ACADEMIC SUPPORT CENTER
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DAYTONA STATE COLLEGE

The Human Digestive System

A BASIC OVERVIEW

Digestion

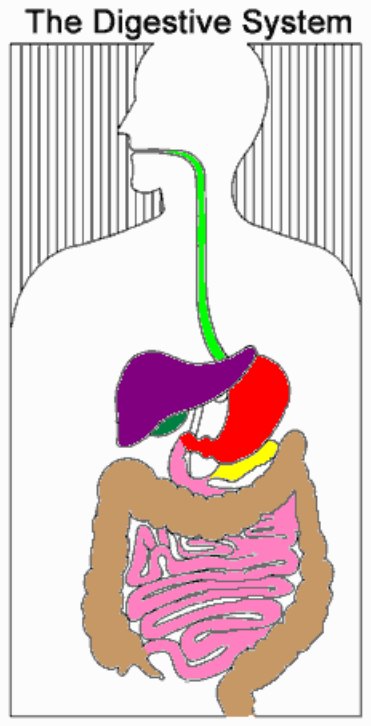
- Phases Include
  1. Ingestion
  2. Movement
  3. Mechanical and Chemical Digestion
  4. Absorption
  5. Elimination

Digestion

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

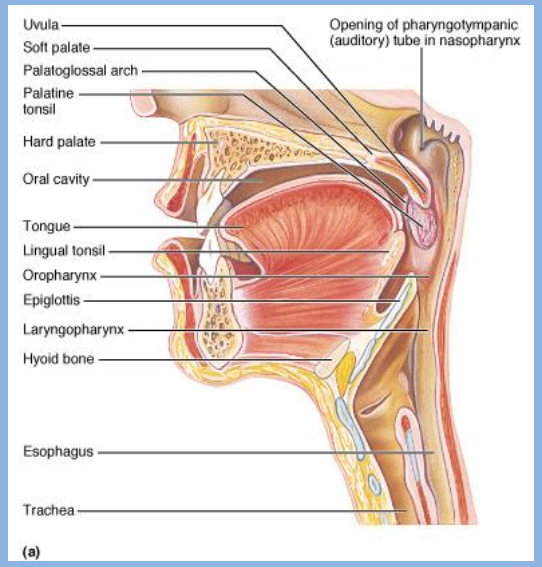
Digestive System Organization

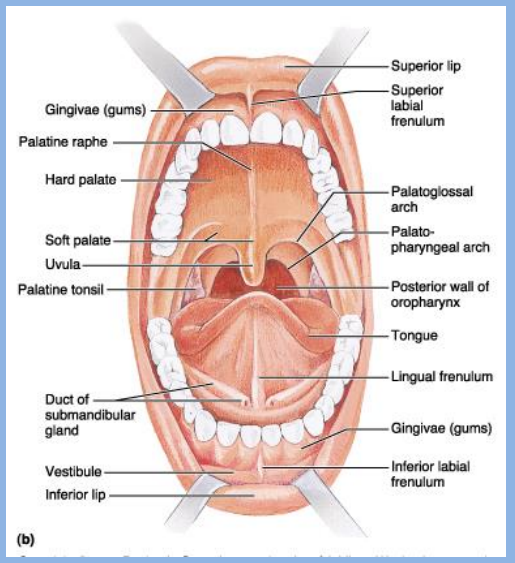
- Gastrointestinal (Gl) tract
  - Tube within a tube
  - Direct link/path between organs
  - Structures
    - Mouth
    - Pharynx
    - Esophagus
    - Stomach
    - Small intestine
    - Large Intestine
    - Rectum



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.



