

# The Human Digestive System

# Digestion

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

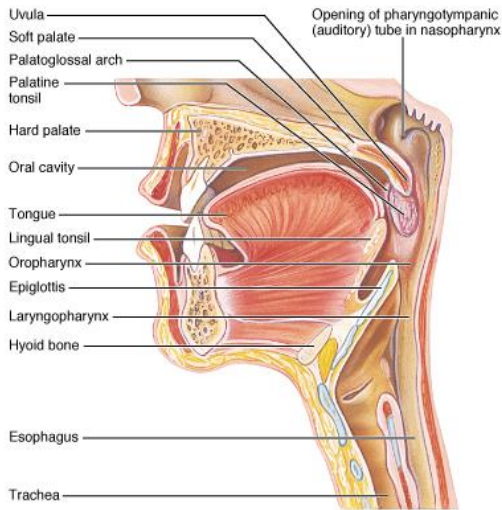
# Digestion

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

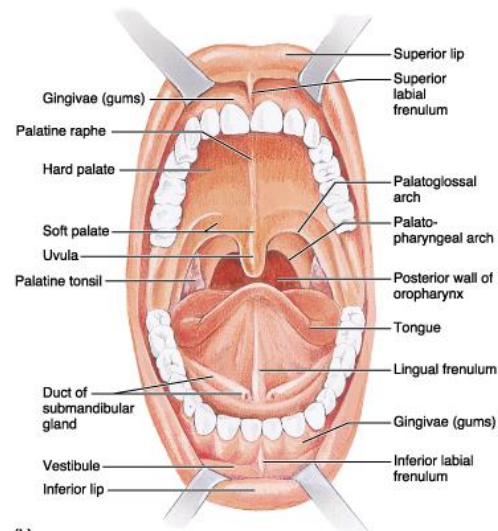
# Mouth

- 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.



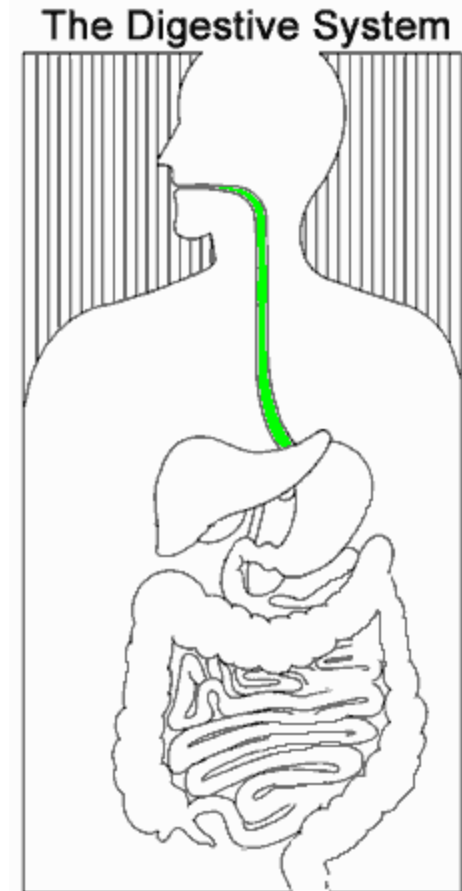
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(b)  
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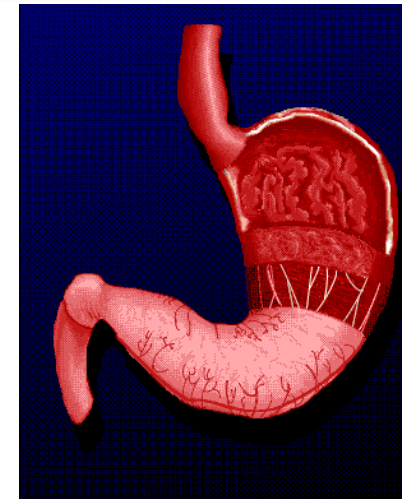
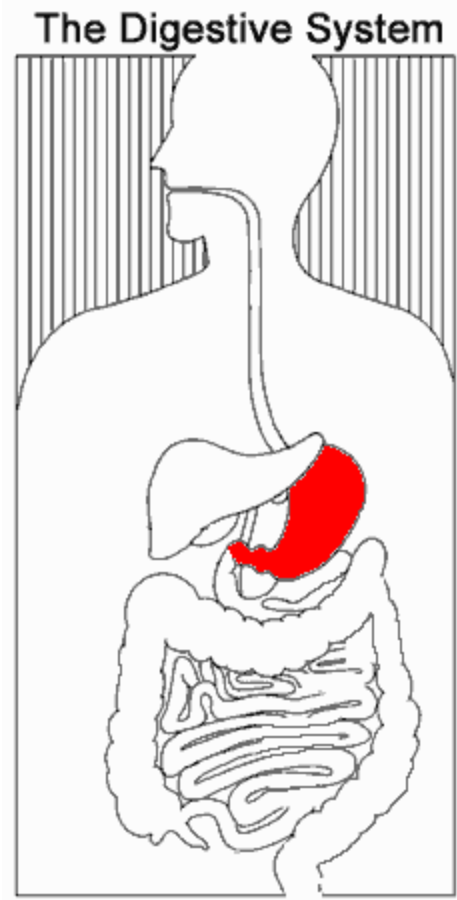
# Esophagus

