

1.4 Digestive system

Learning objectives

After this topic you will be able to:

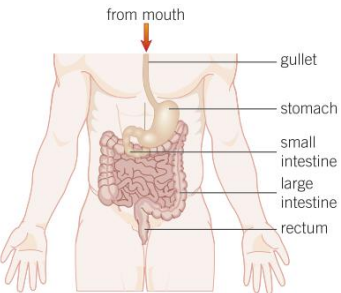
- describe the structure and function of the main parts of the digestive system
- describe the process of digestion.

Link

You can learn more about molecules in C1 2.3 Compounds

Fantastic fact

If you unravelled your small intestine it would be roughly four times taller than you – it is not very small!!

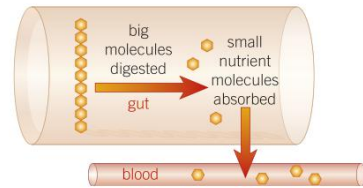


▲ Movement of food out of the digestive system.

You may sometimes notice your stomach rumbling. This is a hint that you need to eat. You know that the food contains nutrients. But how does your body get nutrients out of food?

What is the digestive system?

The **digestive system** is a group of organs that work together to break down food. The nutrients in most of the food you eat are large molecules, like lipids and proteins. During **digestion** these large molecules are broken down into small molecules of nutrients. These nutrients can then pass into the blood where they are used by the body.



◀ During digestion large molecules are broken down into small molecules and pass into the bloodstream.

A State what happens during digestion.

Structures in the digestive system

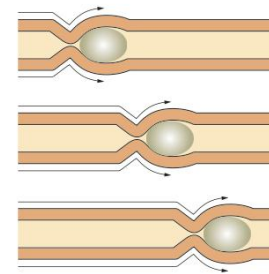
The diagram opposite shows the main structures in your digestive system. It is often referred to as your gut.

Mouth	Food is chewed and mixed with saliva. Teeth help to break the food into smaller chunks.
Gullet	Food passes down this tube.
Stomach	Food is mixed with digestive juices and acids.
Small intestine	Digestive juices from the liver and pancreas are added and digestion is completed. Small molecules of nutrients pass through the intestine wall into the bloodstream.
Large intestine	Only food that cannot be digested gets this far. Water passes back into the body, leaving a solid waste of undigested food called feces.
Rectum	Feces are stored here until they leave the body.
Anus	This is a muscular ring through which feces pass out of the body.

B Name the structure that food passes along to reach the stomach.

Moving through the digestive system

Fibre in your food isn't digested but adds bulk to the food. Muscles push against this, forcing food along the gut. Eating lots of fibre-rich foods such as vegetables and wholemeal bread helps prevent constipation.



◀ Muscles in the wall of the gut squeeze food along – a bit like squeezing a tube of toothpaste.

C Describe how food moves along the gut.

Passing into the blood

The small molecules of nutrients produced during digestion pass into the bloodstream through the wall of the small intestine. They are then transported around the body.

The small intestine needs to absorb the nutrients quickly, before the undigested food passes out of the body. The small intestine is specially adapted to this function. The wall of the small intestine is thin. It is also covered with tiny structures called **villi**. These stick out of the wall and give it a big surface area. They also contain blood capillaries to carry away the absorbed food molecules.



▲ Villi in the small intestine increase the surface area so more nutrients can be absorbed.

Key Words

digestive system, digestion, gullet, stomach, small intestine, large intestine, rectum, anus, villi

Wordbank

Make a wordbank by listing all the scientific terms about digestion. You can refer to your wordbank as you progress through this topic.

Summary Questions

- Match each organ below to its role in digestion.

stomach	food is chewed and mixed with saliva
small intestine	water is absorbed back into the body
large intestine	food is mixed with acid and digestive juices
rectum	feces are stored here until they pass out of the body
mouth	small molecules of nutrients are absorbed into the blood stream

(5 marks)
- Describe the adaptations of the small intestine to its function.

(3 marks)
- Explain why it is important to eat a fibre-rich diet.

(3 marks)
- Describe in detail the passage of food through the digestive system.

(6 marks)