

Digestive System

Digestion

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

Digestion

- Types

- Mechanical (physical)

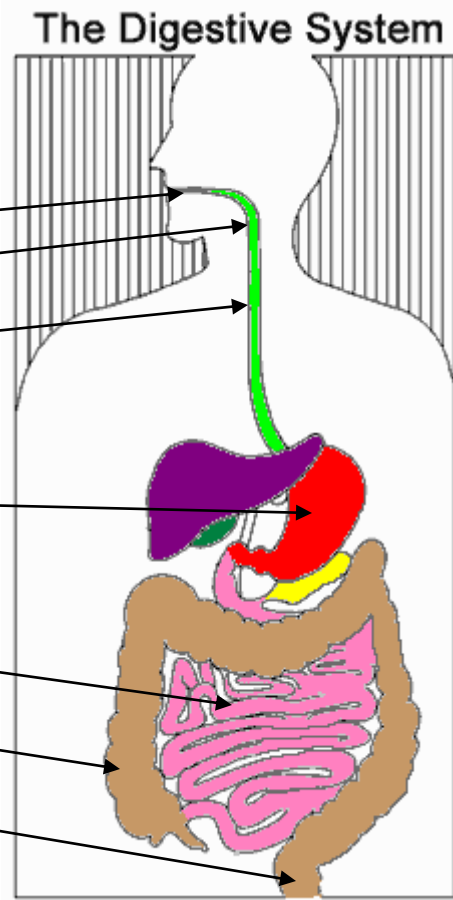
- Chew
 - Tear
 - Grind
 - Mash
 - Mix

- Chemical

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

Digestive System Organization

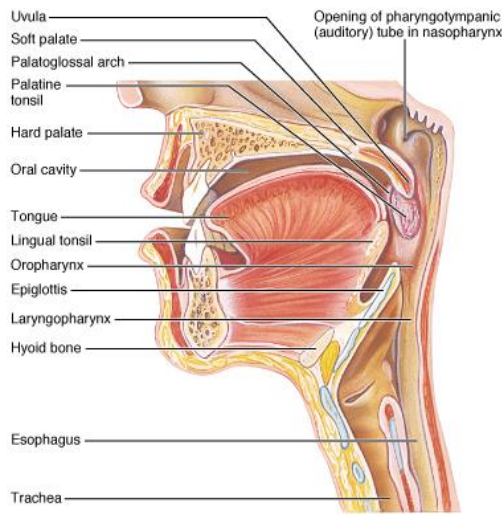
- **Gastrointestinal (GI) tract**
 - Tube within a tube
 - Direct **link/path** between organs
 - **Structures**
 - Mouth
 - Pharynx
 - Esophagus
 - Stomach
 - Small intestine
 - Large Intestine
 - Rectum



Mouth

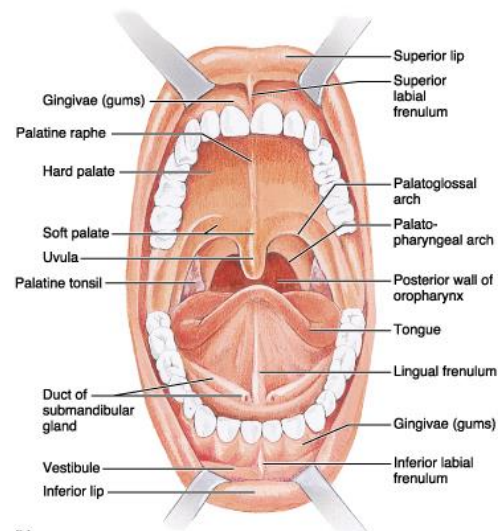
- Teeth mechanically break down food into small pieces. Tongue mixes food with saliva (contains amylase, which helps break down starch).

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



(a)

