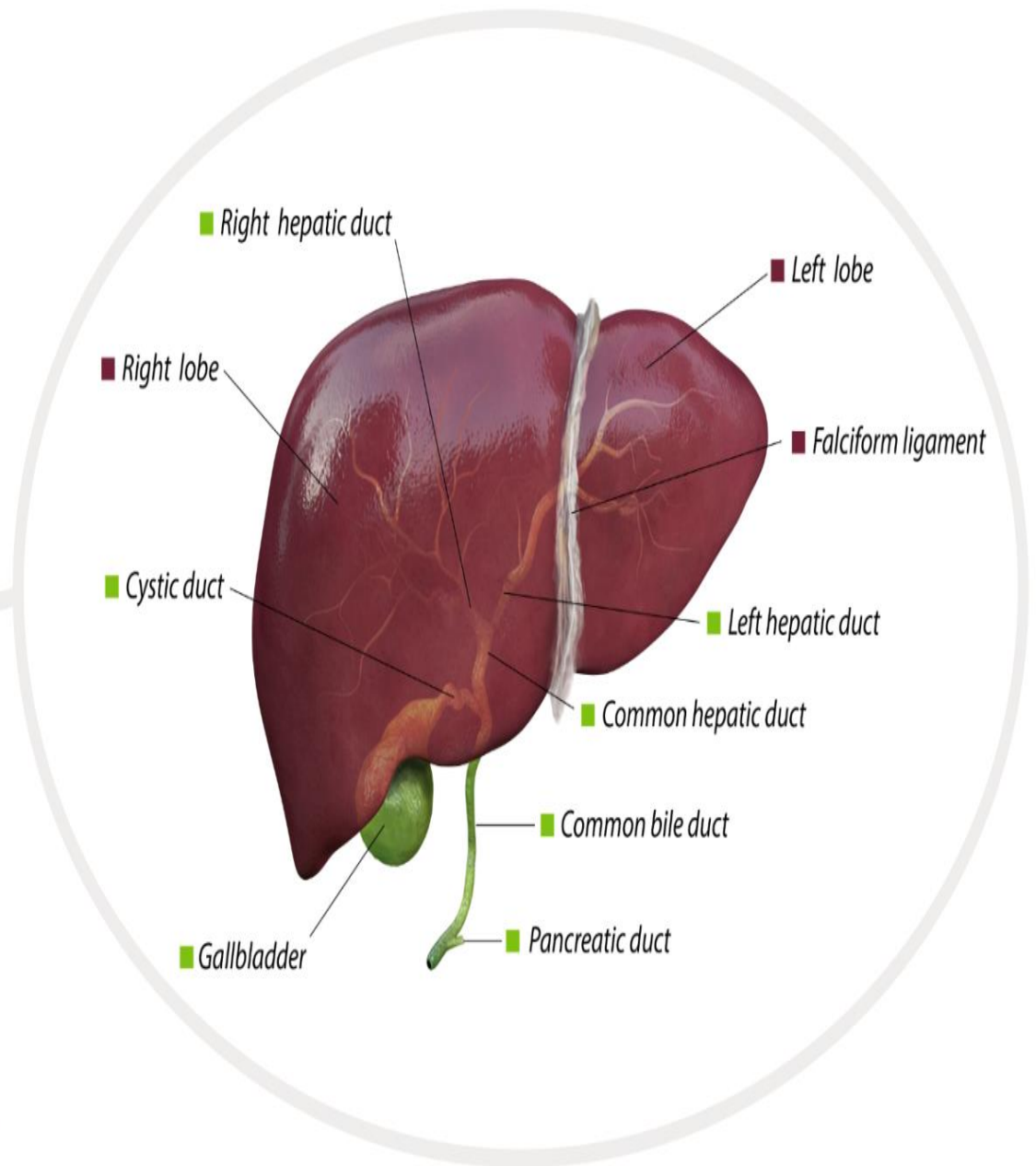
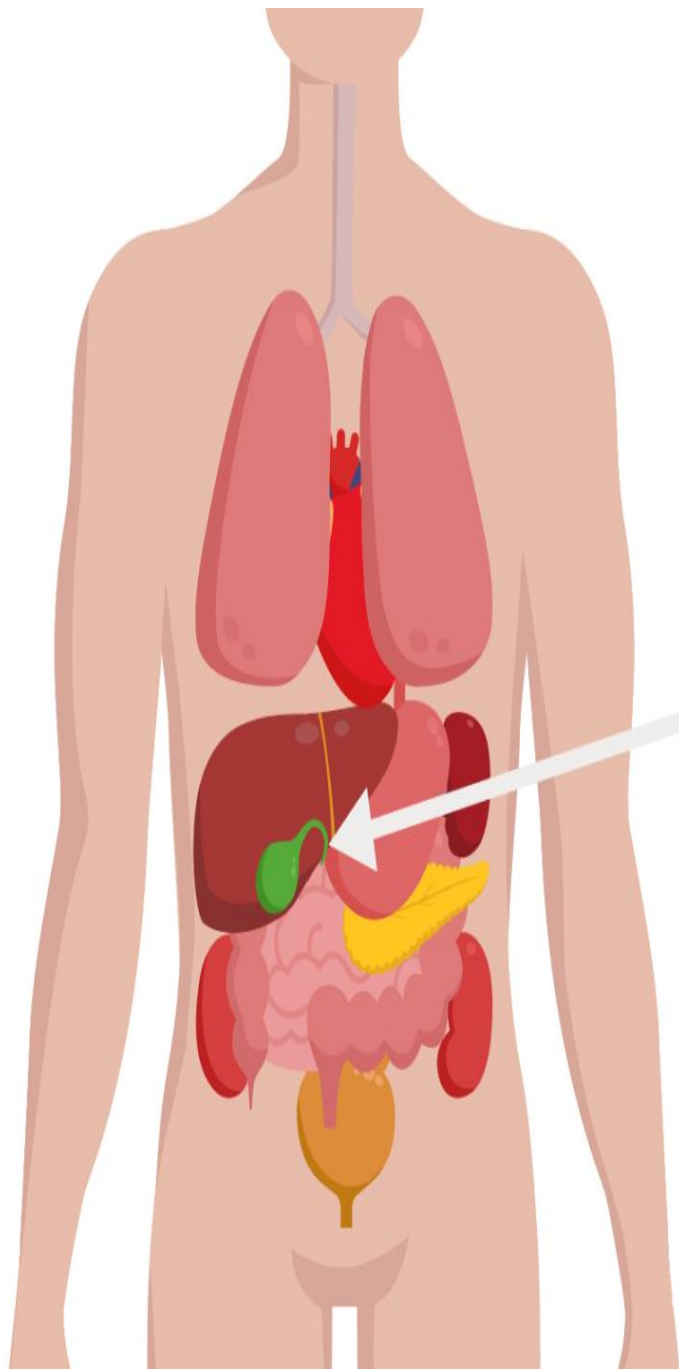
Pancreatitis