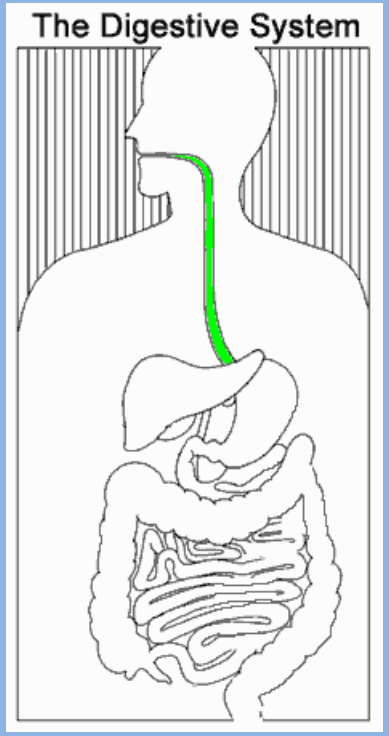


Esophagus

- Approximately 10” long
- Functions include:

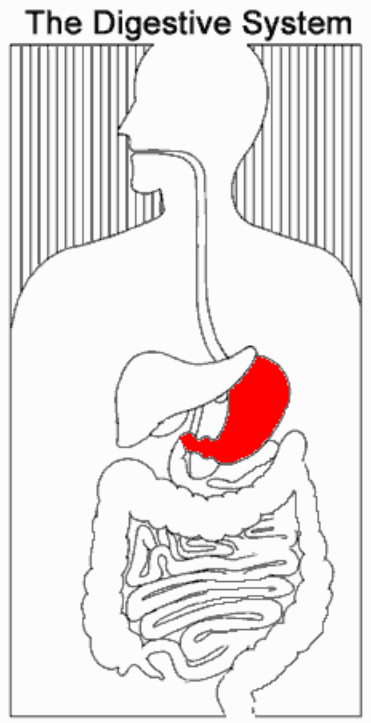
1. Secrete mucus
2. Moves food from the throat to the stomach using muscle movement called peristalsis

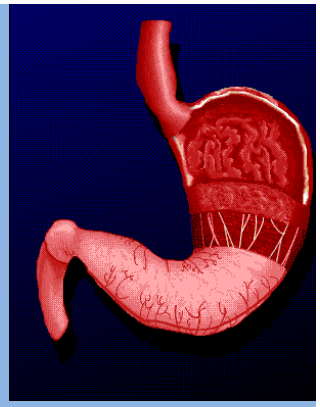
- If acid from the stomach gets in here that’s heartburn.



Stomach

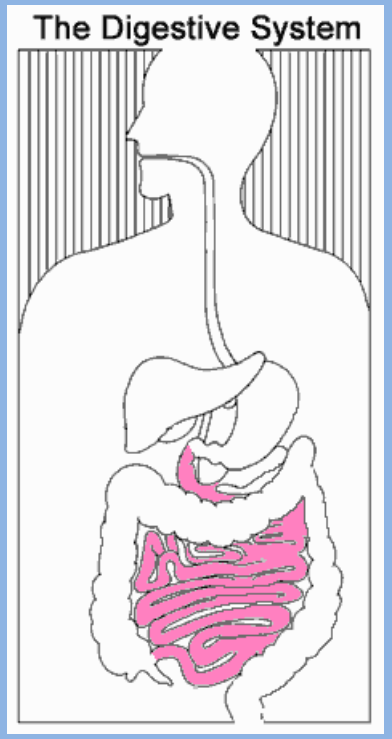
- J-shaped muscular bag that stores the food you eat, breaks it down into tiny pieces.
- Mixes food with digestive juices that contain enzymes to break down proteins and lipids.
- Acid in the stomach kills bacteria.
- Food found in the stomach is called chyme.