- 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**.



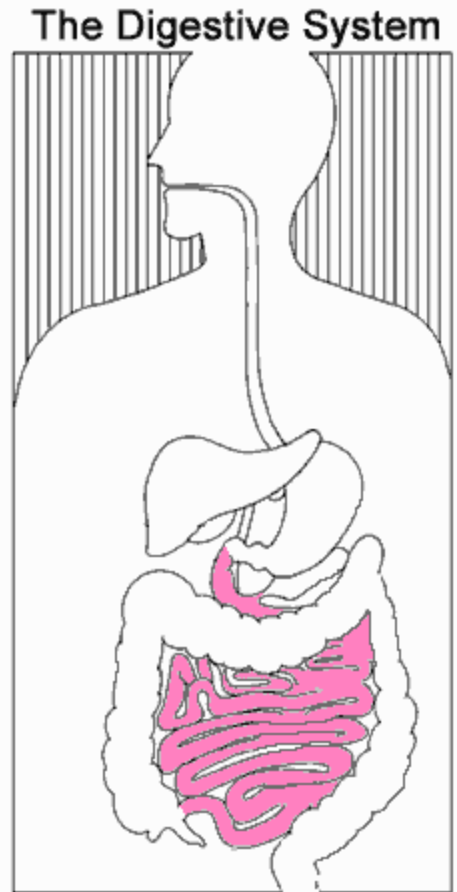
# Stomach

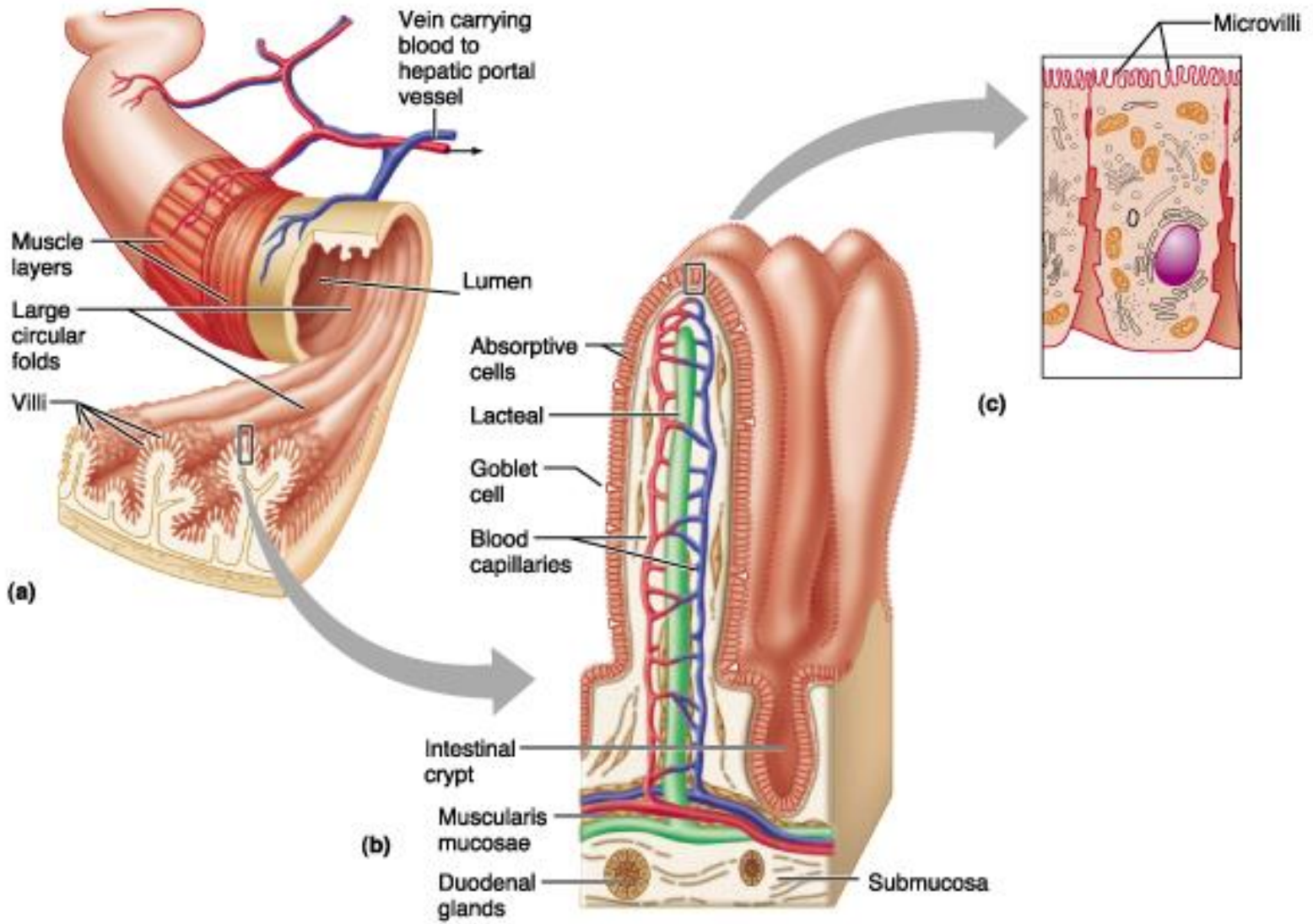
- J-shaped muscular bag that stores the food you eat, breaks it down into tiny pieces.
- Mixes food with **digestive juices** that contain enzymes to break down proteins and lipids.
