

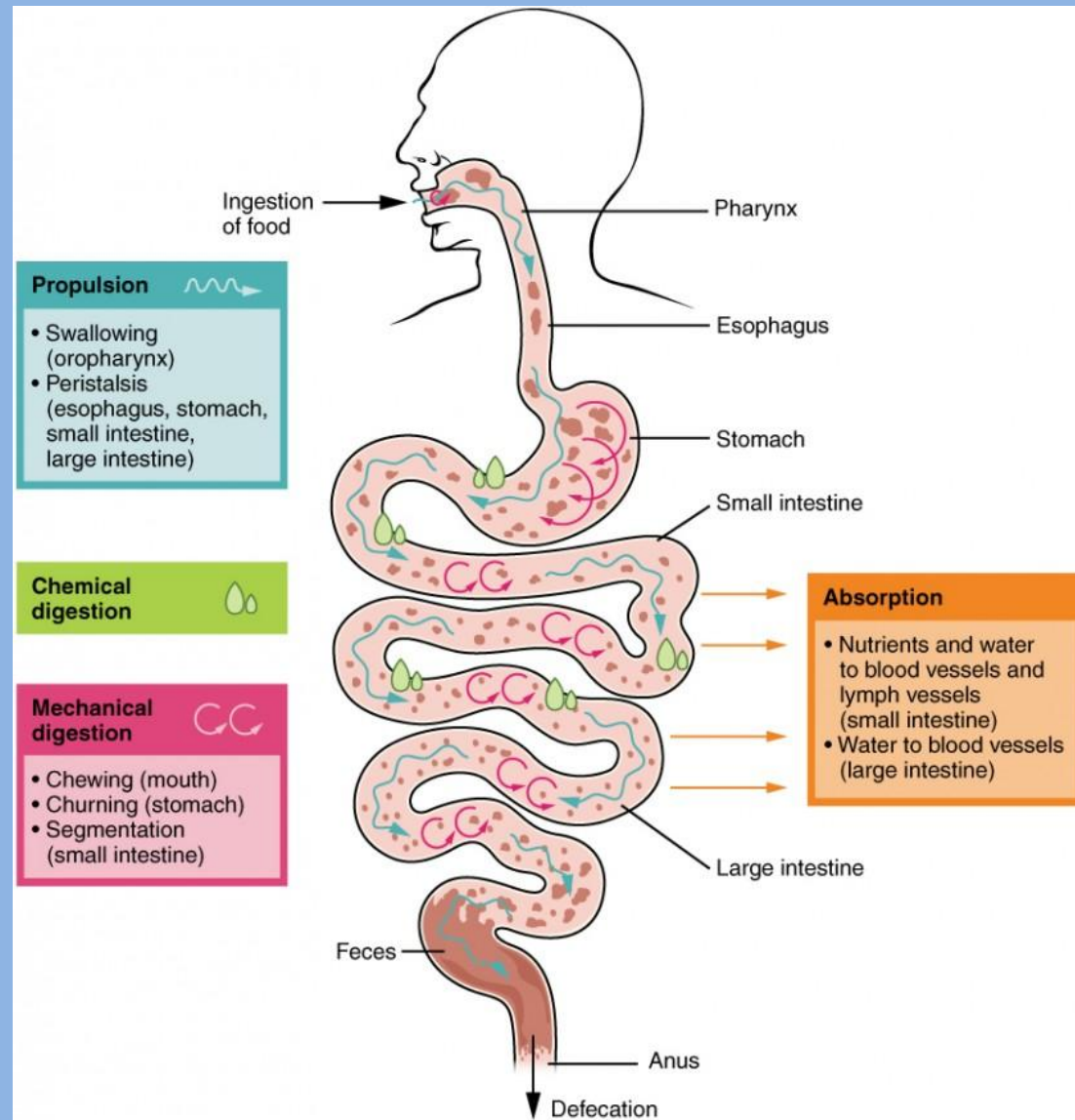
The Human Digestive System

An anatomical illustration of the human digestive system. The digestive tract is highlighted in a vibrant red color, showing the esophagus, stomach, and the coiled small and large intestines. This is overlaid on a semi-transparent, greyish-white human torso, which allows the underlying skeletal structure and other internal organs to be partially visible. The background is a clean, light blue gradient at the top and bottom, with a white central area.

