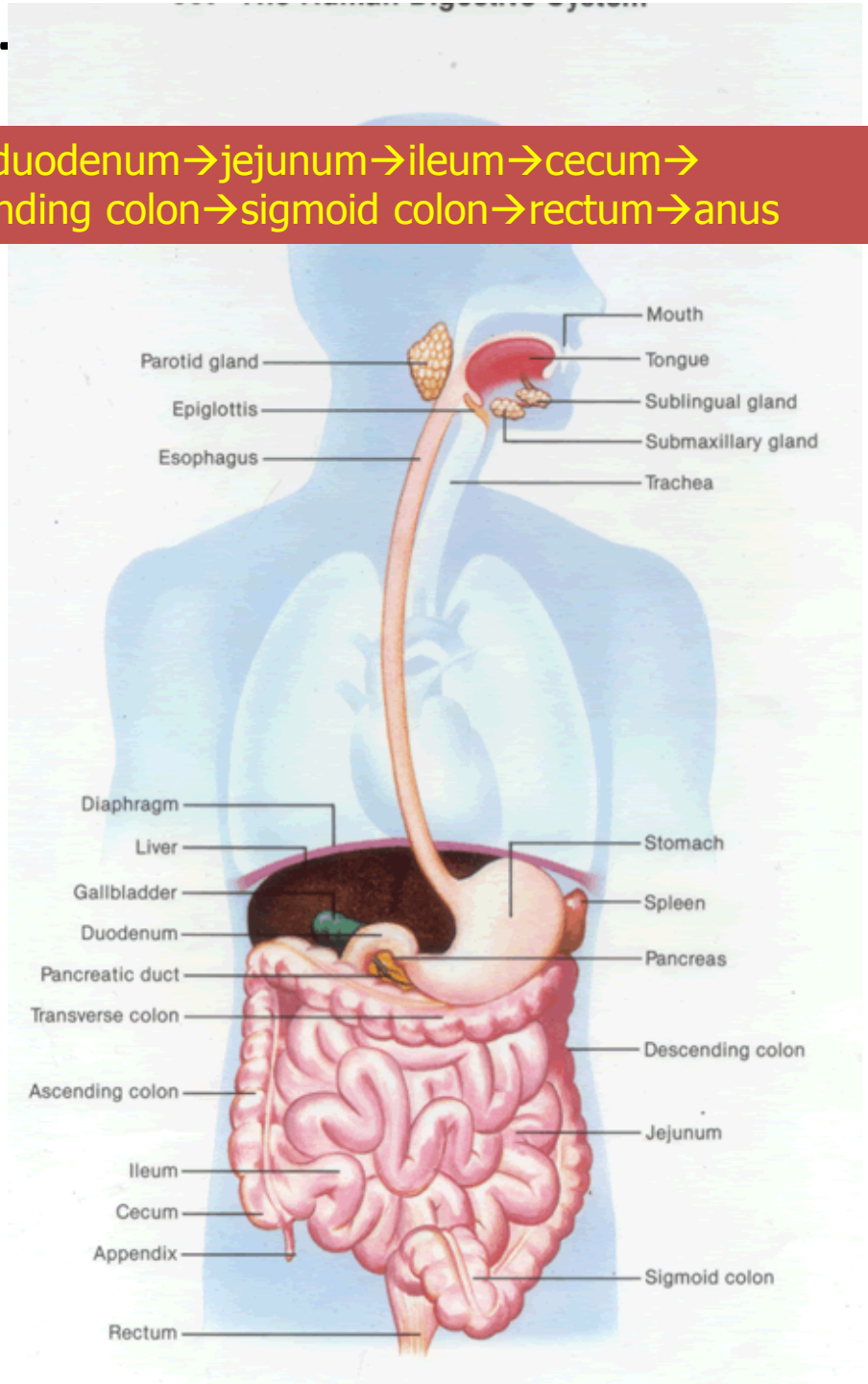
Chapter 18

The Digestive System

The Diges

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

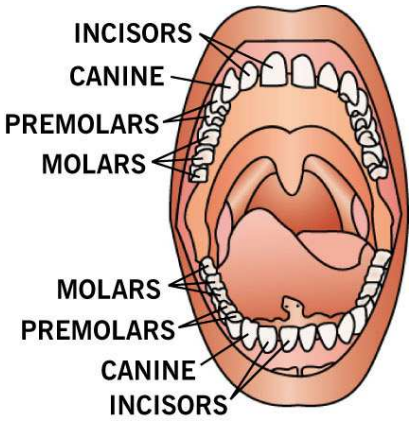
- General info:
  - Basic “tube-within-a-tube”
  - Digestion by mechanical & chemical means
  - Mechanical Digestion from cutting, grinding, chewing in mouth. From churning by peristalsis in stomach
