

4. The digestive system

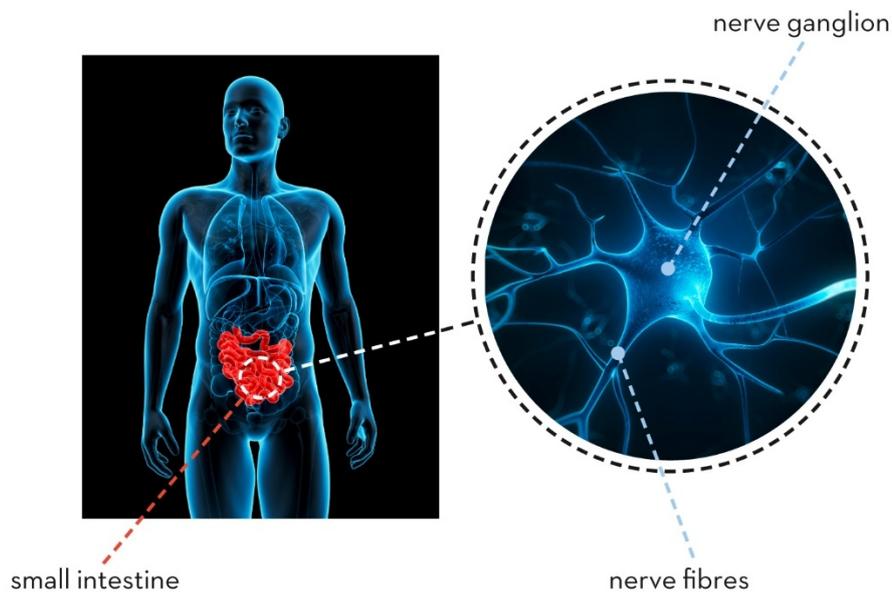
4.1 The organs in the digestive tract

4.1.4

The abdominal brain

THE NERVOUS SYSTEM

Humans have an **autonomous nervous system** that makes it possible for the heart to beat, blood to flow and for us to breathe without thinking about it. One part of this autonomous nervous system controls the intestine, so it is called the **enteric nervous system**. This system allows us to transform the food we have eaten, without necessarily being aware of what happens between these two steps. Its nerve cells are located in the intestinal wall.



The entire length of the intestine is surrounded by nerve cells densely connected to each other. Remember that the intestine is more than 5 metres long, which means there is a 'brain' of 100 million neurons wrapped around it!

Near the end of the 19th century, two British scientists, called Bayliss and Starling, carried out an experiment. They isolated a segment of the intestine from the rest of the body and observed that this segment could continue functioning in a solution of nutrients. Its activity only stopped when they blocked all of this segment's nerve cells. So, the intestine can work independently and can continue to do its job even when its nerve links are cut off from the rest of the nervous system.

The abdominal brain

The enteric nervous system is also known as...

- the abominable brain
- the abdominal brain
- the gastric brain

The abdominal brain is wrapped around...

- the intestines
- the heart
- the brain

There are neurons in the intestines.

- False
- True

The abdominal brain cannot work without the brain.

- True
- False

Which of the following functions is not carried out by the abdominal brain?

- Propulsion of the bolus
- Regulation of the digestive system
- Cardiovascular regulation

How many neurons does the abdominal brain have?

- 1 million
- 10 million
- 100 million

Answers

The enteric nervous system is also known as...

the abominable brain

Wrong! That was a trick answer.

the abdominal brain

Well done! This is the other name given to your enteric nervous system as it is located in your abdomen.

the gastric brain

Wrong! That's not quite right.

The abdominal brain is wrapped around...

the intestines

Well done! There is a whole network of neurons around your intestines to ensure they work.

the heart

Wrong! Try again!

the brain

Wrong! Try again!

There are neurons in the intestines.

False

Wrong! That's not the right answer.

True

Well done! Over 100 million interconnected neurons ensure your digestive system works well.

The abdominal brain cannot work without the brain.

True

Wrong! That's not the right answer.

False

Well done! Bayliss and Starling proved that the abdominal brain could work independently from the brain.

Which of the following functions is not carried out by the abdominal brain?

Propulsion of the bolus

Wrong! Your abdominal brain does carry out this function.

Regulation of the digestive system

Wrong! Your abdominal brain does carry out this function.

Cardiovascular regulation

Well done! This does not depend on your abdominal brain, but on your autonomic nervous system, influenced by your central nervous system.

How many neurons does the abdominal brain have?

1 million

Wrong! It's more than that!

10 million

Wrong! It's more than that.

100 million

Well done! It is said that the abdominal brain comprises an average of 100 million neurons.