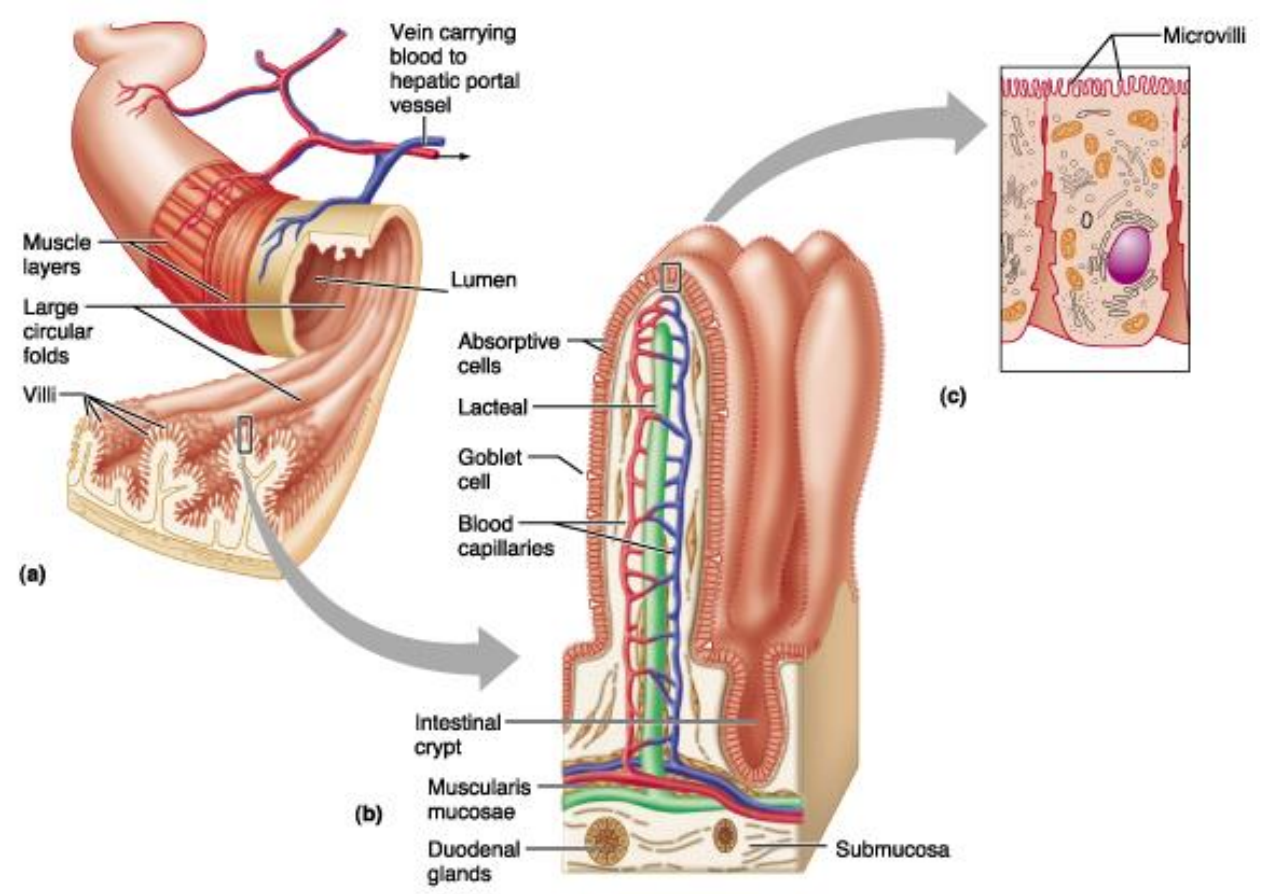




Small Intestine

- 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.



