4.3.3

From the 18th to the 20th century

SPALLANZANI

In the 18th century, Spallanzani studied digestion in animals but wanted to do research on humans. He decided to make himself vomit on an empty stomach, then filled a tube with the liquid he had harvested. He then put cooked, chewed beef into the tube and placed it in an oven to imitate the temperature in his stomach. After some 35 hours, the meat had lost all its texture.

BEAUMONT

In the 19th century, Beaumont, an American surgeon, took advantage of the opportunity of having a patient, who had been wounded by a bullet in the abdomen, to explore things further. The wound healed but left a direct entry point into the stomach. Beaumont was then able to remove digestive juices and watch digestion as it was happening in the patient's stomach.

MECHANICAL AND CHEMICAL TRANSFORMATION

Digestive juices were identified at the start of the 20th century and it was established that digestion is a series of mechanical and chemical transformation.

4.3.3

From the 18th to the 20th century

What did Spallanzani do for the sake of his experiment?

- O He put on weight.
- O He found a sponsor.
- O He vomited.

By placing meat next to the fluid he had vomited, Spallanzani proved that chemical transformations exist.

- O False
- O True

Spallanzani demonstrated that a piece of meat placed in gastric juice would lose its consistency after 35 hours.

- O False
- O True

What had happened to Beaumont's patient? He had been wounded...

- O in a plane
- O in the leg
- O by a bullet

Beaumont carried out his experiment on the patient's...

- O colon
- O stomach
- O small intestine

Beaumont's experiment proved that the stomach's mechanical action made chemical transformation easier.

- O False
- O True

During the 20th century, evidence showed that digestion was a series of...

- O chemical transformations only
- O mechanical transformations only
- O both mechanical and chemical transformations

Answers

What did Spallanzani do for the sake of his experiment?

- ○ **He put on weight.**
  Wrong! That's not what he did.
- ○ **He found a sponsor.**
  Wrong! Try again!
- ● **He vomited.**
  Well done! He wanted to carry out studies on humans, so he induced his own vomiting to extract his own gastric juice.

By placing meat next to the fluid he had vomited, Spallanzani proved that chemical transformations exist.

- ○ **False**
  Wrong! His experiment set mechanical transformations aside to prove that chemical transformations are also part of digestion.
- ● **True**
  Well done! That's right!

Spallanzani demonstrated that a piece of meat placed in gastric juice would lose its consistency after 35 hours.

- ○ **False**
  Wrong! Try again!
- ● **True**
  Well done! He proved that chemical transformations took place.

What had happened to Beaumont's patient? He had been wounded...

- ○ **in a plane**
  Wrong! Planes, as we know them today, did not exist back then.
- ○ **in the leg**
  Wrong! This would not have increased his suitability for taking part in experiments on digestion.
- ● **by a bullet**
  Well done! The patient had been injured in the abdomen and the wound had healed badly. This enabled Beaumont to extract gastric juice from the patient's stomach.

Beaumont carried out his experiment on the patient's...

- ○ **colon**
  Wrong! It was on an organ placed higher up in the digestive system.
- ● **stomach**
  Well done! The badly healed wound enabled Beaumont to access his patient's stomach to carry out his experiments.
- ○ **small intestine**
  Wrong! You are not far off, though! It's the organ just before that.

Beaumont's experiment proved that the stomach's mechanical action made chemical transformation easier.

- ○ **False**
  Wrong! Try again!
- ● **True**
  Well done! That's right!

During the 20th century, evidence showed that digestion was a series of...

- ○ **chemical transformations only**
  Wrong! The existence of mechanical transformations in digestion had been acknowledged before then.
- ○ **mechanical transformations only**
  Wrong! Those are 17th-century theories.
- ● **both mechanical and chemical transformations**
  Well done! A digestion model with both mechanical and chemical transformations was first established in the early 20th century.