

Hearing loss: The auditory system.

NID Training Disability Diary

- Compiled by Dr Jean Mitchell



Summary of the parts of the ear and their function



NAME	DESCRIPTION	FUNCTION
Outer Ear	Contains the auricle and the external auditory canal	
Auricle	Visible part of the ear	Gathers and funnels sound into the ear canal, transmits them down the auditory canal (external auditory meatus) so that sound can enter the middle ear and set the eardrum (tympanic membrane) in motion. The movements of the eardrum change the acoustic energy into mechanical energy, which is transferred to the middle ear.
External auditory canal	Leads to the eardrum	Improves speech frequencies and protects the eardrum.
Middle Ear	Contains the tympanic membrane (eardrum), the malleus (hammer), the incus (anvil), and the stapes (stirrup)	The vibrations from the eardrum are transmitted in a chain reaction via the malleus, incus, and stapes to the oval window, the connection between the middle and inner ears. Air pressure in the middle ear is controlled by the Eustachian tube that is positioned between the middle ear and the back of the throat.
Eardrum	End of ear canal	Amplifies and transfers sound to ossicles. Creates air-containing space
Ossicles	Middle ear bones	Amplify and transfer sound to cochlea
Inner Ear	Contains the cochlea and semi-circular canals which control the sense of balance	The inner ear is covered by the temporal bone (the hardest bone in the human body) and is the most complex and critical part of the entire hearing apparatus. When the stapes move, pressure is built up and triggers the oval window to move in and out. This causes the fluid in the cochlea of the inner ear to flow. This movement of the fluid results in a complex sequence of activities in the cochlea; this causes the cochlea nerve to be stimulated, an electrical impulse is sent to the brain, and sound is heard.
Cochlea	Fluid and hair cells	Converts vibrations to nerve signals
Balance system	Fluid, hair cells and crystals	Converts motion/gravity to nerve signals

Introduction

Hearing allows an individual to communicate with the world by means of transposing sounds that reach the ear into meaning made in the brain. The ear is described as one of the most complex and compact parts of the body, and audition (the sense of hearing) as a complex process.

Hearing is a complex process the table summarises how the various parts of the ear function to provide hearing and ensure balance.

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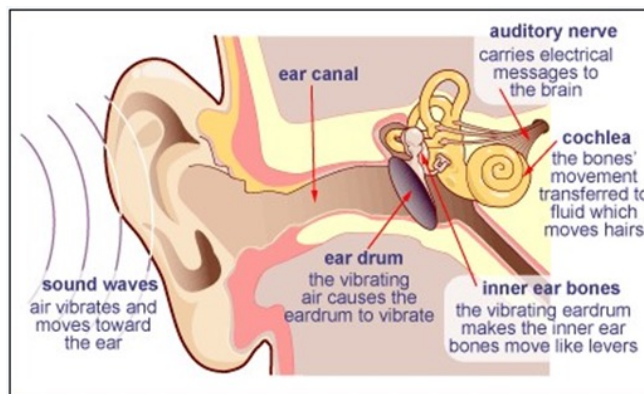


Diagram of the ear. Source: Open Learn <https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=162512§ion=2.5> (An Open Education Resource)

References

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