



The Human Digestive System

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Learning Outcome

After completing of this presentation you will be able to explain

- Introduction of Digestive system
- Anatomy
- Physiology
- Functions

Digestion

- Phases Include

1. Ingestion
2. Movement
3. Mechanical and Chemical Digestion
4. Absorption
5. Elimination

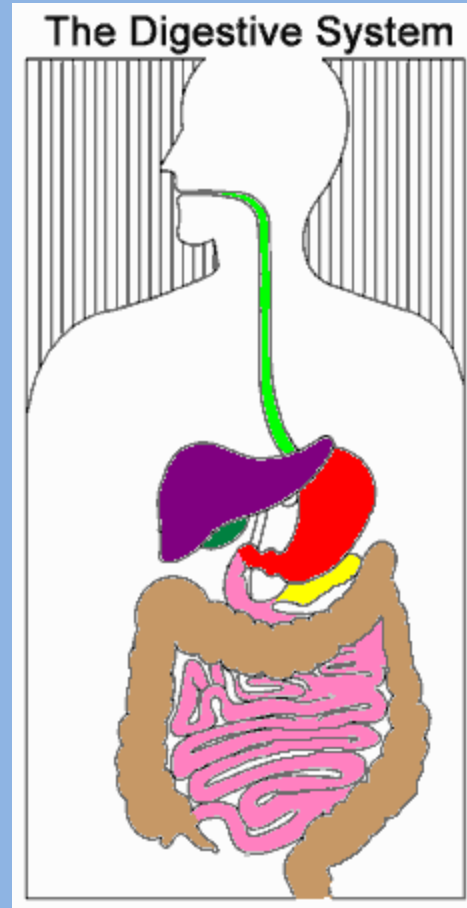
Digestion- is the process of breaking down food into a form your body can use.

Digestion

- Types
 - Mechanical (physical)
 - Chew
 - Tear
 - Grind
 - Mash
 - Mix
 - Chemical
 - Enzymatic reactions to improve digestion of
 - Carbohydrates
 - Proteins
 - Lipids

Digestive System Organization

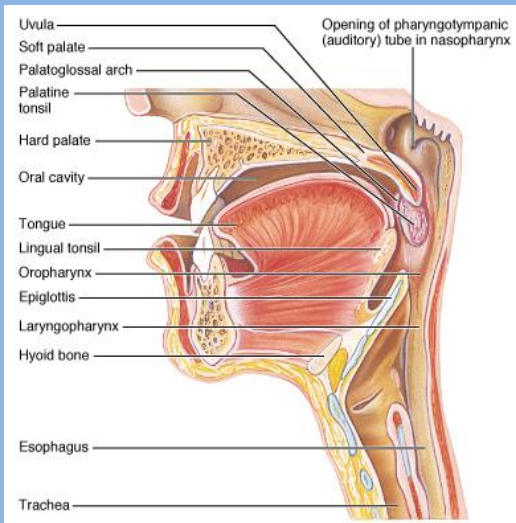
- Gastrointestinal (GI) tract
 - Tube within a tube
 - Direct **link/path** between organs
 - Structures
 - Mouth
 - Pharynx
 - Esophagus
 - Stomach
 - Small intestine
 - Large Intestine
 - Rectum



Mouth

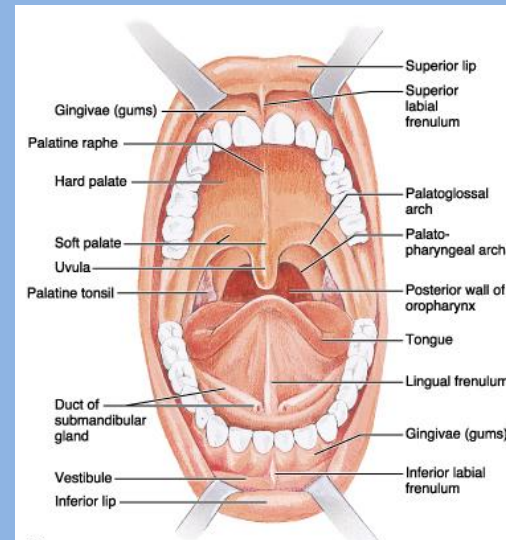
- Teeth mechanically break down food into small pieces. Tongue mixes food with saliva (contains amylase, which helps break down starch).

