# The Digestive System

# 5A

## *Introducing the Read-Aloud* — *10 minutes*

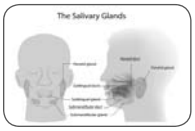
### What Do We Already Know? — *5 minutes*

Point to Poster 3 (Cells, Tissues, Organs, Systems) and review cell progression.

Tell students that today they will learn about the organs that play a role in the digestive system. Ask students if they know one of the main organs of the digestive system. (stomach) Tell students they will learn about several more organs in addition to the stomach. Explain that most of the digestive system's organs are located in the abdomen, sometimes called the belly. Have students touch their bellies. Tell them that their abdominal organs, the primary digestive organs, are found in this area.

### Vocabulary Preview — *5 minutes*

***Digest***




**Show image 5A-4: Salivary glands**

1. In today's read-aloud, you will hear about how our bodies *digest* the food we eat.
2. Say the word *digest* with me three times.
3. Digest means to change food that you have eaten into substances and nutrients that your body can use.
4. Our teeth break our food down into small pieces so it is easier to digest.
5. Which parts of our bodies do you think digest our food? What organs do you think help to digest food? Try to use the word *digest* when you answer. [Make a list of student responses. Tell students to listen carefully to the read-aloud to hear about the organs that work together to digest food.]

***Digestive System***

**Show image 5A-12: The digestive system**

1. The title of today's read-aloud is *The Digestive System*.
2. Say the phrase *digestive system* with me three times.
3. The digestive system is the body system that carries food to the stomach and small intestines and breaks it down into nutrients for your body to give your body the energy it needs to live.
4. Many organs make up the digestive system.
5. [Name a part of the digestive system, and have a volunteer come up to the image and point to it.] Say: "_____ is part of the digestive system." (stomach, liver, esophagus, small intestine, large intestine)

## Purpose for Listening

Tell students that the process of breaking down, or digesting, food is a slow one. Muscular gates hold food back, as well as open to release digested food along the way. Ask students to listen carefully to learn where these gates, called sphincters, are.

## *Presenting the Read-Aloud* — *15 minutes*

### The Digestive System

**Show image 5A-1: The digestive system**

Ah, boys and girls, when I look at you I can't tell whether you are hungry or whether you have just had a meal. But one thing I do know is that everybody in this room has a digestive system and that all of your digestive systems are working right now. There is a lot going on inside those bodies of yours!

You each eat several hundred pounds of food in one year. It takes roughly twenty hours for food to travel through your gut, or digestive tract, a long, complicated series of tunnels with openings at both ends. Where does the journey begin? Yes, the process [1] of digestion begins when you put a piece of food in your mouth.

1 or series of steps

**Show image 5A-2: Toothless baby**

When you were born, most of your teeth were hiding under your gums. That's why babies start out with a liquid diet. [2] But once your first set of teeth came in, you were able to eat solid foods. You are at an age right now when you are probably losing some of those teeth and getting a new set. If so, maybe you are finding it hard to chew certain foods.

2 A liquid diet is nutrition you can drink. Babies start out drinking their food, which is mainly milk.

Your teeth help you break your food down into millions of tiny pieces. The longer you chew, the smaller the pieces become, and the easier it is to digest.

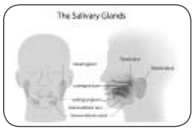
**Show image 5A-3: Teeth**

Human teeth come in different shapes and sizes, designed to eat both plants and animals. Let's take a look at the different types of teeth you have in your mouth. The flat, wedge-shaped teeth at the front of your mouth are called incisors. [3] The incisors, both top and bottom, work together like a pair of scissors to bite, slice, and cut up your food. Next to the incisors are sharp, fang-like teeth called canines, or dogs' teeth. These teeth tear and rip food apart,

3 The incisors are thicker at one end than the other, similar to a piece of pie. [Point to the incisors on the image.]

the way that dogs do with a piece of meat. Behind the canines, bicuspids help to crush the food. In the back of the mouth, wide teeth with bumpy tops known as molars help grind the food into mush.[4] Next time you bite into a piece of chicken, sample a piece of cheese, or chomp into an apple, see if you can tell which teeth help you the most.

