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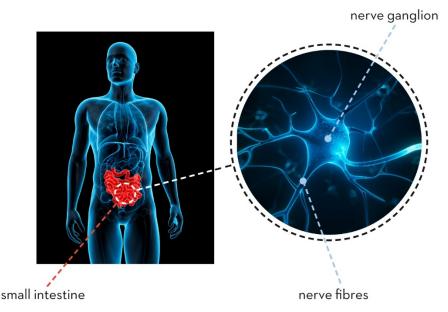
4. The digestive system

4.1 The organs in the digestive tract

^{4.1.4} The abdominal <u>brain</u>

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.

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4.1.4		
The	abdomina	al brain

Which of the following functions is not What do we call the part of the nervous carried out by the abdominal brain? system which controls the intestines? **O Propulsion of the bolus O Peripatetic nervous system** O Regulation of the digestive system **O Enteric nervous system** O Cardiovascular regulation **O Spheric nervous system** In the late 19th century, Bayliss and The enteric nervous system is also Starling proved that the intestines known as... depend on the central nervous system. O the abominable brain O True O the abdominal brain **O** False O the gastric brain How many neurons does the abdominal The abdominal brain is wrapped brain have? around... O 1 million O the intestines O 10 million O the heart O 100 million O the brain Bayliss and Starling isolated a piece of There are neurons in the intestines. intestine and placed it alongside some food. **O** False **O False O** True **O** True The abdominal brain cannot work without the brain. **Bayliss and Starling illustrated that** intestinal neurons are indispensable for **O** True nutrient absorption. **O** False **O** False **O** True

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Answers

What do we call the part of the nervous system which controls the intestines?

- O Peripatetic nervous system Wrong! That does not actually exist!
- Enteric nervous system Well done! That's right!
- O Spheric nervous system Wrong! Try again!

The enteric nervous system is also known as...

O 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.

O 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.

O the heart

Wrong! Try again!

O the brain Wrong! Try again!

There are neurons in the intestines.

O 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.

O 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?

O Propulsion of the bolus

Wrong! Your abdominal brain does carry out this function.

O 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.

In the late 19th century, Bayliss and Starling proved that the intestines depend on the central nervous system.

O True

Wrong! That's not the answer we're looking for.

False

Well done! Their experiment illustrated that the intestines work independently from the central nervous system.

How many neurons does the abdominal brain have?

O 1 million

Wrong! It's more than that!

- O 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.

Bayliss and Starling isolated a piece of intestine and placed it alongside some food.

• False

Well done! It was not food that was used, but nutrients.

O True

Wrong! Remember, by the time food reaches your intestines, it is no longer whole.

Bayliss and Starling illustrated that intestinal neurons are indispensable for nutrient absorption.

O False

Wrong! That's not the right answer.

True

Well done! By blocking the nerve cells of a piece of intestine, they realised that the intestine no longer fulfilled its role.