Name DO NOT WRITE ON Date DO NOT TAKE Class

SECTION 3-3 SECTION SUMMARY

# The Digestive Process Begins

**Guide for Reading**

◇ What general functions are carried out in the digestive system?

The digestive system has three main functions. **First, it breaks down food into molecules the body can use. Then, the molecules are absorbed into the blood and carried throughout the body. Finally, wastes are eliminated from the body.**

The process by which the body breaks down food into small nutrient molecules is called **digestion.** There are two kinds of digestion—mechanical and chemical. In mechanical digestion, foods are physically broken down into smaller pieces. In chemical digestion, chemicals produced by the body break foods into their smaller chemical building blocks.

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After food is digested, the molecules are ready to be transported throughout your body. **Absorption** is the process by which nutrient molecules pass through the wall of your digestive system into your blood. Materials that are not absorbed, such as fiber, are eliminated by your body as wastes.

Both mechanical digestion and chemical digestion begin in the mouth. The fluid released when your mouth waters is called **saliva.** Saliva plays an important role in both mechanical and chemical digestion.

Chemical digestion begins in the mouth. Your teeth carry out the first stage of mechanical digestion. As the teeth break foods into smaller pieces, saliva mixes with the pieces of food and moistens them. Chemical digestion is accomplished by enzymes. An **enzyme** is a protein that speeds up chemical reactions in the body. Saliva contains an enzyme that digests starch.

As you swallow, muscles in your throat move the food downward. As this happens, a flap of tissue called the **epiglottis** seals off your windpipe, preventing the food from entering. Food moves into the **esophagus,** a muscular tube that connects the mouth to the stomach. The esophagus is lined with mucus. **Mucus** is a thick, slippery substance produced by the body. Mucus makes food easier to swallow. Involuntary waves of muscle contractions called **peristalsis** move food down the esophagus towards the stomach.

Food leaves the esophagus and enters the stomach. The **stomach** is a J-shaped muscular pouch located in the abdomen. Most mechanical digestion occurs in the stomach as muscle contractions churn the food. Chemical digestion is carried out in the stomach by digestive juices that contain enzymes and hydrochloric acid. When the food has been digested into a liquid form, it moves into the next part of the digestive system. a few hours after eating.

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SECTION 3-4 SECTION SUMMARY

# Final Digestion and Absorption

**Guide for Reading**

◇ **What roles do the small intestine and large intestine play in digestion?**

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Once the food has been changed into a thick liquid, the stomach releases a little liquid at a time into the small intestine for further digestion. The **small intestine** is the part of the digestive system where most of the chemical digestion takes place. It makes up two thirds of the digestive system. **Almost all chemical digestion and absorption of nutrients takes place in the small intestine.** Enzymes and secretions produced by the small intestine, the liver, and the pancreas finish the chemical digestion of food.

The **liver,** which is located in the upper portion of the abdomen, plays an important role in digestion. As part of the digestive system, the liver produces bile. **Bile** is a substance that breaks up fat particles. Bile flows from the liver into the **gallbladder,** the organ that stores bile. After you eat, bile passes through a tube from the gallbladder into the small intestine. The bile mixes with fats in food and breaks them into small droplets. These small droplets can then be broken down chemically by enzymes produced in the pancreas.

The **pancreas** is a triangular organ that lies between the stomach and the first part of the small intestine. It produces enzymes that flow into the small intestine. These enzymes help break down starches, proteins, and fats.

After chemical digestion takes place, the small nutrient molecules are ready to be absorbed by the body. The lining of the small intestine is covered with millions of tiny finger-shaped structures called **villi.** The villi absorb nutrient molecules. Nutrient molecules then pass from cells on the surface of a villus into blood vessels. The blood carries the nutrients to all of the body's cells. The cells use them for many functions.

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The **large intestine** is the last section of the digestive system. It contains helpful bacteria that feed on the material passing through. By the time material reaches the large intestine, most of the nutrients have been absorbed. The material entering the large intestine contains water and undigested food such as fiber. **As the material moves through the large intestine, water is absorbed into the bloodstream. The remaining material is readied for elimination from the body.**

The large intestine ends in a short tube called the **rectum.** Here waste is compressed into a solid form. This waste is removed from the body through the **anus,** a muscular opening at the end of the rectum.

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