  - Chemical Digestion beginning in mouth through stomach & small intestines.
    - Acidic pH in mouth & 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

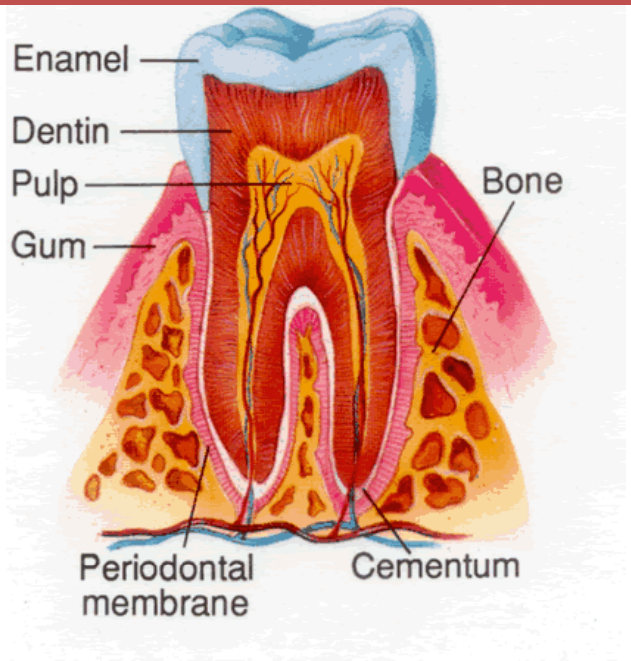


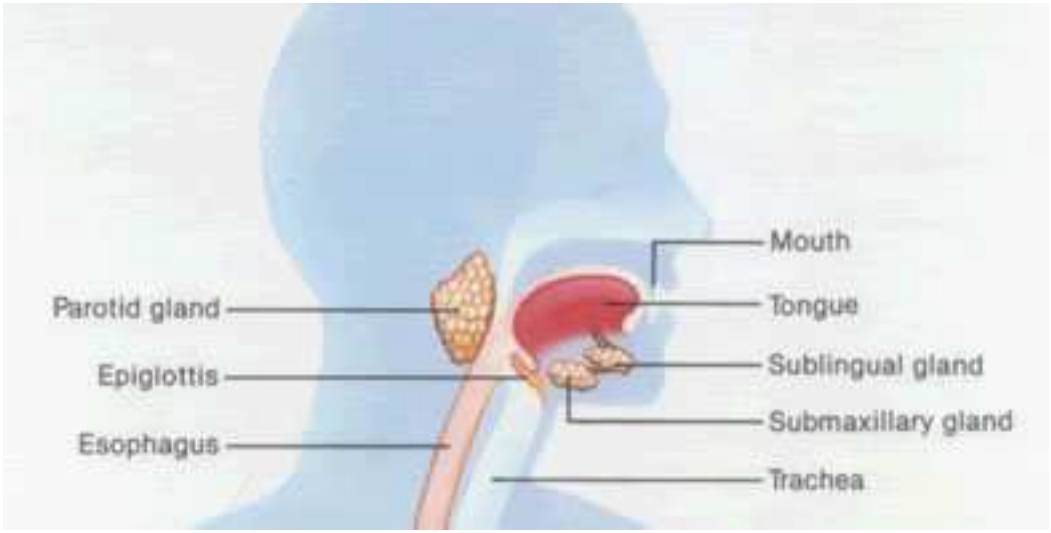
Upper Digestive Tract

- 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.