- Epiglottis is a flap-like structure at the back of the throat that closes over the trachea preventing food from entering it.



(a)

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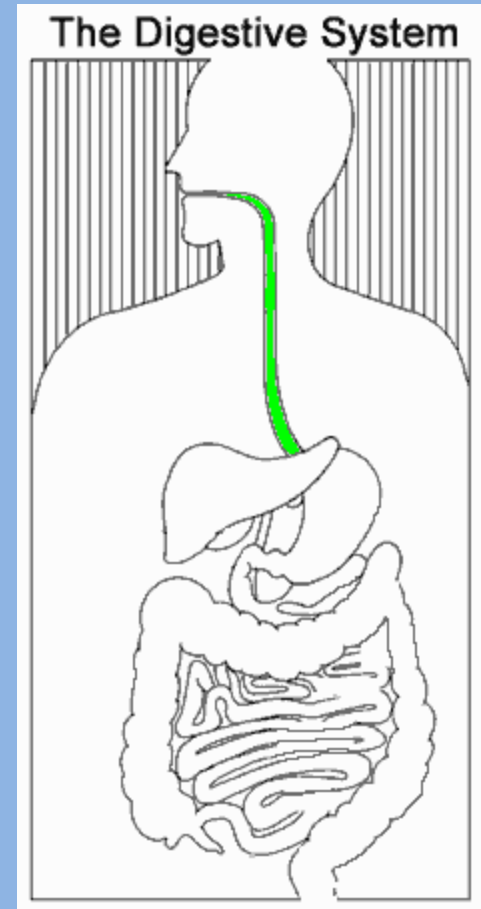


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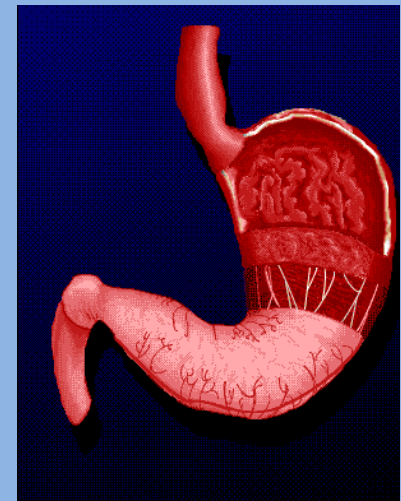
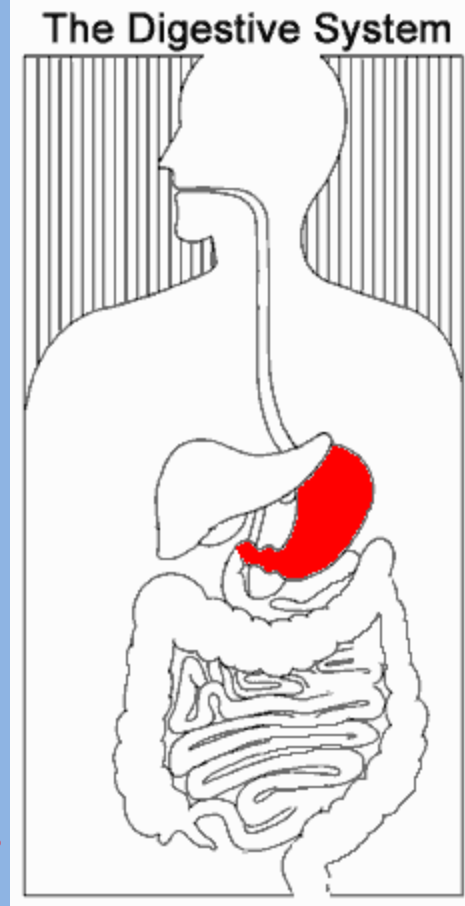
Esophagus

- Approximately 10” long
- Functions include:
 1. Secrete **mucus**
 2. Moves food from the throat to the stomach using muscle movement called **peristalsis**
- If acid from the stomach gets in here that’s **heartburn**.



