

# The Digestive System

Organs and Functions

# Phases of Digestion

- Phases Include

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

# Digestion

- Mechanical (physical)
  - **Chew, tear, grind, mash, and mix**
- Chemical
  - Enzymatic reactions to improve digestion of **carbohydrates, proteins, and lipids**

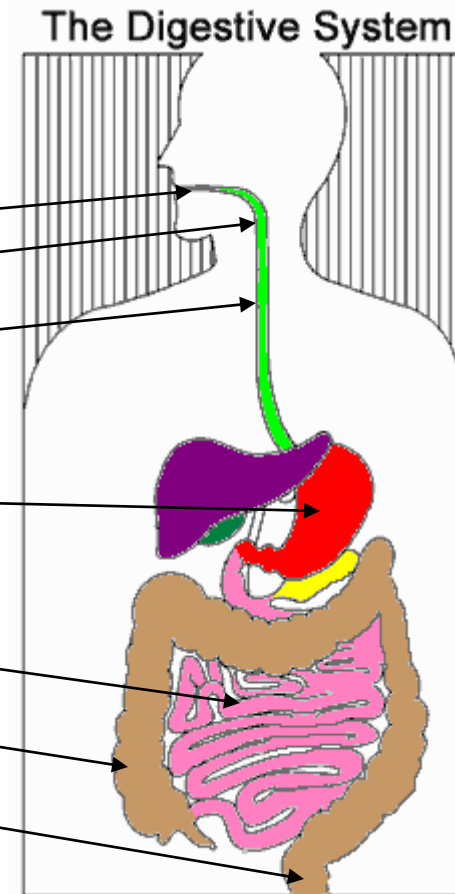
# Digestive System Organization

- **Gastrointestinal (GI) tract**

- **Direct link/path** between organs

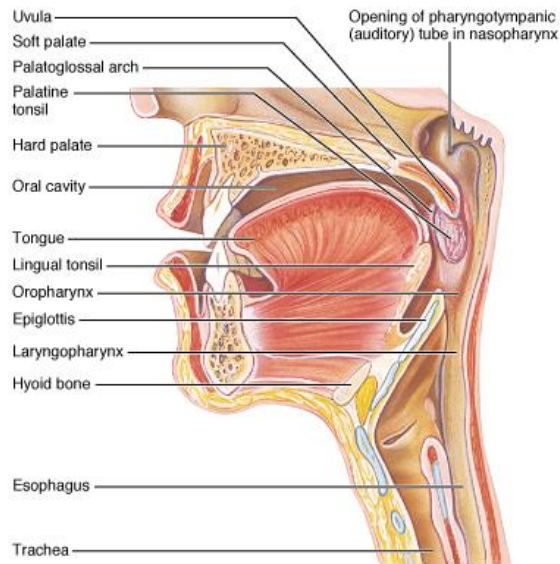
- **Structures**

- **Mouth**
- **Pharynx**
- **Esophagus**
- **Stomach**
- **Small intestine**
- **Large Intestine**
- **Rectum**



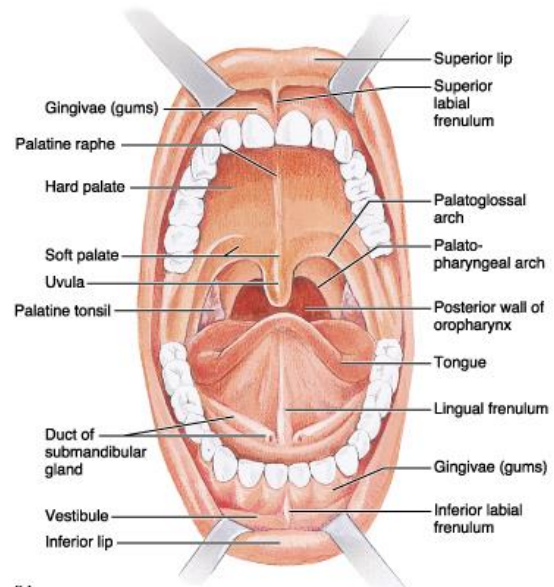
# Mouth

- Teeth mechanically break down food into small pieces.
- Tongue mixes food with saliva (contains **amylase**, which helps break down starch).
- Epiglottis: flap-like structure at the back of the throat.
- Closes over the **trachea** preventing food from entering it. **It is located in the Pharynx.**



