

**University of Cihan-Sulaimaniya**  
**College of Health Science**  
**Department of ANS**  
**Second year students**



# **Human Anatomy**

## **Week Six**

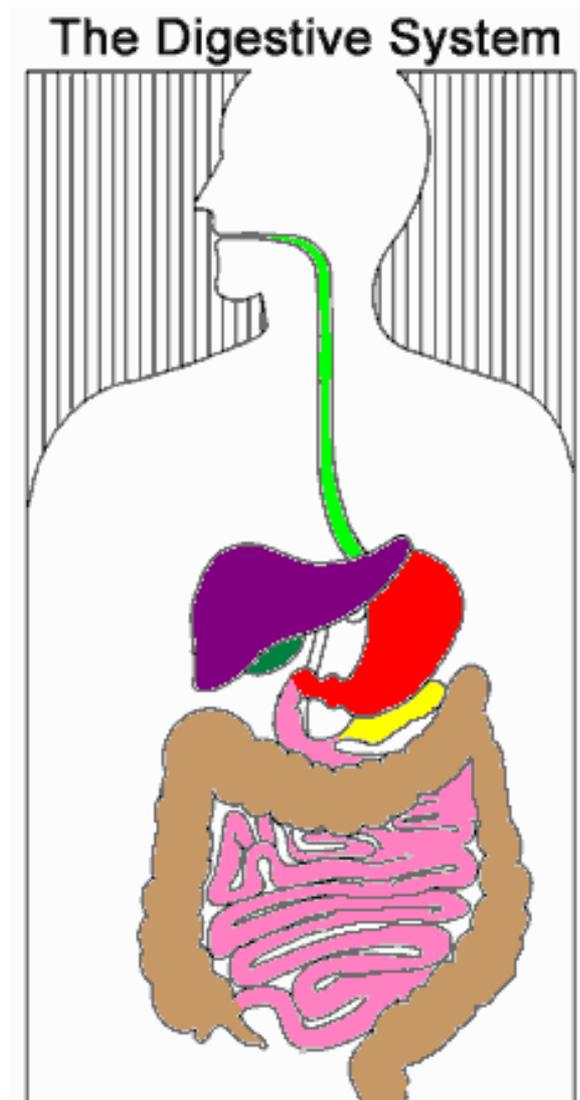
### **Digestive System**

2-11-2024

# Major Organs

The major organs involved in the human digestive system are:

- Mouth or oral complex
- Pharynx
- Esophagus
- Stomach
- Pancreas
- Liver and gall bladder
- Small intestines and associated glands
- Large intestines
- Rectum
- Anal canal and anus



# Types of Digestion

- **Mechanical (physical)**

- Chew
- Tear
- Grind
- Mix

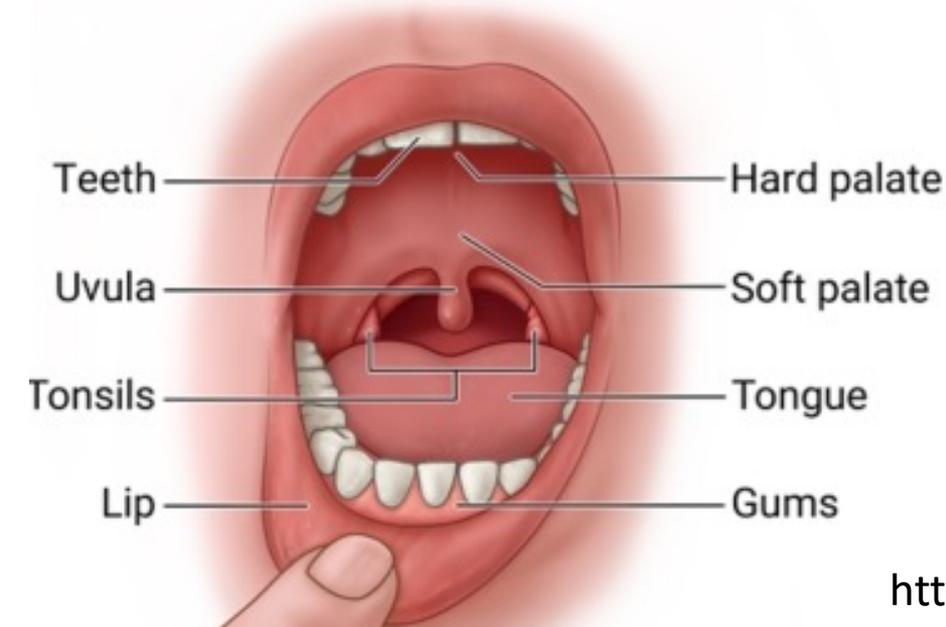
- **Chemical**

- Enzymatic reactions to improve digestion of:
  - Carbohydrates
  - Proteins
  - Lipids

# Mouth

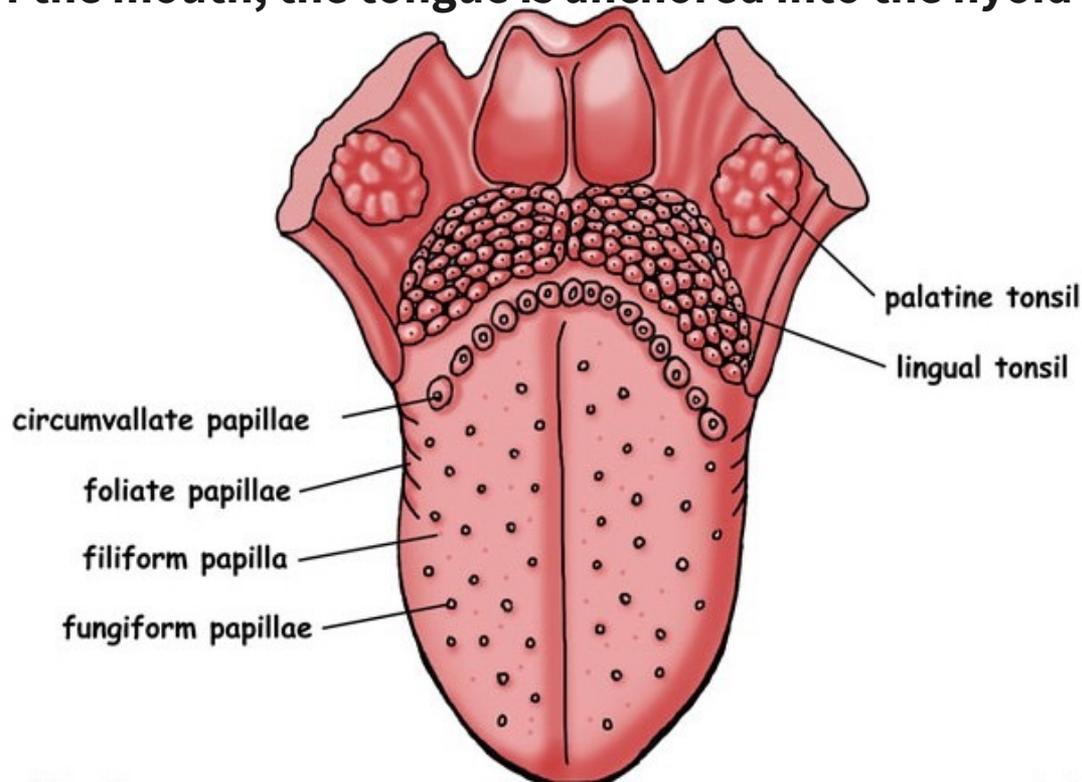
The mouth, or oral cavity, is the first part of the digestive tract. It is adapted to receive food by ingestion, break it into small particles by mastication, and mix it with saliva.