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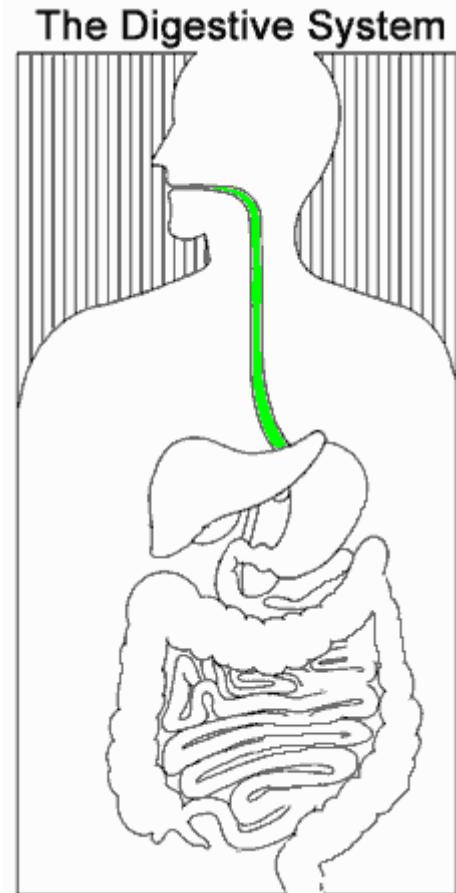
(b)

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Esophagus

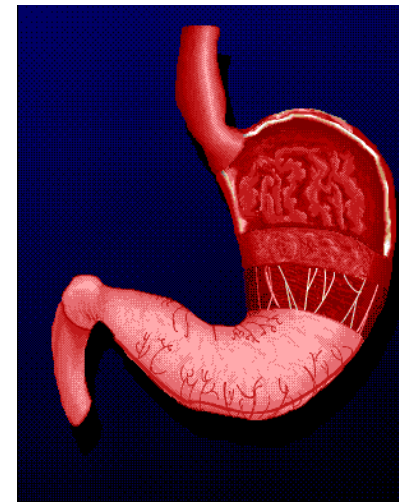
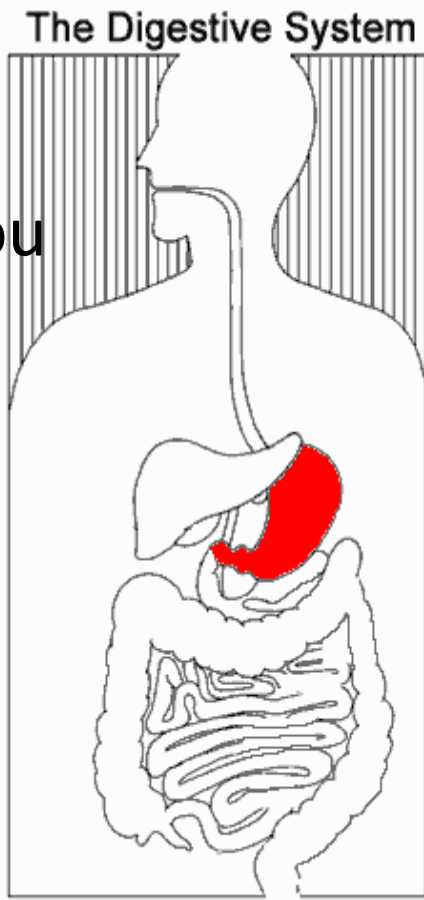
- Approximately 20 cm long.
- Functions include:
 1. Secrete **mucus**
 2. Moves food from the throat to the stomach using muscle movement called **peristalsis**
- If acid from the stomach gets in here that's **heartburn**.

[Mouth, Pharynx and Esophagus Video](#)