(a)

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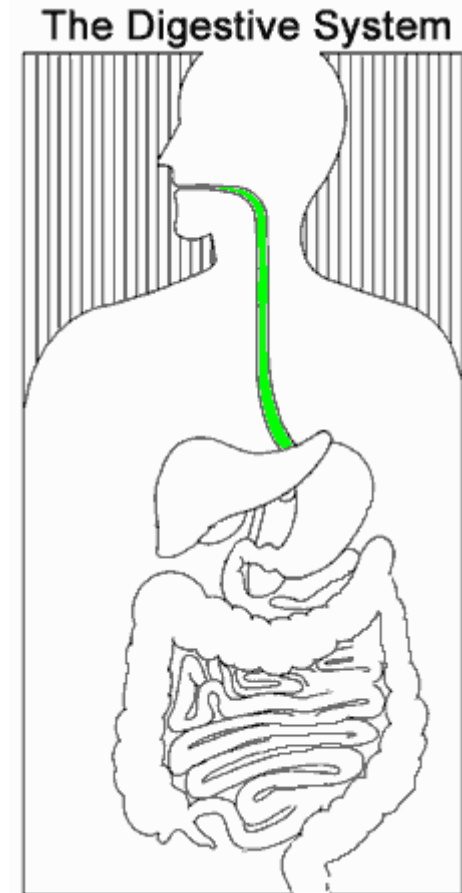
(b)

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# Esophagus

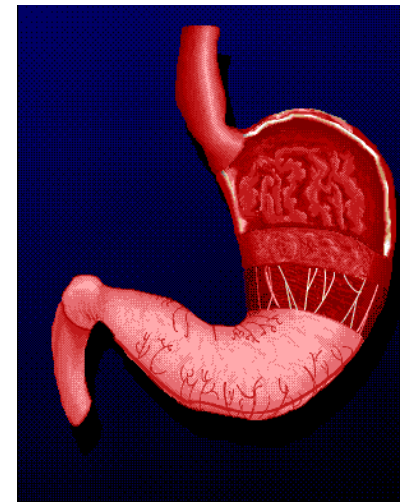
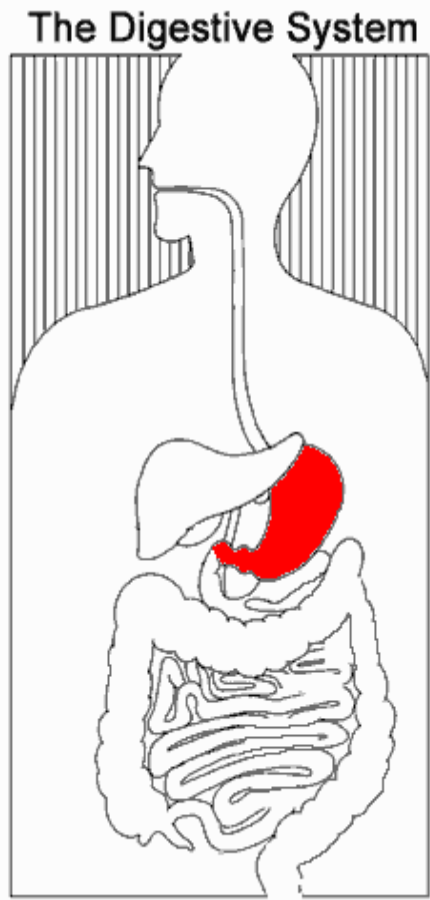
- Approximately **20 cm long**.
- Functions include: **Secreting mucus** and moving food from the throat to the stomach using muscle movement called **peristalsis**

- [Mouth, Pharynx and Esophagus Video](#)