- **Teeth** **mechanically** break down food into small pieces.
- The **tongue** mixes food with saliva to start **chemical digestion** (contains amylase, which helps break down starch).
- **Epiglottis** is a flap-like structure at the back of the throat that closes over the trachea preventing food from entering it when swallowing.



# Tongue

- The tongue is a muscular organ in the mouth.
- The tongue is covered with moist, pink tissue called mucosa.
- Tiny bumps called papillae give the tongue its rough texture.
- Thousands of taste buds cover the surfaces of the papillae (4 types of papillae).
- Taste buds are collections of nerve-like cells that connect to nerves running into the brain.
- In the back of the mouth, the tongue is anchored into the hyoid bone.



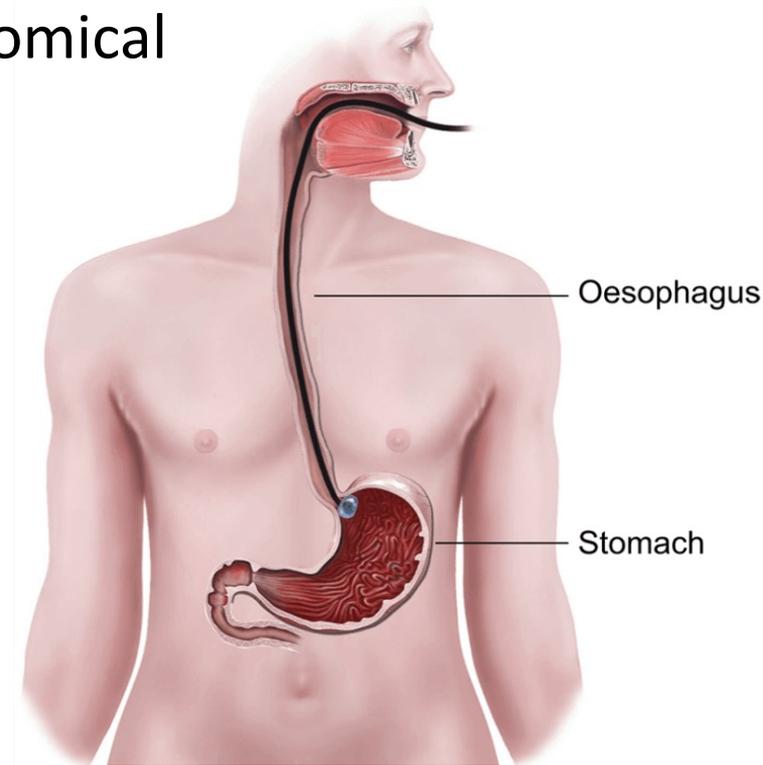
**Esophagus:** is Approximately 25 cm long, fibromuscular tube extending from the pharynx (C6 level) to the stomach (T11 level).

- Esophagus is subdivided into three anatomical segments:

