**Shoo Fly!**

**Nervous System - Stimulus and Response**

Suppose you are trying to fall asleep in your bed at night, but a fly is keeping you awake. It keeps landing on and crawling around on your arm. You shoo it off, but it just flies around your room and lands back on your arm. Let’s use this scenario to explain a stimulus and response, and what is taking place in your nervous system.

1. Sensory neurons in your dermis detect the tickle of the fly’s legs as it crawls over your skin.
2. The sensory neurons transmit the nerve impulse of that tickle through the neurons in your arm to your spinal cord. (Remember how a nerve impulse travels from one neuron to the next?)
3. The interneurons in your spinal cord transmit the nerve impulse to your brain. This is when you actually feel the tickle of the fly crawling on your arm.
4. You make a decision in your brain that you want to shoo the fly away with your other hand.
5. The brain transmits a nerve impulse through the interneurons in the spinal cord to the motor neurons in your arm.
6. The motor neurons transmit that nerve impulse to the muscles in your arm telling some of them to contract and others to relax so that they can move your hand to shoo away the fly.

**Ouch!**

**Nervous System – Reflex Arc**

Have you ever touched a hot pan and moved your hand away before you even felt the pain? The body has a built in protection system to prevent us from doing too much damage to our bodies in a situation like that. Study the diagram and read the description below to see how it happens.

1. Sensory neurons in your dermis detect the pain of the tack sticking into your skin.
2. The sensory neurons transmit the nerve impulse of that pain through the neurons in your arm to your spinal cord. (Remember how a nerve impulse travels from one neuron to the next?)
3. Since this is an “emergency message”, the interneurons in your spinal cord immediately transmit a nerve impulse through the motor neurons to the muscles.
4. Some of the muscles in your arm contract and others relax so that they can move your hand away from the tack.
5. At the same time the nerve impulse is being transmitted to your muscles, a nerve impulse travels up the spinal cord to your brain and you feel the pain.

**1.**

**2.**

**3.**

**4.**

**5.**