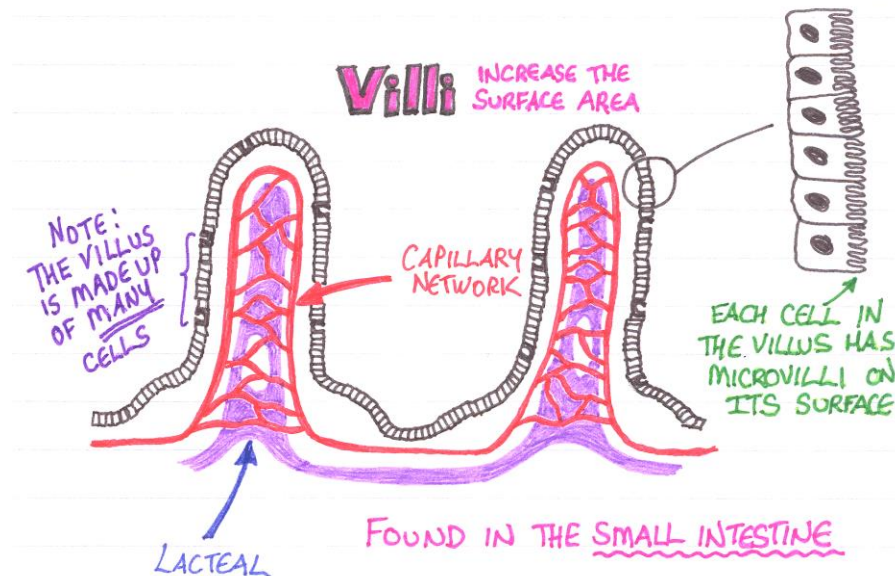
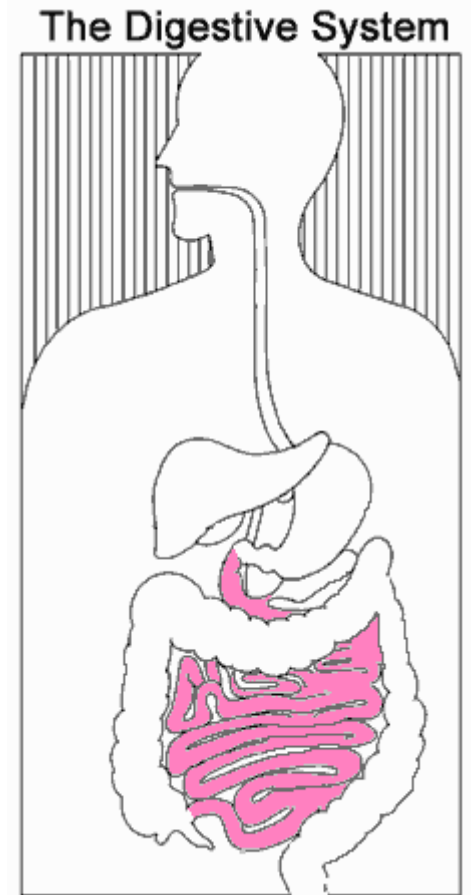
Stomach

- 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 (HCl)** in the stomach Kills Bacteria.
- Food found in the stomach is called Chyme.



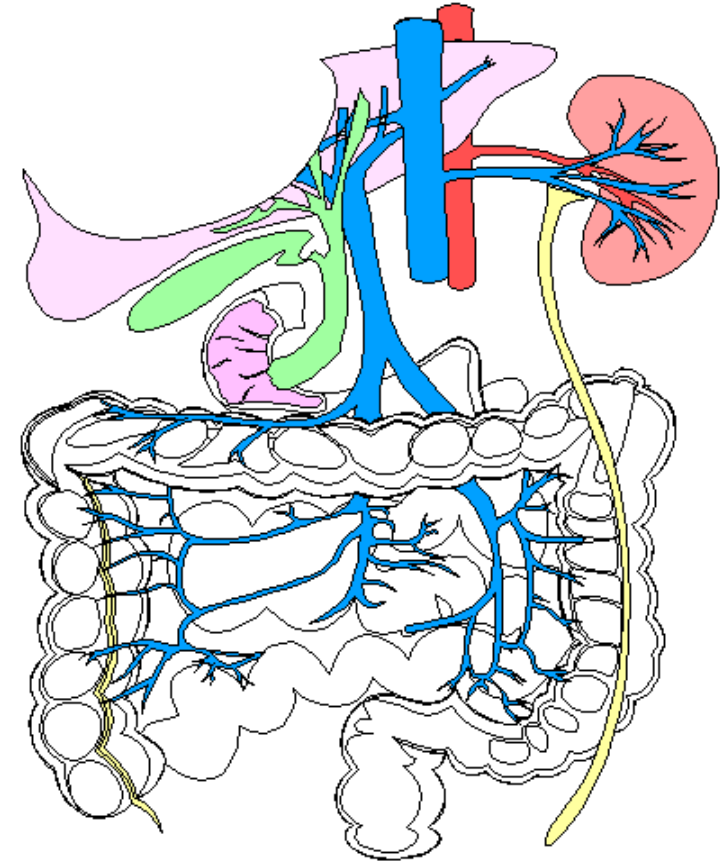
Small Intestine

- 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.



