

# Pancreas, Gallbladder, & Liver

by Sophia



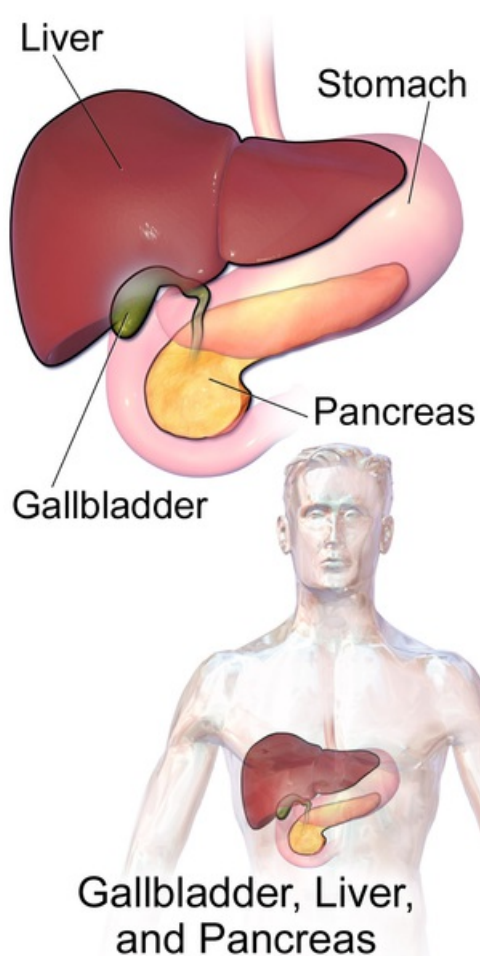
## WHAT'S COVERED

In this lesson, you will learn to identify the pancreas, gallbladder, and liver, and investigate their role in digestion. Specifically, this lesson will cover:

## 1. Accessory Organs Overview

The pancreas, gallbladder, and liver are identified as accessory organs. This means they play a role in digestion, but they're separate from the digestive tract.

As you move through the lesson, refer to the diagram below as a visual.



## 2. The Pancreas

The **pancreas** is an organ that releases enzymes that help to break down carbohydrates, lipids, proteins, and nucleic acids within the small intestine. It also plays a role in regulating our blood sugar levels or homeostasis.

### IN CONTEXT

A person who has Type 1 diabetes has issues with their pancreas where they're not able to produce insulin (the hormone that helps to regulate blood sugar levels).

The pancreas releases enzymes that help break down these materials in digestion, and these pancreatic juices also help to neutralize the acids in chyme. Chyme is an acidic substance from the stomach, and it is very important to neutralize its pH to make it easier on the lining of the small intestine as it passes through it.



### TERM TO KNOW

#### Pancreas

The endocrine functions of the pancreas are to secrete insulin and glucagon to regulate blood glucose levels.

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## 3. The Liver

The **liver** produces **bile**. Bile is the substance that aids in the digestion and absorption of fats.

In addition to producing bile for digestion, the liver has many different roles in the body. Some of them are digestive-related, and some of them aren't. Some other functions of the liver include storing vitamins and minerals, storing glucose as glycogen, and helping remove toxins, such as alcohol, from the blood.

The liver is also related to the **hepatic portal system**, which is a system of blood vessels that diverts blood from the small intestine to the liver.

Nutrient-rich blood is delivered from the small intestine through the hepatic portal system, up to the liver. From there, nutrients that are in that blood from digestion are either processed, stored, or can be used for the synthesis of proteins or by cells to make ATP. The liver will determine what needs to happen with these substances based on our metabolic needs.

➞ **EXAMPLE** If there is too much glucose in the blood that's delivered to the liver, it will store some of that glucose as glycogen. If there's a certain vitamin or mineral that happens to be really high in the blood at that time, it can also store some of those extra vitamins and minerals, such as iron in the liver until it's needed later, as well.



### TERMS TO KNOW

#### Liver

Produces bile and secretes it into the gallbladder to be stored; the liver also processes nutrients such as amino acids and carbohydrates, and also “detoxifies” the blood.

### Bile

A secretion created by the liver that is used to aid in the digestion of lipids (fats).

### Hepatic Portal System

A system of veins that drain blood from the stomach and intestines to the liver; a portal system consists of two consecutive capillary beds connected by a portal vein(s).

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## 4. The Gallbladder

The **gallbladder** stores bile and releases it into the small intestine when needed. Bile is produced in the liver but stored in the gallbladder. So when bile is needed—if there are fats that need to be digested or absorbed—the gallbladder will release some of this bile through the bile ducts into the small intestine.



### TERM TO KNOW

#### Gallbladder

The organ that stores bile until it needs to secrete it; bile is transported from the gallbladder into the duodenum through bile ducts.



### SUMMARY

This lesson has been an **overview of the accessory organs**. Specifically, you looked at the structure and function of the **pancreas, liver, and gallbladder**.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND



### ATTRIBUTIONS

- [Accessory Organs](#) | Author: Wikipedia | License: Creative Commons



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**Liver**

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**Pancreas**

The endocrine functions of the pancreas are to secrete insulin and glucagon to regulate blood glucose levels.