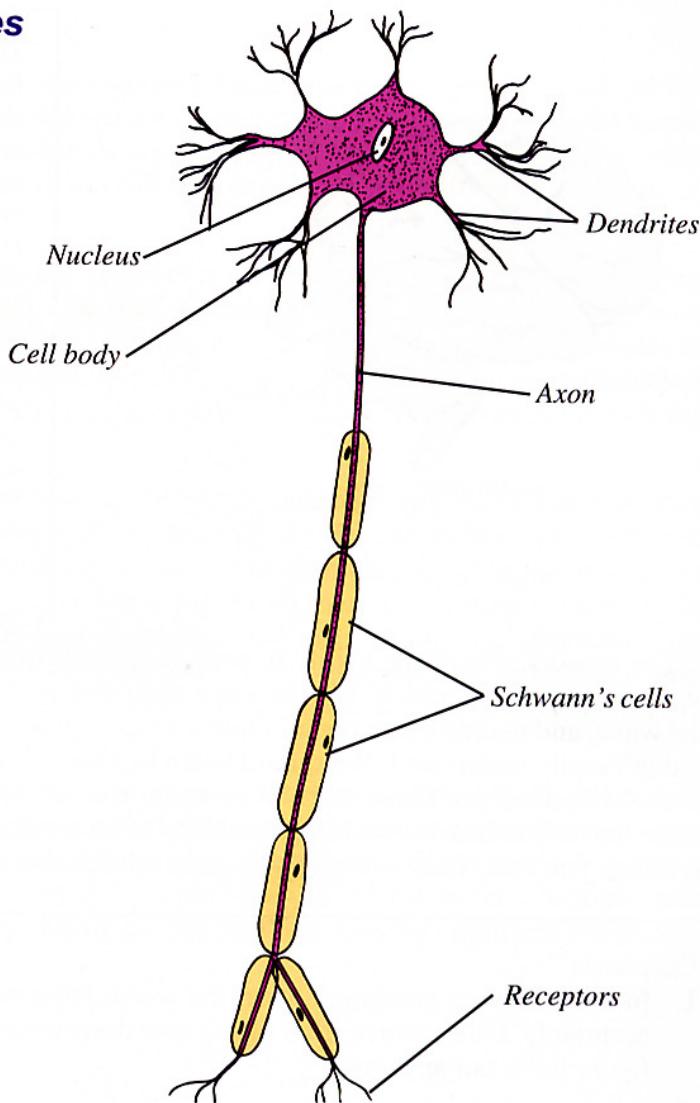


38: You Are a Bundle of Nerves

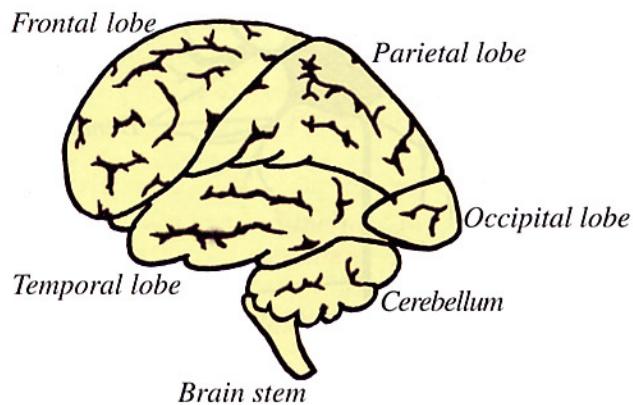
We introduced the **nervous system** when we said that each muscle receives signals from the **brain** telling it when to contract. The nervous system is the great conductor of the symphony that is constantly going on inside your body, whether you are asleep or awake. It tells your heart to keep pumping and your respiratory system to keep drawing air either faster or slower. It tells your blood vessels how far to open or close in order to raise or lower the pressure on the system. It tells you when your food and water levels are low.

Our brains control many things we don't even know are happening. For example, our brains call for the growth hormone to stop being released at the time we have reached full height and are ready to stop growing. It tells the **adrenal glands** above the kidneys to produce adrenaline when we get excited, afraid or angry. This prepares us for the "fight or flight" response that gives us the energy to either fight our enemy or run away.

The nervous system consists of a brain—the master control center—a **spinal cord**, **nerve cells** to link the various parts of the body back to the spinal cord, and **sensory endings** or **receptors**. The sensory endings are of many different types. They allow us to sense pressure, warmth, lack of heat ("cold"), and pain. There are also receptors deep inside muscles, tendons and joints that sense position, vibration, deep pressure, and deep pain. There are receptors inside the organs that sense **nausea** (a need to vomit), hunger and pain. And there are receptors in our sensory organs that give us special sensory abilities: the light receptors in our eyes, the wave detectors in our ears, the chemical taste receptors in our mouths, and the chemical smell (**olfactory**) receptors in our noses.



A nerve cell, or neuron, is one of the cells that carry electrical signals throughout the body. This network of cells is like the wires in a telephone connection except that it is made of living tissue.



The human nervous system is a series of links that carry electrical signals from all parts of the body to the brain and back again. The sensory endings accept inputs (such as pressure or heat) from the person's environment and send a signal of electrical energy to neighboring nerve cells. The electrical signal is passed from cell to cell up the spinal cord and eventually to the brain. The brain processes all of these signals that constantly come into it from different parts of the body and replies with its own electrical signals. These signals go back down the spinal cord and out to the muscles and other organs that are involved in the body's response. The time required for this entire process is a fraction of a second.

The sensors give us the ability to perceive the environment and react to it. This may seem simple, but it is really complex. We can see a sight that we have never seen before, like a tornado or a tidal wave, and realize that it means danger to us. Our brains can tell us to be afraid of situations that we don't really understand. We should listen to those signals and react with fear when we don't feel comfortable. God put those fears in us to protect us. However, if we understand a situation and realize that it is harmless, we have the ability to be unnecessarily afraid as well. Talk to adults about the things you fear. They can give you good advice about fears and what to do about them.