

4. The digestive system

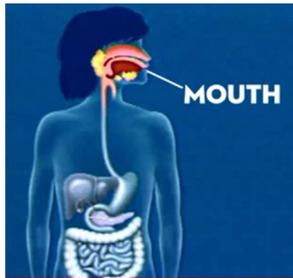
4.1 The organs in the digestive tract

4.1.2

The anatomy of the digestive tract

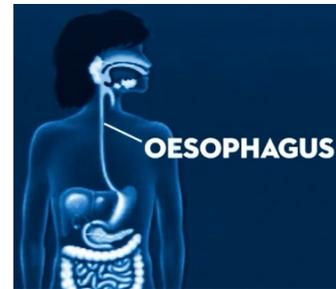
THE MOUTH

The digestive tract is simply all the organs that are instrumental in digestion. It starts with the mouth, which is sometimes called the **buccal cavity**.



The mouth has three main components: **teeth**, the **tongue** and **saliva**. Teeth are hard structures. The tongue is a muscle. Saliva is the liquid inside the mouth. It is a chemical substance that contains enzymes.

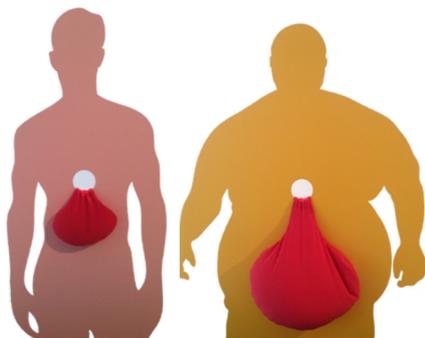
The food we eat starts to be transformed in the mouth. Once it leaves the mouth, food goes into a tube called the **oesophagus**, which is about 25 centimetres long.



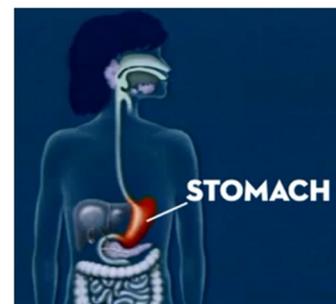
A muscle at the bottom of the throat opens and closes the oesophagus. This muscle is called a **sphincter**, which either allows or prevents food from passing through.

THE SPHINCTERS

There are several sphincters in the digestive tract. For example, there is another sphincter at the end of the oesophagus to control the entrance to the stomach.

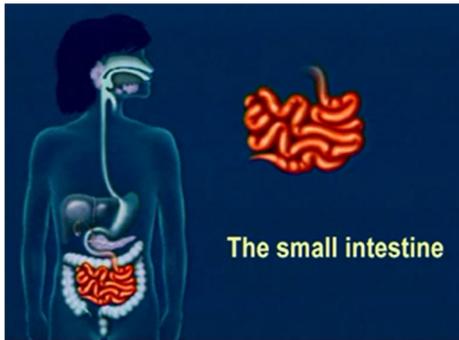


The stomach is a J-shaped muscular pouch that expands when it receives food and drinks. Its average size is 1.3 litres, but a heavy beer drinker's stomach can reach a volume of 4 litres!



As you may have guessed, there is another sphincter at the bottom of the stomach to regulate the movement of food towards the small intestine. It is called the **pylorus**.

THE INTESTINES



The small intestine is a narrow, coiled tube that is more than 5 metres long. To put this in context, if stretched out vertically, it would be equivalent to the height of a giraffe!

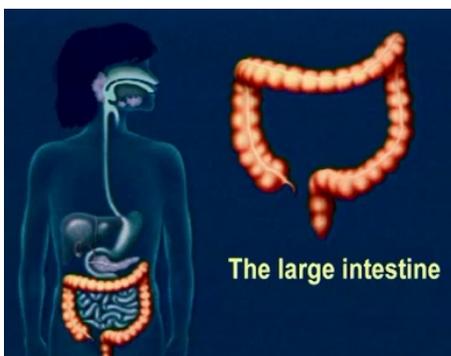


The small intestine can be separated into three parts: the **duodenum**, the **jejunum** and the **ileum**.

The **duodenum** is the first part of the small intestine, but since it is closely related to the liver and pancreas, it is often treated separately.



The liver and pancreas are considered **accessory digestive glands** because, although they play an important role in digestion, food never actually goes through them. It is mainly in the small intestine that nutrients move into the blood to reach the body's cells.

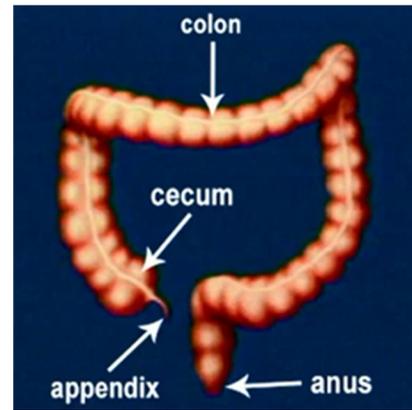


The last organ in the digestive tract is the large intestine. It is about 1 metre long.

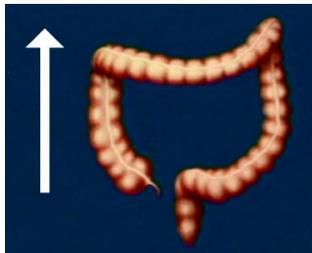
Nutrients first pass through another pouch, located between the small and large intestines.

alimentarium academy

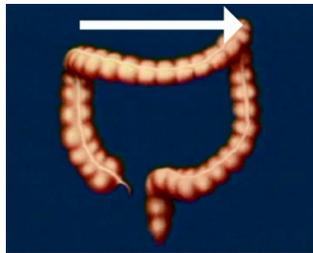
This pouch is called the **cecum**. It has a small appendage, called the **appendix**. The appendix does not participate in digestion, but may become infected. Such an infection is called appendicitis. The large intestine is sometimes also called the **colon**. Just like the oesophagus and stomach, it also has a sphincter at the end. Most of the time this sphincter is closed, except when stools are evacuated through the **anus**.