- 1- Cervical part
- 2- Thoracic part
- 3- Abdominal part

- **Functions include:**

1. Secrete **mucus**
2. Move food from the throat to the stomach using wave-like muscle movement called **peristalsis.**

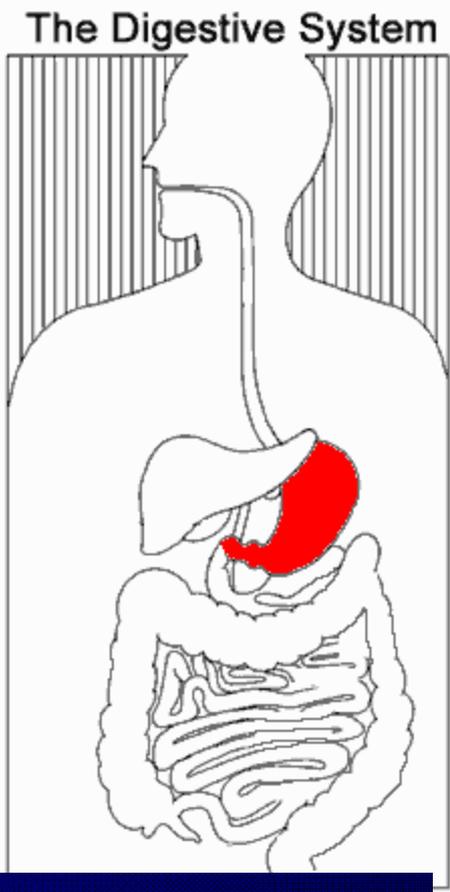


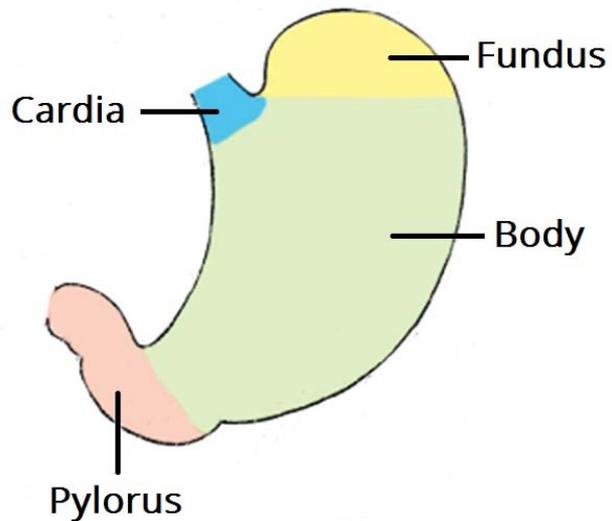
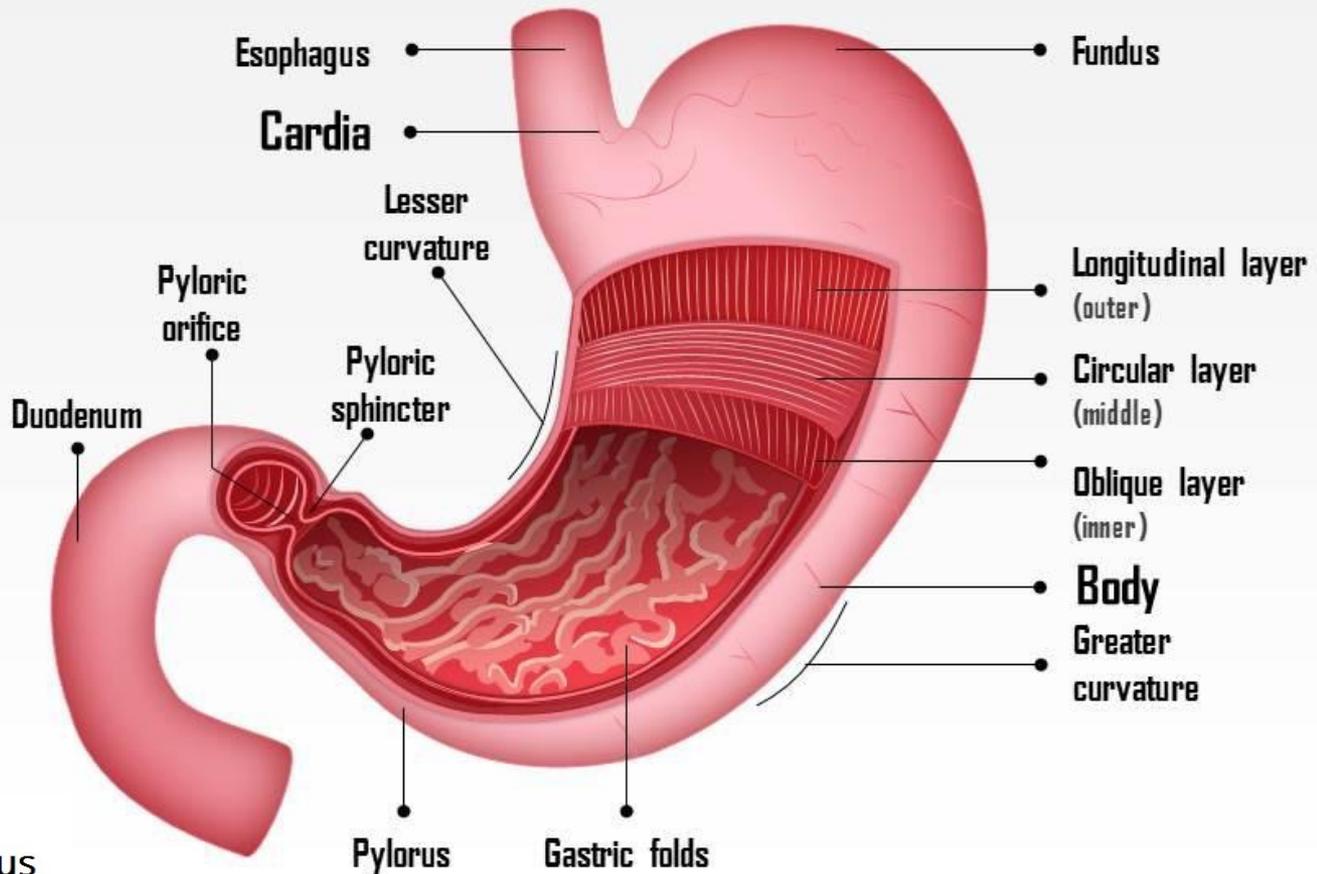
# Stomach:

The **stomach**, is an intraperitoneal digestive organ located between the [oesophagus](#) and the [duodenum](#).

It has a **J** shape, and features a lesser and greater curvature. The anterior and posterior surfaces are smoothly rounded with a peritoneal covering.

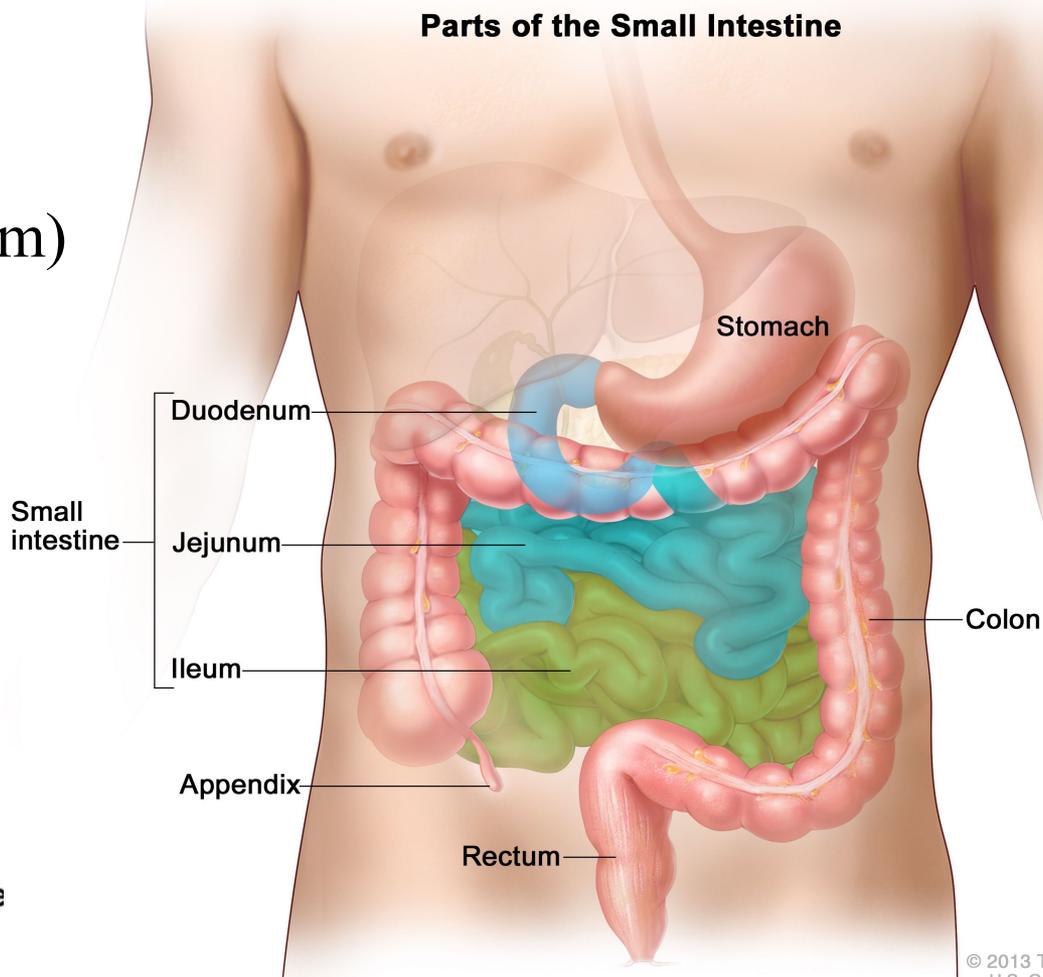
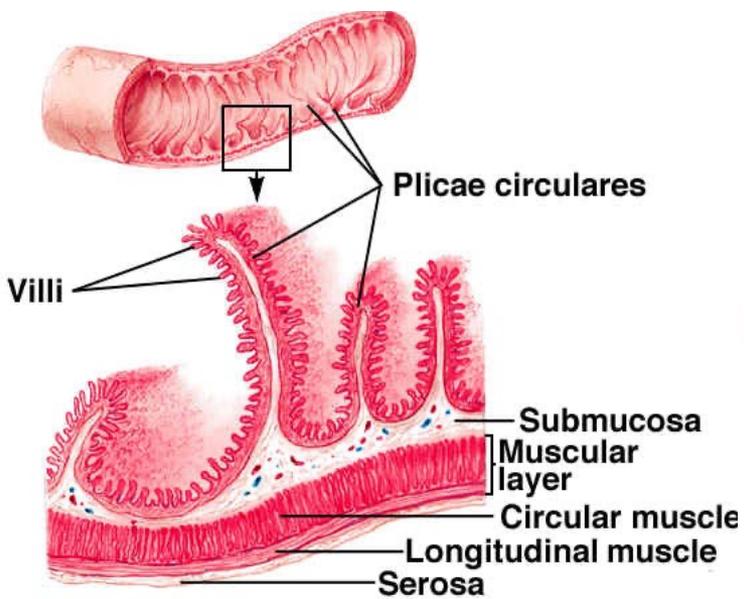
Located in **epigastric** and **umbilical** regions, however, the exact size, shape and position of the stomach can vary from person to person and with position and respiration.