- **Acid** in the stomach kills bacteria.
- Food found in the stomach is called **chyme**.



# 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.
- Bile aids in the chemical digestion of lipids
- Enzymes continue to digest carbohydrates, lipids and proteins.





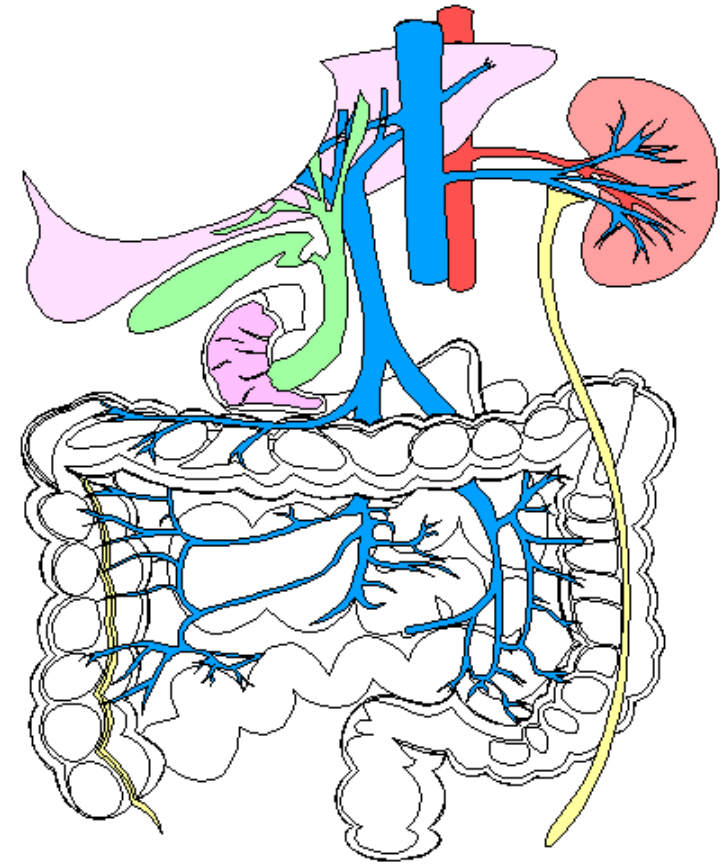
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10/13/2017