The colon is also divided into three parts: the **ascending colon**, the **transverse colon** and the **descending colon**.



Ascending colon



Transverse colon



Descending colon

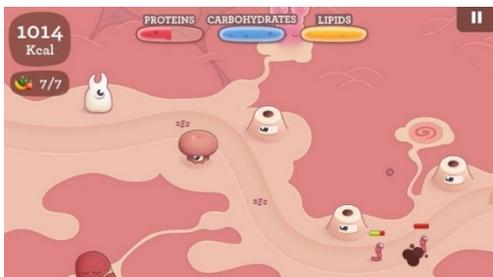
THE ORDER OF THE ORGANS



This course is also associated with a game called TUBIX. In this game, you need to place the organs of the digestive tract in the correct order. The mouth comes first, the oesophagus goes after the mouth, but before the stomach, and so on.

You can play TUBIX at various levels. The higher levels look at the anatomy of the digestive tract

in more detail. In some cases, you are required to place various sphincters, such as the **inferior oesophageal sphincter** at the end of the oesophagus.



In DIGESTIX, the order in which you place the digestive pieces matters as well. If you do not start with the teeth for example, you will not manage to transform food into fragments.

The anatomy of the digestive tract is complex and, in addition to the main organs, we also need to consider the accessory digestive glands.

The anatomy of the digestive tract

The digestive tract starts with...

- the mouth
- the oesophagus
- the kidneys

Saliva is just as important as teeth.

- True
- False

The oesophagus is a tube that is approximately...

- 2 centimetres long
- 10 centimetres long
- 25 centimetres long

Which muscle at the bottom of the throat can block food or let it pass?

- The glottis
- The oral cavity
- The upper oesophageal sphincter

The stomach is an organ that looks like...

- the letter 'J'
- a sphere
- a narrow tube

What is the average amount a stomach can hold?

- 0.5 litres
- 1.3 litres
- 2.2 litres

The size of your stomach varies depending on what you eat.

- True
- False

The small intestine curls around itself and measures on average...

- 1 metre
- 2 metres
- 5 metres

What is the function of the appendix during the digestive process?

- To filter food
- To regulate digestion
- It has no particular function

Answers

The digestive tract starts with...

the mouth

Well done! That's right.

the oesophagus

Wrong! The oesophagus plays its part in the second stage of the digestive process.

the kidneys

Wrong! Kidneys are not part of the digestive tract.

Saliva is just as important as teeth.

True

Well done! Your saliva moistens food and its enzymes begin to digest starch.

False

Wrong! That's not the right answer.

The oesophagus is a tube that is approximately...

2 centimetres long

Wrong! It is much longer than that.

10 centimetres long

Wrong! It is a little longer than that.

25 centimetres long

Well done! That's right!

Which muscle at the bottom of the throat can block food or let it pass?

The glottis

Wrong! That's not a muscle.

The oral cavity

Wrong! That's not a muscle.

The upper oesophageal sphincter

Well done! That's right.

The stomach is an organ that looks like...

the letter 'J'

Well done! That's right.

a sphere

Wrong! Try again!

a narrow tube

Wrong! That's not the right answer.

What is the average amount a stomach can hold?

0.5 litres

Wrong! It's more than that.

1.3 litres

Well done! That's right!

2.2 litres

Wrong! It's less than that.

The size of your stomach varies depending on what you eat.

True

Well done! Your stomach can dilate to adapt to the volume of what you eat and drink. A heavy beer drinker's stomach can hold up to 4 litres.

False

Wrong! That is not the right answer.

The small intestine curls around itself and measures on average...

1 metre

Wrong! It's a lot more.

2 metres

Wrong! It's more than that.

5 metres

Well done! Stretched out, that would be about the height of a giraffe!

What is the function of the appendix during the digestive process?

To filter food

Wrong! Try again!

To regulate digestion

Wrong! That's not the right answer.

It has no particular function

Well done! It does not play any particular role, but it can become infected. This is what we call appendicitis.

The length of the digestive tract

[8-10 years old and 11-13 years old]

Materials required: string, a tape measure, scissors

Instructions: Use the string to show the length of an 'unravalled' digestive tract:

- mouth cavity: ___ centimetres
- oesophagus: ___ centimetres
- stomach: ___ centimetres
- small intestine: ___ metres
- large intestine: ___ metre

First, try to estimate these amounts.

Then carry out the experiment again, this time using a tape measure.

How accurate was your estimate? Was it too low? Was it too high?

Answers

The length of the digestive tract

[8-10 years old and 11-13 years old]

Materials required: string, a tape measure, scissors

Instructions: Use the string to show the length of an 'unravalled' digestive tract, bearing the following figures in mind:

- mouth cavity: 7 centimetres
- oesophagus: 25 centimetres
- stomach: 25 centimetres
- small intestine: 5metres
- large intestine: 1 metre

First, try to estimate these amounts.

Then carry out the experiment again, this time using a tape measure.

How accurate was your estimate? Was it too low? Was it too high?

Suggestion: Divide the class into groups to make this a team activity.

Sketch a diagram of the digestive system

[8-10 years old]

Instructions: Draw a simplified sketch of the digestive system, including the following body parts. Add captions.

- mouth
- oesophagus
- stomach
- large intestine
- small intestine

Answers

Sketch a diagram of the digestive system

[8-10 years old]

Instructions: Draw a simplified sketch of the digestive system, including the following body parts. Add captions.

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