# Small Intestine:

- Small intestines are approximately **20** feet long in an adult.
- The lining of intestine walls have finger-like projections called **villi**, to increase surface area.
- The villi are then covered in **microvilli** which further increases surface area for absorption.
- **Divided into 3 segments:**
  1. **Duodenum** (25cm)
  2. **Jejunum** (around 2.5m)
  3. **Ileum** (around 3.5m)

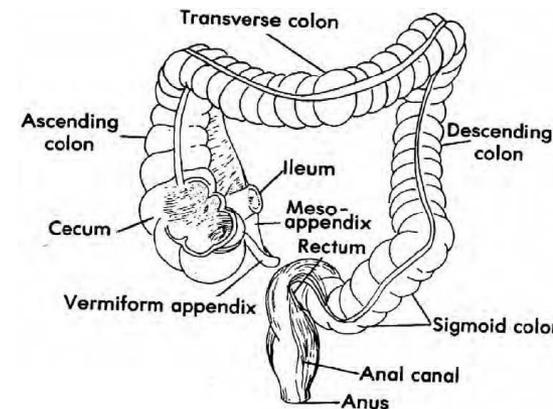
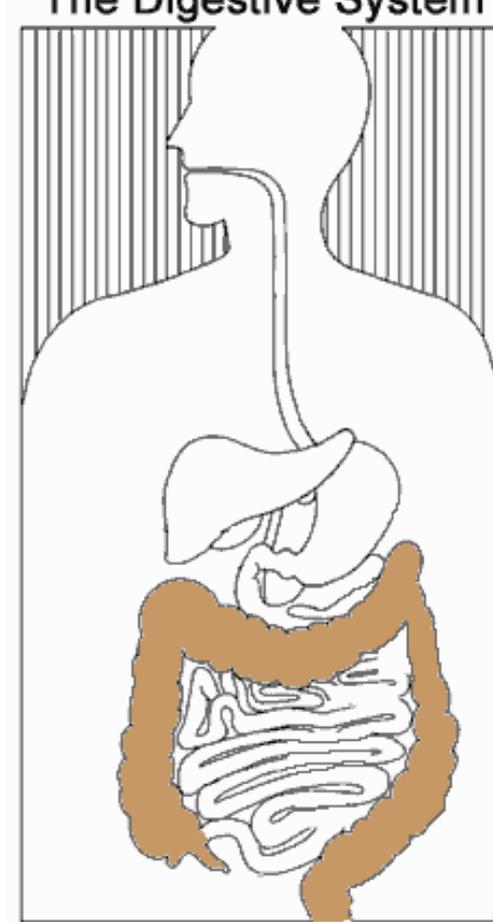


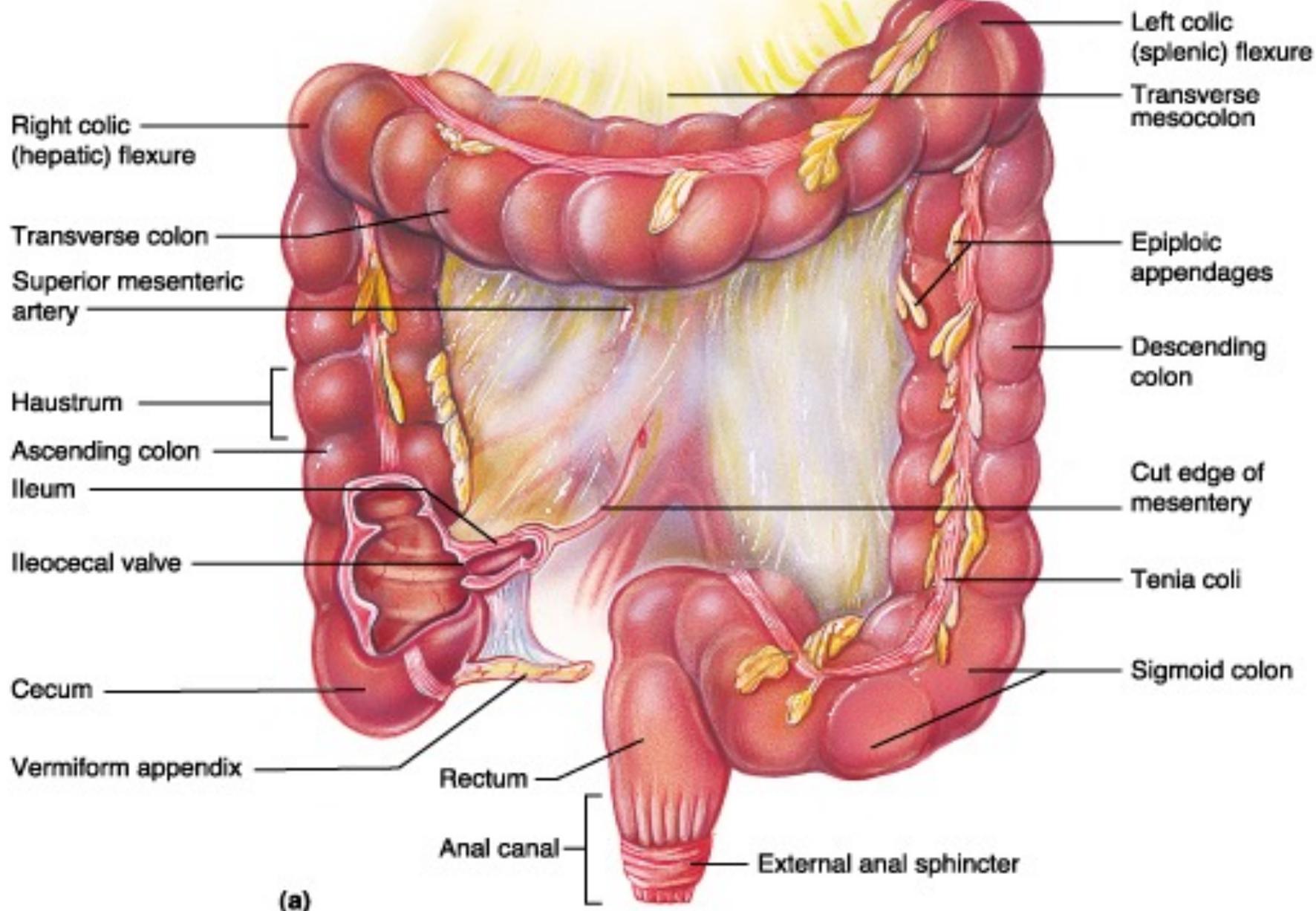
# Large Intestine:

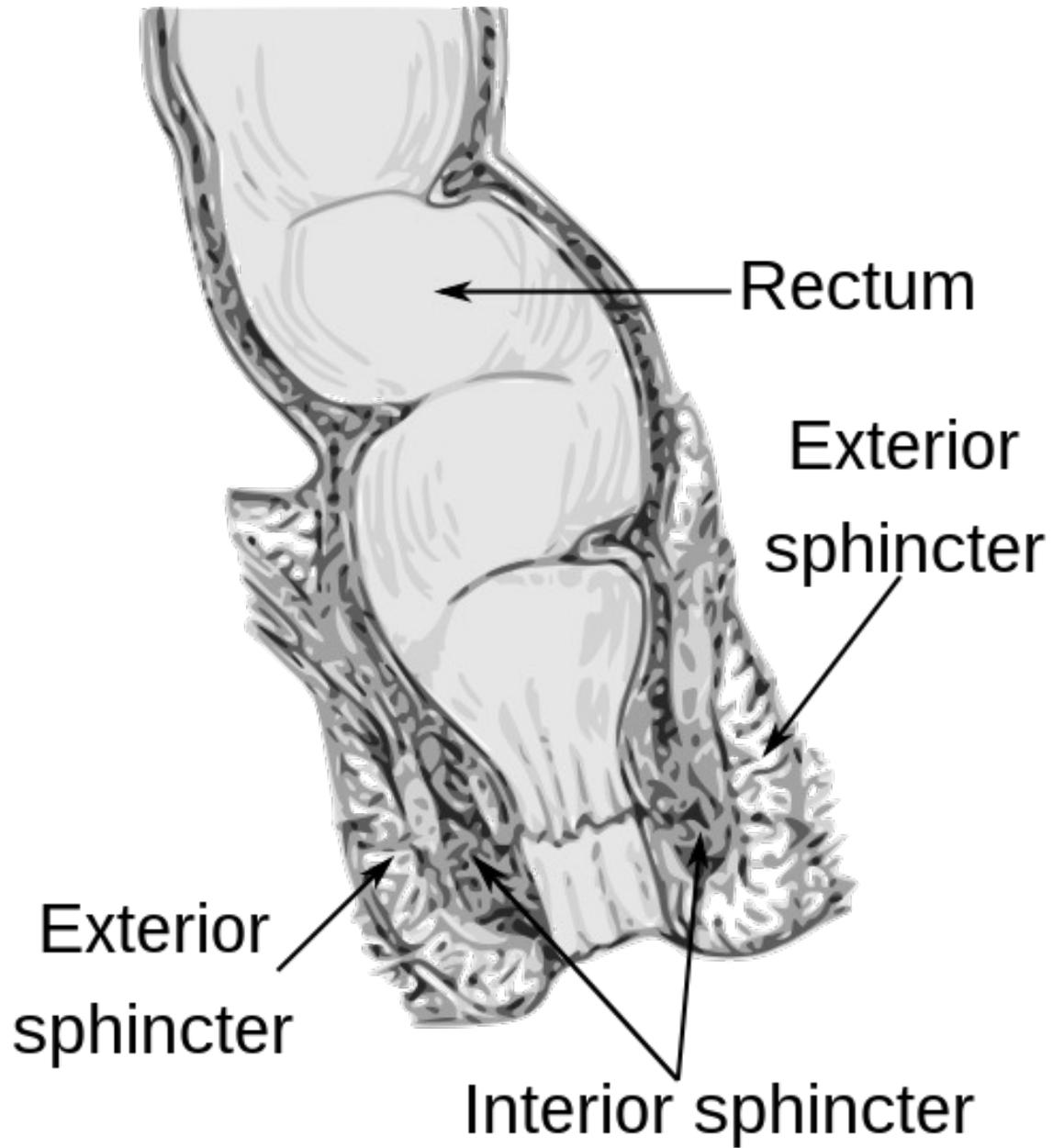
- Approximately **5 feet** in length.
- Absorbs remaining water for reuse by the body.

## Parts of the colon

- Cecum: This is the beginning of the colon. ...
  - Ascending colon (right colon): This is the first part of the colon.
  - Transverse colon: This is the middle part of the colon.
  - Descending colon (left colon): This is the third part of the colon.
  - Sigmoid colon: This is the last part of the colon.
- 
- The **Rectum**, which is the last segment of the large intestine and serves as short term storage by holding the feces until it can expelled.



