

CHAPTER 28

Welcome back! You are almost finished with your study of the parts of the human body (which is also known as **human anatomy**...“a-nat-o-mee”). In this last chapter, you will be looking at three more organs. Like all of your organs, these guys work together to keep you alive!

**THIS WEEK YOU WILL BE
LEARNING ABOUT YOUR....**

**Pancreas, Liver
and Gallbladder**

Let's start by looking at your... **Pancreas** (“pan-kre-az”)

The **#1** job of your pancreas is to help **digest** (break down) the food that comes into your small intestine!

THE WORD **"DIGEST"**
MEANS TO "BREAK DOWN
YOUR FOOD INTO
SMALLER, SOFTER AND
MORE USABLE PIECES."



If you remember from Chapter 27, by the time that pizza you ate for lunch moves from your stomach into your small intestine, your food looks like a pile of creamy slime!

Your pancreas squirts chemicals into your small intestines called **enzymes** ("ends-imes"). Enzymes are chemicals that your body makes that helps your body do all kinds of things. Enzymes are used to help you breathe, walk and **digest** your food.



Once your pancreas squirts its enzymes into your small intestines, these chemicals mix into the creamy slime you once called your lunch. These enzymes help to break down a lot of the fats, sugars and

proteins in your food. Foods like meat, eggs, milk and vegetables are filled with proteins! Proteins are the most important part of the food that you eat because your body must have protein to survive! Some parts of your body are even made up of proteins...like your muscles!

Ok...back to your pancreas!

The enzymes from your pancreas help to digest most of the food that makes it into your small intestine.

This is not the only job for your pancreas!

In addition to digesting your food, your pancreas also makes certain that your blood has the right amount of sugar in it! Too much or too little sugar in your blood can make you very sick!

As your blood flows through your pancreas, it can tell when you have too much or too little sugar in your blood. When this happens, your pancreas sends out messengers into your blood, which are called **hormones** ("hoar-moans"). If you have too little sugar in your blood, your pancreas sends out a hormone (a messenger) called **glucagon** ("glue-ca-gone"). This messenger tells another organ in your body (your **liver**) to release more sugar into your blood!

When you have too much sugar in your blood, your pancreas sends out a different hormone, called **insulin**, into your blood. Insulin tells your liver to take sugar out of your blood and to store it for future use!



SUGAR CANE

IF SUGAR COMES FROM THIS PLANT, WOULDN'T THAT MAKE SUGAR A VEGETABLE?

NOPE!

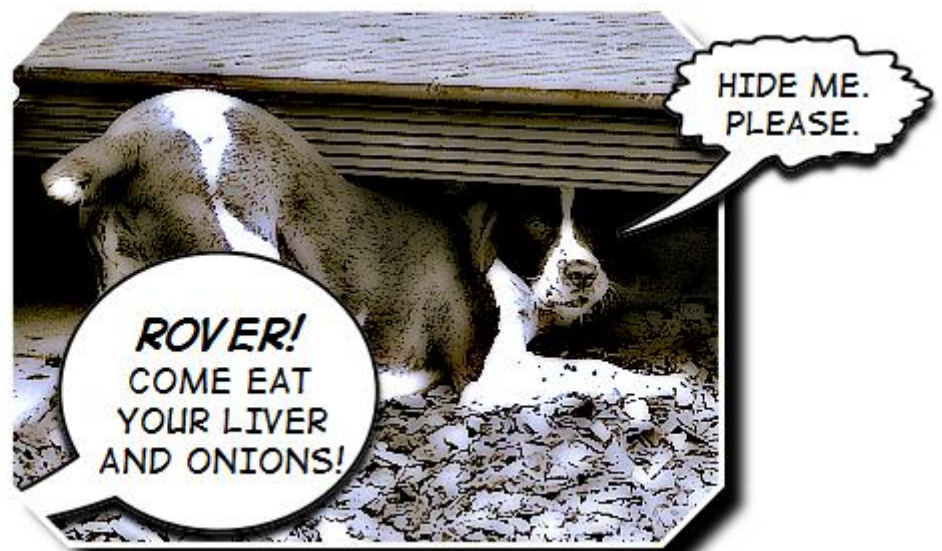
A common disease that involves your pancreas is **diabetes** ("di-a-beet-ez"). Diabetes happens in people when their pancreas does not release enough insulin in their blood. Without insulin, they cannot lower the amount of sugar in their blood. If this problem is not taken care of, a person can become very sick.

Now let's take a look at your... **Liver**

The enzymes from your pancreas do a very good job at breaking down your food; however, the "creamy goo" that was once your lunch still needs to be cleaned before it can be used by your body. This is where your liver comes in!