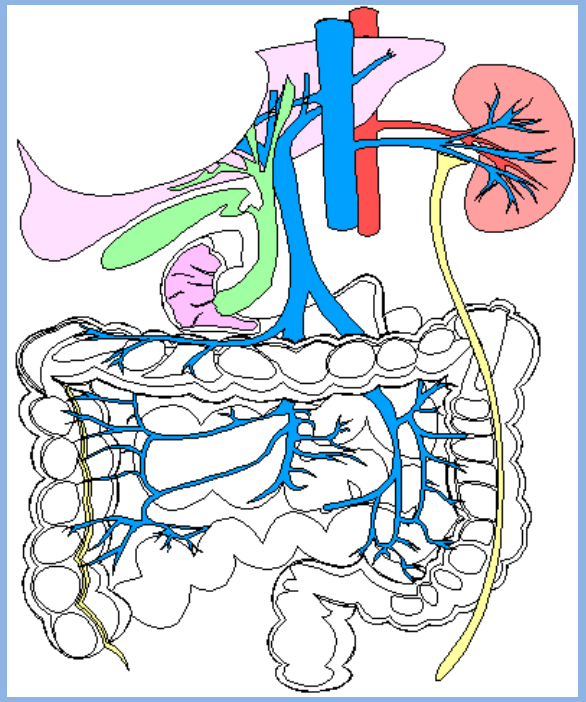

Vein carrying blood to hepatic portal vessel
Muscle layers
Lumen
Large circular folds
Villi
(a)
Absorptive cells
Lacteal
Goblet cell
Blood capillaries
Intestinal crypt
Muscularis mucosae
(b)
Duodenal glands
Submucosa
Microvilli
(c)

Small Intestine

- Nutrients from the food pass into the bloodstream through the small intestine walls.

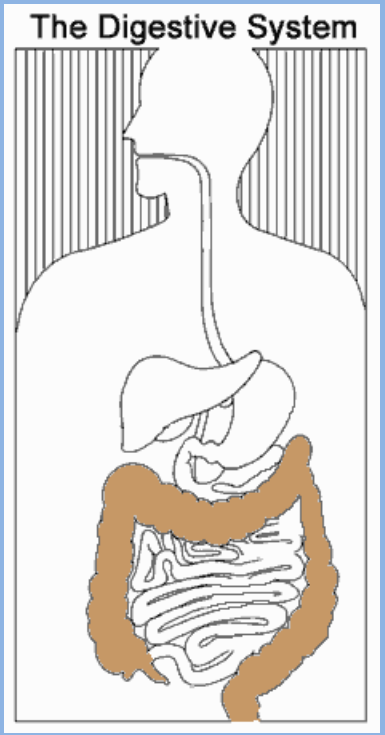
- Absorbs:
  - 80% ingested water
  - Vitamins
  - Minerals
  - Carbohydrates
  - Proteins
  - Lipids