4 With your tongue, touch the teeth in your mouth. Do you notice the different shapes your teeth have?




**Show image 5A-4: Salivary glands**

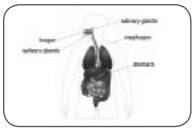
Have you ever heard someone call food "mouth-watering"? What do you think that means? When you smell your favorite food, perhaps spaghetti and meatballs, your mouth probably starts to water as you think about how good it will taste. That watery substance is called **saliva.** Saliva comes from small salivary glands in your cheek and under your tongue.[5] It helps keep your mouth damp and softens food as you chew, beginning to break food down for easy digestion. Saliva serves another important job as well, helping to wash away and kill bacteria.[6] Did you know that every day you produce as many as six cups of saliva in your mouth?[7] Can you feel it? Can you taste it?

5 [Point to the salivary glands in the image as well as inside your mouth (inside your cheeks and under your tongue).]

6 What is another word for unwanted bacteria? (*germs*) [Explain to students that germs are everywhere.]

7 [Show students a one-cup measure or a container with six cups of liquid.]

What else do you have in your mouth besides your teeth and saliva?

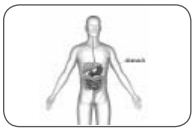


**Show image 5A-5: Upper digestive system**

What's the name of that fleshy muscle in your mouth that is covered in taste buds?[8] Your tongue, of course! Not only does your tongue help you taste your food, it also helps push the food around your mouth, rolling it into a mashed up, wet lump of food.

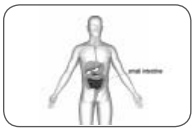
Your tongue pushes the lump of food to the back of your mouth and helps you swallow. Once food is swallowed, it passes into a food canal called the **esophagus.** This stretchy tube is only about ten inches long, leading from the back of your throat, through your neck and chest, to your stomach. Food passes through the esophagus quickly. Muscles squeeze together and push the food into the stomach in about ten seconds or less. It's a lot like squeezing toothpaste from its tube.

8 Taste buds are clusters of nerve endings.



**Show image 5A-6: Middle digestive system**

Put your hand on the left side of your upper abdomen, just below your chest and above your waist. That's where your stomach lives, behind your lower ribs. This human mixing machine is shaped a bit like the letter 'J'. Your stomach acts like a balloon, expanding to hold the food it receives. The stomach's gastric juices help break down the food into a paste-like substance. These digestive juices also kill any germs that may have been swallowed. Round and round food churns for three to four hours as muscles squeeze inside the stomach walls. Once it is the substance of a thick soup, the food continues its journey into the intestines.



**Show image 5A-7: Lower digestive system**

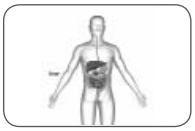
There are two types of intestines—the small intestine and the large intestine. The intestines are tubes located in the lower abdomen through which food and food waste travel. Even though there are two different kinds of intestines—the small and the large intestines, they are actually part of the same, long, single tube. A muscular gate, or sphincter, at the bottom of the stomach opens to allow food to flow from the stomach into the small intestine. The small intestine is about twenty-one feet long, or about as long as five seven-year-olds lying head to toe. Even though it's longer than the large intestine, it's called the small intestine because it's much thinner than the large intestine. This narrow tube, the small intestine, is coiled up like a snake below your belly button. Muscles squeeze together and push the mashed-up-soupy liquid along the curly, small intestine. The food is mixed once more with digestive juices from the liver, pancreas, and gallbladder, other organs that are part of your digestive system. The juices, called enzymes, break the food down and make it more and more watery along the way.

**Show image 5A-8: Cross section of the small intestine**

The small intestine, with its millions of **villi** [*VIL*-eye]**,** or finger-like threads, is where some of the most important work of the digestive system takes place.[9] The villi reach out and **absorb,** or soak up, usable nutrients and water, passing them through the bloodstream

9 [Point to the villi on the image.]

into all the cells of your body. Did you ever hear rumbling sounds coming from inside you? Chances are they are coming from your small intestine as muscles contract, or squeeze together, to break down food. They are the sounds of a healthy gut!



