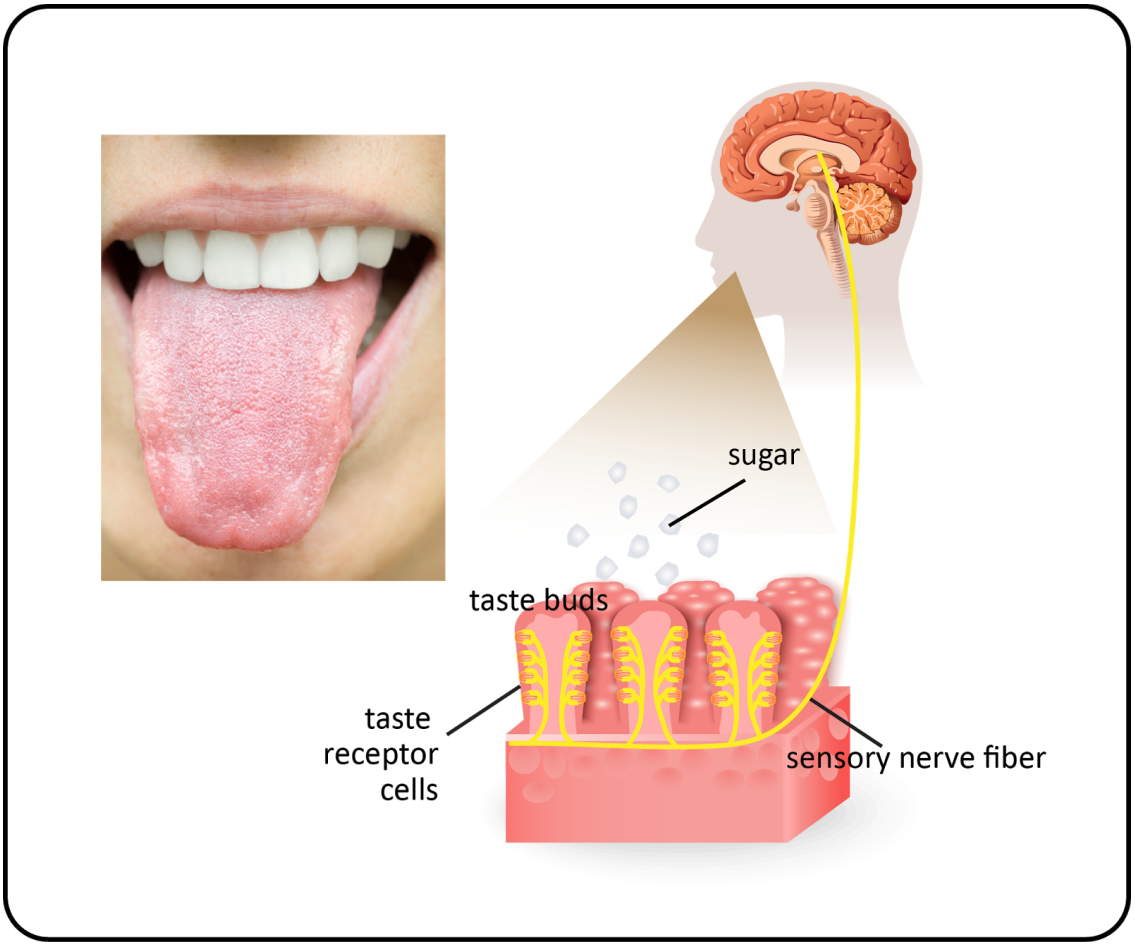
Nerve Cells Resource Cards

Card 1: Sense of Taste

Video link: https://youtu.be/j7GibFhuBmE

Do you have a favorite food? Maybe it is a warm, gooey slice of pizza or a sweet, chewy chocolate chip cookie. You might like salty French fries or rich, creamy ice cream. Chances are, you enjoy certain foods a lot more than others. The reason that you prefer chocolate to vanilla (or maybe the other way around) is your sense of taste.

