

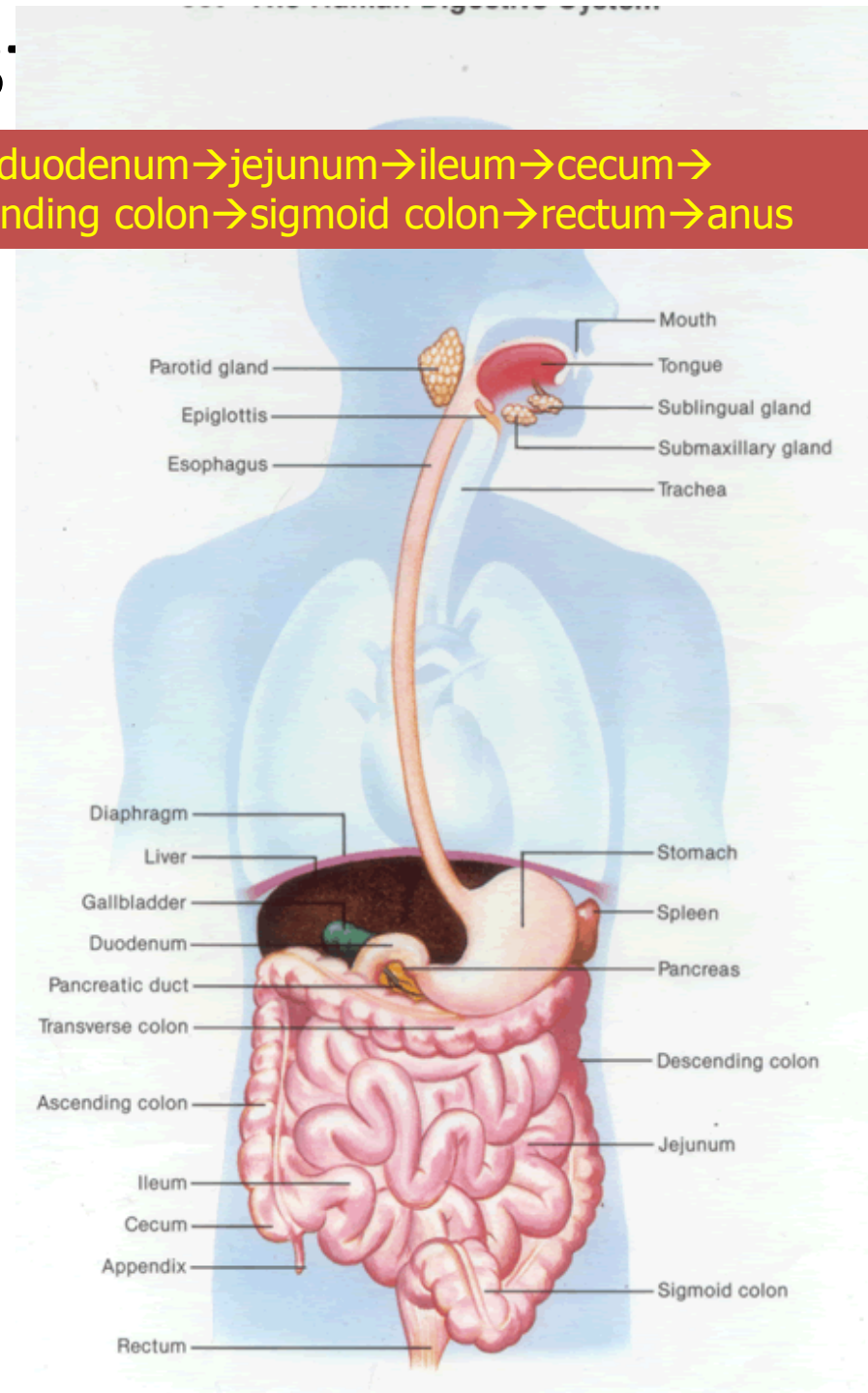
# Chapter 18

## The Digestive System

# The Digestive System

Mouth → pharynx → esophagus → stomach → duodenum → jejunum → ileum → cecum → ascending colon → transverse colon → descending colon → sigmoid colon → rectum → anus