  - Secretes digestive enzymes



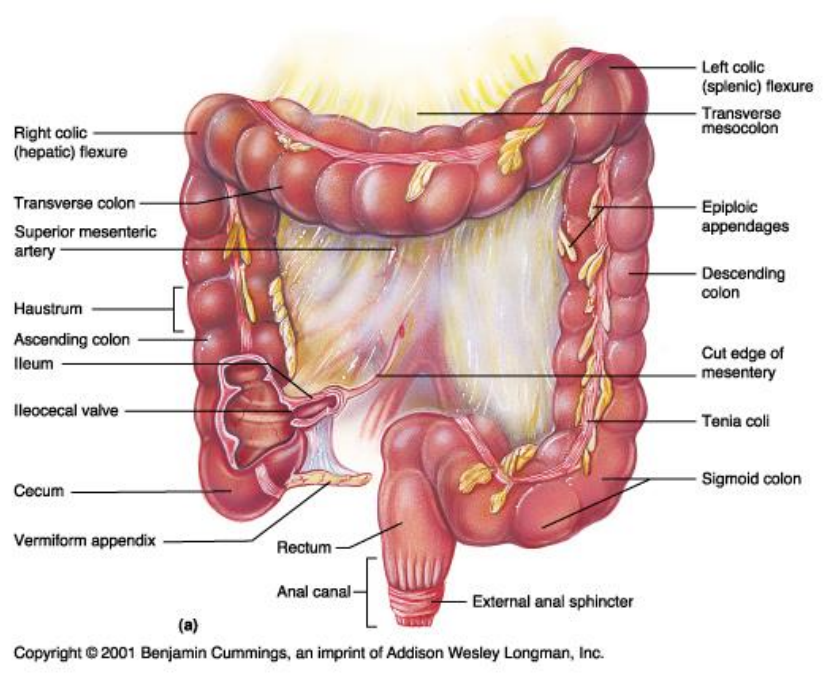
Large Intestine

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



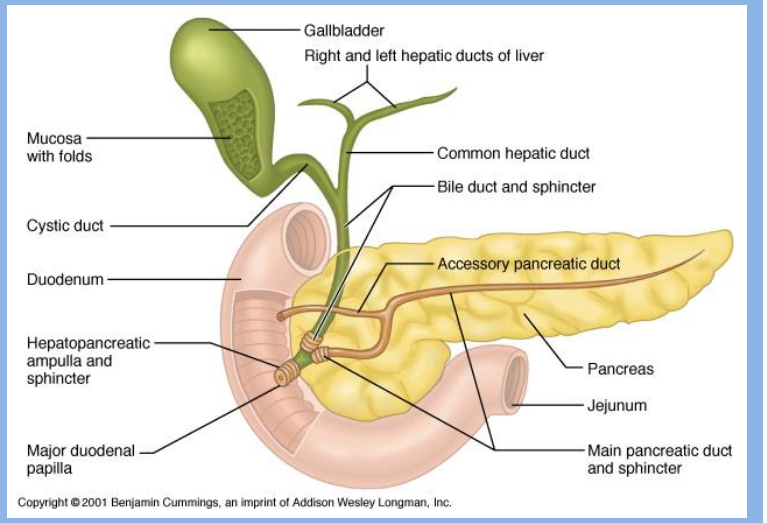
Large Intestine

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



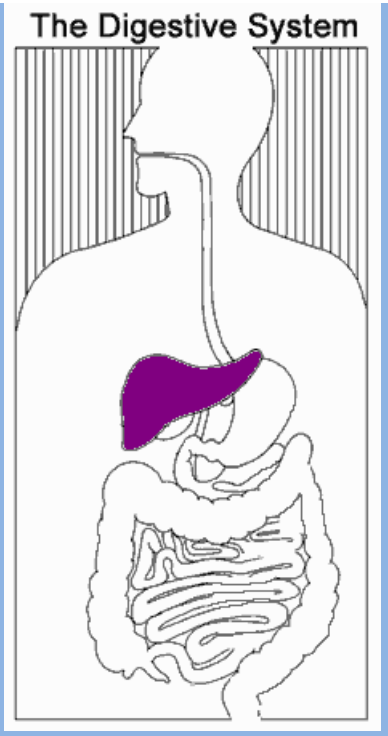
Accessory Organs

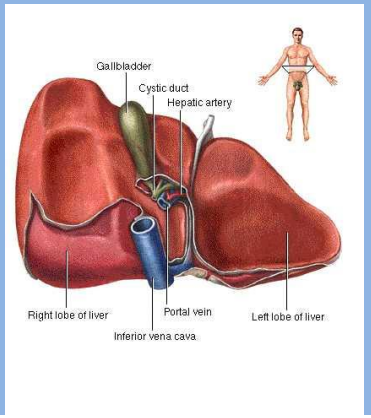
- Not part of the path of food, but play a critical role.
- Include: Liver, gall bladder, and pancreas



Liver

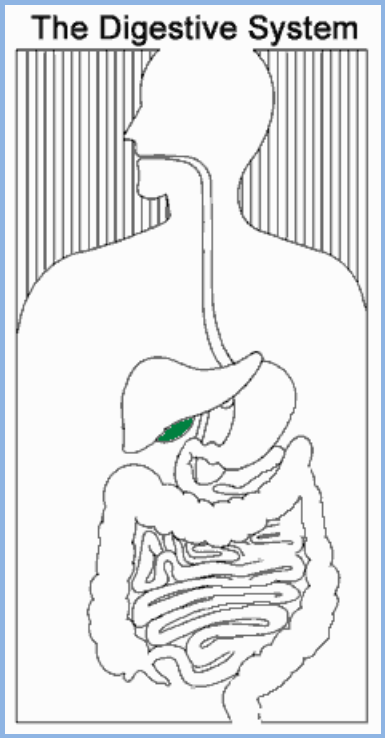
- Directly affects digestion by producing bile
  - helps emulsify fat
  - filters out toxins and waste including drugs and alcohol