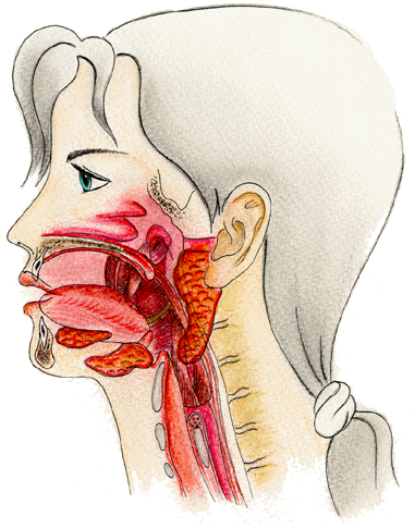
Swallowed food passes thru pharynx, past epiglottis & into esophagus





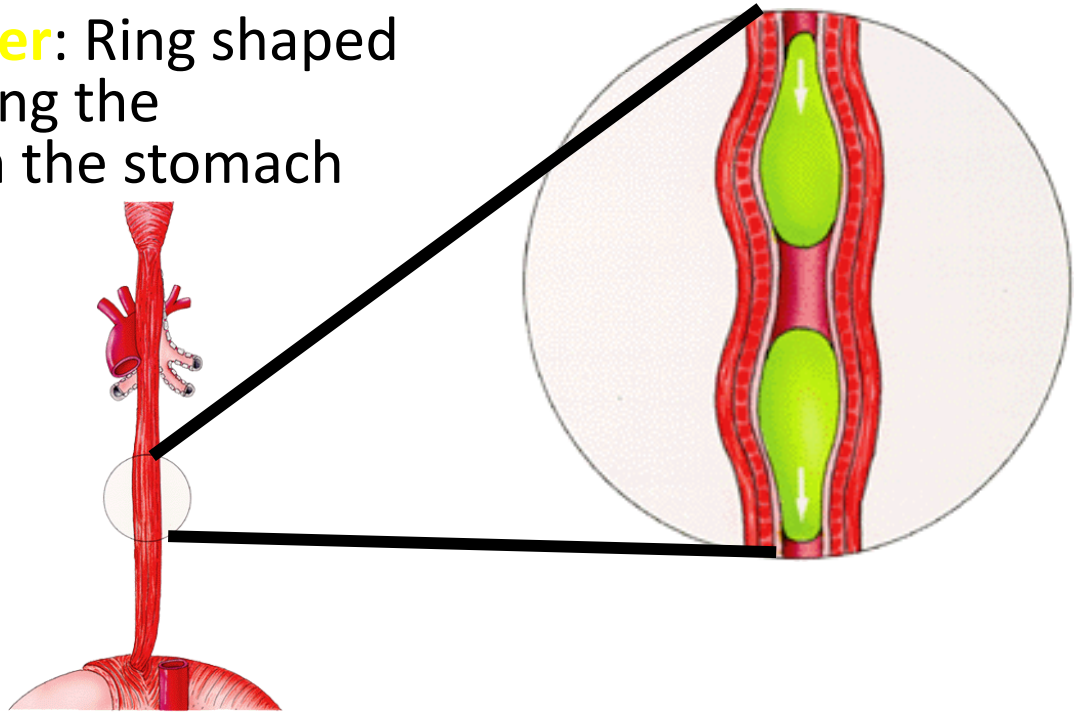


The Esophagus



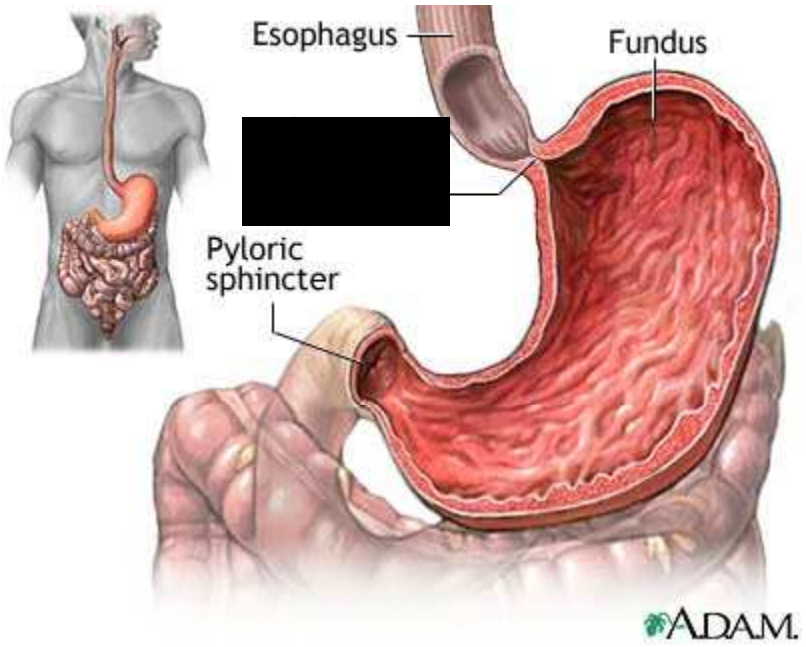
- Involuntary contractions and relaxation of smooth muscle surrounding esophagus moves food down esophagus: Peristalsis

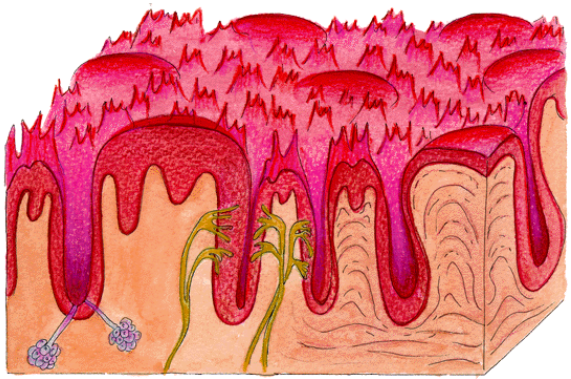
- **Cardiac Sphincter**: Ring shaped muscle separating the esophagus from the stomach