- General info:
  - Basic “tube-within-a-tube”
  - Digestion by mechanical & chemical means
  - **Mechanical Digestion** from cutting, grinding, chewing in mouth. From churning by peristalsis in stomach
  - **Chemical Digestion** beginning in mouth through stomach & small intestines.
    - **Acidic pH** in mouth & stomach
    - Switches to **basic pH** in small intestine
  - **Accessory Organs** – food doesn’t pass thru them. They supply digestive “juices”.
    - Salivary glands, Liver, gall bladder & pancreas



# Upper Digestive Tract

- Mouth & Pharynx

- Teeth

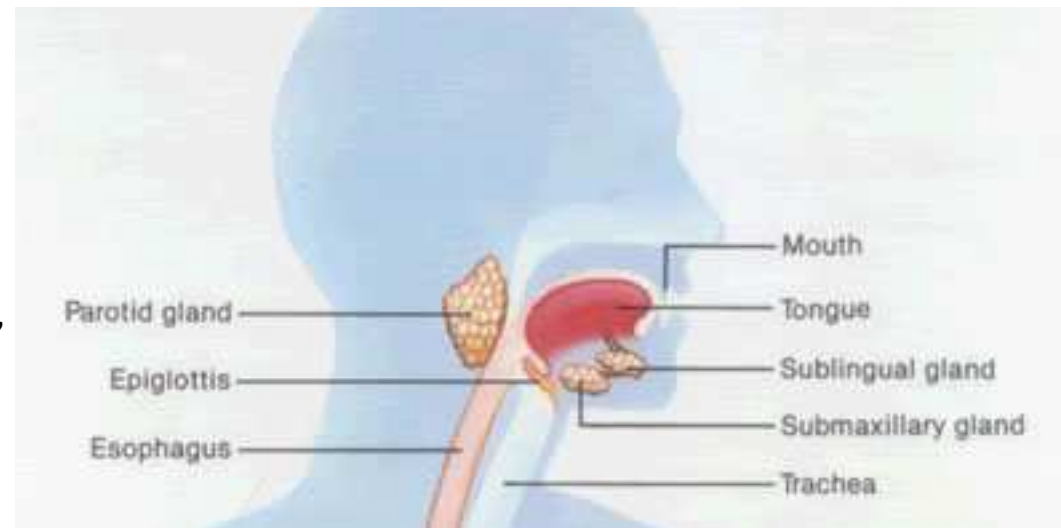
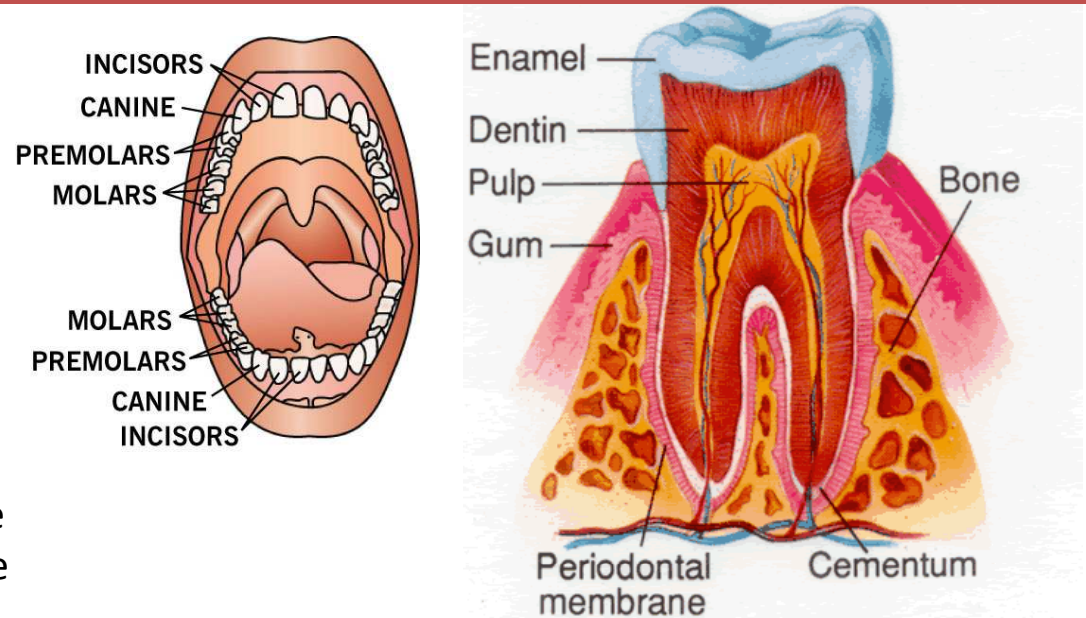
- Incisors - slice
- Canines – tear
- Premolars – grind
- Molars - grind