Digestion

- Phases Include

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

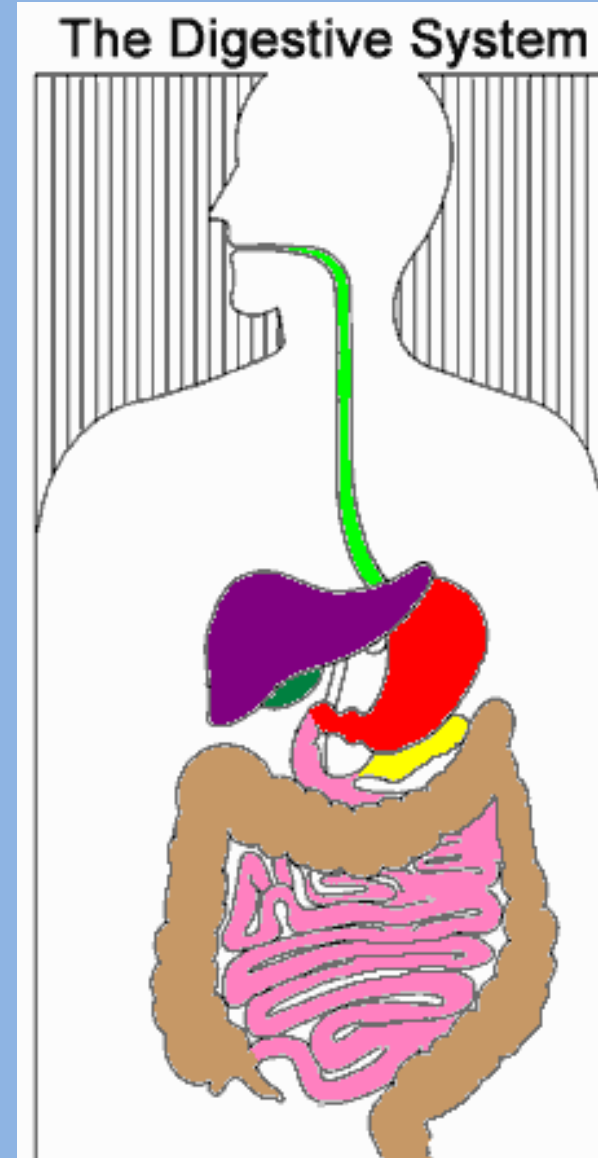


Digestion

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

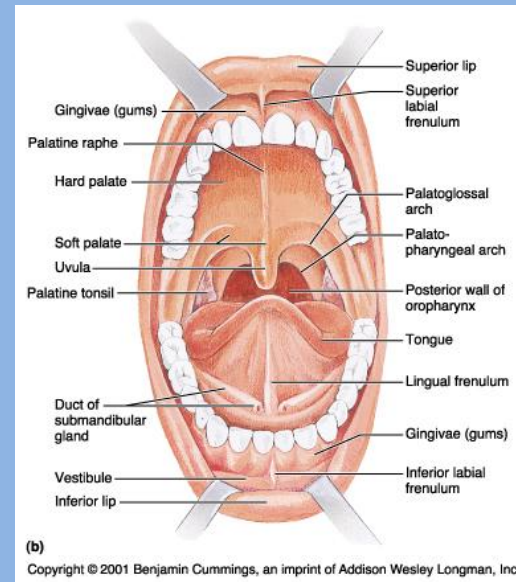
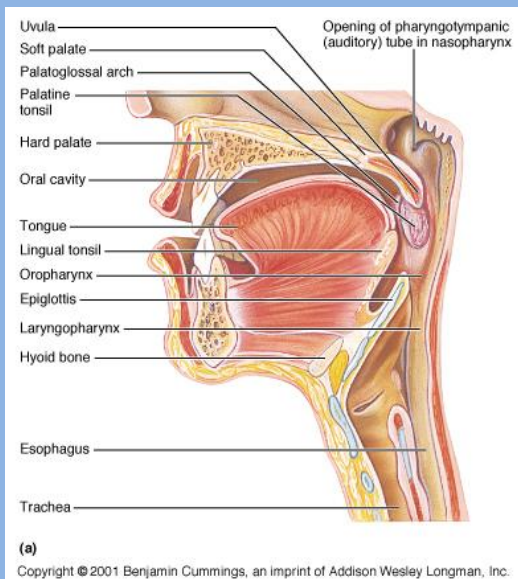
Digestive System Organization

- Gastrointestinal (GI) tract
 - Essentially one long tube with two openings
 - The entire length is lined with epithelial tissue
 - Direct **link/path** between organs
 - Structures
 - Mouth
 - Pharynx
 - Esophagus
 - Stomach
 - Small intestine
 - Large Intestine
 - Rectum