If you look closely at your tongue, you will probably notice a lot of little bumps all over it. These bumps are clusters of taste buds, which are groups of receptor cells that can detect the chemical makeup of anything that touches your tongue. Different types of food are made of different small particles or chemicals, and depending on what you put in your mouth, your taste buds will recognize these small particles as five basic tastes. The tastes you recognize are sweet, salty, bitter, sour, and umami (savory or meaty taste). Your taste buds pick up these signals in the form of chemicals and then send the signals to the brain based on what chemicals you
are tasting. The brain takes the chemical input information, as well as the smell associated with the food, and is able to interpret it as taste.



Nerve Cells Resource Cards

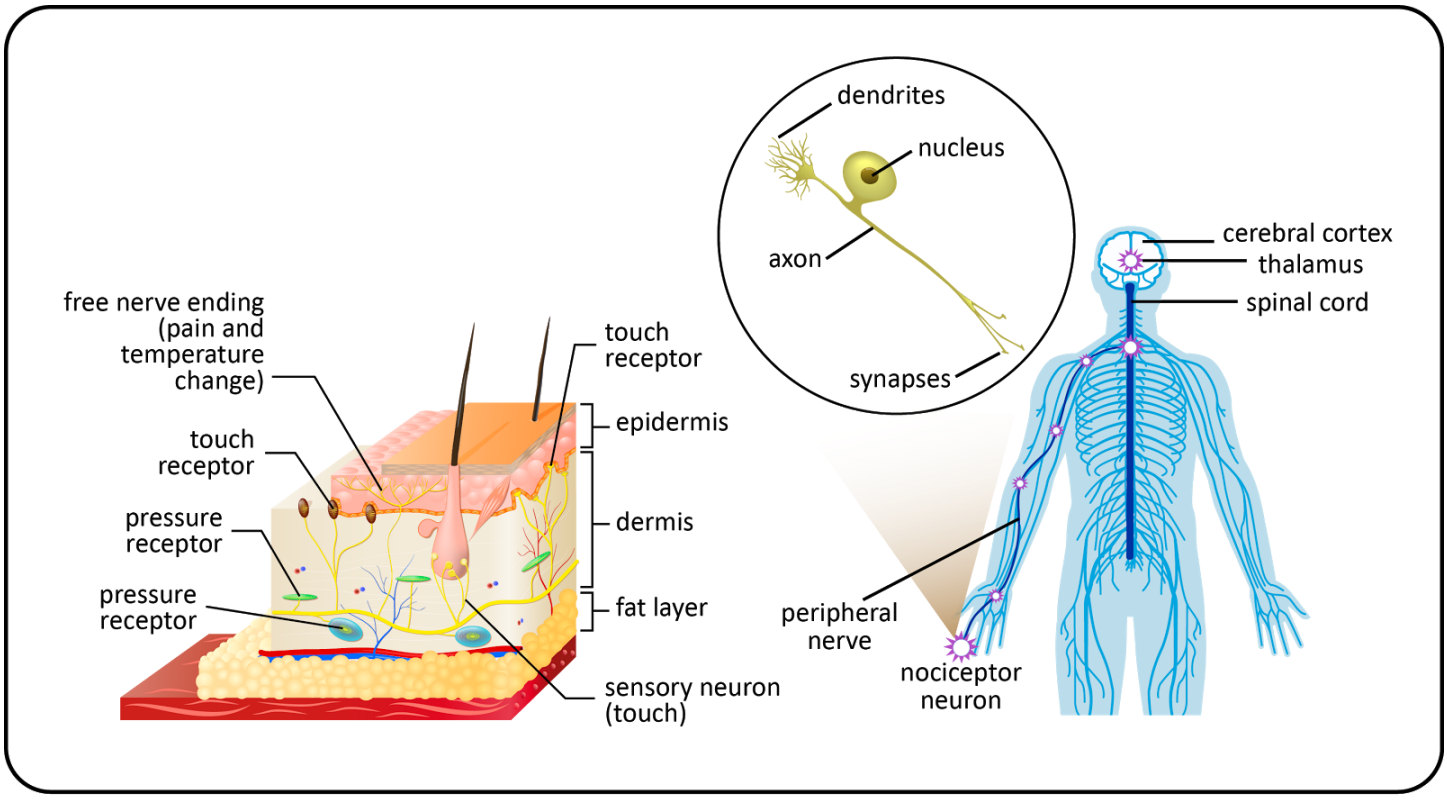
Card 2: Sense of Touch

Video link: https://youtu.be/8IEaW0ofKiI

We tend to take our sense of touch for granted. It is easy to forget all of the sensations that you experience through touch. The reason you are aware of the feel of your chair, the comfort of your clothing, and the temperature of the room is because of touch. Touch lets you feel pain when you cut yourself or when you have a stomachache. Just think—without touch, you would not even know to move away when you put your hand on a hot stove!

Unlike your other senses, which are located in specific spots in the body, your sense of touch is found all over, in your skin and in your organs. The dermis, the bottom layer of your skin, is filled with different types of neurons that sense pain, pressure, vibrations, texture, and temperature. Some of the receptors tell you where all your body parts are in relation to their surroundings.

When you touch something, the specialized nerves (see picture below) are stimulated by mechanical input and send a message to your neurons, which relay this message to your spinal cord. The spinal cord then sends the signal to your brain. The brain changes the signal into the feeling of touch. Finally, your brain makes a decision as to how to respond to the touch sensation and makes a memory of the touch sensation.