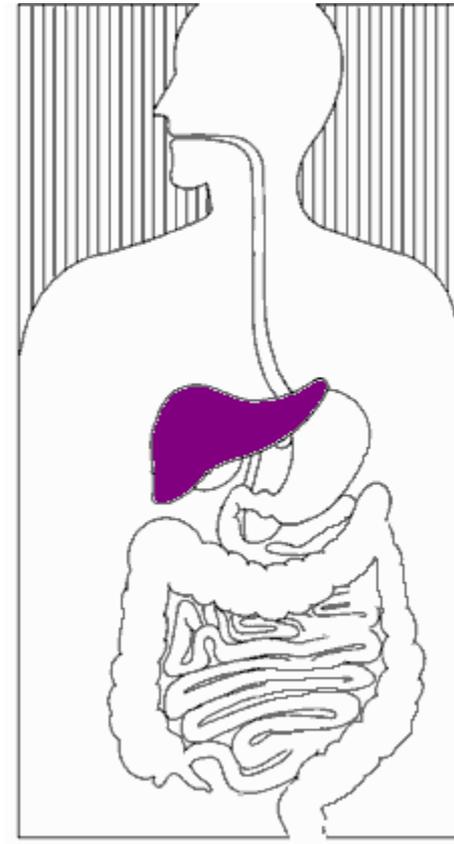


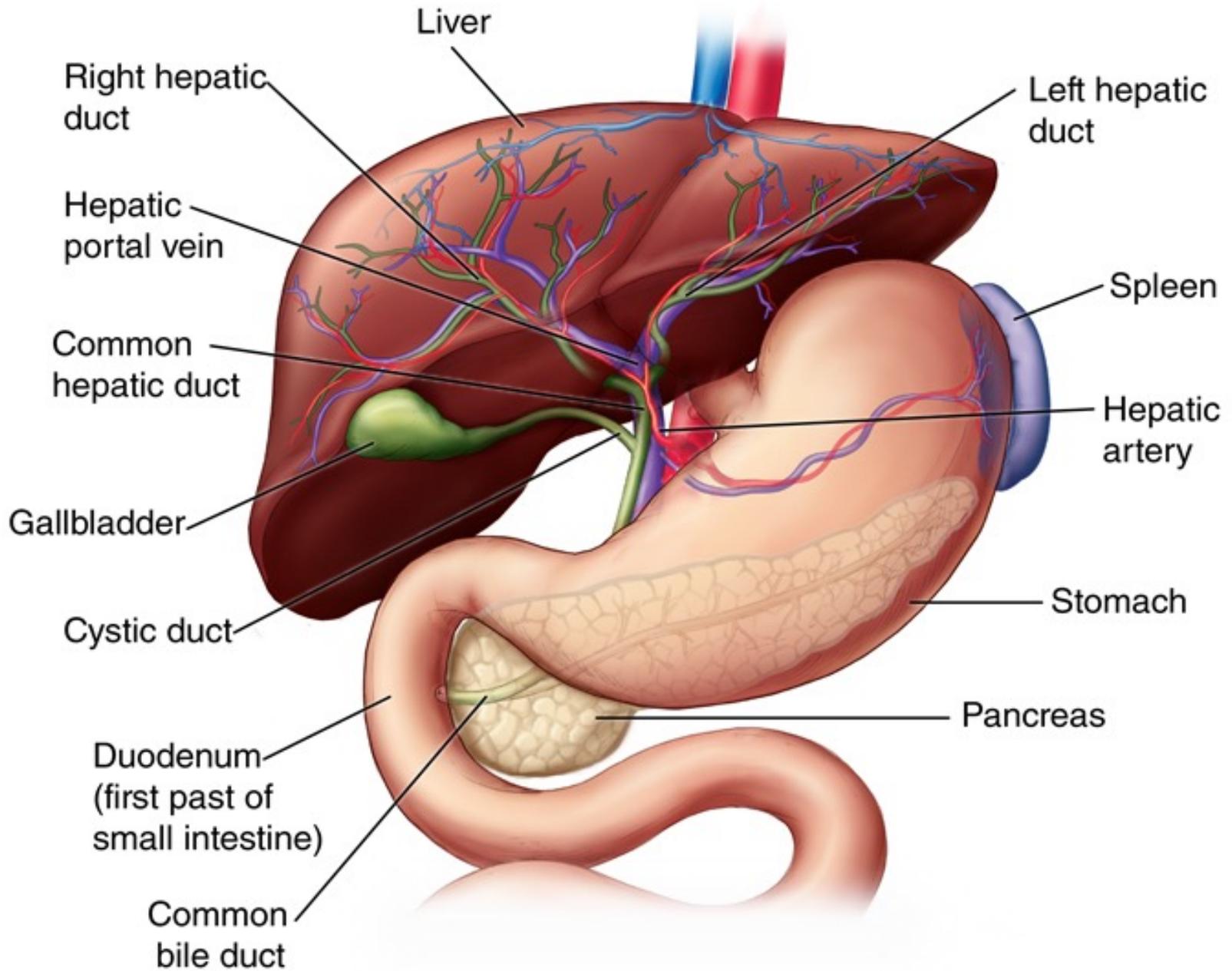


# Accessory Organs

## Liver:

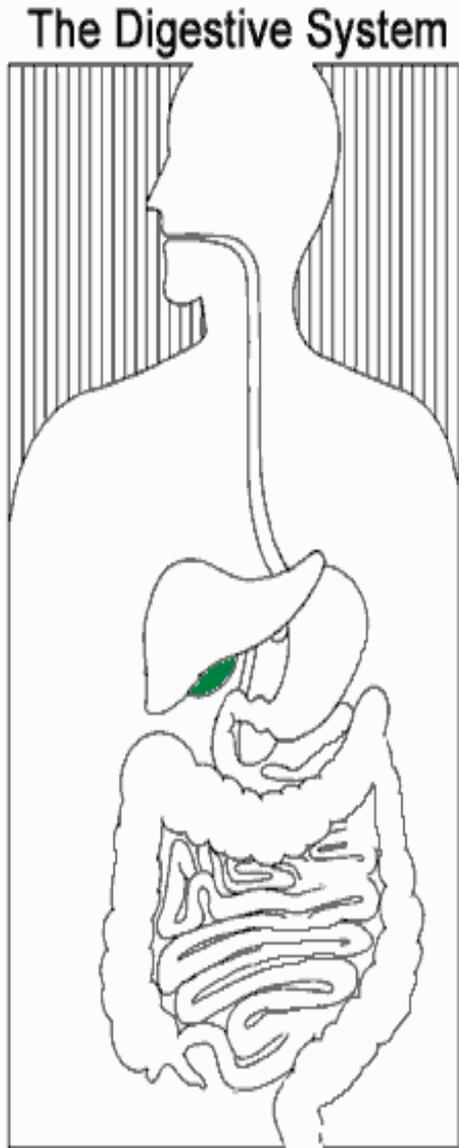
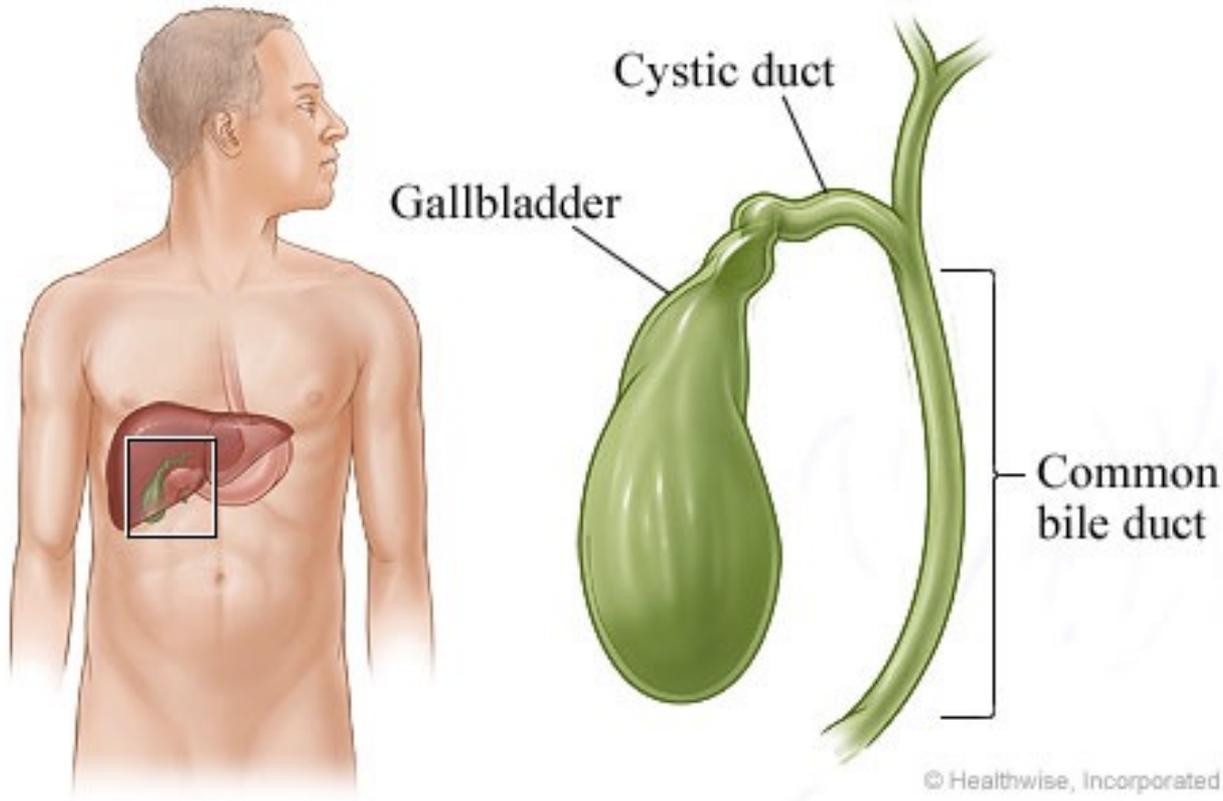
- The liver is located in the upper right-hand portion of the abdominal cavity, beneath the diaphragm, and on top of the stomach, right kidney, and intestines.
- Shaped like a cone, the liver is a dark reddish-brown organ that weighs about 3 pounds.
- Stores extra blood (~10% of body's blood volume)
- Filters out toxins
- Metabolism of fats for energy
- Production of clotting proteins
- Breakdown of old RBCs
- Production of necessary cholesterol
- Produces **bile**