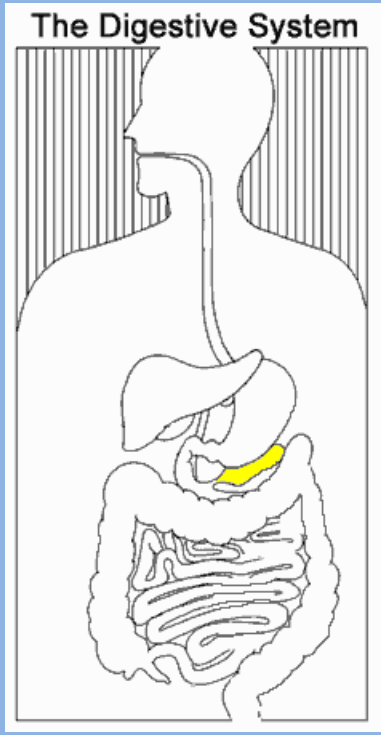
Gall Bladder

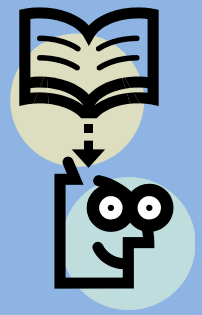
- Stores bile from the liver, releases it into the small intestine.
- Fatty diets can cause gallstones



Pancreas

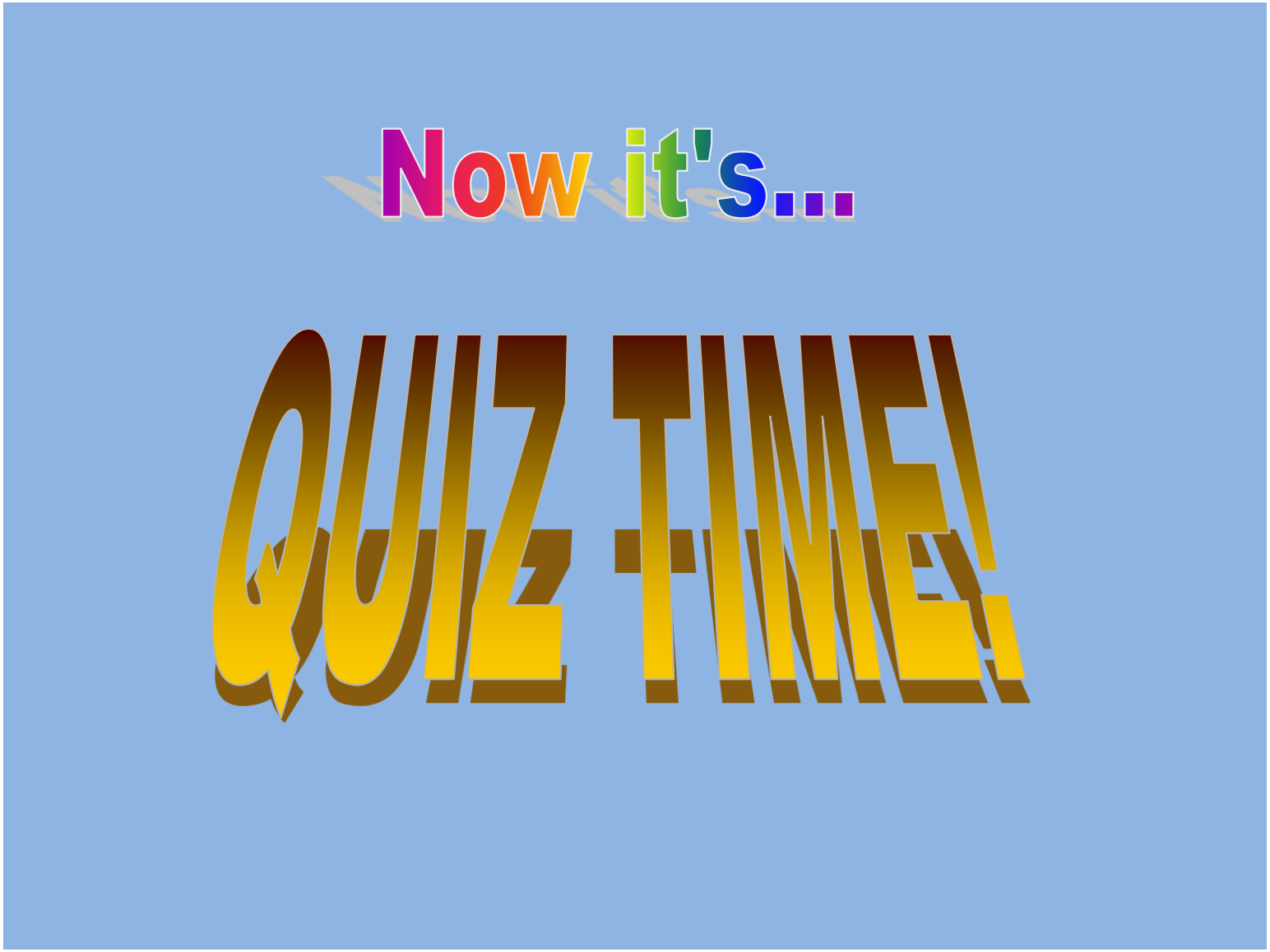
- Produces digestive enzymes to digest fats, carbohydrates and proteins
- Regulates blood sugar by producing insulin