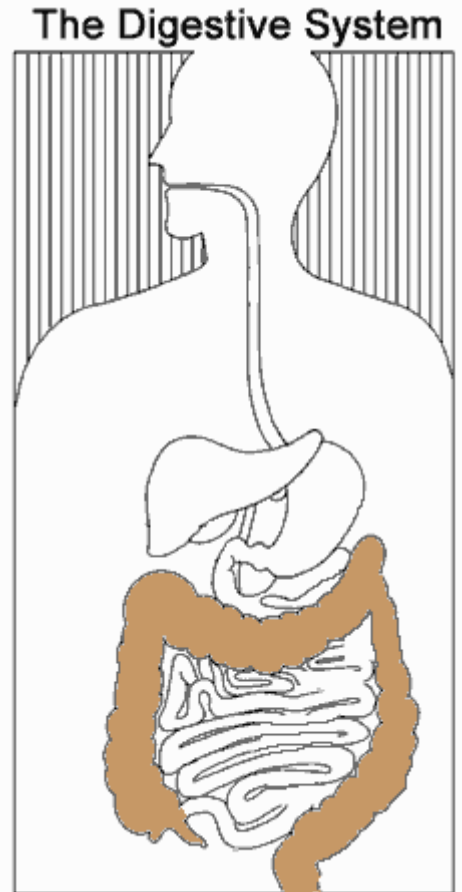
Small Intestine

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



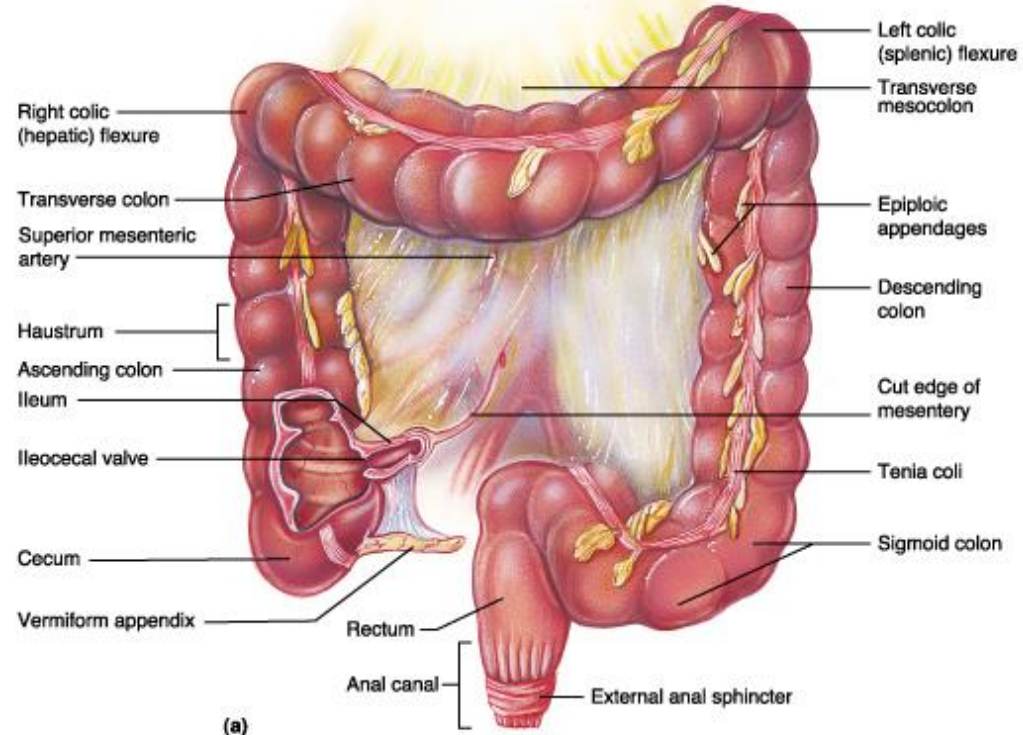
Large Intestine

- Functions

- Bacterial digestion

- Ferment carbohydrates

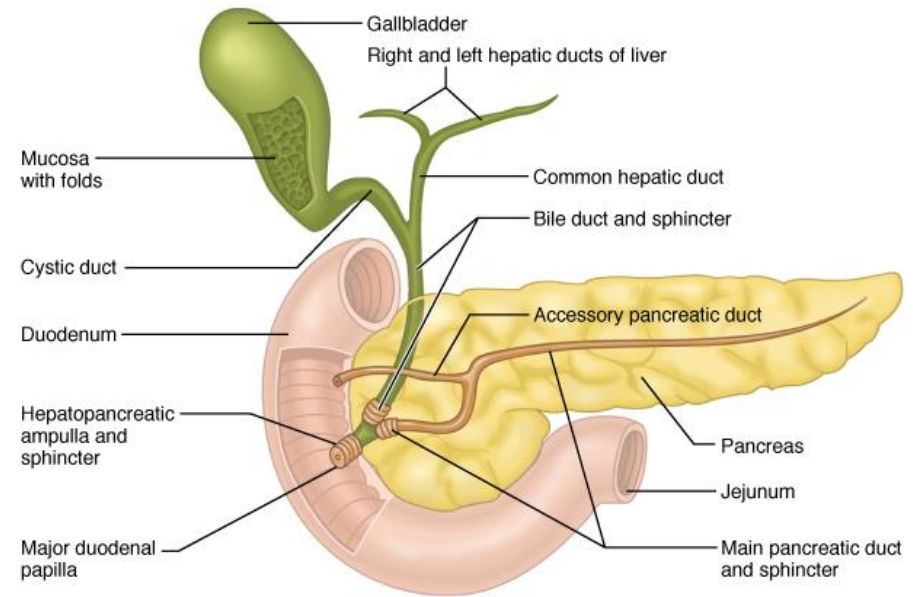
- Absorbs more **water**
- Concentrate **wastes**