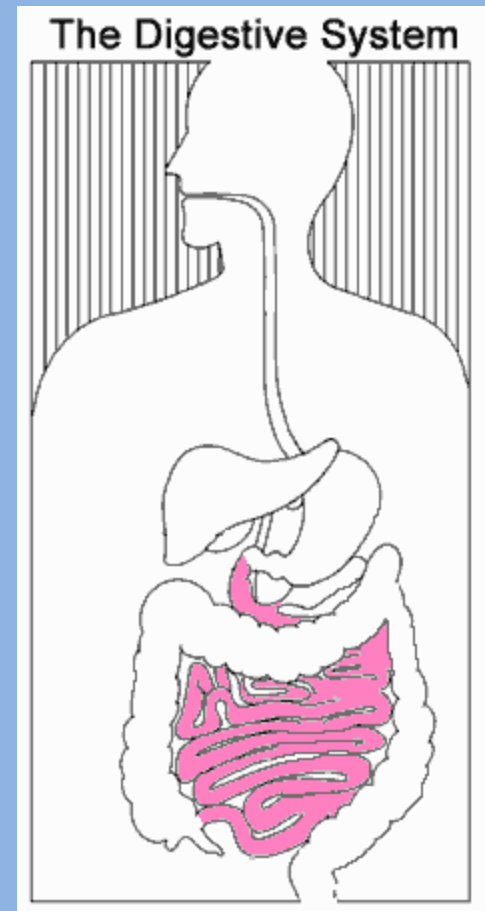
Stomach

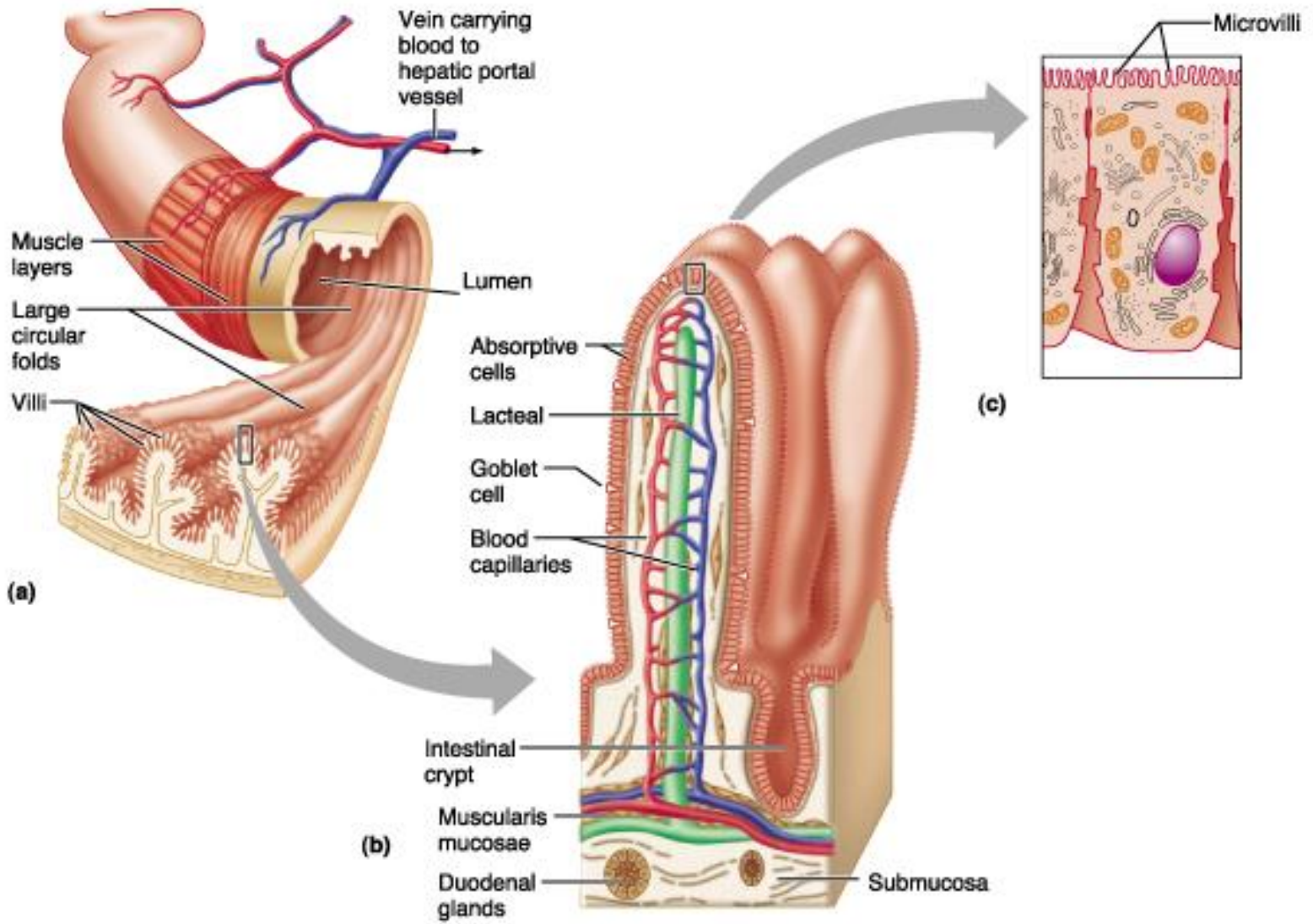
- J-shaped muscular bag that stores the food you eat, breaks it down into tiny pieces.
- Mixes food with **digestive juices** that contain enzymes to break down proteins and lipids.
- **Acid** in the stomach kills bacteria.
- Food found in the stomach is called **chyme**.