**Show image 5A-9: The role of the liver in the digestive process**

Most of the nutrients that are absorbed by the small intestine's many villi travel to the reddish-purplish liver, one of your body's important cleansing organs.[10] Your lower ribs on the right side of your body protect your liver. Its function is to clean the blood, **filtering,** or straining out any leftover waste. It turns this waste into bile, one of the juices used by the small intestine to help digest your food. The clean blood, with lots of nutrients, is carried to muscles to make them stronger, to bones to make them harder, and to every other part of your body to give you energy to help you grow. Since blood goes to every part of your body, the liver performs a very important function of making sure the blood circulating in your body is clean.

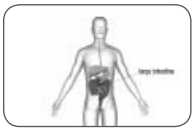
10 What does it mean when something is absorbed? (It is soaked up.)

**Show image 5A-10: The appendix**[11]

This finger-shaped organ is called the appendix. As far as anyone knows, it doesn't seem to be useful to the digestive system. From time to time, the appendix can become infected, or sick, and cause a disease called appendicitis. When people get appendicitis, they get a very sharp pain in the lower abdomen in the area surrounding the intestines. The pain comes from the appendix, located in the lower right side of your abdomen, near your hip bone. When it causes too much pain, doctors remove it. For many years, the appendix was considered a completely useless organ. Only recently have some doctors begun to think that the appendix may serve to fight infections.[12]

11 [Point to the image of the appendix.]

12 or kill germs



**Show image 5A-11: Lower digestive system**

The appendix is located right where the small intestine widens out into the large intestine. The large intestine is where the solid waste ends up.[13] Even though the large intestine is much, much shorter than the small intestine, it is called the large intestine because it is

13 When something is solid, it is not liquid, or a gas.

much wider. Parts of food not digested in the small intestine are squeezed out into the large intestine where they remain for up to two days. Water is absorbed from the waste into the walls of the large intestine and passed into the bloodstream. The waste becomes thicker and thicker, piling up into a solid mass known as feces. Feces are stored in the rectum, the final section of the large intestine, until another muscular gate, or sphincter, opens and allows the feces to pass through the anus, the body's exit point for solid waste.

**Show image 5A-12: The digestive system**[14]

That is the end of your food's journey—from mouth to esophagus to stomach to small intestine to large intestine to anus. The digestive system's organs are working all the time, day and night, to process food into substances that your body can use, providing you with the nutrients and energy you need.

14 [Point to each of the relevant digestive organs as you read about it.]

## *Discussing the Read-Aloud* ***15*** *minutes*

### Comprehension Questions ***10*** *minutes*

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* The human body has many muscular gates called sphincters. One is between the esophagus and the stomach. What other sphincters did you hear about today? (between the stomach and the small intestine; between the large intestine and the anus)
2. *Literal* What is the name of the long, stretchy tube that carries food from your throat to your stomach? (esophagus)
3. *Evaluative* You learned that both saliva and gastric juices work to kill germs. Why is that necessary? How do germs get into your body? (Germs are everywhere, and it is impossible not to breathe them through the air and ingest them with our food.)

4. *Inferential* If the intestines are one, long, coiled tube, why do you think we talk about them separately, using the terms *small intestine* and *large intestine*? (They perform different jobs. The small intestine is long and narrow, and its job is to break down food into nutrients, which are absorbed into the body through the villi. The large intestine is short and wider than the small intestine, and it houses waste for a time before passing the waste out through the anus.)

5. *Inferential* You learned that the liver filters waste from your blood. Why is it important to have clean blood? (Blood travels to all parts of your body, and it would not be good to have waste circulating through the body.)

6. *Literal* If you have appendicitis, the doctor may operate on you to remove one of your organs. What is the name of that organ? (appendix) Is it dangerous to remove the appendix? (No, doctors are not sure of its purpose, but some think it may help fight infections. You can live without the appendix.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

7. *Evaluative* *Think Pair Share:* After this read-aloud, you know what *digestion* means. If we put the prefix *in–* before a word, it changes the meaning of the word to *not* or *without.* If we put *in–* before the word *digestion,* we get the word *indigestion.* What do you think that means? What are some possible causes of indigestion? (Answers may vary, but let students know that indigestion causes pain or discomfort in the stomach. Causes may include swallowing food too quickly, before it has had time to break down in the mouth's saliva; eating too much so that it overloads the system; eating foods that irritate the stomach's lining.)

8. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

## Word Work: Absorb *5 minutes*

1. In the read-aloud you heard, "The villi reach out and *absorb* usable nutrients and water, passing them through the bloodstream into all the cells of your body."
2. Say the word *absorb* with me.
3. *Absorb* means to soak in a substance.
4. The paper towel will absorb the spilled water.
5. Think of an absorbent material, something that will absorb—or soak up—a substance easily. Use the word *absorbs* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase students' responses: "_____ absorbs _____"]
6. What's the word we've been talking about?

Use a *Making Choices* activity for follow-up. Directions: I am going to name two words. You need to respond with a simple sentence, saying "_____ absorb _____," using the words in the correct order. For example, if I said, "pancakes" and "syrup," you would respond, "Pancakes absorb syrup," because syrup is soaked up by the pancakes, not the other way around. Remember to use the word *absorb:* "_____ absorb _____."

- trees/rainwater (Trees absorb rainwater.)
- liquid/paper towels (Paper towels absorb liquid)
- nutrients/villi (Villi absorb nutrients.)
- plant leaves/sunlight (Plant leaves absorb sunlight.)
- saliva/crackers (Crackers absorb saliva.)

**Complete Remainder of the Lesson Later in the Day**

# The Digestive System

5B

## *Extensions* — *20 minutes*

### Sequencing the Digestive Process (Instructional Master 5B-1) — 15 *minutes*

- Hold Image Cards 8 (Mouth), 9 (Esophagus), 10 (Stomach), 11 (Small Intestine), 12 (Large Intestine), and 13 (Rectum and Anus) in your hand, fanned out like a deck of cards.
- Invite six students to each choose a different card. Students must then look at their cards and figure out the correct sequence for the digestive process. Ask them to stand in the proper order, facing the others so that they may give their input as well.
- Repeat the activity until all students have had a chance to participate.
- Have students complete Instructional Master 5B-1 (Sequencing the Digestive Process). If students have difficulty reading, you may wish to read aloud to them the descriptions of the steps of the process aloud to them.
- When students have completed the worksheet, have them check their work by comparing it to the Image Cards showing the correct sequence for the digestive process.

### Digestive System Matchup (Instructional Master 5B-2) — 5 *minutes*

- Have students complete Instructional Master 5B-2 to label the parts of the digestive system with the correct terms from the word bank.

### My Human Body Journal (Instructional Master 5B-3) — 20 *minutes*

- Have students draw the various parts of the upper and middle digestive system (i.e., mouth, esophagus, and stomach) inside the outline of the human body. Then have them write two or three sentences about the digestive system: one introductory sentence, and two sentences with details about the digestive system.

### Domain-Related Trade Book — 20 *minutes*

- Refer to the list of recommended trade books in the Introduction at the front of this *Supplemental Guide*, and choose one trade book about the digestive system to read aloud to the class. [Suggested trade books are Items 5–7, 9, 11, 14, 15, 23 and 26.]
- Explain to students that the person who wrote the book is called the author. Tell students the name of the author. Explain to students that the person who makes the pictures for the book is called an illustrator. Tell students the name of the illustrator. Show students where they can find this information on the cover of the book or on the title page.
- As you read, use the same strategies that you have been using when reading the read-aloud selections—pause and ask occasional questions; rapidly clarify critical vocabulary within the context of the read-aloud; etc.
- After you finish reading the trade book aloud, lead students in a discussion as to how the story or information in this book relates to the read-alouds in this domain.
- Provide students with drawing paper, drawing tools, and writing tools. Have students draw one detail or idea from the trade book that is new or different from the read-aloud they heard. Then have students write two or three sentences to go along with their drawings. Have students share their drawings and writing with their partners or home-language peers.

## *Take-Home Material*

### Family Letter

Send home Instructional Masters 5B-4 and 5B-5.