# Small Intestine

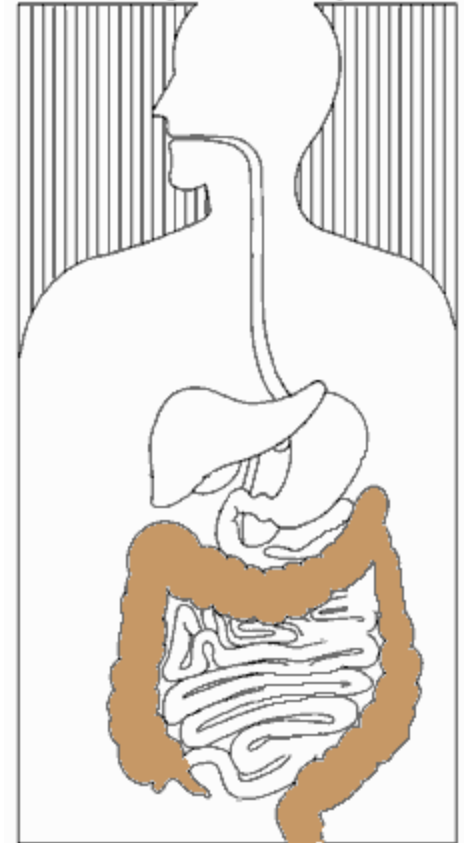
- Nutrients from the food pass into the **bloodstream** through the small intestine walls.
- Absorbs:
  - 80% ingested water
  - Vitamins
  - Minerals
  - Carbohydrates
  - Proteins
  - Lipids
- Secretes **digestive enzymes**



# Large Intestine

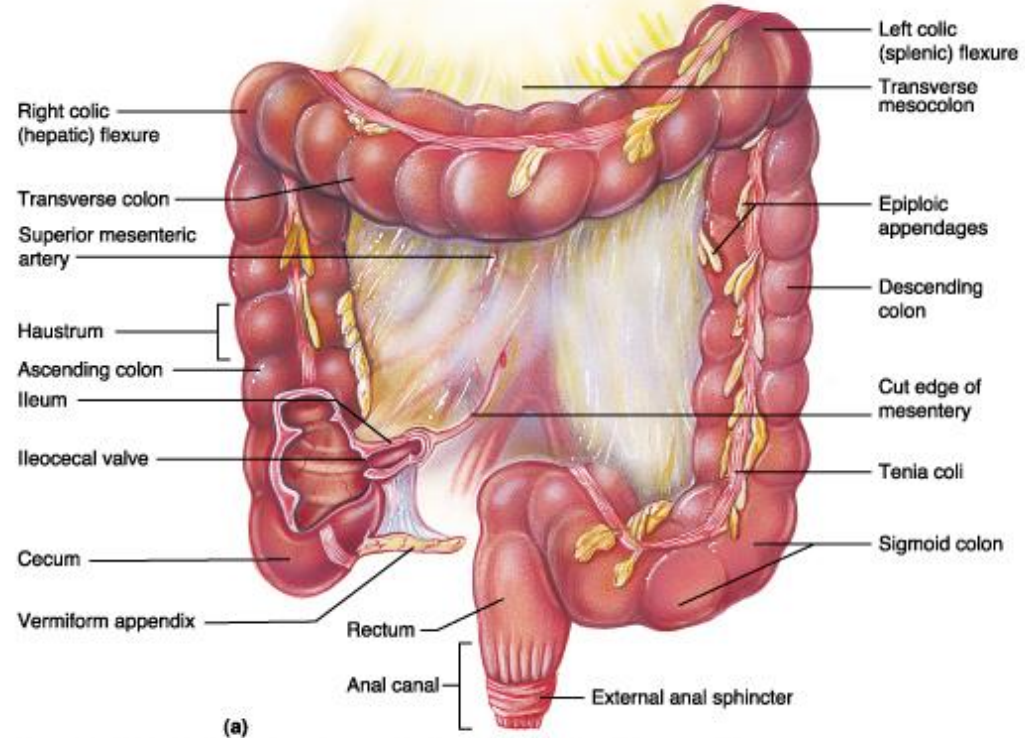
- About **5 feet** long
- Continues to absorb water
- **Rectum** (short term storage which holds feces before it is expelled).