Small Intestine

- Small intestines are roughly **7** meters long
- Lining of intestine walls has finger-like projections called **villi**, to increase surface area.
- The villi are covered in **microvilli** which further increases surface area for absorption.



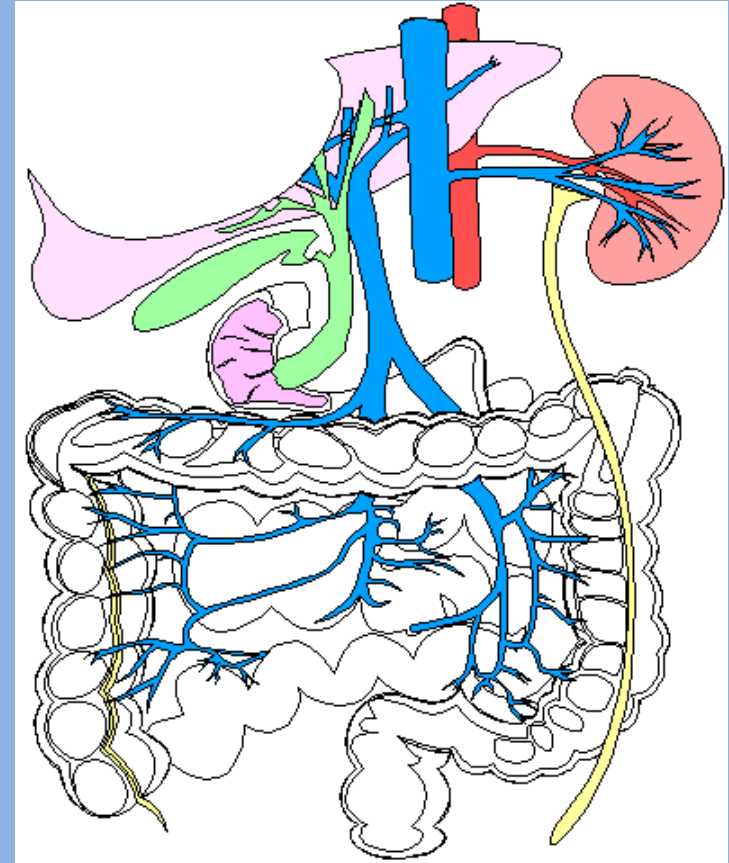


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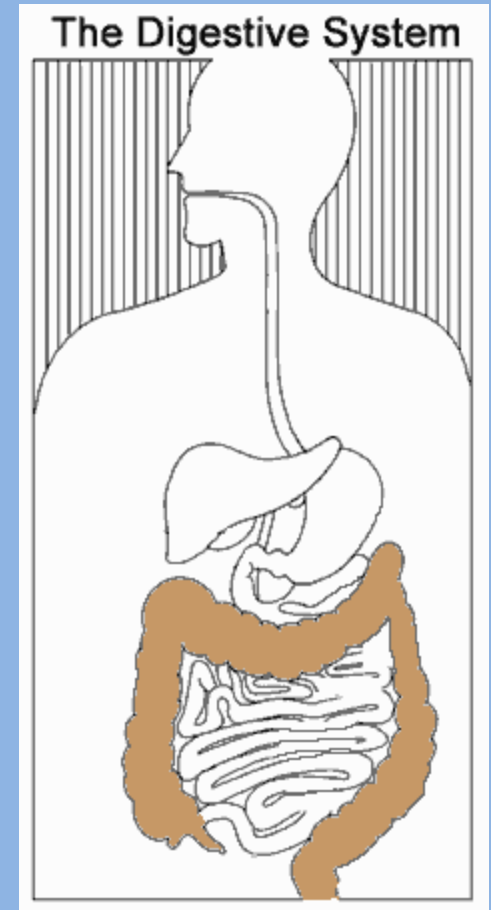
Small Intestine

