

Making Neuroscience Fun

A Brain Awareness Program for All Ages

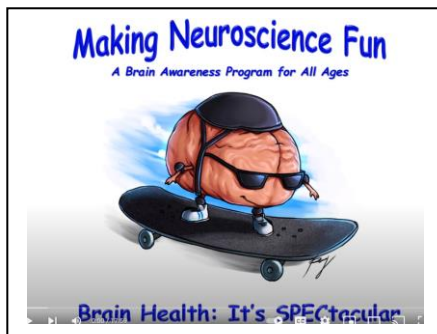


Brain Health: It's SPECTacular

What to do TODAY Grade 3 (🌈 A Brain Facts Story)

This story describes how the brain is able to send information to and from the body.

- 🌈 The brain is made up of billions of cells called neurons. (like puzzle pieces – afferents & efferents)
 - 🌈 There are 2 main ways that neurons “talk” – chemically and electrically. (both are REALLY fast)
 - 🌈 Neurons connect different parts of the brain together and they connect the brain to different parts of the body. (nerves)
- 🌈 For this presentation, you need to have the “How Your Brain and Your Body Talk” Story Video, paper, a few gloves, a few socks. If you don't have gloves and socks, you can have the students, or you, draw some pictures of a hand and a foot. You will be doing Activity #1 - Demonstration: At Arm's Length & Activity #4 - Physical Activity: Becoming Neurons.
- 🌈 Put up the Brain Facts “How Your Brain and Your Body Talk” story video.



Introduce yourselves and tell the students that you are really excited to be with them to talk about Brain Health.

Tell the students the name of the program is Brain Health: It's SPECTacular because you will be sharing new stories that will help them take care of their brains.

Tell the students that you will also be doing Activities to help them understand more about their brains and how to take care of them.

Tell the students that **today** you are going to teach them about some Brain Facts. Brain facts are things that we know about the brain AND we have to know something about our brains to so that we can help our brains get and stay healthy!!!

- 🌈 Start the Story Video and stop after this screen.



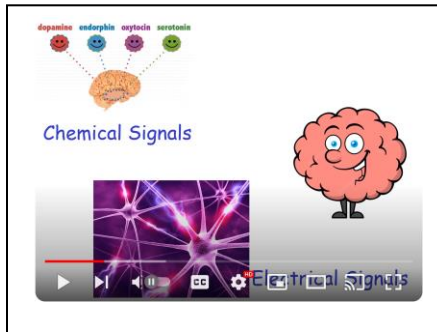
Ok...so the story we are going to talk about today is about **How Your Brain and Your Body Talk**.

Who can tell me what parts of your body your brain talks to? Solicit some answers. When the students answers, then say “that's right” and describe why the brain talks to that part of the body.

If no one raises their hands that then maybe hold your hand to your face and say..hmmm what part of the brain does my brain talk to? Then answer... my muscles...explain how your brain tells your muscles to contract and relax so that your body can move.

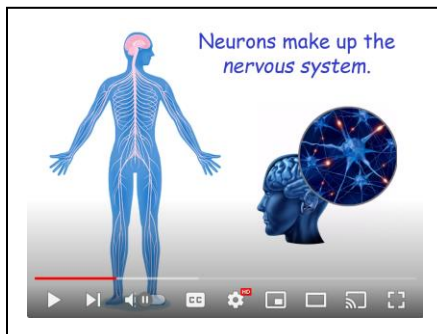
Ask the students again... Who can tell me what other parts of your body your brain talks to? (get a few answers – or you give a few examples.)

Continue playing the video and stop after the following slide.



Ok...so we now know that the brain does not “talk” to the body using words...it uses either chemicals or electrical signals.

Continue playing the video and stop after the following slide.

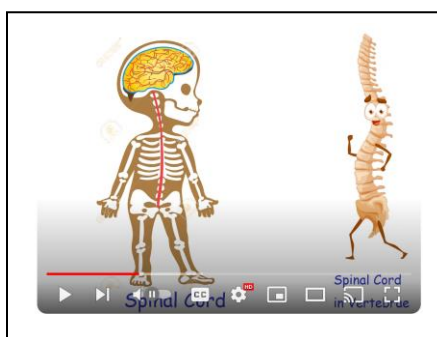


Ok...so the brain is made of BILLIONS (say this loud and emphatically) of cells.

Does anyone know the name of all those BILLIONS of cells that make up the brain? Right...**neurons**.

Ok...and we now know that the brain is part of something called **nervous system**.

Continue playing the video and stop after the following slide.

