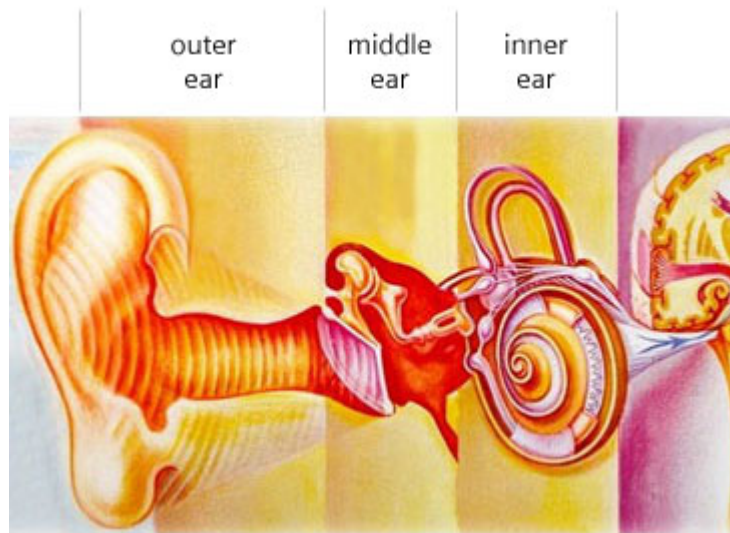


# Anatomy of Our Ear

To understand hearing loss, the best place to start is inside the ear. It is the place where many complex and delicate functions combine to create what we call hearing. Your ear is an amazing organ that can perceive sounds from barely audible to very loud at frequencies or pitches of 20 to 20,000 Hz. It can pinpoint the direction of a sound source to an amazing degree of accuracy.

The human ear consists of three parts: the outer ear, the middle ear, and the inner ear.



The **outer ear** includes the visible part of the ear (pinna) and the ear canal. Sound is collected and directed through the ear canal.

The **middle ear** is an air-filled space separated from the outer ear by the eardrum. The middle ear contains three small bones (ossicles), which make up the ossicular chain. These bones connect the eardrum to the inner ear.

The portion of the **inner ear** responsible for hearing is called the cochlea. It is full of fluid and has thousands of tiny nerve fibers.

## Additional terms

**External auditory canal** - part of the outer ear, a one-inch long, one-quarter inch diameter tube that ends at the eardrum. Its shape helps to boost speech frequencies.

**Eardrum or tympanic membrane** - a membrane about 1/3 of an inch in diameter that stretches across the inner end of the external ear canal. It vibrates in response to sound waves and forms the boundary between the outer ear and middle ear.

**Cochlea** - converts sound waves to nerve impulses through movement of thousands of tiny hair cells.

**Acoustic hair cells** - located inside the cochlea, these convert mechanical sound waves into electrical signals.

**Auditory nerve** - transmits the electrical signals from the acoustic hair cells from the inner ear to the brain.

**Brain** - processes the electrical signals from the auditory nerve that we interpret to be "sound."