- Tooth Structure

- Crown, neck & root
- Enamel – hard for protection
- Dentine – softer, alive bone-like
- Pulp – soft blood & nerve tissue
- Cementum & Periodontal membrane “glue” tooth to the bony socket

- Chewed Food (smaller pieces w/ higher surface area) mixes w/ saliva becomes **bolus**. Enzyme **Amylase** begins Carbohydrate chemical digestion.

Swallowed food passes thru pharynx, past **epiglottis** & into esophagus



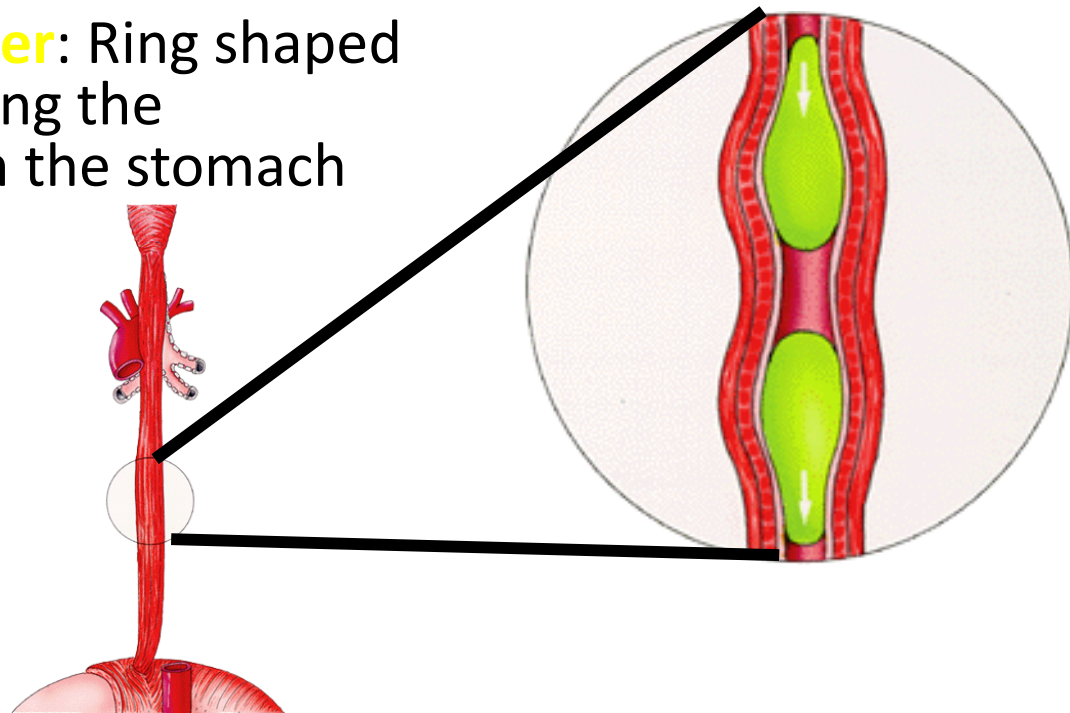
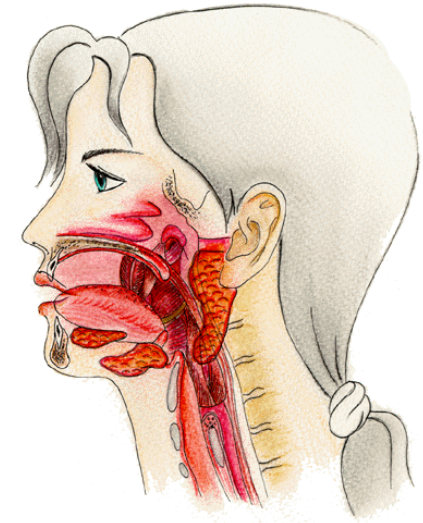
# The Esophagus