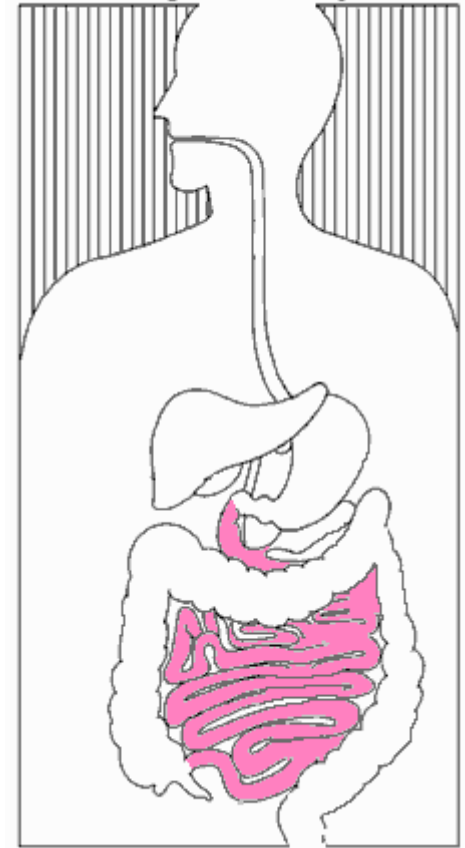
# Stomach

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

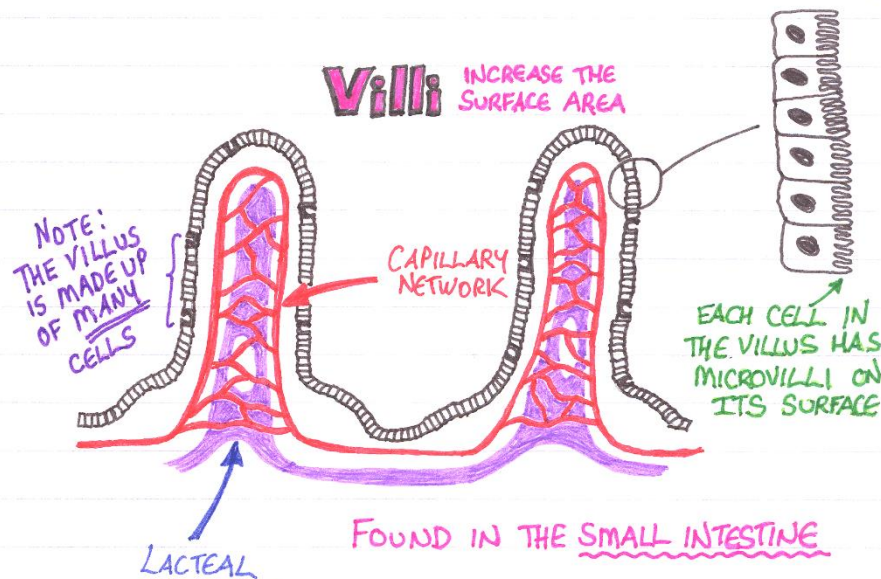


# Small Intestine

## The Digestive System



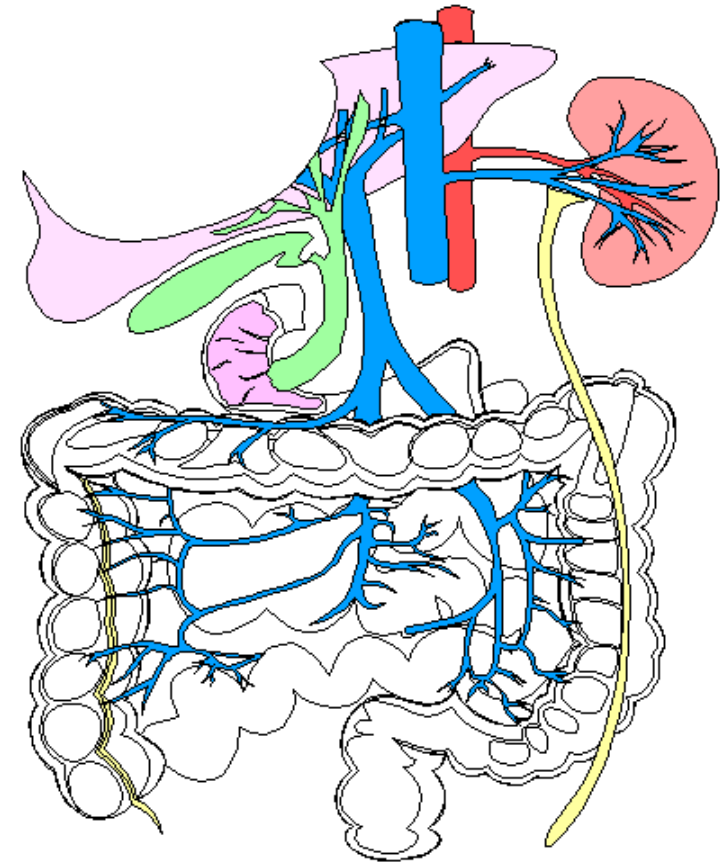
- Small intestines are roughly **7 meters** long
- Lining of intestine walls has **finger-like projections called villi, to increase surface area.**