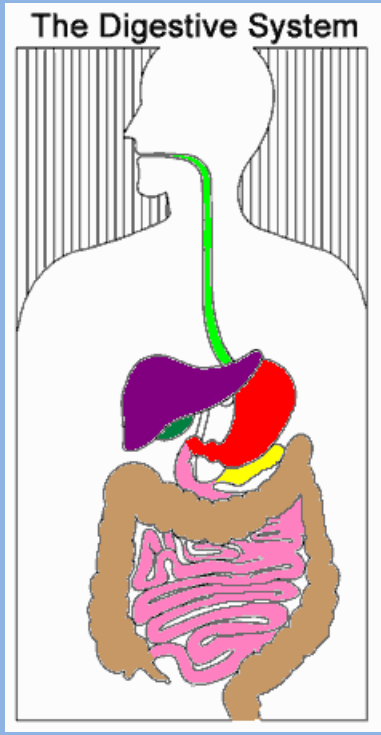
Fun Facts

- 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!!


Now it's...
QUIZ TIME!

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

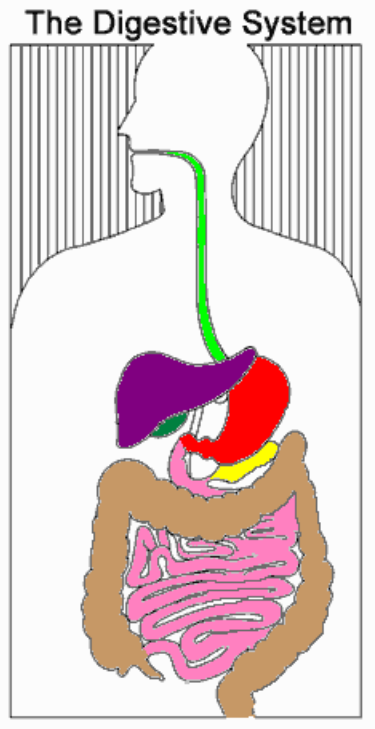
- Green:
- Red:
- Pink:
- Brown:
- Purple:
- Green:
- Yellow:



How'd you do?

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

Great Job!



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Questions

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