



# How we hear

Sounds are invisible vibrations that travel through the air. When someone speaks, tree leaves rustle, a telephone rings or anything else creates a 'sound', a vibration or a sound wave is sent through the air in all directions.

Almost all sound waves are unique. Some sound waves might be high pitched or low pitched, loud or soft.

When our ears capture sound waves, they convert them into messages our brains can understand. How well they are captured - and how clearly they are sent to our brains - depends on how well our ears work.



The ear is quite a piece of engineering; a complex organisation of bones, hairs, nerves and cells. It is made up of three main parts, outer (1), middle (2) and inner (3 and 4). To hear naturally, each part of the ear needs to work well.

## 1. Sounds enter the ear canal

When these sound waves reach the ear, they travel down the ear canal and hit the eardrum, making it vibrate.

## 2. The ear drum and bones of hearing vibrate

Three tiny bones in the middle ear link the vibrating eardrum to a tiny bone structure in the inner ear called the cochlea.

## 3. Fluid moves through the inner ear

The cochlea is filled with liquid that carries the vibrations to thousands of tiny hair cells.

## 4. Hearing nerves communicate to the brain

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