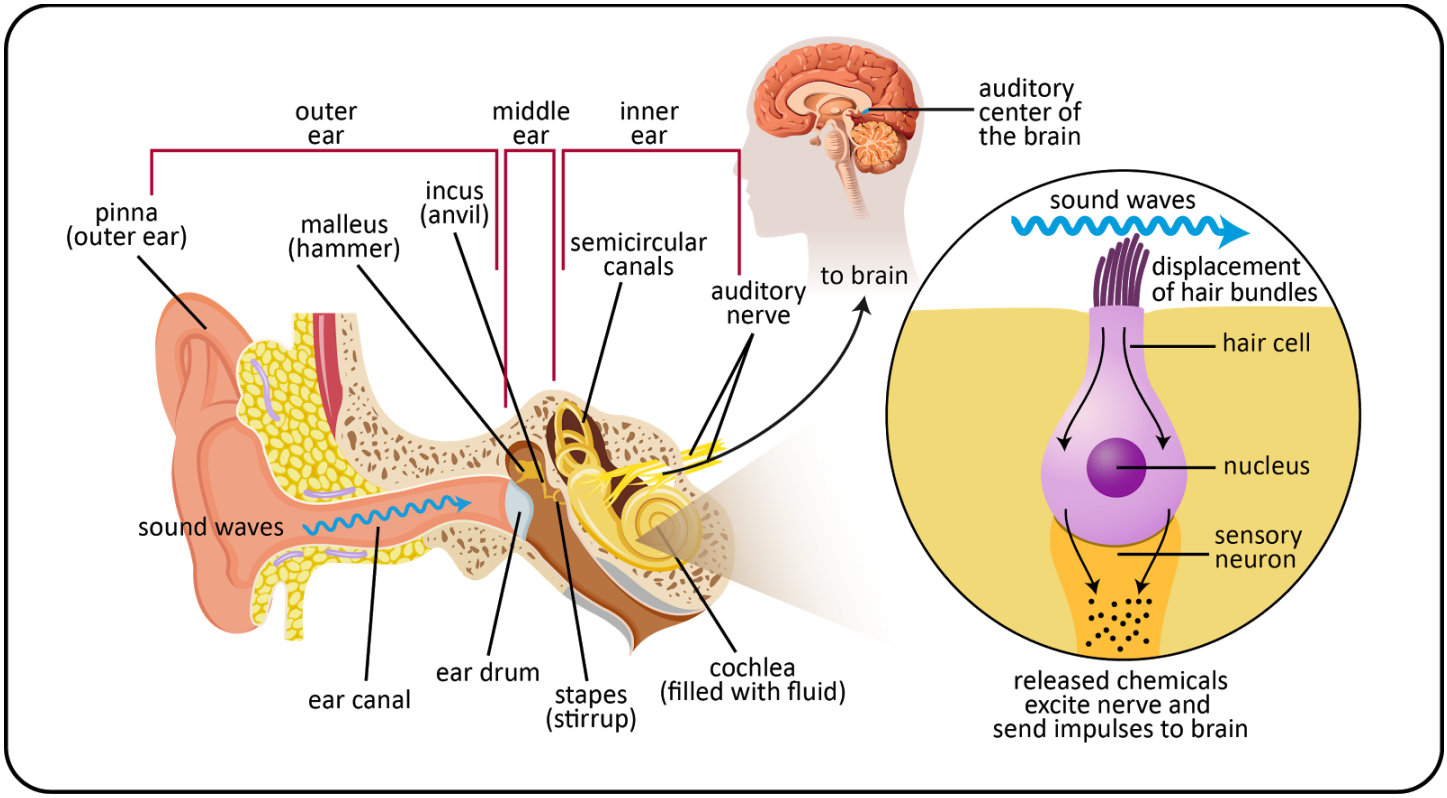
Nerve Cells Resource Cards

Card 3: Sense of Hearing

Video link: https://youtu.be/fm7t5S09iUg

Close your eyes for a moment and listen to your surroundings. Chances are your classroom is not completely quiet. Maybe a fellow student is tapping a pencil on the desk. Someone might have just sneezed. You may hear the air conditioner or heater running. And if you pay close attention, you can probably even hear your own breath as you inhale and exhale. You can tell that all of this is going on by your sense of hearing.

Sound is the result of vibrations. Any time that something vibrates, it creates a sound wave, which moves the air particles as the wave travels through the atmosphere. If the sound is close enough, a sound wave will reach your ear. The outer part of your ear is curved in such a way as to "catch" as much of the sound wave as possible. These sound vibrations travel through your ear and hit your eardrum, making the eardrum move back and forth. Then the sound wave moves deeper into your ear to a structure filled with fluid. Just like the waves in the ocean make seagrass bend, sound vibrations cause the fluid to move hair cells in the cochlea. Different pitches of sound make different areas of hair cells bend. The hair cells send messages up the auditory nerves to your brain. When your brain receives these signals, it processes them and is able to interpret them as sounds. Because there are moving parts that start the signal to the brain, the sense of hearing is started by mechanical input.