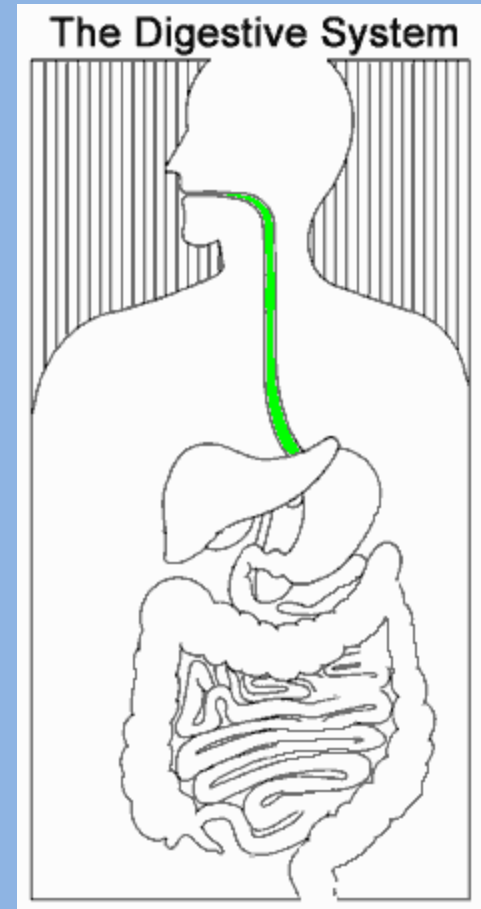
Mouth

- 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.



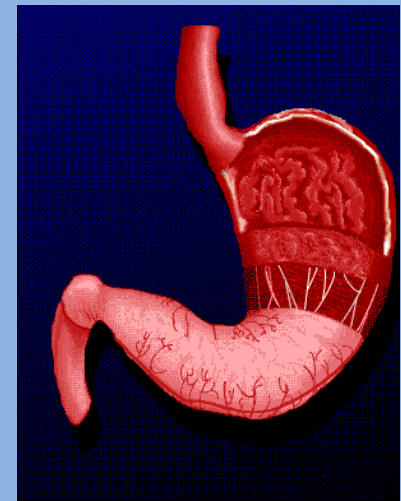
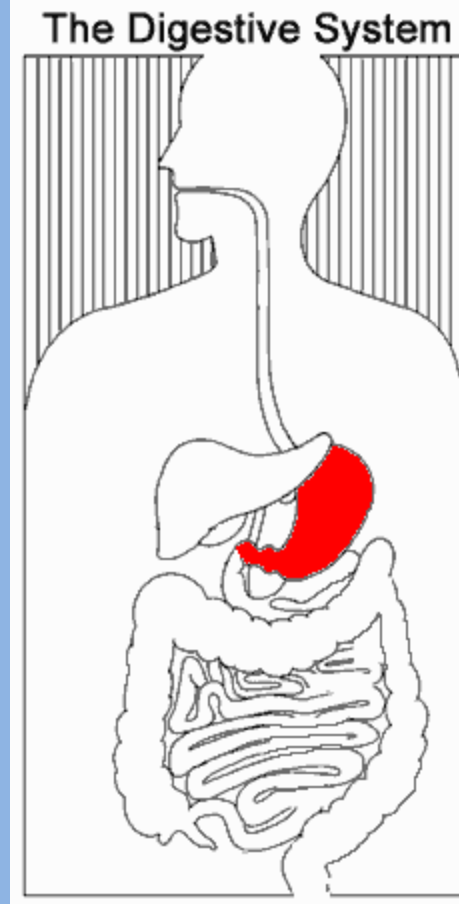
Esophagus

- 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**.