- Nutrients from the food pass into the **bloodstream** through the small intestine walls.
- Absorbs:
 - 80% ingested water
 - Vitamins
 - Minerals
 - Carbohydrates
 - Proteins
 - Lipids
- Secretes **digestive enzymes**



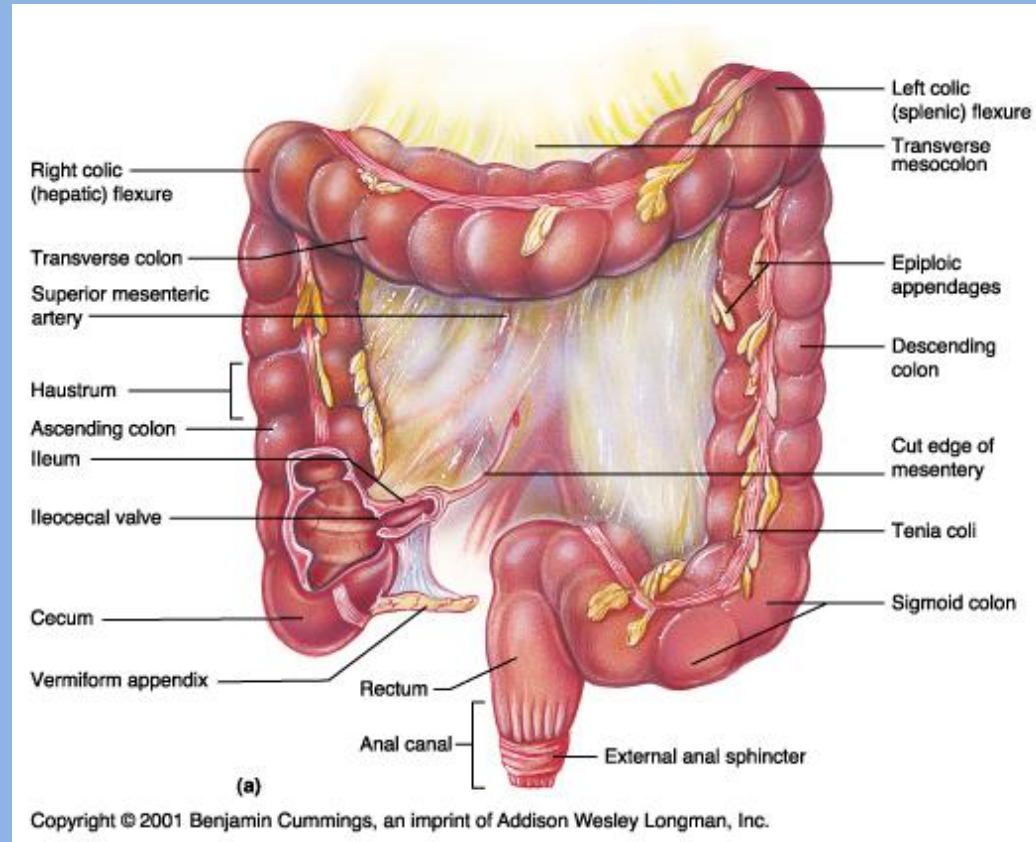
Large Intestine

- About **5 feet** long
- Accepts what small intestines don't absorb
- **Rectum** (short term storage which holds feces before it is expelled).