- The villi are covered in **microvilli** which further increases surface area for absorption.





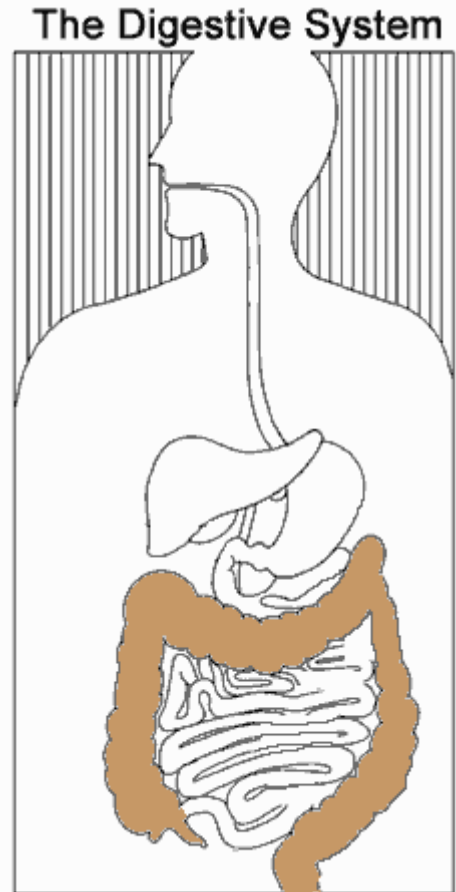
# Small Intestine

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



# Large Intestine

- About **1.5 meters** long
- Absorbs nutrients left behind by the small intestines.
- The end of the large intestine is the **rectum**. (short term storage which holds feces before it is expelled).