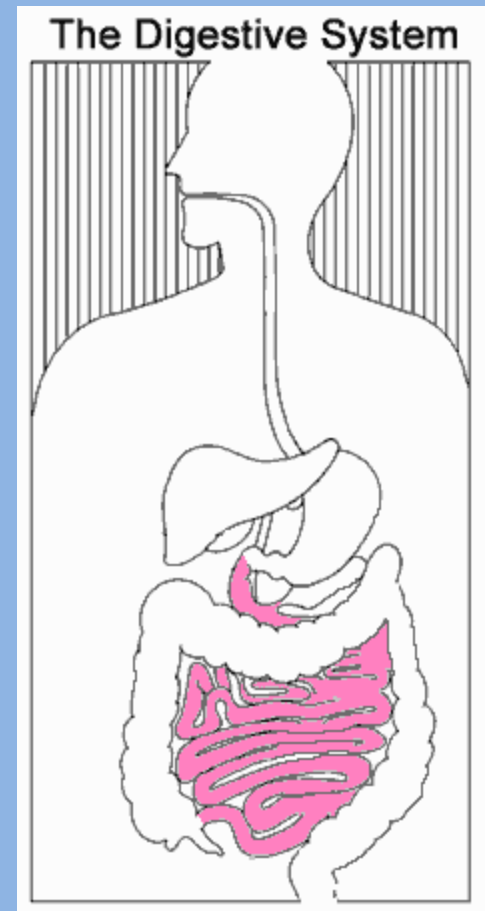
Stomach

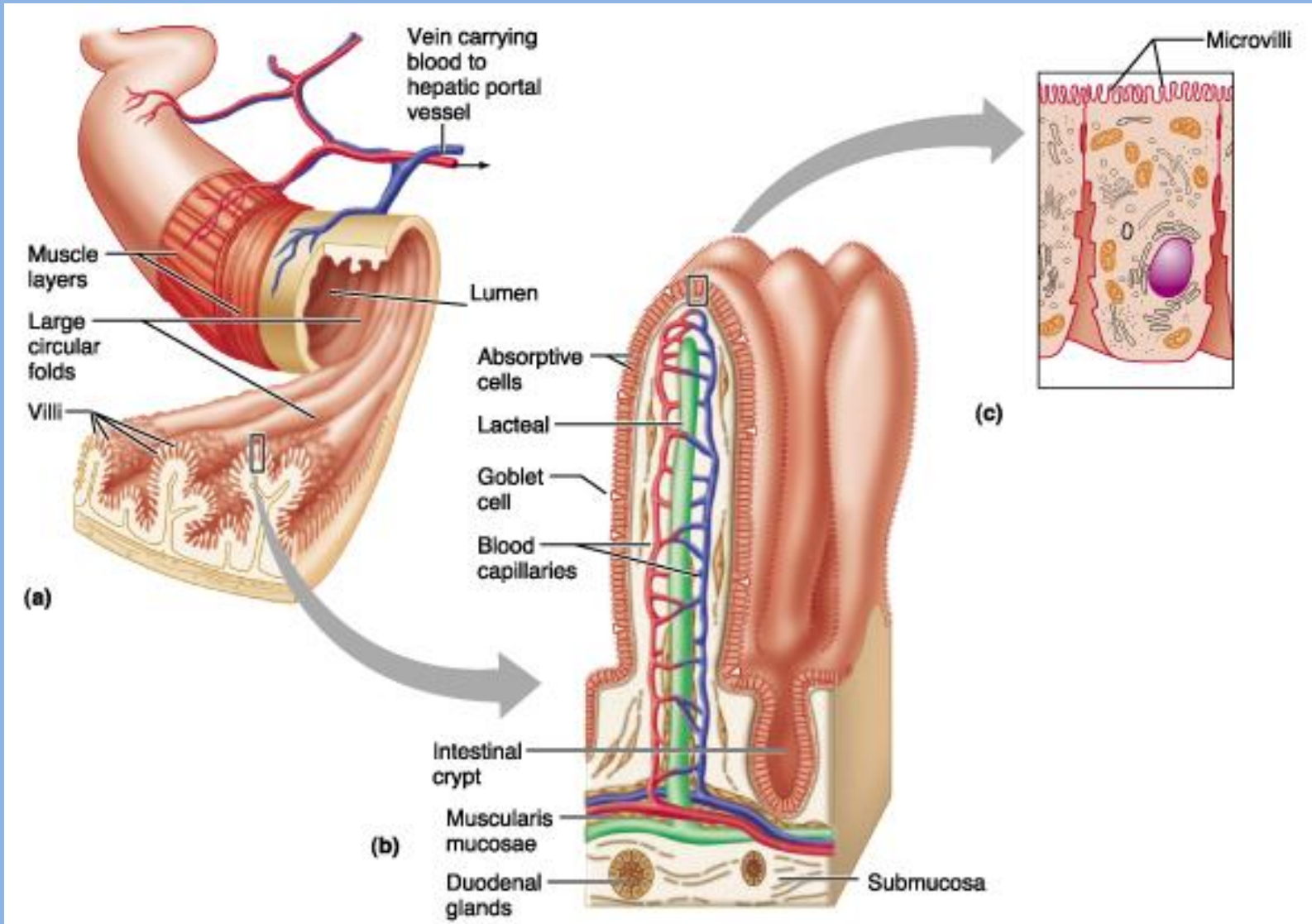
- J-shaped muscular bag that stores the food you eat, breaks it down into tiny pieces.
- Mixes food with **digestive juices** that contain enzymes to break down proteins and lipids.
- **Acid** in the stomach kills bacteria.
- Food found in the stomach is called **chyme**.



Small Intestine

- Small intestines are roughly **6-7** 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.

