

# THE EAR AND HEARING

The ear is a special sense organ and is equipped with specialized structures to receive sound signals, and to convert these signals into nerve impulses. These impulses are perceived as hearing. The human ear can pick up sound vibrations from  $\pm 80$  Hertz to 18,000 Hertz.

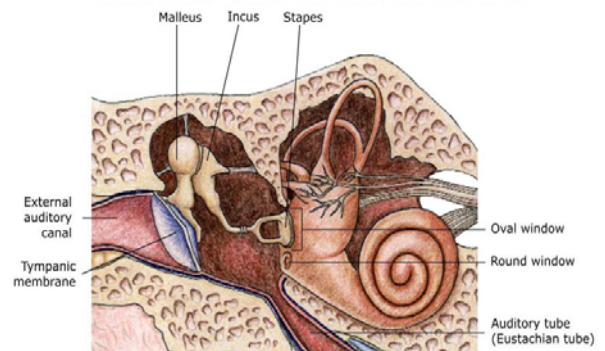
In addition, the ear has other specialized structures involved in perceiving position and movement. These structures are important in maintaining the body's balance (equilibrium).



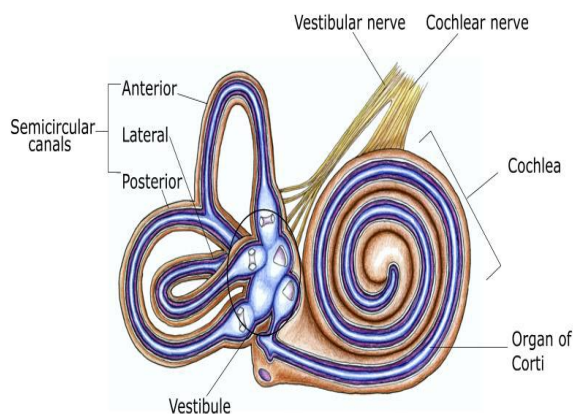
The external ear (auricle) is concerned mainly with receiving sound waves and directing these waves into the ear canal leading to the ear drum (tympanic membrane).

The middle ear houses three small bones – the hammer (malleus), the anvil (incus) and the stirrup (stapes). Sound is amplified and transferred from the eardrum to the inner ear by these bones.

## THE STRUCTURES OF THE MIDDLE EAR



## INNER EAR



The inner ear contains the cochlea. The cochlea is a very special structure with the ability to convert sound vibrations into nerve impulses. The inner ear also contains three semicircular canals. This structure is concerned with balance.

A doctor uses an otoscope to examine the external ear canal, the eardrum, and the middle ear.



### CROSS SECTION OF THE EAR