- Involuntary contractions and relaxation of smooth muscle surrounding esophagus moves food down esophagus:

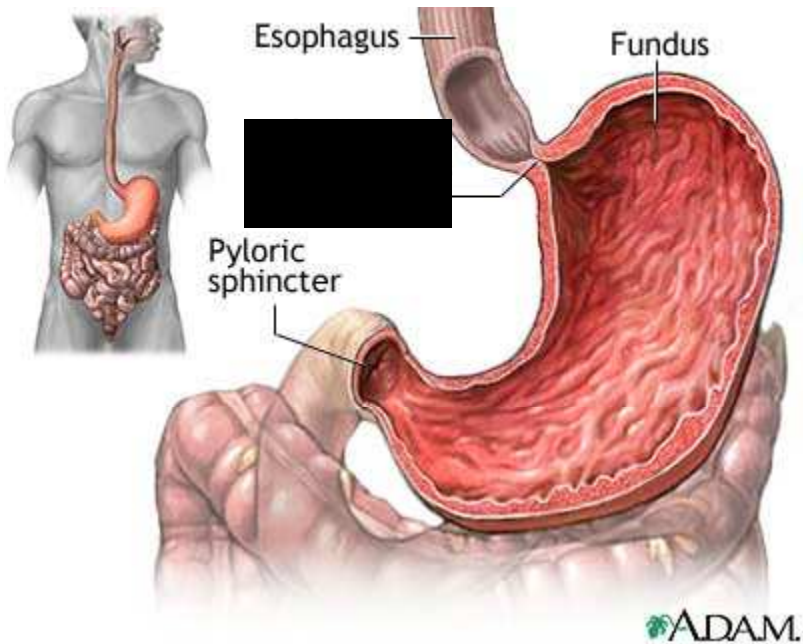
**Peristalsis**

- **Cardiac Sphincter:** Ring shaped muscle separating the esophagus from the stomach

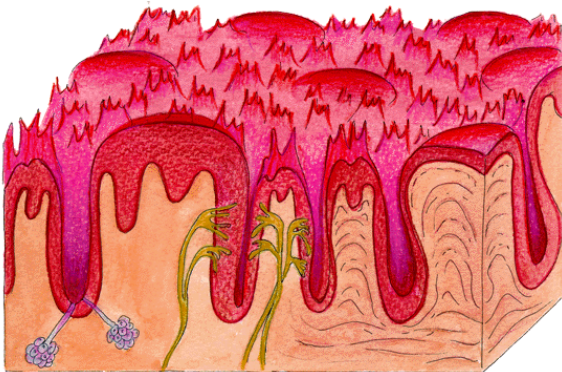
□ **sphincters** are muscles that squeeze the digestive tube closed and help move material in only one direction.