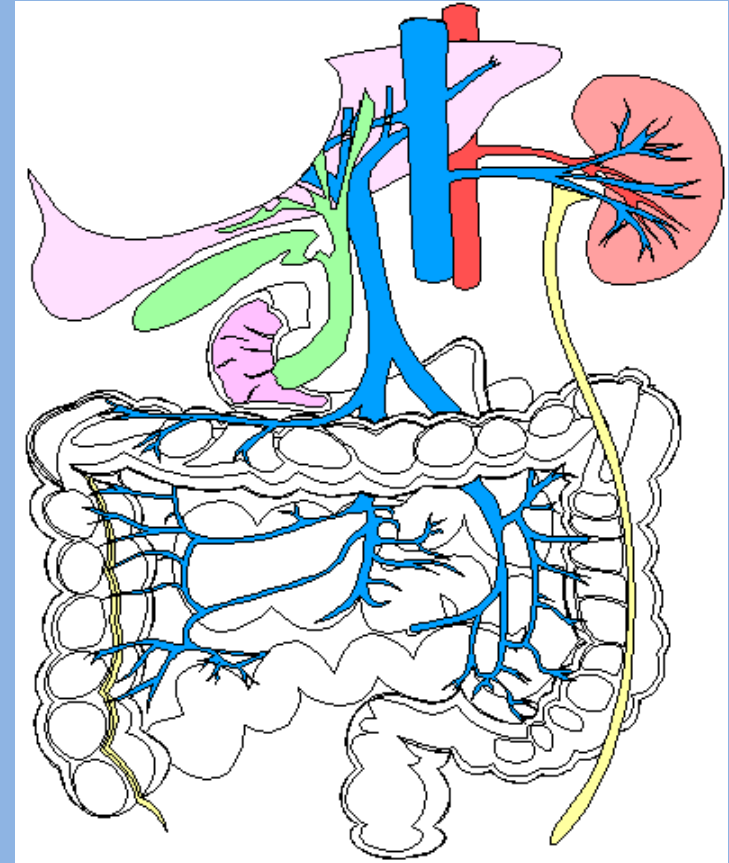




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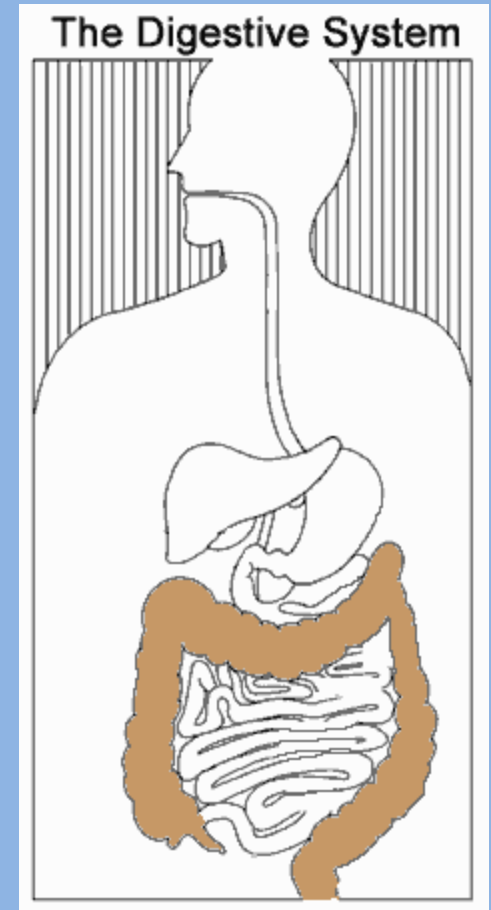
Small Intestine