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Accessory Organs The Glands

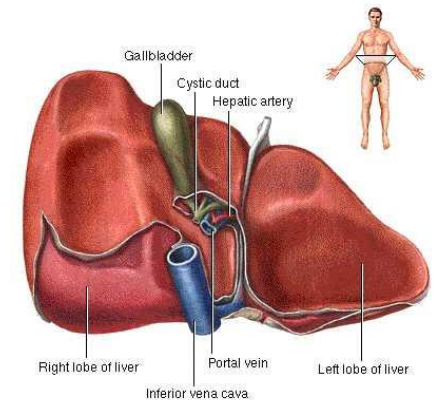
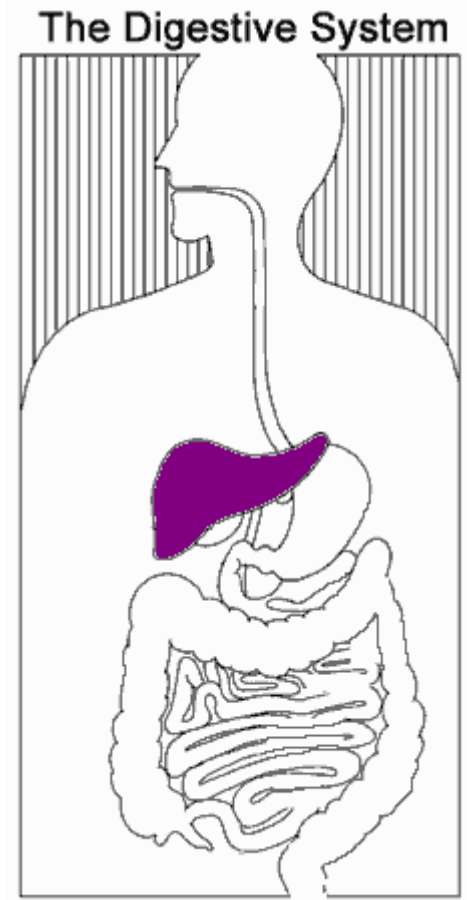
- Not part of the path of food, but play a critical role.
- Include: Liver, gall bladder, and pancreas



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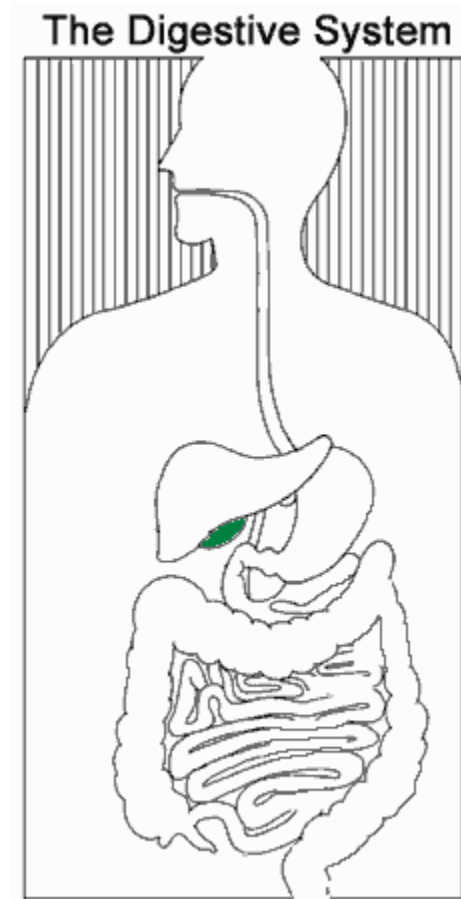
Liver

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



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](#)