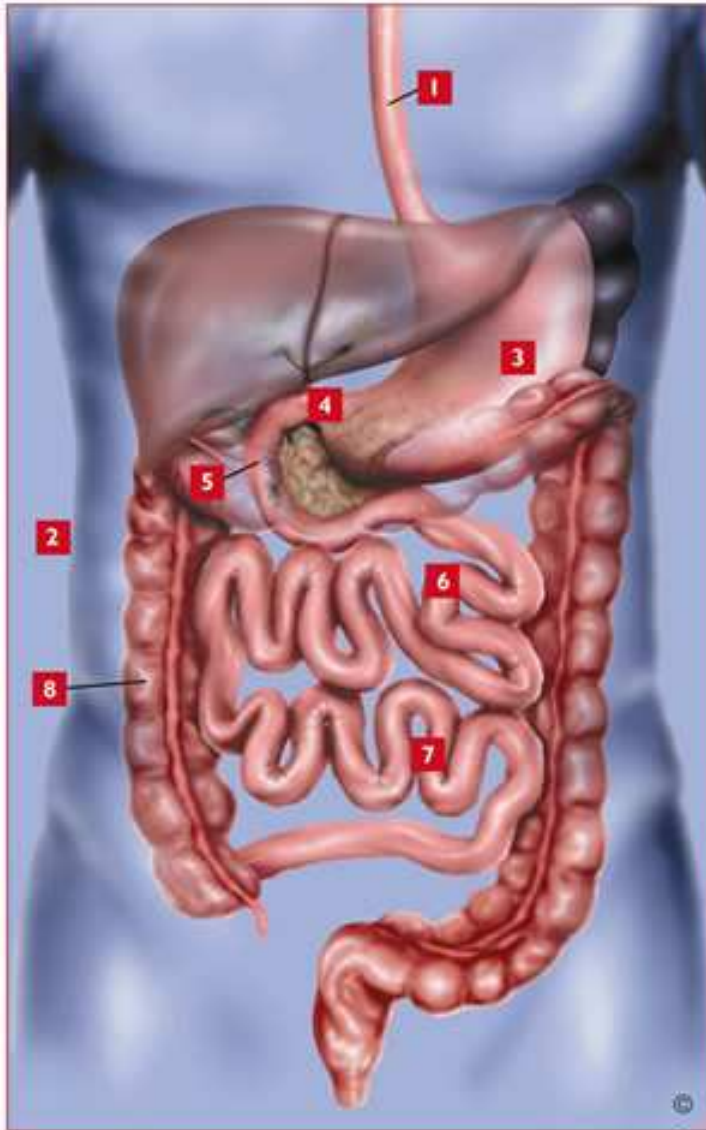
# The Stomach



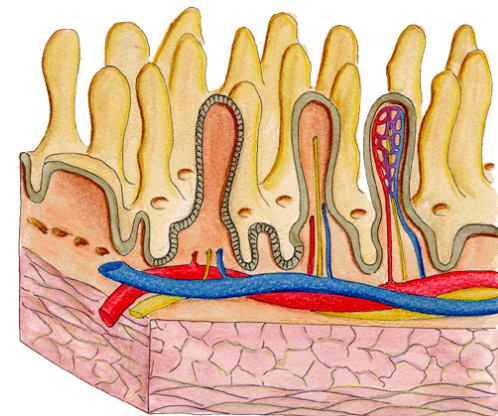
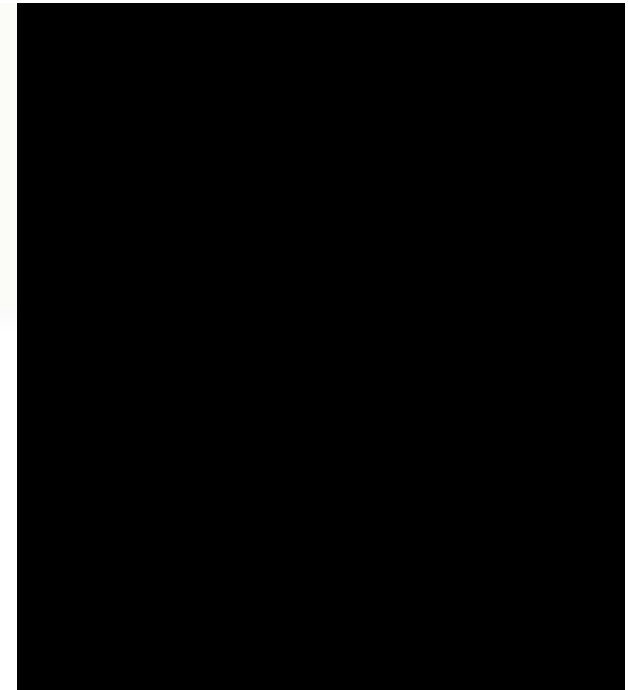
- Mechanical & Chemical digestion
- Stomach secretes **HCl** – very acidic
- Mucus secretions protect lining from self-digestion
- Stomach lining w/ folds to increase surface area
- Bolus is mixed w/ acids for several hours – now called **chyme**.
- Carbohydrate and protein digestion takes place.
- Enzyme **Pepsin** used in protein digestion
- Leaves thru **Pyloric Sphincter** to the duodenum.