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

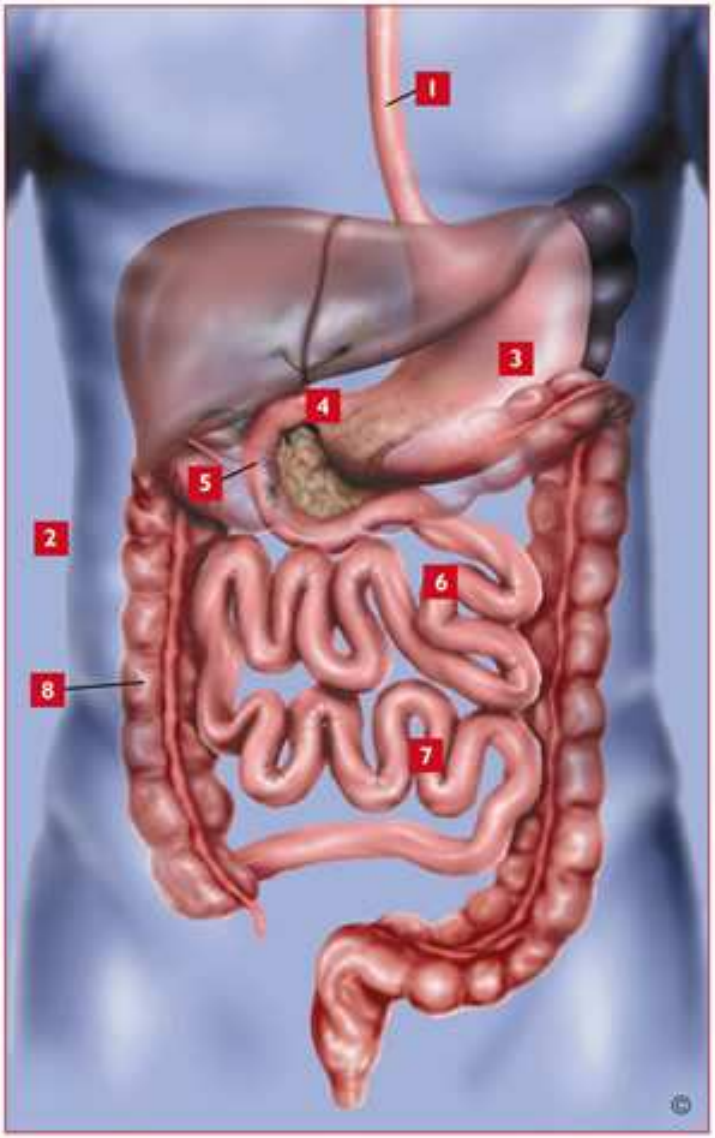
The Stomach



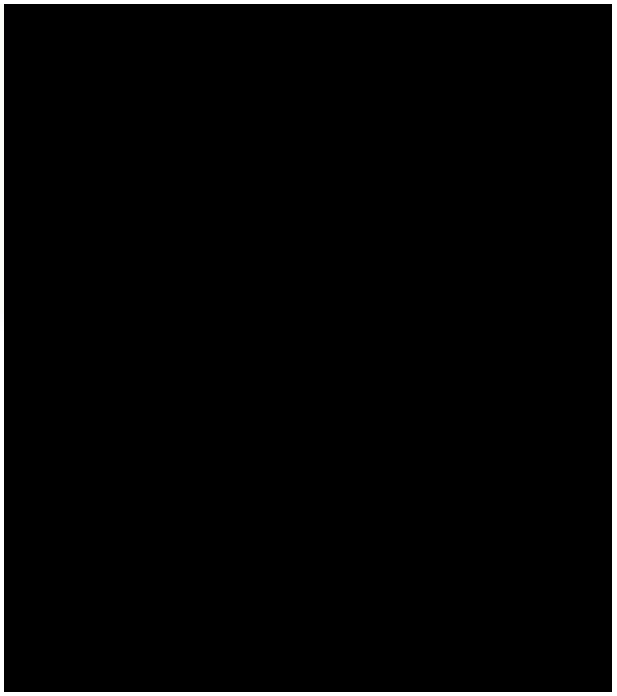


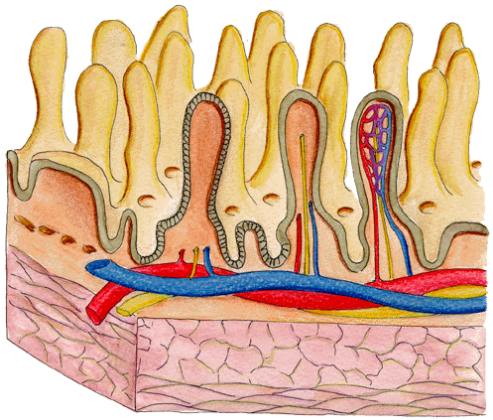
- Mechnical & Chemical digestion
- Stomach secretes HCl – very acidic
- Mucus secretions protect lining from self-digestion
- Stomach lining w/ folds to increase surface area