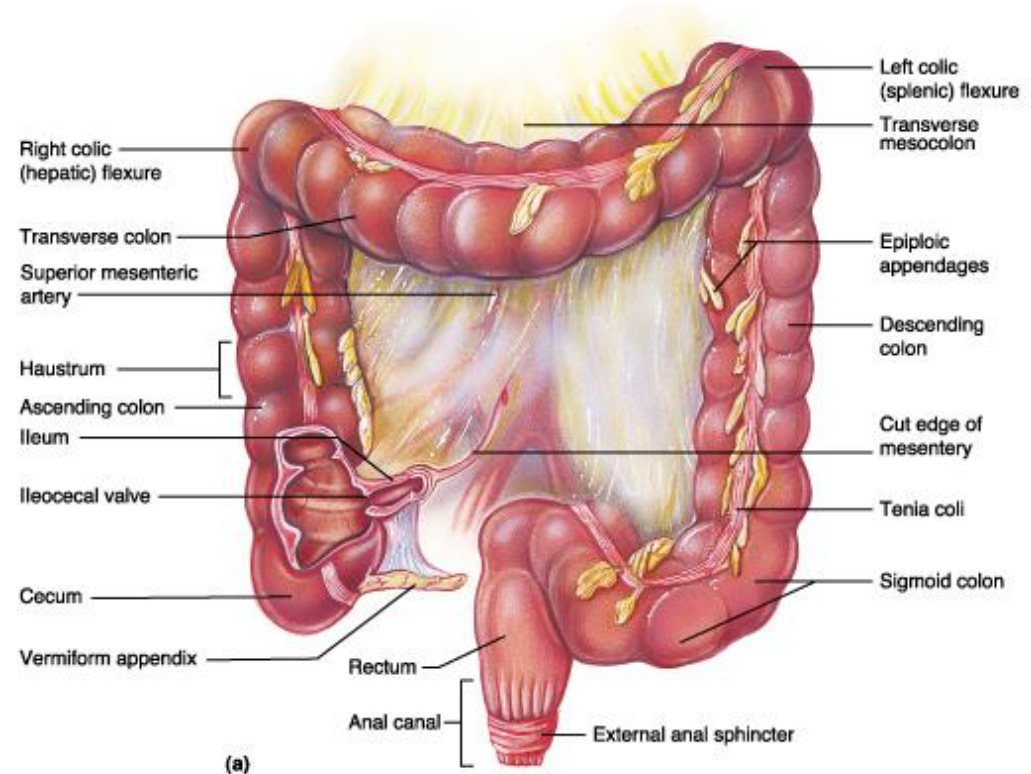
# Large Intestine

- Functions

- **Bacterial digestion and fermentation of carbohydrates**

- **Absorbs additional water**

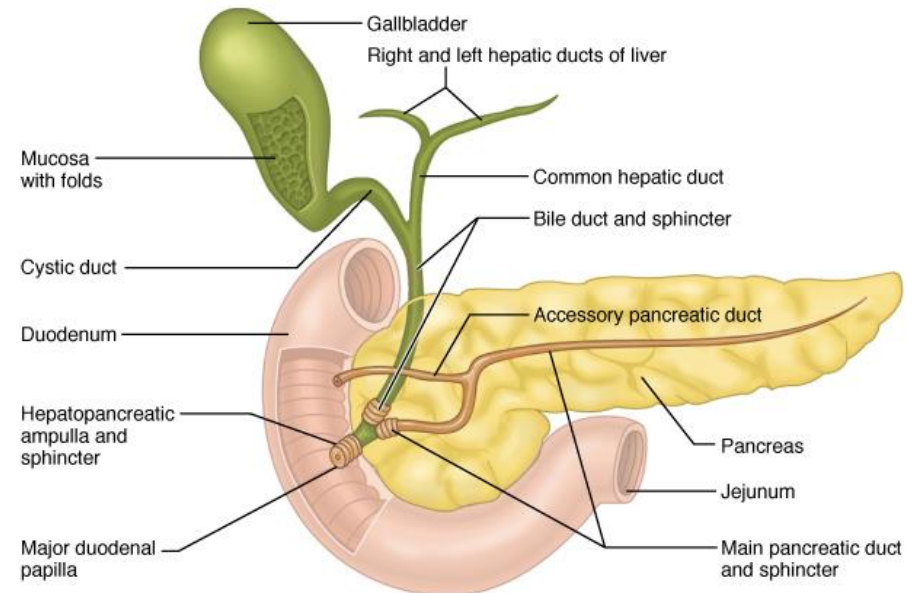
- **Concentrates wastes**



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# Accessory Organs- The Glands

