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.
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

- 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
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
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