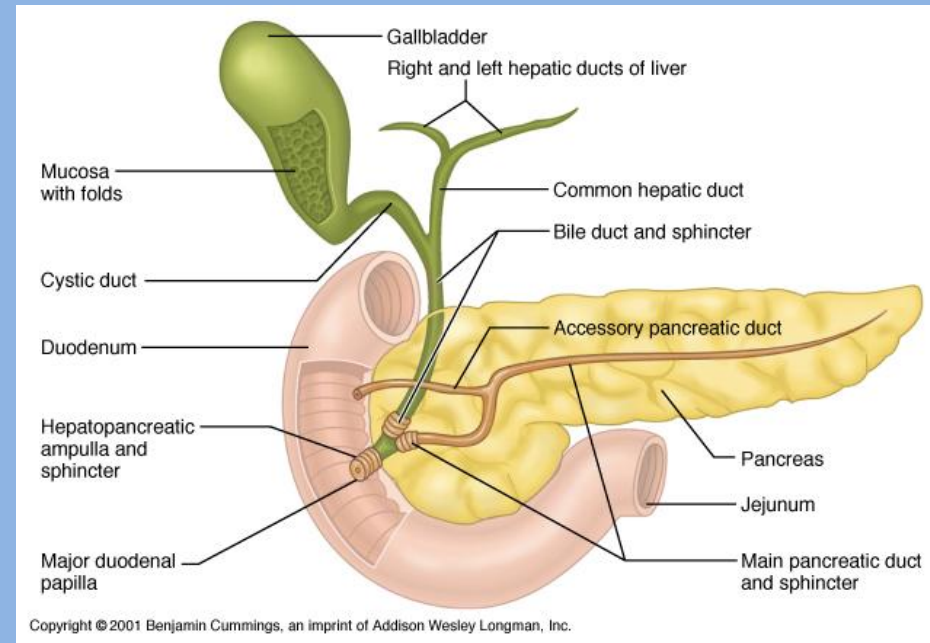
Large Intestine

- Functions
 - Bacterial digestion
 - Ferment carbohydrates
 - Protein breakdown
 - Absorbs more **water**
 - Concentrate **wastes**



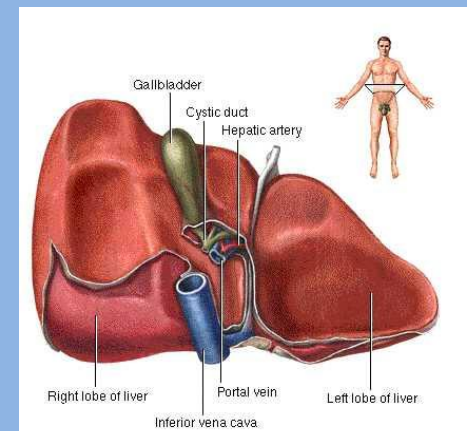
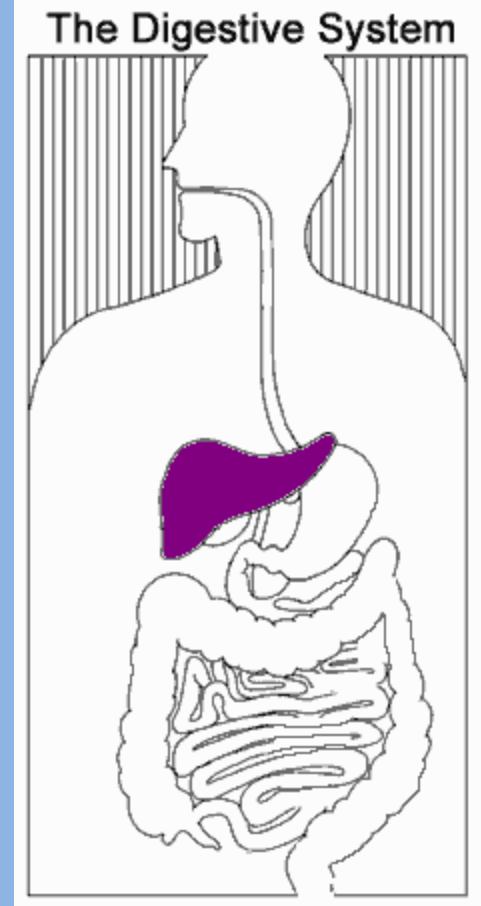
Accessory Organs

