Sam’s Brainy Adventure
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Sam was studying for a test about the brain. There were so many new words and things to remember.

He fell asleep, thinking about the nervous system... Cortex, cerebellum, axon, neuron...

and started to dream.

1

Where am I?

You are inside your own brain.

What are you?

2

We are nerve cells.

Or you can call us neurons.

Nerve cells or neurons. That's us.

3

How did I get here?

You are dreaming!

Dreaming... that sounds good!

4
5. Hey, I'm learning about neurons at school.

A neuron is one type of cell in the brain.

We are just 3 of the 100 billion neurons in your brain.

6. We take care of everything that your brain does.

Thinking, reading.

Talking, walking.

Don't forget sleeping....

7. Do you know your way around the brain?

I have a big test tomorrow and can use some help.

Follow us!

We'll give you a tour

Never mind.

8. Remind me. How do neurons work?

Take a look at us. We have four basic parts.

- Dendrites
- Cell body
- Axon
- Synaptic terminal
9

Dendrites receive signals from other neurons.

Information is passed to the cell body.

Too many new words! I can’t handle all of this information.

Information leaves the cell body through the axon.

10

Let’s slow it down.

Dendrites receive signals from other neurons.
The cell body receives information from dendrites.
The axon sends new signals to the synaptic terminal.

I think I get it!

11

I remember that neurons don’t touch each other.

That’s correct! There is a small space between two neurons.

Stay away from me

Wait a minute! If neurons don’t touch, how does information get from one neuron to another neuron?

12

Correct! There is a small space between neurons. This area is called a synapse.

Neurons are like little batteries. They make their own electricity.

This electrical signal is sent down the axon.

When the electrical signal reaches the synaptic terminal, chemicals are released.

Synaptic terminal

Cell body

Axon

Dendrite

Synaptic Terminal

Dendrite
When the chemicals attach to special places on a dendrite, another electrical signal is made.

A neuron uses electrical and chemical signals to send messages.

Dendrites, cell body, axon, synaptic terminal, electrical signals, chemical signals... Hey! I think I've got it!

I'm getting tired of all this talk about neurons. Can we start our tour of the brain?

Sure! Is everyone ready to go?

Wait for me!

Where are we?

So humans and other mammals are not like spineless jellyfish.

The spinal cord ends where it connects to the brain at the brain stem.

The brain stem is responsible for controlling heart rate and breathing.

The brain stem looks very busy. All work and no play!
17

What’s this at the back part of the brain? That’s the cerebellum. It’s important for balance and posture. I wish I had better balance!

18

Let’s keep moving. Here we are in the thalamus. The thalamus sends and receives messages from many parts of the brain. In the thalamus: some messages for you, some for me!

19

Below the thalamus is the hypothalamus. The hypothalamus helps control body temperature, thirst, hunger and emotions. That reminds me. I’m hungry!

20

What’s this up here? It covers the brain like the bark of a tree. That’s the cerebral cortex. The cerebral cortex is divided into a right and left hemisphere.
Each hemisphere can be divided into 4 lobes.

Frontal lobe  Parietal lobe
Temporal lobe  Occipital lobe

The frontal lobe is important for reasoning, planning, speech, movement, emotions, and problem-solving.

The occipital lobe receives information about what we see.

The parietal lobe receives information about our skin.

The temporal lobe is important for memory and receives information about what we hear.

We've traveled from the spinal cord, to the brain stem and cerebellum, up to the thalamus and hypothalamus and finally to the cerebral cortex.

These areas work together to do all of the great things the brain does.

Right! There are many parts to each of these main areas of the brain.

So, protect your brain!

Thanks! You have really helped. I'm ready for my test.

Glad to help.

Good luck

See you later!

That was a strange dream!

Time for school.

I'm ready for my test.