The Digestive System



# Large Intestine

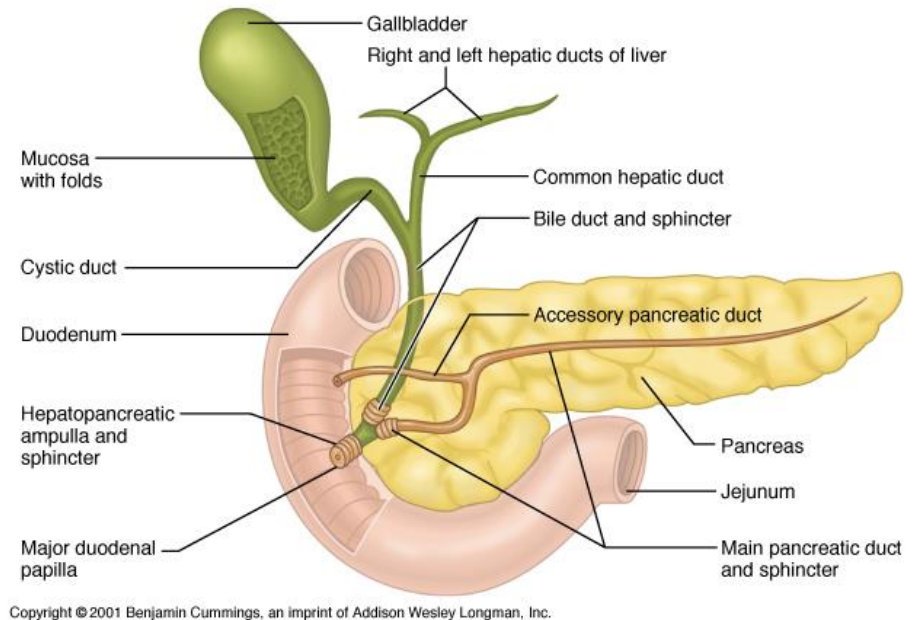
- Absorbs more **water**
- Concentrate **wastes**



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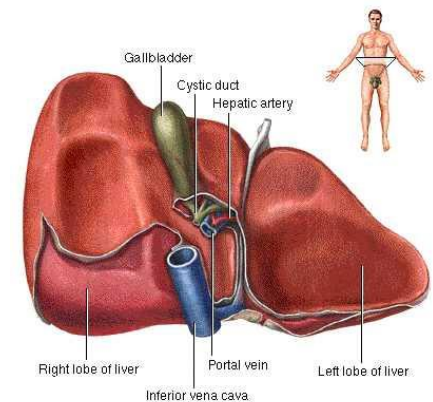
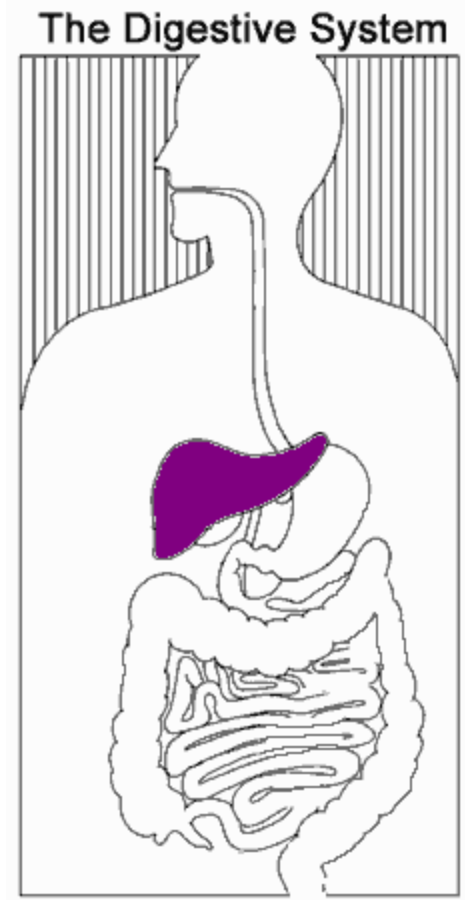
# Accessory Organs