# Small Intestine

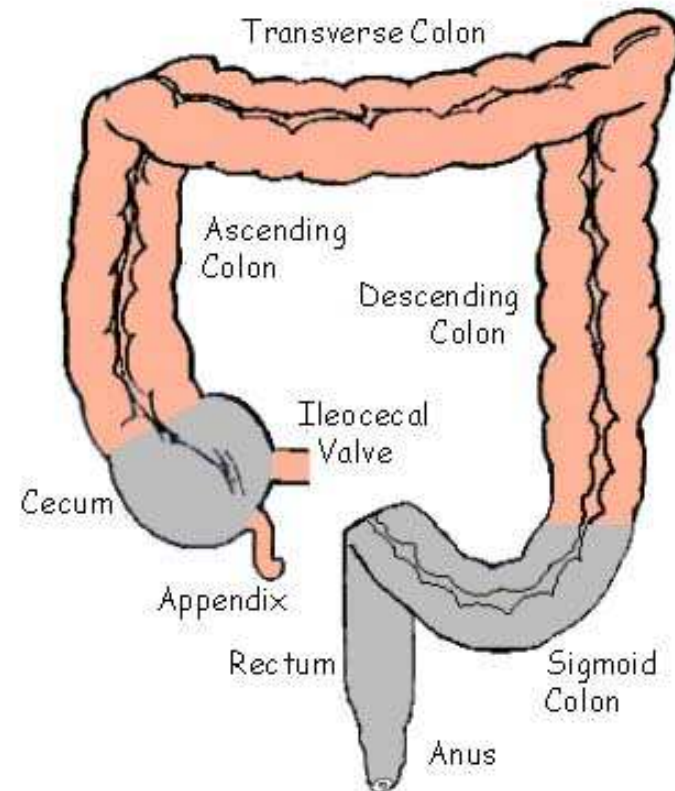


- 1** THE ESOPHAGUS
- 2** THE ABDOMEN
- 3** THE STOMACH
- 4** THE PYLORUS
- 5** THE DUODENUM
- 6** THE JEJUNUM
- 7** THE ILEUM
- 8** THE LARGE INTESTINE