- 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**



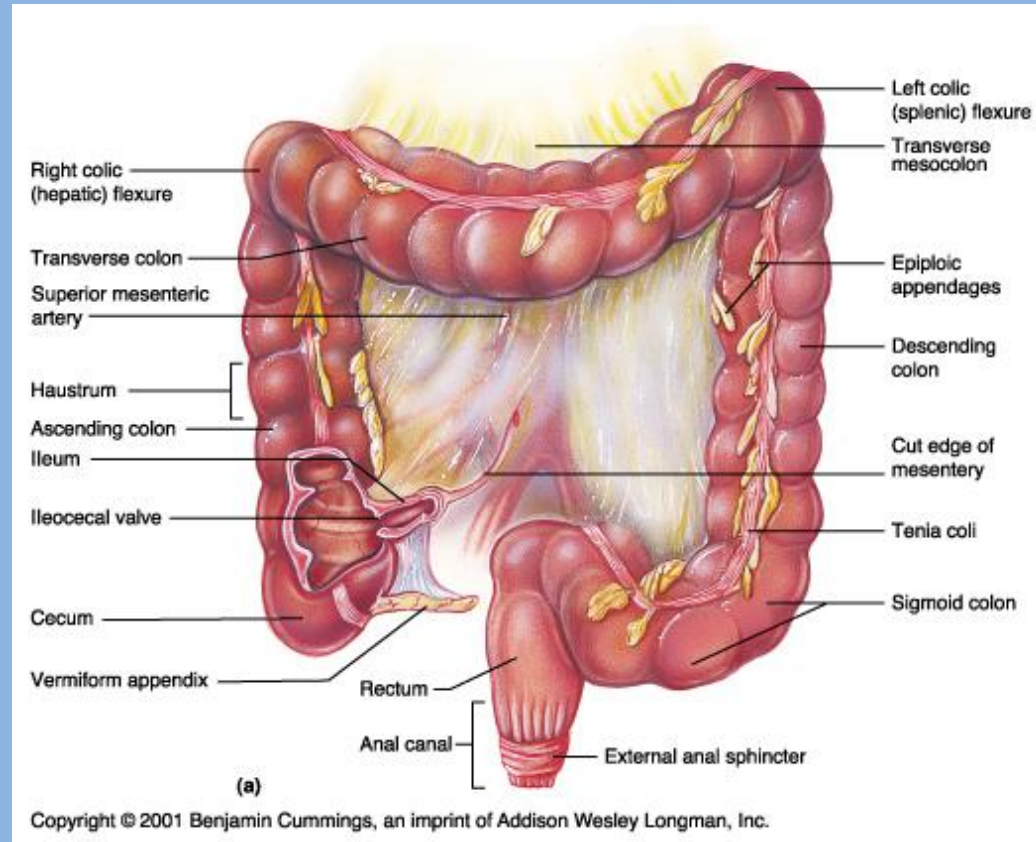
Large Intestine

- About **1.5 m** long
- Larger in diameter vs. small intestine
- Absorbs water
- **Rectum** (short term storage which holds feces before it is expelled).