- Bolus is mixed w/ acids for several hours – now called chyme.
- Carbohydrate and protein digestion takes place.
- Enzyme Pepsin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

Small Intestine



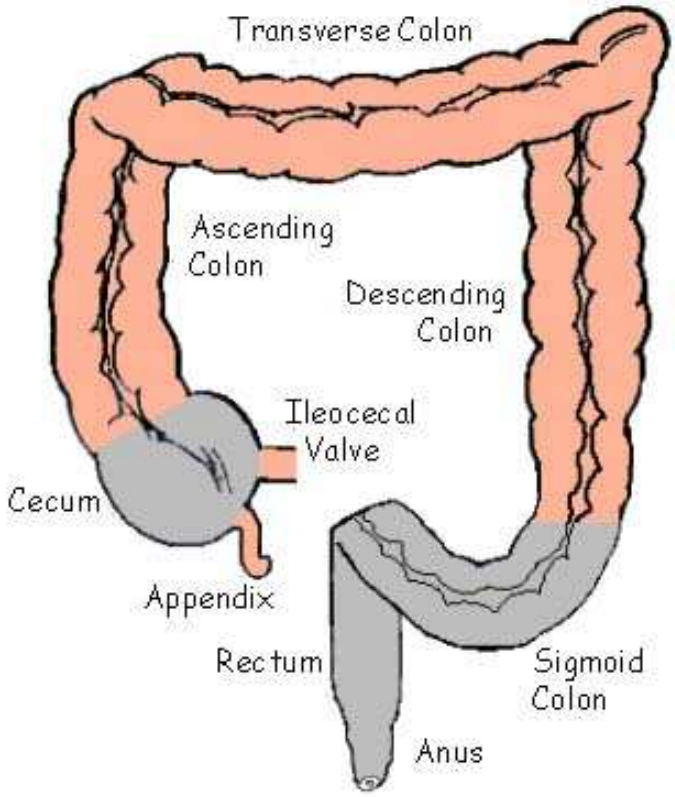
1 THE ESOPHAGUS
2 THE ABDOMEN
3 THE STOMACH
4 THE PYLORUS
5 THE DUODENUM
6 THE JEJUNUM
7 THE ILEUM
8 THE LARGE INTESTINE





