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 (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.
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.
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!
Questions

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http://www.daytonastate.edu/asc/ascsciencehandouts.html