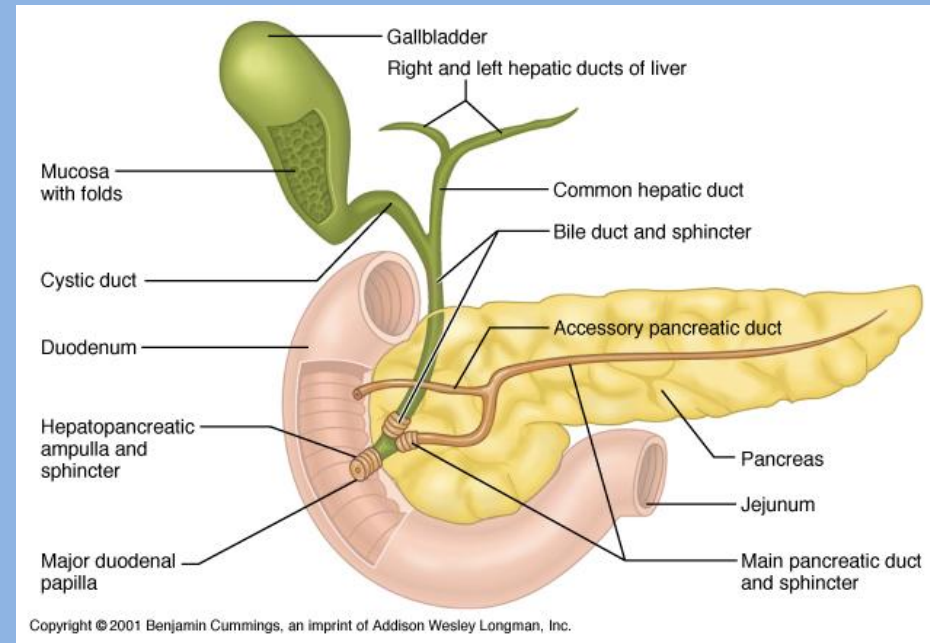
Large Intestine

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



Accessory Organs

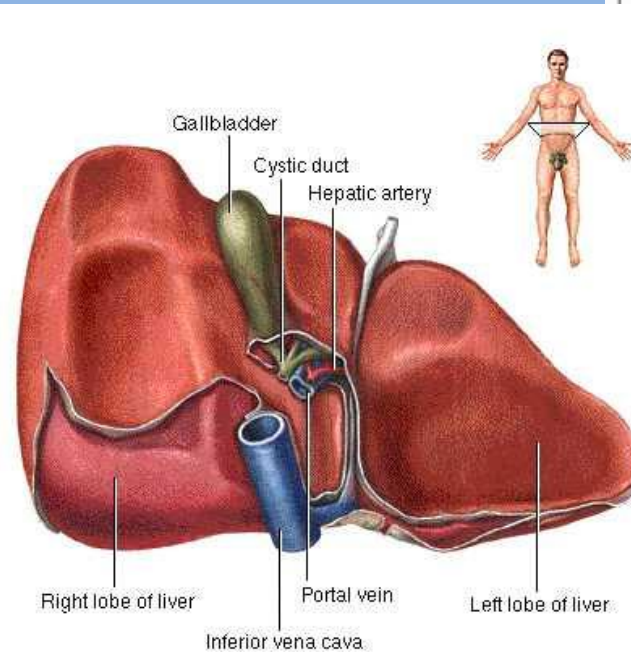
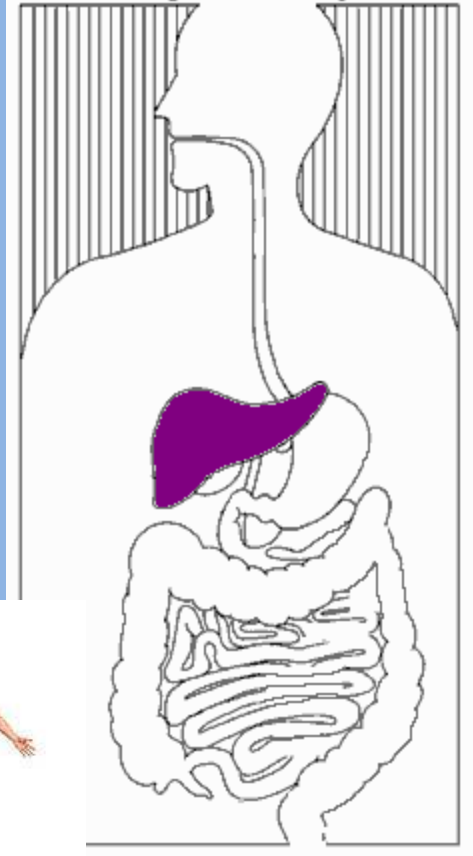
- Not part of the path of food, but play a critical role.
- Include: Liver, gall bladder, and pancreas



Liver

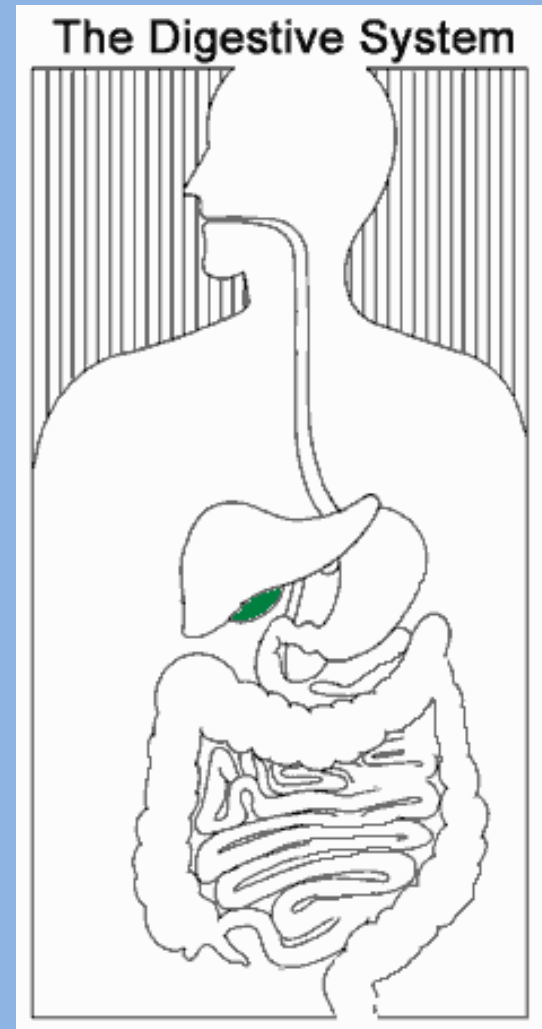
- Directly affects digestion by producing **bile**
 - Bile helps digest **fat**
- filters out **toxins** and waste including **drugs** and **alcohol**