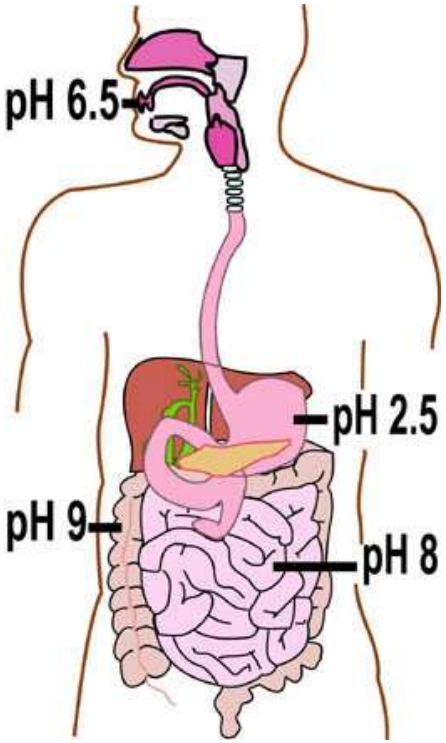
Large Intestine (aka Colon)

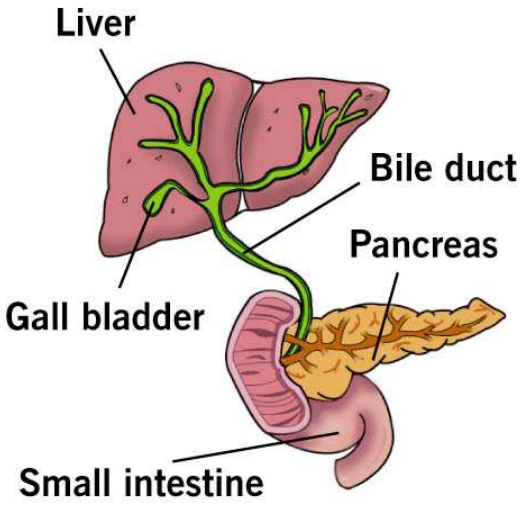
- 5-6 feet in length, 3”-4” in diameter
- Main Functions
  - Reabsorption of water
  - Reabsorption of vitamins
  - Waste elinination
  - Very little digestion (most is done in the stomach & small intestine)
- Divided into Cecum, Ascending, Transverse, Descending, and Sigmoid Colon
- Undigested food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

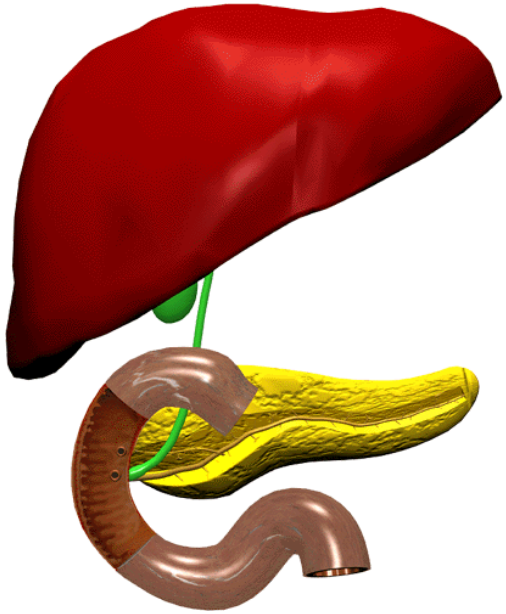


Accessory Digestive Organs

- 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!!