

The Five Connected Parts of the Digestive System

Our digestive system is made up of five connected organs. These organs are called the digestive tract. They may also be referred to as the alimentary canal or the gastrointestinal tract. Together they measure about eight meters long. They do most of the work in breaking down your food. Several other organs help them along the way as they do their jobs.

The Beginning: Your Mouth

Okay, you are ready to eat a delicious, hot pizza. You pick up a piece and move it towards the first part of the digestive system, your **mouth**, of course! Your mouth may also be known as the **oral cavity**. In your mouth, you have a nice set of **teeth** and a rather thick muscle called a **tongue**. Your teeth are used to tear or grind your food. This is the beginning of **mechanical digestion**, breaking your food into smaller pieces. As you chew, your tongue helps you move the food around in your mouth. Your tongue also has taste buds on it, which allow you to enjoy the different flavors in your food. When your food is broken into small enough pieces, your tongue helps you swallow the food.

Along with the teeth and tongue, you have **salivary glands** in your oral cavity. These glands are hidden under your tongue. They make the saliva, or watery liquid, that you may call spit. Your saliva helps moisten the food you are eating, making it softer and easier to swallow. Your saliva is also responsible for beginning **chemical digestion**. Saliva contains enzymes, which are molecules that speed up chemical reactions. The enzymes in your mouth are called **salivary amylase**, and they help break down the starches in your food, making them into simple sugars. Scientists think you might make as much as two or three pints of saliva every day. How long would it take you to make a gallon of saliva?

The Food Tube: The Esophagus

When you swallow your food, it enters a muscular tube called the **esophagus**. This tube is about 25 centimeters long. When you are not swallowing, the esophagus flattens out. It stretches open to allow the food you have chewed to pass through it. As you swallow, involuntary muscles contract and relax, pushing your food toward your stomach. The movement created by the contracting and relaxing muscles is called **peristalsis**.

An Expandable Bag: The Stomach

Attached to the end of the esophagus is your **stomach**. This organ looks a bit like a bag, shaped like a "J." When your food enters your stomach, it mixes with **gastric juices**. These juices are enzymes, acids, and mucus. Some of the enzymes are called **pepsin**, and they help break down proteins and fats. One of the acids is known as hydrochloric acid, and it is responsible for breaking down proteins as well. The mucus in your stomach protects the stomach walls so they are not attacked by the strong acids and enzymes that are breaking down your food.

Food stays in your stomach for two to six hours. During this time, mechanical digestion takes place as the food and gastric juices are mixed together. Chemical digestion

also takes place as the enzymes and acid break down the food you have eaten. When the food and juices are fully mixed, the resulting mixture is called **chyme**.

Have you ever noticed that your pants feel a lot tighter after you have eaten a big meal? Remember that we said your stomach is like a bag. Well, it is a special bag that is able to stretch. Your stomach has many folds which are able to open up and stretch out as more and more food arrives through your esophagus. When the food is broken down and begins to move out of your stomach, your pants feel more comfortable once again.

A Seven-Meter Tube: The Small Intestine

When your food has been completely mixed and churned in your stomach, it moves into your **small intestine**. The name refers to the width and not the length of this organ. In most adults, the small intestine measures about 2.5 centimeters wide and about seven meters (over 21 feet) long. It is hard to imagine such a long tube fitting into a person's body. Because the small intestine is folded many, many times like an accordion, it finds the room it needs.

The small intestine is actually a long tube that is divided into three parts; the **duodenum**, the **jejunum**, and the **ileum**. In the first section, called the duodenum, digestive juices are added to the chyme. The juices are made by the **pancreas**, the small intestine, and the liver. The juices made by the pancreas work to break down carbohydrates, proteins, and fats. The juices made by the small intestine finish the work started by the pancreatic enzymes, and they neutralize the acidity of the chyme. **Bile**, made by the **liver** and stored in the **gall bladder**, is responsible for breaking fats into smaller molecules.

In the small intestines, digestion of your food is completed. Nutrients are completely broken down into molecules that are small enough to be used by the body cells. Food moves along through this long organ by the process of **peristalsis**. This is the same process that moves food from the mouth through the esophagus to the stomach.

Just how do the molecules of food get to the body cells from the small intestine? Inside the many folds of your small intestines there are millions of **villi**. Villi are tiny finger-like projections. These villi are surrounded by tiny blood vessels known as capillaries. Remember when you studied the circulatory system, you learned that capillaries are very thin blood vessels. The nutrients that have been broken down in the process of digestion are small enough to move out of the villi into the capillaries. They move from the digestive system into the circulatory system. Remember that one of the jobs of the circulatory system is to carry food to all the body cells. The pickup point is the small intestines!

A Two-Meter Tube: The Large Intestine

After the nutrients move from your small intestines into your blood stream, waste materials and fiber remain in your digestive system. These materials move into your **large intestine**, which is about six centimeters wide and 1.5 to two meters (around four to six feet) long. The waste materials still contain water that can be used by the body cells. Water molecules are absorbed by the blood from the large intestine. The blood carries the water along with the food to all the cells throughout the body. The remaining semisolid waste moves through the large intestine and is stored in the **rectum**. This waste material is called **feces**. When the rectum becomes full, the fecal wastes are removed from the body through the **anus**.

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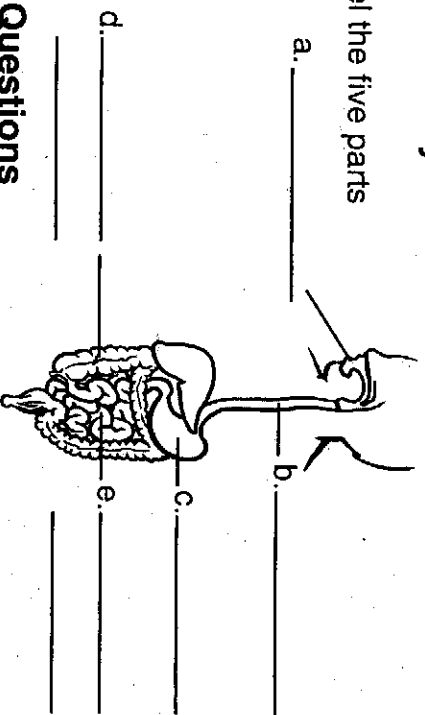
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Name: _____ Date: _____

Activity

Look at the diagram at the right. Label the five parts of the digestive system.



Questions

1. Why do very young children need to be fed soft foods?

2. Why is it important to chew your food?

3. What are three jobs performed by your tongue?

4. Why is it easier to eat a grape than a saltine cracker?

5. If you make two pints of saliva every day, how long would it take you to make a gallon?

6. What is peristalsis?

7. What is chyme?

8. The small intestine is about seven meters long and the large intestine is about two meters long. Why aren't the names switched?