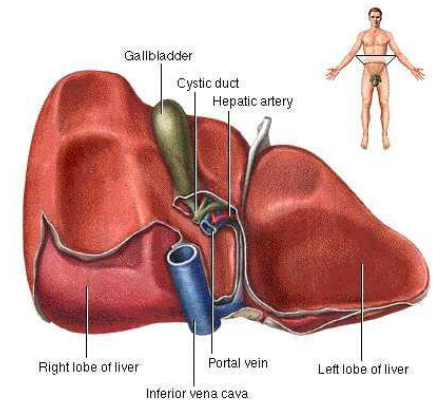
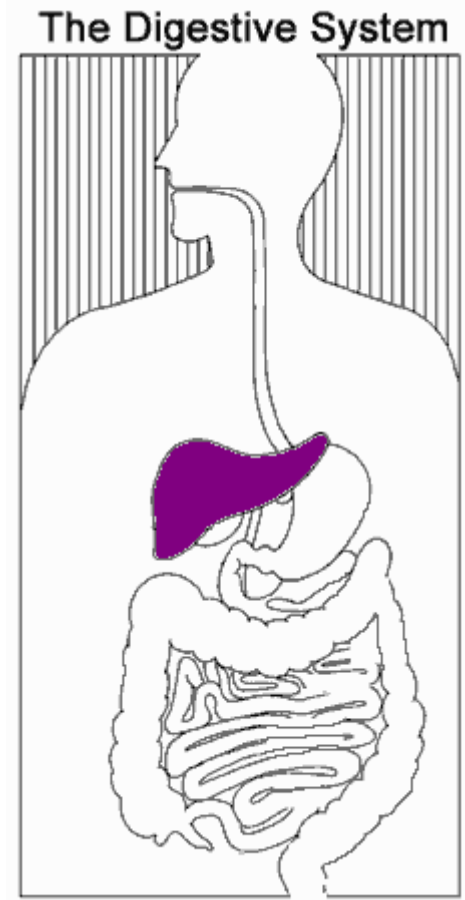
- **Not part of the path of ingested food**, but play a critical role in digestion.
- Includes: **Liver, gall bladder, and pancreas**



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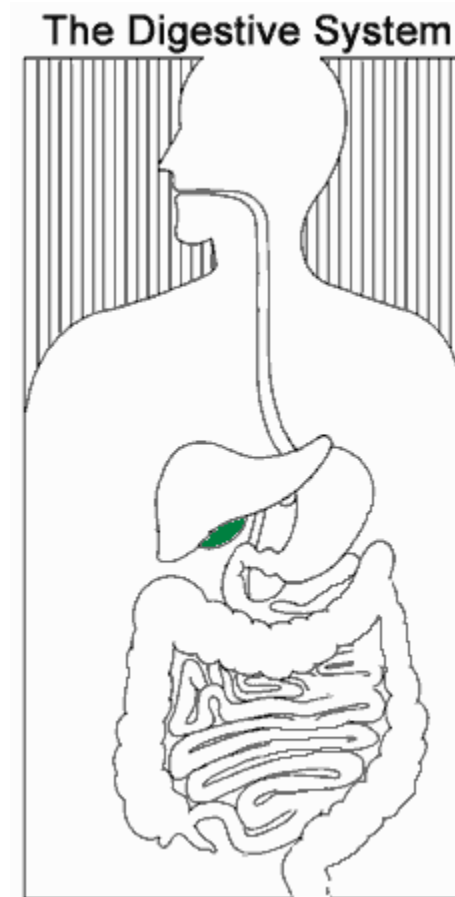
# Liver

- Directly affects digestion by producing **bile**
  - Bile aids in the **digestion of fat**
  - Filters out **toxins** and waste including **drugs, alcohol and poisons.**



