

Making Neuroscience Fun

A Brain Awareness Program for All Ages



Brain Health: It's SPECTacular

Story General Information

How Your Brain and Your Body Talk (🧠 A Brain Facts Story) (3rd Grade- 8-9 yrs.)

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)

The facilitator begins by introducing themselves, neuroscience, and the program, Brain Health: It's SPECTacular. Brain Health is about maintaining a happy, healthy brain to feel good. This story focuses on how communication is an imperative function between the brain and body.

The facilitator helps the children recognize that the brain and body cannot talk or use words but are still able to communicate in some way. The terms *neurons*, the *nervous system*, and the concept of messages sent through signals are all introduced to the children.

The facilitator breaks down a neuron into its smallest parts and describes their function. *Dendrites* get information and *axons* send information. This information is sent through electrical or chemical signals. *Afferents* are neurons outside the brain sending signals to the brain. *Efferents* are in the brain/spinal cord and send information to the body. Through images, the children see how the nervous system runs throughout the entire body. These visuals solidify how neurons are able carry messages to and from the brain effectively and efficiently.

But how do neurons physically exchange the information they carry? The facilitator describes how a neuron uses *receptors* to “catch” chemicals released by another neuron. Neurons can also pass electrical charges (positive and negative) to one another.

The connection by neurons allows the body and brain to function and perform behaviors correctly. It is how someone raises their hand to answer a question, pedals a bike, and uses fingers to play a video game. The facilitator emphasizes the significance of connections between neurons in the nervous system. The more frequently neurons “talk,” the stronger the connection becomes. The stronger the connection, the less neurons needed. Therefore, the body uses less energy to complete that specific behavior.

The facilitator introduces the concept of “*practice makes perfect*” to the children. They discuss learning how to dribble a basketball while running. This is an objective for students to meet in third grade and can be challenging for some children. Understanding how the body learns new behaviors and why practice is imperative to mastery, may help some children feel more confident and prioritize practicing any new behavior or skill they want to master.

The children and facilitator review the function of neurons, their importance in brain and body communication, and the significance of practicing a new skill. This allows the body to use less energy to complete a behavior, which helps make a happy, healthy, SPECTacular brain!

Story Objectives:

- Students will explain how the brain and body communicate to support overall Brain Health.
- Students will describe the chemical and electrical signals the brain and body use to communicate.
- Students will define and describe neurons.
- Students will identify parts of the nervous system (neurons/spinal cord/brain).
- Students will describe the difference between dendrites and axon.
- Students will explain the difference between afferents and efferents.
- Students will explain why people use the phrase “practice makes perfect” and its connection to the nervous system.