The Digestive System



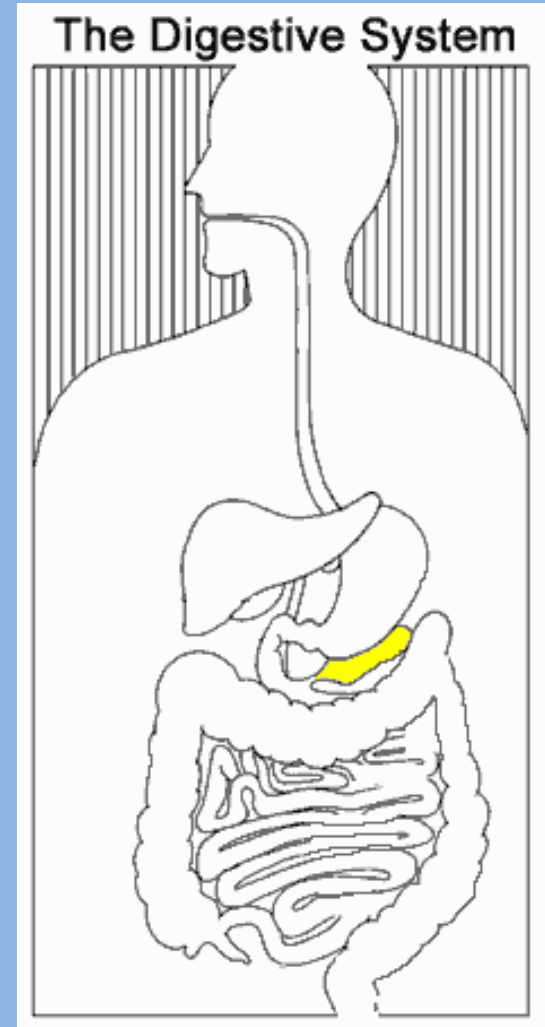
Gall Bladder

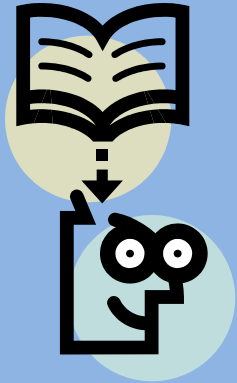
- Stores bile from the liver, releases it into the small intestine.
- Fatty diets can cause gallstones



Pancreas

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





Fun Facts

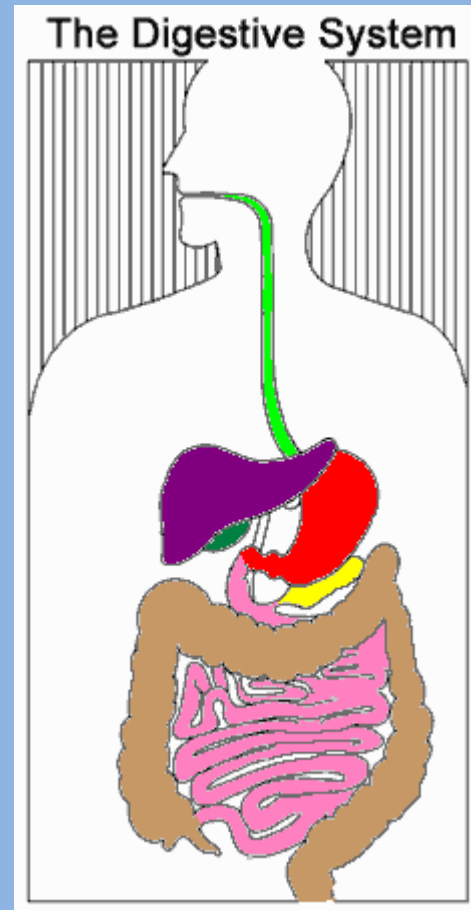
- HOW LONG ARE YOUR INTESTINES? At least **25 feet** in an adult. Be glad you're not a full-grown horse -- their coiled-up intestines are 89 feet long!
- Food drying up and hanging out in the large intestine can last 18 hours to 2 days!
- In your lifetime, your digestive system may handle about 50 tons!!

Now it's...

QUIZ TIME!

On a sheet of paper, write the name of each colored organ:

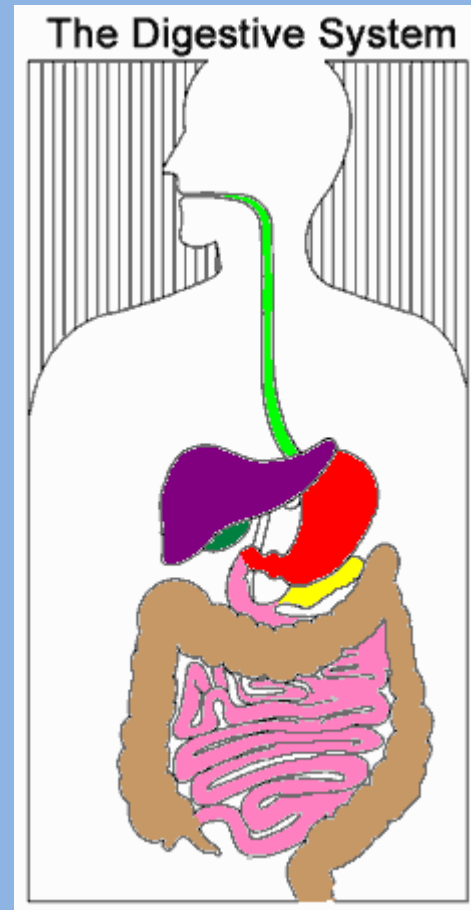
- Green:
- Red:
- Pink:
- Brown:
- Purple:
- Green:
- Yellow:



How'd you do?

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

Great Job!



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](#)