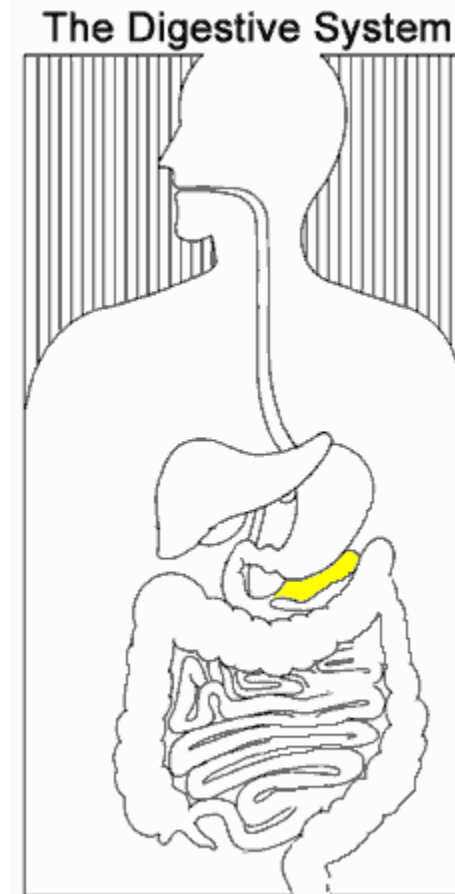
# Gall Bladder

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



# Pancreas

- Produces digestive enzymes to digest **fats, carbohydrates and proteins**
- Regulates blood sugar by producing [insulin](#)



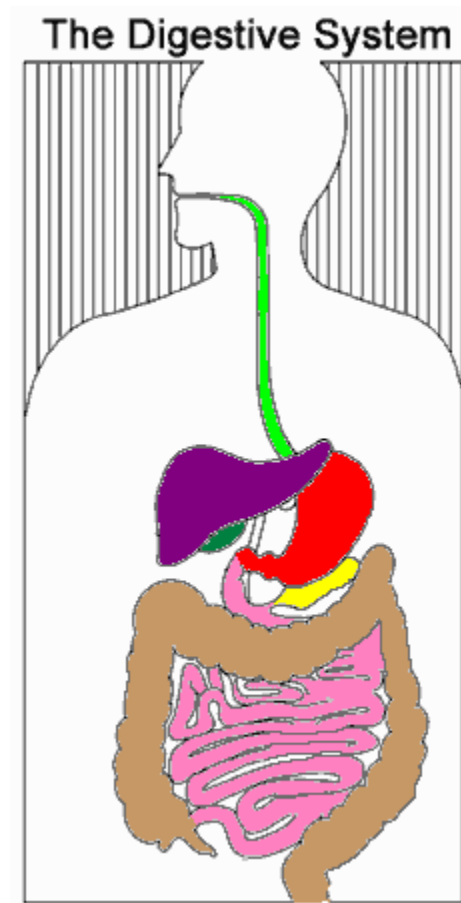
Now it's...

QUIZ TIME!



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

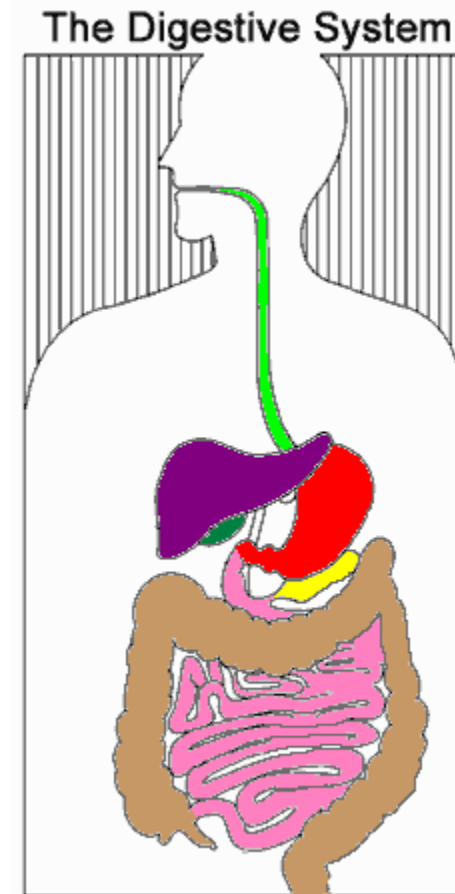
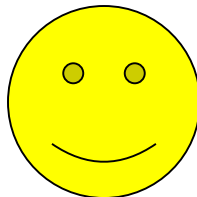
- Green:
- Red:
- Pink:
- Brown:
- Purple:
- Green:
- Yellow:



# 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](#)
- [Laurentian Regional High School Data Base](#)
  - **you must know the Username and Password**