Your Digestive and Urinary Systems

Chapter 18 Lesson 1
Functions of the Digestive System

- **Digestion** - the mechanical and chemical breakdown of foods for use by the body’s cells
- **Absorption** - the passage of digested food from the digestive tract to the circulatory system
- **Elimination** - the expulsion of undigested food or body wastes

Once food is broken down, nutrients from it are absorbed through the small intestine.
Food not broken down during this process is eliminated as waste.
The Mouth and Teeth

- Digestion begins in the mouth with the teeth, tongue, and salivary glands.
- **Ingestion**- the taking of food into the body, takes place in the mouth.

The primary function of your teeth is to break down food into smaller pieces.

**Mastication**- the process of chewing, prepares food to be swallowed.
The Tongue

- Your tongue forms food into a ball to prepare for swallowing.
- As you begin to swallow, a wave of muscular contractions pass over your tongue, forcing food into the pharynx.
- At the same time, the ovula, a small muscular flap of tissue suspended at the back of your mouth, closes over the opening to the nasal passages.
The Esophagus

- The muscular tube that extends from the pharynx to the stomach, situated behind the trachea.
- The esophagus is about 10 inches long.
- A process called **peristalsis**-a series of involuntary muscular contractions, moves food through the esophagus.
- A sphincter muscle opens to allow food to enter the stomach. Sphincter muscles are located along the digestive tract to prevent food from backing up.
The Stomach

- The stomach is flexible and consists of three layers of muscles. The main activities of the stomach are to:
  - Continue breakdown of food
  - Serve as a storage organ for food until it’s ready for the small intestine
  - Mix together food and **gastric juices** - secretions from the stomach lining that contain pepsin and hydrochloric acid.
  - **Pepsin** is an enzyme that breaks down protein
  - **Hydrochloric acid** kills bacteria and is strong enough to dissolve metal.
  - As food is churned in the stomach, food is turned into **chyme** - a creamy, fluid mixture of food and gastric juices.
The Small Intestine

- The majority of digestion and absorption occurs in the small intestine.
- The small intestine is 20-24 feet long.
- Consists of three parts: the duodenum, the jejunum, and the ileum. Chyme enters the duodenum from the stomach. The ileum opens into the large intestine.
- Peristalsis moves food through the small intestine in three to five hours.
- Millions of fingerlike projections called villi line the small intestine. Villi increase the surface area of the jejunum and allow more absorption to take place.
- Unabsorbed material leaves the small intestine and enters the large intestine.
The large intestine (colon) forms the lower part of the digestive tract and is 5-6 feet long.

The main functions of the large intestine are to absorb water and eliminate undigested food.

Water absorption in the large intestine is where the majority or vitamins, and mineral salts are absorbed into the bloodstream.

Many harmless bacteria live in the large intestine, changing the consistency of undigested food to a semisolid waste, called feces.
Organs that Aid Digestion

- **The Liver** - the second largest organ in your body (skin is the largest) functions as your body’s chemical factory and regulates the levels of most of the main chemicals in your blood.

- The liver acts to clear the blood of drugs and poisonous substances. The liver absorbs these substances, changes their chemical structures, and makes them water soluble.

- These substances are then excreted in **bile** - a yellowish/green bitter fluid important in the breakdown of fats.
The Gallbladder - a small pear shaped sac 3-4 inches long located underneath the liver.

- The neck of the gallbladder forms a neck leading to the duodenum - the first section of the small intestine.
- The gallbladder stores bile until food moves into the duodenum from the stomach.
Organs that Aid Digestion cont.

- **The Pancreas** - as part of the endocrine system, produces the hormone insulin.
- As part of the digestive system, the pancreas produces three digestive enzymes: trypsin-digests proteins, amylase- digests carbohydrates, lipase- digests fats.