Every drop of blood that carries your digested food from your small intestines goes through your liver first!

Your liver does a lot of things to keep your body alive!



Your liver:

- Gets rid of wastes and poisons in your blood
- Stores sugar and releases it into your blood
- Produces a chemical called **bile**

Your liver is the warehouse for sugar in your body. When your pancreas senses that there is too much or too little sugar in your blood, it sends a hormone to the liver. Once your liver picks up this hormone, it can either start storing sugar from your blood or start releasing it into your blood.

Every drop of creamy goo that enters your small intestine and is digested by the enzymes from your pancreas must pass through your liver!

Your liver filters out all of the waste and poisons that are in this creamy goo and prepares to send it through your blood to your body.

Your liver also makes a special liquid called **bile!**

Bile is a liquid that is made by your liver and is used to digest any fat that still can be found in your food.



After your liver makes bile, it gets stored in an organ called
the **gallbladder!**

Your gallbladder squirts out its bile into the creamy goo once it reaches the small intestines! Just like your pancreas squirts out enzymes to digest your fats, sugars and proteins in your food. That's right! It takes more than one chemical to break down all of the fats in your food!

Before you go, let's have a quick reminder about what happens to that pizza once you start eating your lunch...

1. You use the skeletal muscles and bones in your arms to reach for the last slice of pizza and place it into your mouth.
2. The skeletal muscles in your mouth move your jaw to chew your food.
3. Your esophagus forces your food down into your stomach.
4. The smooth muscles in your stomach store your food until it gets moved into your small intestines. At this point, it looks like a creamy goo.
5. Your pancreas squirts enzymes and your gallbladder squirts bile into the goo.
6. The goo gets digested into smaller, softer pieces and gets placed into your blood.
7. Your blood is passed through the liver.
8. The liver removes the poisons and wastes from the blood.
9. Your blood leaves your liver and goes to your body.

Fill in the blanks with the correct letters. The words in the list on the right provide a clue to the answer.

- | | |
|--------------------|---|
| 1) b _ le | a liquid that is made by your liver and is used to digest any fat that is in your food |
| 2) dig _ s _ _ ng | to break down your food into smaller and more usable pieces |
| 3) pro _ ei _ s | the building blocks for many parts of the body |
| 4) ho _ m _ nes | chemical messengers made by your body |
| 5) g _ uc _ go _ | a hormone made by your pancreas which informs the liver to send more sugar into your blood |
| 6) ins _ _ i _ | a hormone made by your pancreas which informs the liver to stop sending sugar into your blood |
| 7) _ ia _ ete _ | a common disease that occurs when your pancreas stops making insulin |
| 8) pa _ c _ eas | makes enzymes to help break down the food that comes into your small intestine |
| 9) _ al _ bladde _ | a storage area for bile |
| 10) l _ _ er | an organ of the body that filters your blood and stores sugar and makes bile |

Match the words in the first column to the best available answer in the second column.

- | | |
|-------------------|--|
| _____ Pancreas | 1) the building blocks for many parts of the body |
| _____ Digesting | 2) a liquid that is made by your liver and is used to digest any fat that is in your food |
| _____ Proteins | 3) an organ of the body that filters your blood |
| _____ Hormones | 4) to break down your food into smaller pieces |
| _____ Glucagon | 5) a storage area for bile |
| _____ Insulin | 6) a common disease that occurs when your pancreas stops making insulin |
| _____ Diabetes | 7) chemical messengers made by your body |
| _____ Liver | 8) a hormone made by your pancreas which informs the liver to stop sending sugar into your blood |
| _____ Bile | 9) makes enzymes to help break down the food that comes into your small intestine |
| _____ Gallbladder | 10) a hormone made by your pancreas which informs the liver to send more sugar into your blood |

Unit Seven review

Fill in the blanks in the story below with the following words:

skeletal
esophagus
stomach

smooth
small intestines
pancreas

liver
lungs

You use the _____ muscles and bones in your arms to reach for the last slice of pizza and place it into your mouth. After chewing up the pizza, your _____ forces your food down into your _____. The _____ muscles in your stomach store your food until it gets moved into your _____. At this point, it looks like creamy goo. Your _____ squirts enzymes and your gallbladder squirts bile into the goo. The goo gets digested into smaller, softer pieces and gets placed into your blood. Your blood is passed through the _____. This organ removes the poisons and wastes from the blood. Your blood leaves your liver and ends up in your _____ where it can pick up oxygen.

Be certain to go over your definitions for the test!