

The Hungry Brain

Many people think that an empty stomach causes hunger. This idea seems to make sense, for when we are hungry, our stomachs rumble and hurt. We head to the refrigerator for a snack, and in a little while our stomachs stop hurting and feel full. But it's a small area called the hypothalamus, deep inside the brain, that really tells us to be hungry.

Scientists found out about the hypothalamus and hunger by doing experiments with rats. They carefully put a very thin wire inside the rat's brain and into the hypothalamus. The rat didn't seem to be uncomfortable. In fact, it didn't seem to notice that the wire was there at all. Then the scientists sent a very weak electric current through the wire. When the rat received the current in a certain part of the hypothalamus, it would eat and keep on eating even though its stomach was full. If scientists moved the wire to a different part of the hypothalamus and again sent a current down the wire, the rat would not eat at all. It acted as though it was not hungry, even if it hadn't eaten anything in several days. This showed the scientists that different parts of the hypothalamus control the feelings of being hungry or full.

In real life, of course, people and animals don't have wires sending electric currents through their brains. So how does the hypothalamus really work to cause or stop hunger? The blood tells the hypothalamus what to do. Many blood vessels flow into the hypothalamus. When the blood is not carrying many nutrients for the cells in the body, the hypothalamus senses that the body will soon run out of energy. It then sends signals that cause the stomach to secrete digestive juices and to start churning. The animal or person feels hungry and goes to look for food. When the blood contains enough nutrients, the hypothalamus stops sending signals to the stomach, which then stops churning. The quiet stomach causes a feeling of being full. So, strange as it may seem, hunger comes from the brain.

Think About It

What are your favorite snacks when you are hungry?

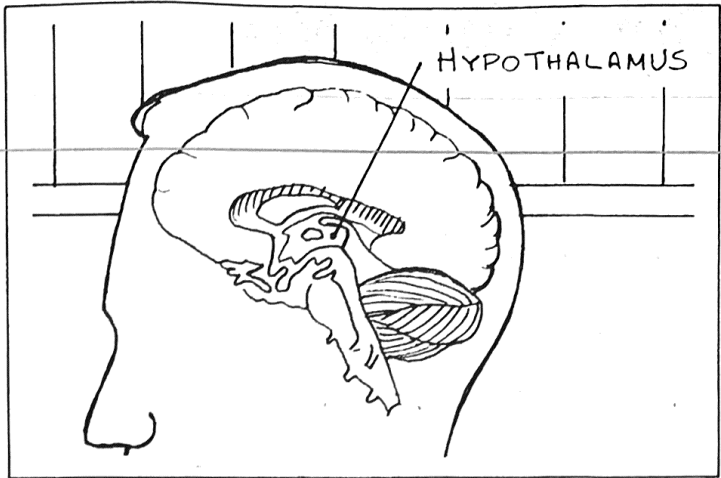


Name _____

The Hungry Brain

Main Idea

1. This story explains
- _____ how the brain controls hunger feelings.
 - _____ that rats are used for scientific experiments.
 - _____ why blood runs through the brain.



Sequencing

2. Number the events below in the order that they happen.
- _____ Blood vessels in the hypothalamus don't have enough nutrients.
 - _____ The animal or person feels hungry.
 - _____ The hypothalamus sends signals to the stomach to start churning.
 - _____ The hypothalamus senses that the body will soon run out of energy.
 - _____ The hypothalamus stops sending signals when the blood has enough nutrients.

Reading for Details

3. Scan the story to answer these questions.

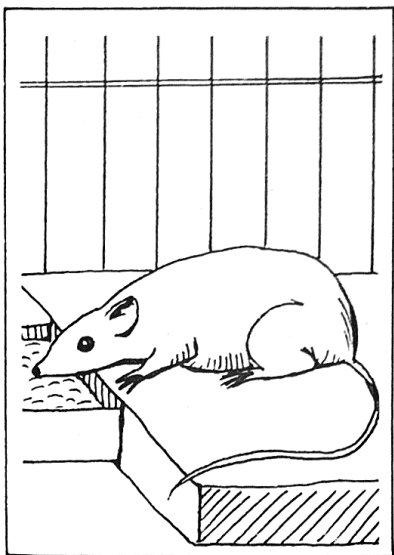
What part of the brain controls hunger? _____

What did scientists use to study hunger feelings? _____

Where did scientists put the thin wire? _____

When would the rat eat even though its stomach was full? _____

Why would the hungry rat refuse to eat? _____



Reading for Understanding

4. Choose the topic for each paragraph.

Paragraph 2

- _____ Experiments with rats helped scientists learn about hunger feelings.
- _____ Electric currents are used in experiments with rats.
- _____ Rats are not hurt in scientific experiments.

Paragraph 3

- _____ People don't have wires in their brains.
- _____ A quiet stomach is a full stomach.
- _____ Several parts of the body are involved in sensing hunger.