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



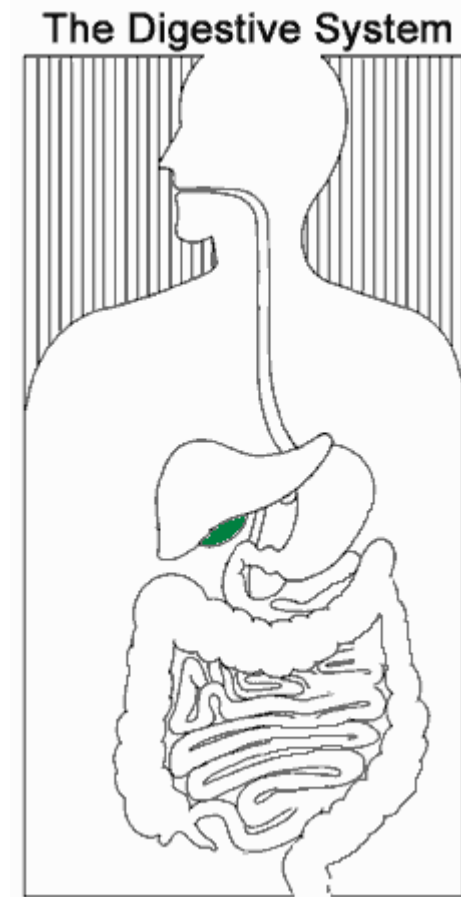
# Liver

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



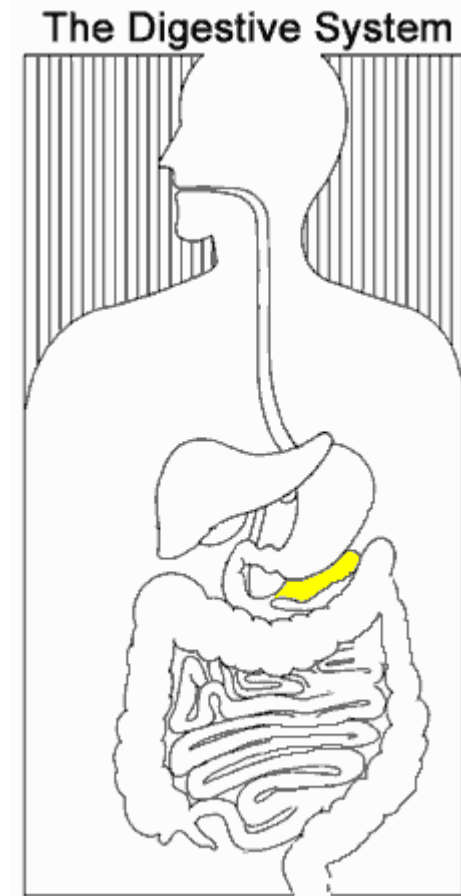
# Gall Bladder

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



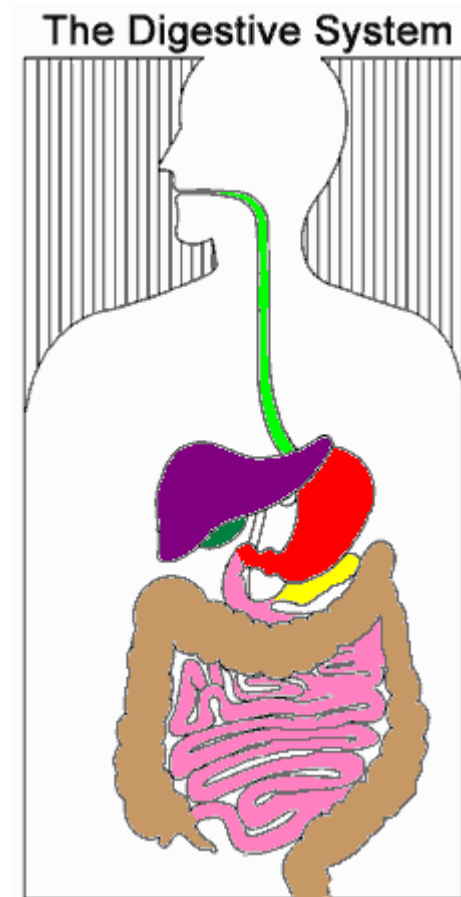
# Pancreas

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



# How'd you do?

- Green: Esophagus
- Red: Stomach
- Pink: Small Intestine
- Brown: Large Intestine
- Purple: Liver
- Green: Gall Bladder
- Yellow: Pancreas





# References and Links

- [Your Digestive System and How It Works](#)
  - Digestive system diagram comes from this site
- [The Real Deal on the Digestive System](#)
- [Pancreas: Introduction and Index](#)
- [Your Gross and Cool Body - Digestive System](#)