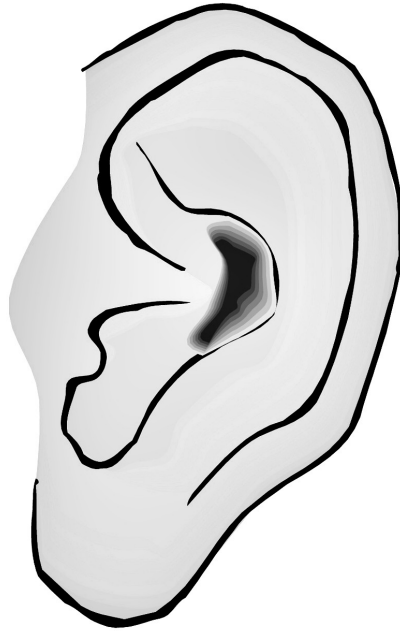


Let's Learn About the Ear



Vocabulary:

pinna
tympanic membrane
ossicles
malleus
incus
stapes
cochlea
semicircular canals
eustachian tube

The ear is divided into three sections: the outer ear, the middle ear, and the inner ear. All three sections of the ear work together so that you can hear and have a sense of balance. The outer ear collects the sound waves, the middle ear turns the sound waves into vibrations, and the inner ear interprets the vibrations and sends a signal to your brain telling your brain what you hear.

The Outer Ear

The outer ear is made up of the pinna (also known as the auricle) and the ear canal. The pinna is the fleshy outside part of the ear, what you would point to when someone asks “where is your ear?” The pinna works like a funnel and collects sound waves and sends them inside your ear. Sound waves travel from the pinna through the ear canal and into the middle ear.

The Middle Ear

Once sound waves move through the ear canal they hit the ear drum, or tympanic membrane. The sound waves cause the ear drum to vibrate and the vibrations are carried to three tiny bones inside the middle ear called ossicles. The ossicles are the smallest bones in the human body and they serve an important purpose when it comes to hearing. As the eardrum vibrates it causes these three bones to move. Their movements, in turn, cause the fluid inside the inner ear to move.

Inside your middle ear there is a tube called the eustachian tube. It is a small tube that connects your middle ear to the nasopharynx (the part of your throat that is located behind your nose). The eustachian tube helps to keep the pressure on both sides of the ear drum the same. Without it, pressure could build up behind the ear drum and cause the eardrum to be damaged. You may notice how the eustachian tube works when you are traveling through the mountains or flying on a plane. As you go up in altitude, the pressure changes inside your ear and you may feel the need to yawn or swallow to relieve the pressure. When you swallow, you may feel a popping sensation. This is caused by the opening of your eustachian tube and a corresponding change in pressure.

The Inner Ear

The inner ear is made up of two parts, the cochlea and the semicircular canals. The cochlea, a part of the inner ear, is a snail shaped tube that is filled with liquid. The vibrations of the middle ear cause the fluid inside the cochlea to move. The cochlea is lined with tiny little hairs. These tiny hairs are moved around as the fluid inside the cochlea moves. The movement of these tiny hairs creates electrical signals that are transmitted to the auditory nerve inside the inner ear. The auditory nerve takes these signals to the brain where it interprets them as sound.

Also located inside the inner ear are the semicircular canals. The semicircular canals are made up of three semicircle shaped tubes that are filled with fluid. The fluid inside the semicircular canals works in a similar way as the fluid inside the cochlea. The semicircular canals are also lined with tiny hairs and as the fluid inside the semicircular canals move around it moves the tiny hairs and creates a signal. The signals created from the hairs tell your brain where your head is in relationship to your body and helps you maintain your balance.