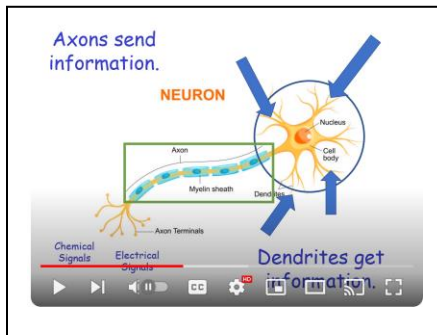


Ok...so now we know there are neurons in your head – that make up your brain.

And there are neurons in your spinal cord, which is in the bony part of you back.

Can you feel the bones that surround your spinal cord? Have the students reach the middle of their lower backs.

🎨 Continue playing the video and stop after the following slide.



So, neurons have a cell body – just like ALL the other cells in your body.

But, neurons have 2 parts that other cells do NOT have that help the neurons talk.

They have dendrites and axons.

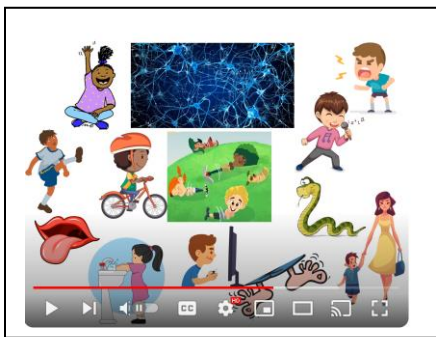
🎨 Now, walk the students through the Activity #1 - Demonstration: At Arm's Length.

Show the students how their hands and arms can be used to help them understand the parts of a neuron. (point to the video as you describe the parts of a neuron).

Hold up your arm and spread out your fingers. Show them their palms are the “cell body” – remind them that all cells in their body have cell bodies, their fingers are the “dendrites” – which gets information, and their arm is the “axon” – which the neuron uses to send out information.

Now have the students draw and label a neuron by tracing their arm and hand.

🎨 Ok...we now know what neurons looks like, so let's see how these neurons talk to you body. Continue the video and stop at this slide.



So, now we know that neurons in different parts of the brain are connected to different parts of the body.

We also know that these neurons in the different parts of the brain talk to different parts of the body by releasing chemicals or electrical charges.

Depending on how much time is left – there is still about 4 minutes of video left – either do a demonstration (using a small number of students in front of the rest of the class) or play a game (using the entire class) using Activity #4 - Physical Activity: Becoming Neurons (modified version).

- Select a student to be the brain, select a student to be the hand, and select a student to be the foot. The rest of the students are neurons between the brain and the body.
- Tell the students that as neurons, they are going to use their **left hand** as the **dendrite** that gets the information, they will move their dendrite across their body – which is now the **cell body** – to their right hand which is now the **axon** – which will deliver the information to the next neurons dendrite.
- Tell the students you are going to make your brain-body connections. Set up the students in a “V formation” with the brain at point of the V and the hand and the foot at each of the ends of the V.
- Make sure you make the brain-body connection **anatomically correct**. You do this by making the brain-hand line smaller (less students) than the brain-foot line. Ask them why???? (Foot is further away from brain than hand – so info gets to hand faster.)

- Divide the rest of the students into 2 lines representing the “arms of the V” with one line going out toward the hand and one line going out to the foot.
- To get the line straight have the students hold hands. If space permits, spread them out.
- When all is ready, give the brain a glove and a sock. When you say “Go”, the brain gives the sock to the foot side of the V and gives the glove to the hand side of the V. See which side of the brain-body connection is faster.
- At the end, tell the students that this is like how the brain talks to the body – by passing along information. Remind them that the brain uses chemicals or electrical signals instead of using a glove or sock. Also, point out how the communication can go wrong – what if the brain passed the glove to the foot side of the connection, or one of the neurons dropped the information or changed it somehow.
- Get excited and tell the students that learning about all of these **Brain Facts** is soooooo important to understanding how to keep our brain healthy.

Either have the students sit where they are to finish the story or have them go back to their desks.

- Continue playing the video and stop after the following slide.



Now think about the neuron activity we just did, if we had less neurons (students) passing the glove or the sock, then the information (glove or sock) would reach the hand or foot faster.

That is what happens when you **practice** doing things. Your brain needs less neurons to “talk” to your body – and that makes the information get passed along faster – while using less energy.

- Continue playing the video to end.

Tell the students that you had fun talking with them today and ask them if they had fun learning.

Tell the students that they now know that they have LOTS of neurons both in their brain and outside of their brain.

Those neurons talk to each other using chemical and electrical signals.

When neurons talk to each other, their connections get stronger and that makes it easier (and more energy efficient) for you to do all the behaviors that you need and want to do.

The more you practice doing behaviors, the easier it is for your brain to do all the work.

So, if you understand how the brain and body talk to each other, then you will be able to help your brain stay healthy and that is SPECTacular.

Be sure to thank them for listening and let them know the Brain Health Team of JHU students will see them soon.