- Not part of the path of food, but play a critical role.
- Include: Liver, gall bladder, and pancreas



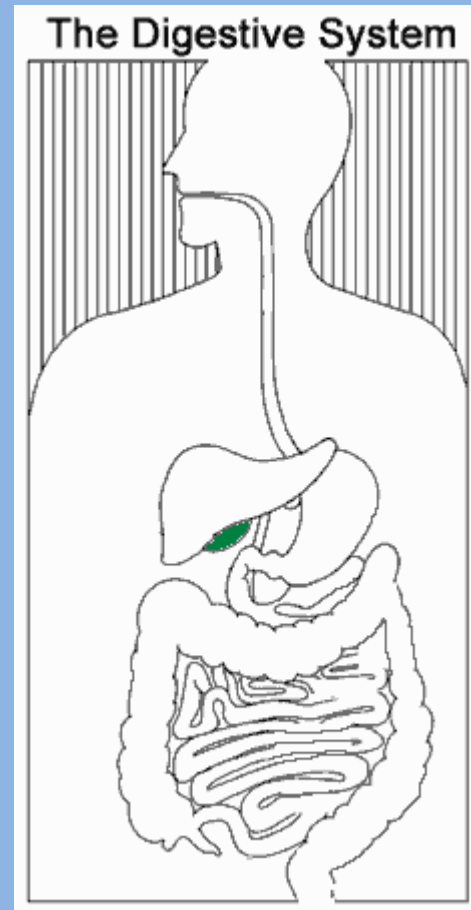
Liver

- Directly affects digestion by producing **bile**
 - Bile helps digest **fat**
- filters out **toxins** and waste including **drugs** and **alcohol**



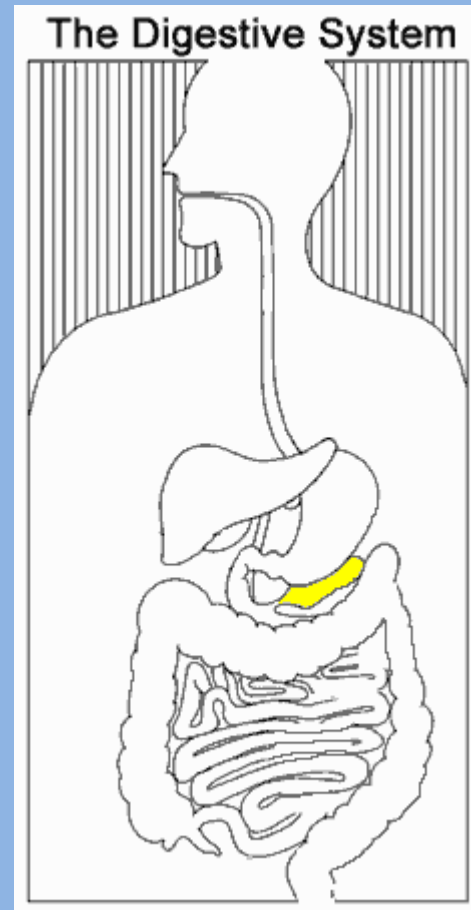
Gall Bladder

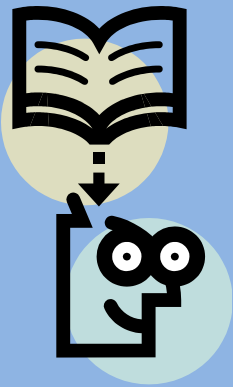
- Stores bile from the liver, releases it into the small intestine.
- Fatty diets can cause gallstones



Pancreas

- Produces digestive enzymes to digest **fats**, **carbohydrates** and **proteins**
- Regulates blood sugar by producing **insulin**





Fun Facts

- HOW LONG ARE YOUR INTESTINES? At least 25 feet in an adult. Be glad you're not a full-grown horse -- their coiled-up intestines are 89 feet long!
- Food drying up and hanging out in the large intestine can last 18 hours to 2 days!
- In your lifetime, your digestive system may handle about 50 tons!!