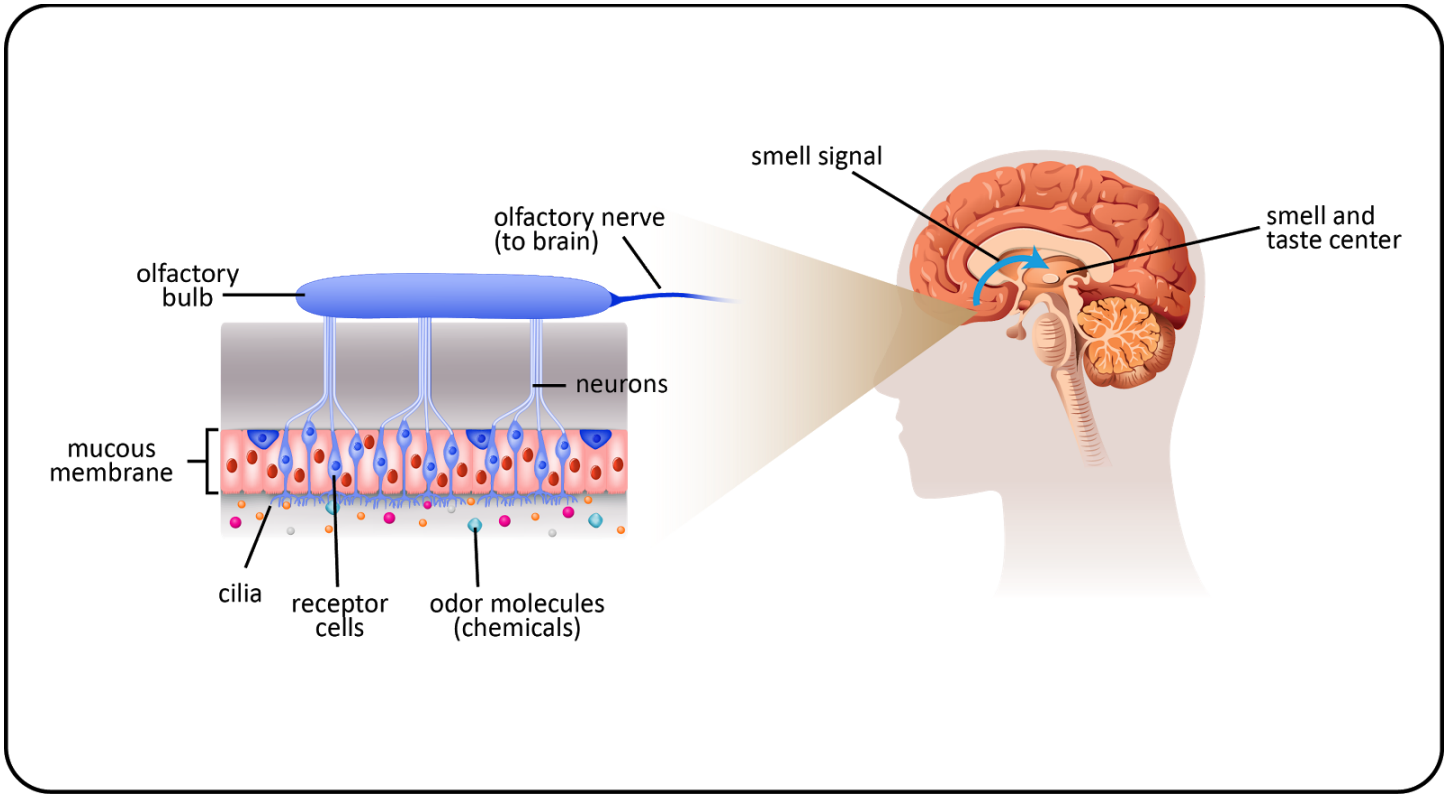
Nerve Cells Resource Cards

Card 4: Sense of Smell

Video link: https://youtu.be/mFm3yA1nslE (2:10–5:20)

Sometimes, smell seems like more trouble than it is worth. We have all had moments when we have had to hold our nose while passing by a garbage bin or when using a public bathroom! But for every bad odor, there are plenty of nice ones—the ocean, apple pie, roses, a freshly-mown lawn. Smell is more closely linked with memory than any of your other senses; often a certain smell will trigger a sudden image from your past that you had forgotten all about.

When you inhale air through your nose or when you eat, the odor molecules (or chemicals) reach neurons on the skin inside your nose. The chemical molecules of the scent you inhale attach to tiny hair-like structures called cilia that are on the end of these neurons. Different neurons bind to different smell molecules. The neurons then send a signal to the smell part of the brain. The information is passed on to other areas of your brain to send out a signal to tell you how to respond to the smell and to remember the smell.



Nerve Cells Resource Cards

Card 5: Sense of Sight

Video link: https://youtu.be/ZH8L3i-qxuE

Humans are incredibly visual creatures. We use our eyes as a tool in nearly everything we do—reading, writing, walking, driving, watching TV, shopping; you are even using them right now to read this card! Close your eyes and suddenly a huge part of what is going on around you is unknown.

Vision is the sensation of light. Light is considered an electromagnetic input. When light rays bounce off of an object, they enter the eye through the cornea, a transparent outer covering, then through the pupil, and finally onto the retina inside the back of the eye. The retina is full of tiny nerve cells called rods and cones that can sense light. The nerve cells convert the light into messages that are sent along the optic nerve to the brain where they are processed and converted into images. The brain then makes sense of these images and gives you signals about what you might do, think, or remember.