

An Exploration of the Brain

Did you know?

The Puyallup Fair makes students an offer they can't refuse.

Most schools receive tickets giving students a day's free gate admission to the Fair. (Now that's a good trip to the principal's office!)

Chapter 2

SENSING THE FAIR

Come to your senses

Our five senses are the ways we experience the world around us. They are taste, touch, smell, sight and hearing. Our brain is very complex. There are different sections of the brain that help us to experience each of the five senses. In this chapter you will explore these areas of the brain and learn about your senses.

Remember that the cerebrum is the largest part of your brain. The outer layer of your cerebrum is the wrinkly pink part called the cerebral cortex.

AL'S BRAIN

When you are at the Fair don't forget to stop by the "Al's Brain" exhibit. The Puyallup Fair will be hosting "Weird Al" Yankovic on September 26. To win a meet-and-greet with Weird Al, complete an entry at the Fair exhibit or enter online at thefair.com.

PARIETAL LOBE

This lobe is found on the top of the cerebrum between the frontal and occipital lobes and above the temporal lobe. It controls how we interpret touch, temperature and pressure. This lobe is responsible for your "spatial awareness" by coordinating your body movements and your senses. If you are picking up a box that is heavy, the parietal lobe can tell the muscles in your arms to work harder while lifting. It can also tell you that the box is square, flat and smooth by interpreting the shape and texture.

FRONTAL LOBE

Your frontal lobe is in the front section of your cerebrum. If you touch your forehead, the frontal lobe is just inside. This section controls your planning, reasoning, problem solving, and parts of your speech and movement. This is the part of the brain that makes up the thoughts in your head. As you read the map of the Puyallup Fair and plan your route to get to the "Al's Brain" exhibit, you are using your frontal lobe. This lobe is where your memories dwell. It is the part of the brain that makes you who you are. You would not be able to read or think without the frontal lobe.

OCCIPITAL LOBE

The occipital lobe is in the back of your cerebrum. Picture a cheerleader with a high ponytail in her hair. Her occipital lobe is just below this ponytail. The occipital lobe controls your vision and stores your visual memories. In fact, when you just pictured that cheerleader, you were using your occipital lobe to recall an image that you had previously seen. Your eyes help to bring the information about what you are looking at into your brain, but your occipital lobe is what interprets the light and colors coming in to produce what you are seeing. When you see a 1,000-plus-pound giant pumpkin at the Puyallup Fair, your eyes are merely bringing in the light and orange and green colors, while your brain interprets this to produce an image of a pumpkin.

TEMPORAL LOBE

The temporal lobe is on the bottom section of your cerebrum just inside your ears. This lobe controls your hearing, taste and smell, and stores your memories of these senses. You will know you are walking up to the cotton candy stand because your temporal lobe remembered that smell from last year! When you taste a fresh scone, hear the roar of a tractor or smell roasted corn, you are using your temporal lobe.

MIND CHECK

When you taste something with your nose plugged, does it taste the same as when your nose is open and you can smell? How does your temporal lobe explain this?

BRAIN TEASER

One of our first insights into how the brain works came from a man named Phineas Gage. Phineas lived in the 1800s and worked building railroads in Vermont. One day in 1848, he was setting an explosive to remove rocks from the path of the railroad when it went off before he could get out of the way. A tamping iron (a long rod used to pack the dynamite into a hole in the rock) shot up from the dynamite and went straight into his left cheek and passed through his brain. Phineas lived through this violent accident, but his personality changed. Though able to still physically perform his job, he had a very hard time with reasoning and performing simple tasks and got angry very easily. Which lobe did the tamping rod pass through and destroy if Phineas was having a difficult time reasoning?

THE BRAIN SONG

Composed by "Weird Al" Yankovic

Your brain is divided into two hemispheres
Yeah, your left controls your right side
And your right controls your left side
And they're both tied together in a neat little package
By the totally awesome corpus callosum

Well, ya peel away that meninges layer
Wipe off that cerebrospinal fluid

And you're lookin' right at the four lobes of the brain
You know the ones I'm talkin' about — say it with me now:
Frontal! Temporal! Parietal Occipital!

And each one's got a very special job
Yeah, each one knows exactly what to do

As you're watching my disembodied head
Your cones and rods are sending that stimuli
To your thalamus, which routes it to your occipital lobe
Which of course processes visual information

As you're listening to these words right here
The vibrations of the cilia way down in your ears
Are sending those impulses along to your temporal lobe

Now I know what you're thinking . . .
Al, how can these different parts of the
Brain communicate with each other?

Well, to answer that question I'm gonna
Have to break it down to a microscopic level

This is a neuron
A funky, funky neuron
You got your axon on the one side
You got your dendrites on the other
The dendrites receive a signal from another neuron
Which then starts a chemical reaction in the nucleus
Creating a nerve impulse which travels
Down a long myelin-coated strand

Where it hits neurotransmitter molecules
In the vesicle of the axon terminal

And those neurotransmitters jump
A millionth of an inch across the synaptic gap
And smash into the receptors
Of the dendrites of another neuron
Connecting neuron to neuron to neuron
All across your entire brain

Aw yeah, the more you use your brain
The more connections you're gonna make
And the smarter, the smarter you're gonna be!
Talkin' 'bout your brain
You gotta hand it to your brain
Yeah, yeah, that's your brain

BRAIN TEASER

Stimulate your brain and write your own version of a song about one of the lobes in your brain. You can write this song in any style you choose. Just be sure to include at least five facts about the lobe.

Sources:
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