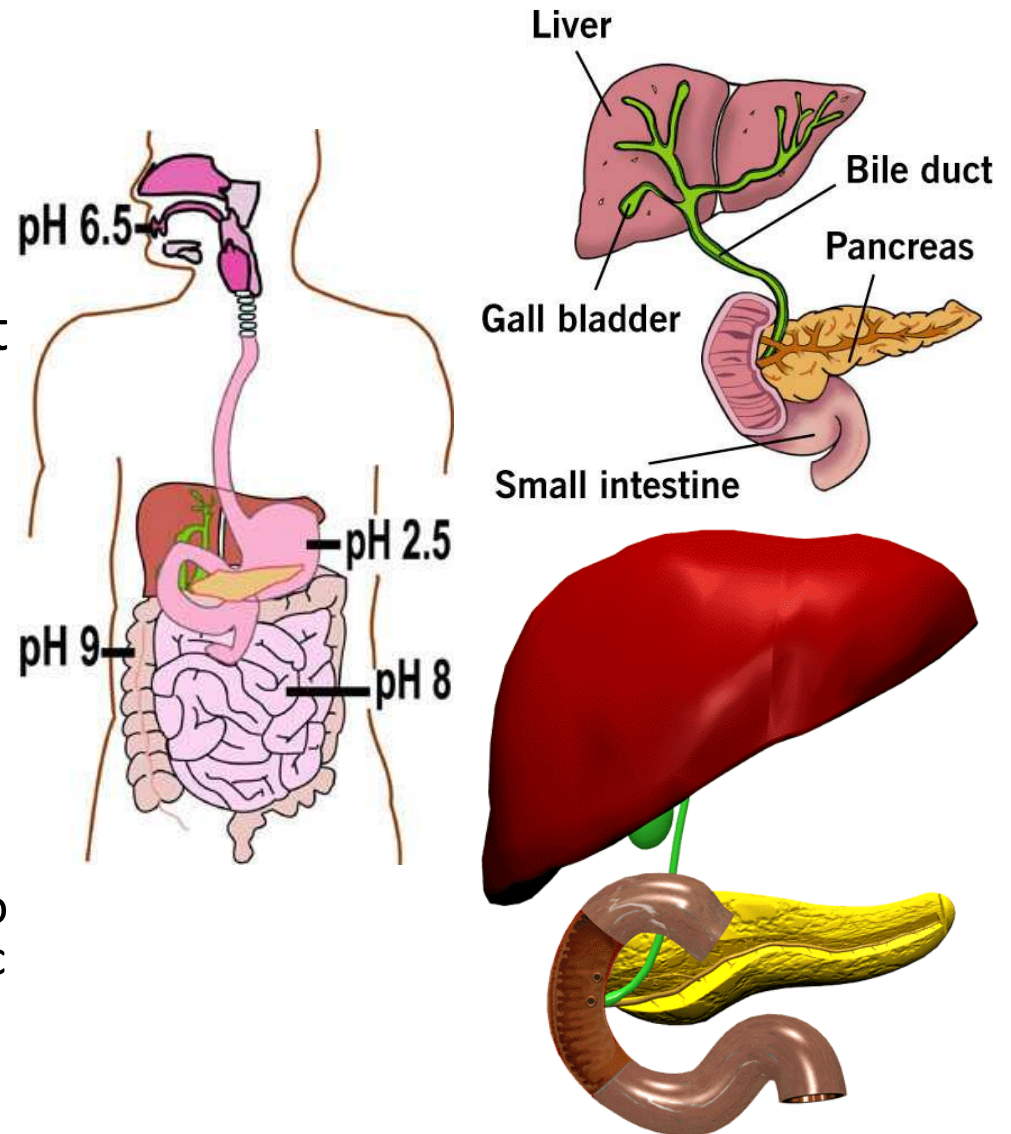
# Large Intestine (aka Colon)

- 5-6 feet in length, 3"-4" in diameter
- Main Functions
  - Reabsorption of water
  - Reabsorption of vitamins
  - Waste elimination
  - Very little digestion (most is done in the stomach & small intestine)
- Divided into **Cecum, Ascending, Transverse, Descending, and Sigmoid Colon**
- Undigested food & Wastes stored in the **rectum** before being eliminated thru the **anus**.



# Accessory Digestive Organs

- **Salivary Glands** – secretes saliva and enzyme **amylase**. Mixes w/ food forms **Bolus**.
- **Liver**- filters blood & secretes **Bile** used to emulsify & digest Fats
- **Gall Bladder** – stores bile until needed
- **Pancreas**- 3 functions
  - Release & control of insulin in the **Islets of Langerhans**. Controls sugar blood levels
  - Release **digestive enzymes**
  - Produce **sodium bicarbonate** to convert stomach acid to a basic solution in the **duodenum**





# Chapter 17

## Muscle

## & Digestive Systems

That's all folks!!