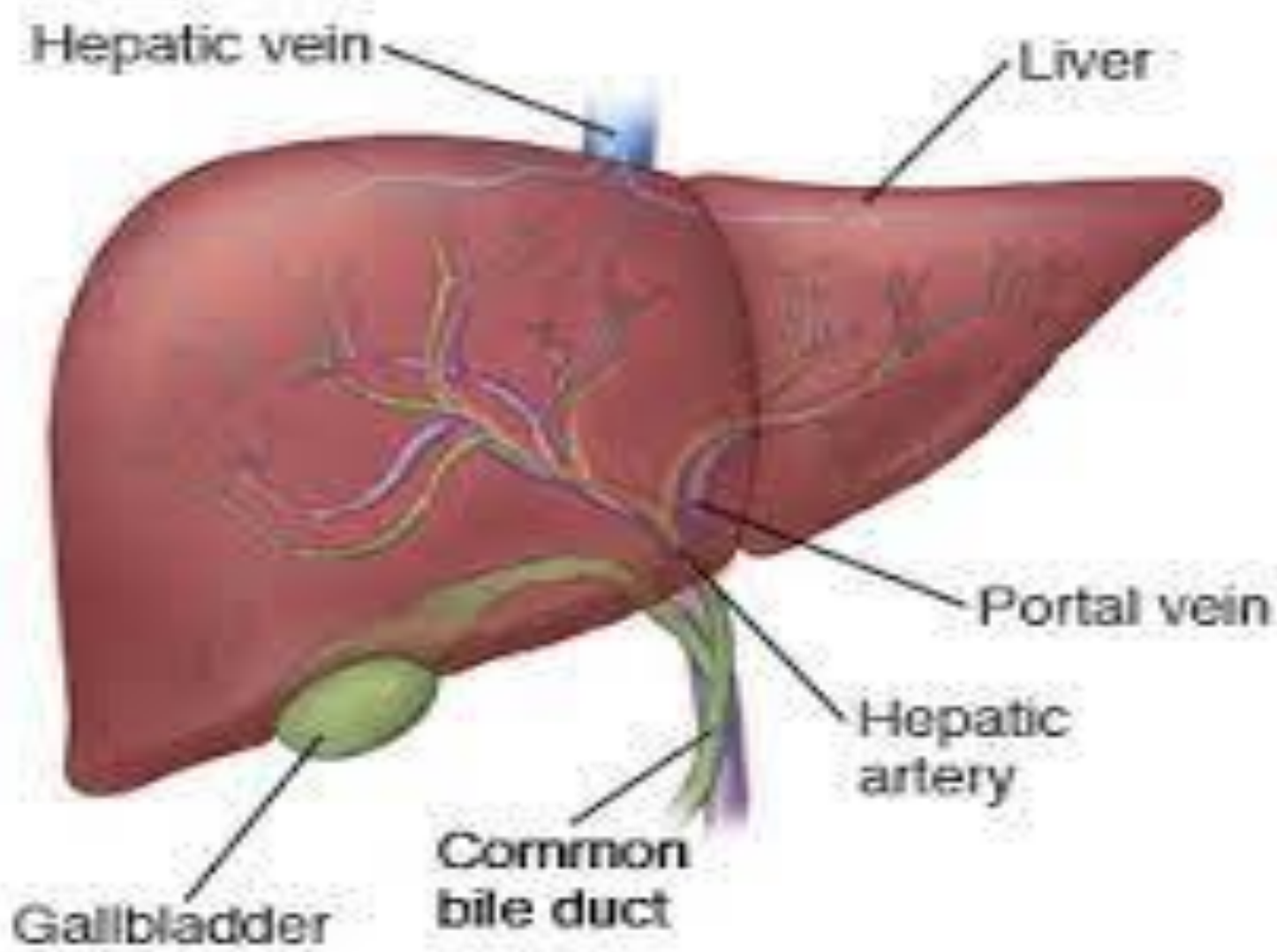


Liver



- Largest gland in the body
 - Located on the right side of the body under the diaphragm
- Consists of four lobes suspended from the diaphragm and abdominal wall by the falciform ligament
 - Connected to the gallbladder via the common hepatic duct





Thank You

