

Digestive system.

Learning Objectives

After this lesson, students should be able to:

- List the major components of the digestive system.
 - Draw a basic diagram of the digestive system.
- Explain how engineers work to resolve the challenges of eating in outer space

mechanical

Tooba Reif 1827
ingestion
mechanical digestion
chemical digestion
movement
absorption
elimination

Lesson Background & Concepts for Teachers

The digestive tract (also called the gastrointestinal tract) is roughly nine meters long and begins at the mouth and ends at the anus. It has six primary functions: ingestion, mechanical digestion, chemical digestion, movements, absorption and elimination.

The two main components of the digestive system are the alimentary tract and the accessory organs. The alimentary tract consists of the mouth, pharynx and esophagus, stomach, small and large intestines, rectum and anus. The accessory organs are the salivary glands, liver, gall bladder and pancreas. The tongue and teeth are accessory structures, and assist in ingestion and mechanical digestion.

Now, let's learn what each part of the digestive system does:

- Mouth** – The mouth is where the process of digestion begins. In the mouth, the teeth work to break down food into smaller parts. Saliva helps break food down chemically and also helps clean your teeth!
- Tongue** – Your tongue helps move food around in your mouth, and it is also covered with taste buds that help you taste your food. Eating would not be much fun without the taste buds that you have on your tongue!
- Teeth** – Your teeth help chop up food and break it into smaller pieces so that you can swallow it more easily. Kids have 20 teeth, but by the time they are fully grown, they should have 32 teeth (some people do have less!). There are different kinds of teeth that have different jobs: some are for cutting and biting, others are for tearing, others are for crushing, and still others are for grinding.
- Pharynx** – The pharynx connects both your mouth and your nasal passageway to your esophagus. A small flap of cartilage called the epiglottis falls down and covers your windpipe to prevent food from going down it instead of your esophagus.
- Esophagus** – Your esophagus connects your pharynx to your stomach and is a long tube about nine inches long. Food moves down the esophagus through peristalsis, which is a wave-like series of squeezing movements along the esophagus. These successive squeezing movements move the food along the esophagus and into the stomach. Peristalsis helps food move along your intestines, too.
- Liver** – Your liver has many different jobs to do. One of its most important jobs is detoxification. This means that your liver can remove harmful chemicals from your blood so that they don't hurt your body. The liver also secretes bile, which is a yellowish-greenish fluid that helps the digestion process, especially fat absorption and digestion.
- Stomach** – Your stomach is shaped like a J, and it has three main functions: to store food, to mix up food, and to pass the food into the small intestine. The partially digested food that leaves your stomach is part fluid and part solid, and it has a special name: chyme.
- Pancreas** – The pancreas secretes hormones (such as insulin) into your blood and also secretes enzymes into tiny ducts so they can travel throughout your body to help break down fats, proteins and carbohydrates.
- Gallbladder** – The gallbladder is a muscular membranous sac. It is shaped like a pear, and its main job is to store the bile that the liver secretes. (This is a great example of how all the parts of the body work together to accomplish what they were designed to do.)
- Small intestine** – The small intestine is another long tube that carries your food onwards. The cells in the small intestine secrete chemicals that further break down the food and finish the digestion process.
- Large Intestine** – The large intestine is wider and shorter than the small intestine. It does not secrete chemicals, so its job is different than the small intestine's. The large intestine works to absorb water, as well as form and get rid of feces.
- Rectum** – The rectum is the last part of the large intestine, and it connects to the anus.
- Anus** – The anus is the exit point of the digestive system. Just think about all the amazing transformations that have occurred along the route of the digestive tract! Food enters your mouth, travels down your pharynx, esophagus, stomach, small intestine, large intestine, rectum, and finally leaves through the anus. Along the way, your body breaks down the food into small compounds that it can use to help you grow, stay healthy and give you energy. It's an incredible journey in an incredible system!

Mouth
Tongue
Teeth
Pharynx
esophagus
Liver
Stomach
Pancreas
Gallbladder
Small intestine
Large intestine

Pancreas

Two Component

accessory organ.

alimentary tract
mouth
pharynx
esophagus
stomach

secretes hormones
enzymes
tiny duct
proteins
carbohydrates

Organs of the Digestive System

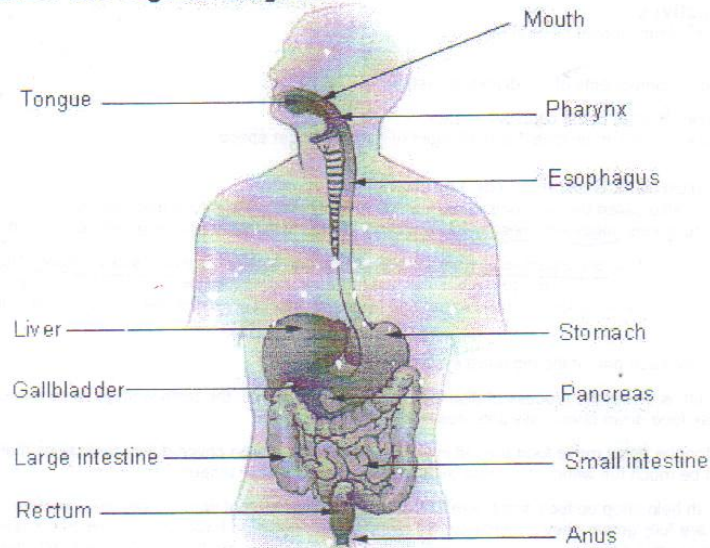


Figure 4. The organs of the human digestive system.
copyright

Vocabulary/Definitions

<i>anus:</i>	The exit point of the digestive system.
<i>bile:</i>	Yellowish-greenish fluid secreted by the liver that assists in the digestion and absorption of fats.
<i>chyme:</i>	The partially-digested food that leaves your stomach.
<i>digestion:</i>	The process of breaking down food into simpler chemical components that the body can use.
<i>digestive system:</i>	The system of organs that helps our bodies digest food.
<i>digestive tract:</i>	The series of hollow organs running from the mouth to the anus.
<i>epiglottis:</i>	A thin flap of cartilage that covers your windpipe when you swallow.
<i>esophagus:</i>	The part of the digestive tract that runs from the pharynx to the stomach.
<i>gallbladder:</i>	A muscular, membranous sac that stores bile.
<i>large intestine:</i>	The intestine that runs between the small intestine and the rectum; wider and shorter than the small intestine; absorbs water and forms feces.
<i>mouth:</i>	The opening where we put food; where the digestive process begins.
<i>pharynx:</i>	The part of the digestive tract between the back of the mouth and the esophagus.
<i>rectum:</i>	The last part of the large intestine; connects to the anus.
<i>liver:</i>	A large organ that secretes bile and removes toxins from the body.
<i>pancreas:</i>	A digestive system gland that secretes enzymes and hormones.
<i>peristalsis:</i>	Waves of contractions along the esophagus or intestines that propel food forward.
<i>small intestine:</i>	The intestine that runs between the stomach and the large intestine; secretes enzymes, and absorbs nutrients.
<i>stomach:</i>	Part of the digestive system responsible for storing, mixing, and passing

Assessment (Review to Content's)

Pre-Lesson Assessment

Drawing the Digestive System: Give each student a pencil and a blank piece of paper, and ask them to draw how they think their entire digestive system is laid out. Ask students to label each organ in their drawing, and clearly show how each part of the system connects to the next. After students finish, use the overhead Digestive System Map from the lesson introduction, explaining what each part of the system does and how the parts are connected.

Post-Introduction Assessment