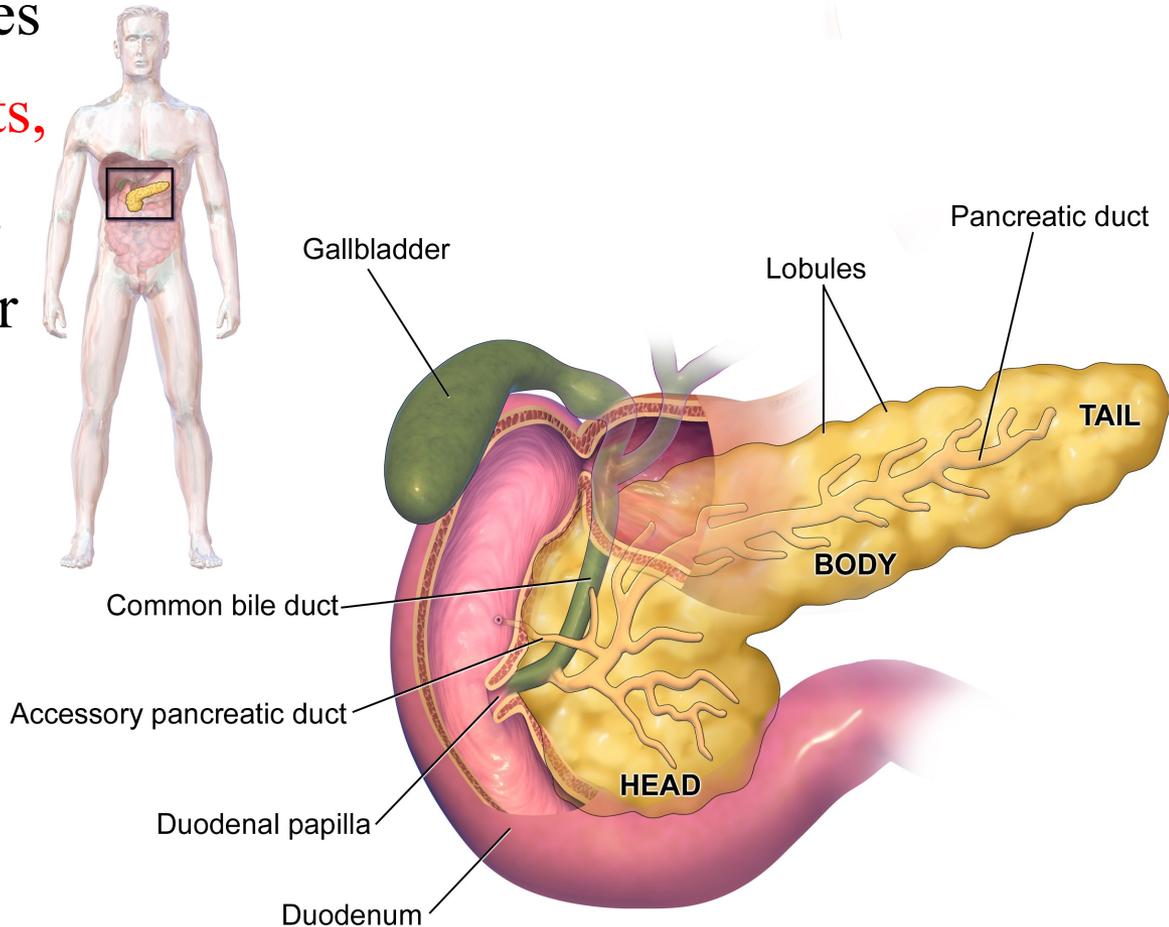
# Gall Bladder

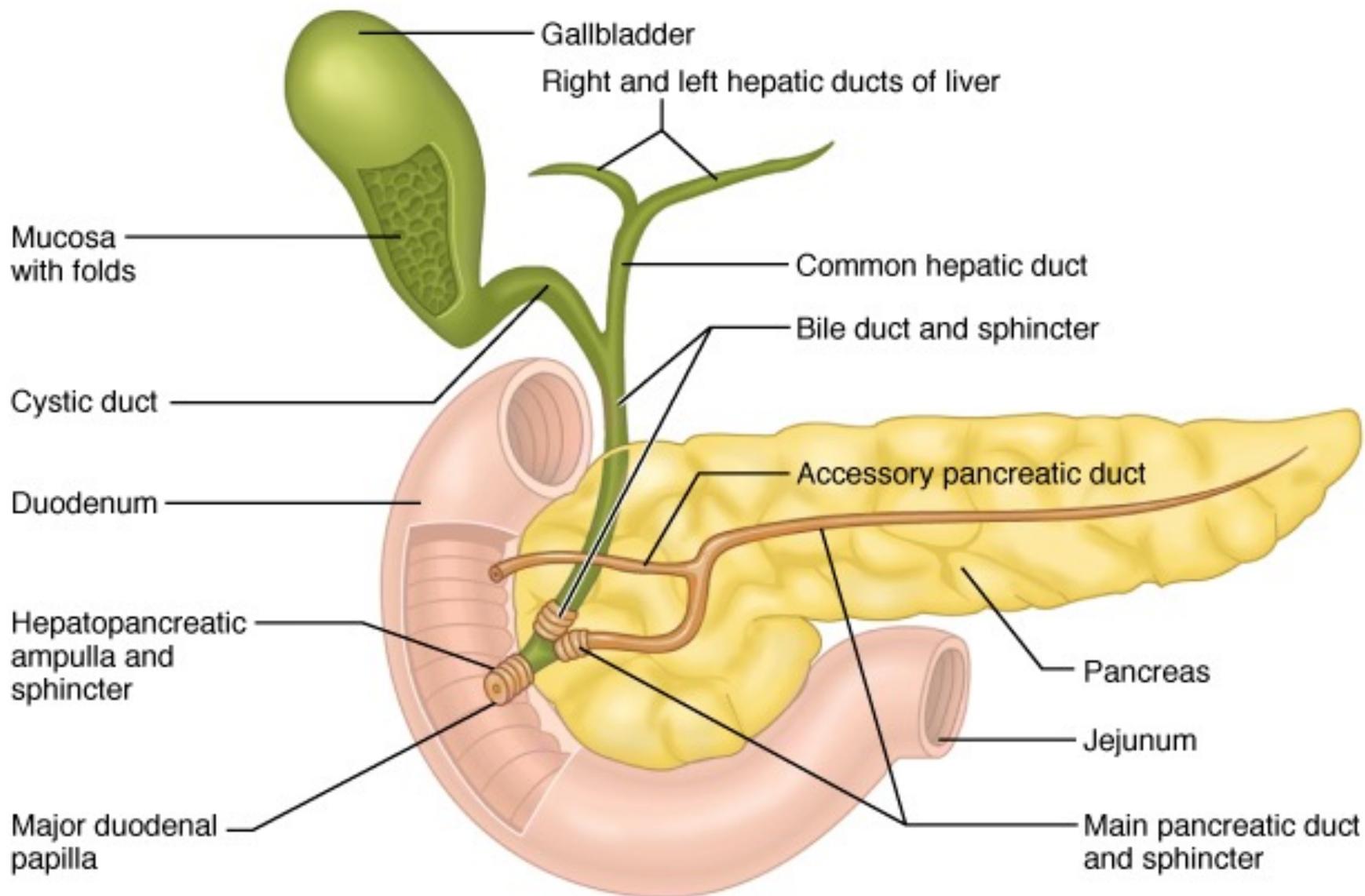
- Stores bile from the liver, releases it into the small intestine.



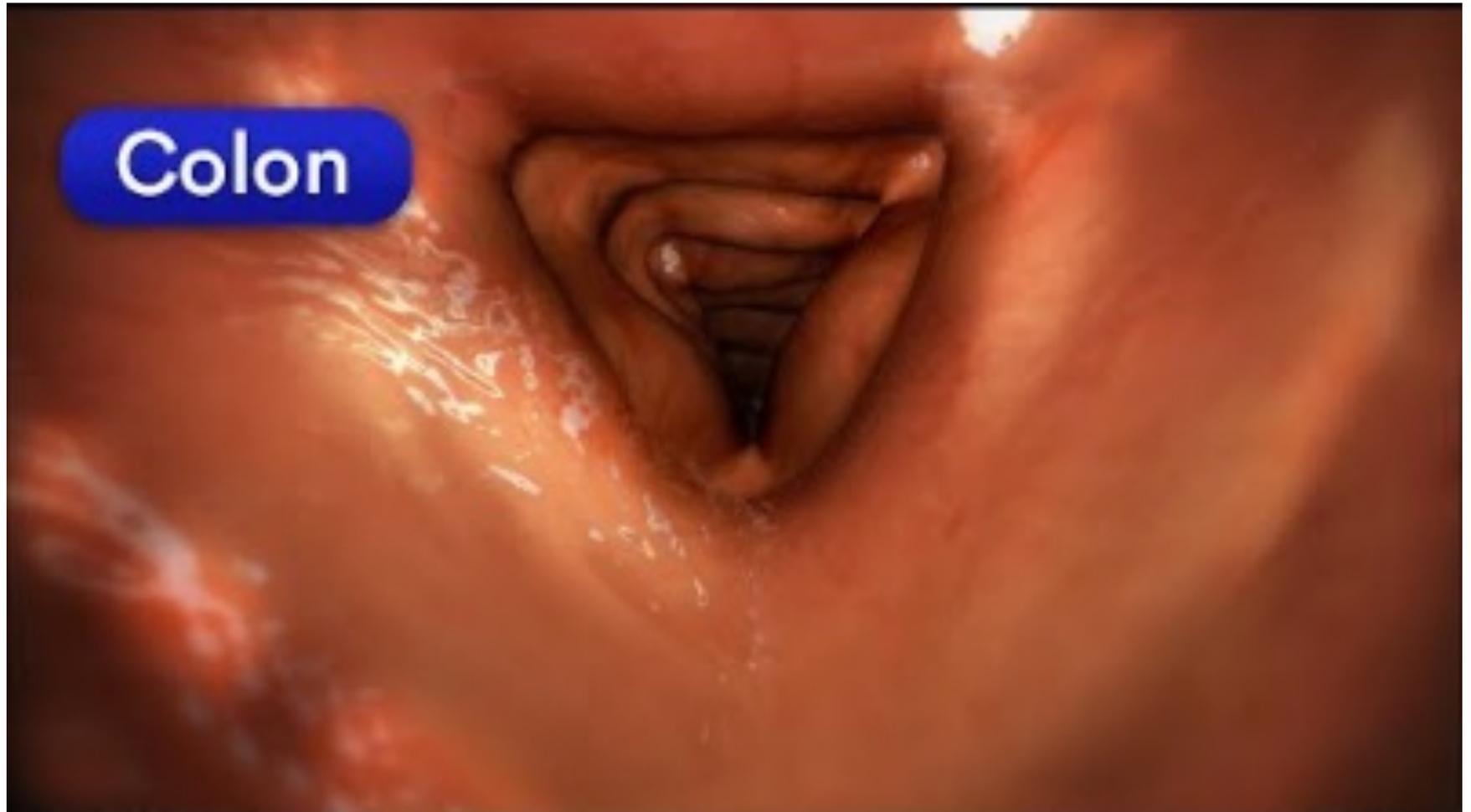
# Pancreas

- The pancreas is an elongated, tapered organ located across the back of the belly, behind the stomach.
- The right side of the organ—called the head—is the widest part of the organ and lies in the curve of the duodenum.
- Produces digestive enzymes to aid in the digestion of **fats**, **carbohydrates** and **proteins**.
- Regulates high blood sugar by producing **insulin**.





# The process of digestion



<https://www.youtube.com/watch?v=9v6VBKH9px0>

**General Anesthesia**

**Thoracic epidural analgesia (TEA)**

**Intrathecal (spinal) analgesia**

**Paravertebral blocks**

**Transversus abdominal plane (TAP) blocks**

**local anesthesia in the wound**

**Oxethazaine** exerts a prolonged topical anaesthetic action. It is prescribed for rapid and effective relief in gastritis, esophagitis, hiatus hernia, heartburn and peptic ulcer

**Complications:**

1- Fall in lower esophageal sphincter pressure, reflux – aspiration pneumonia

2- Anesthesia also alters gastrointestinal motility, secretion, and absorption

3- Paralytic ileus or Gastroparesis