



**SNS COLLEGE OF ALLIED HEALTH SCIENCES**  
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**DEPARTMENT : PHYSICIAN ASSISTANT**

**COURSE NAME : ANATOMY**

**UNIT : SENSE ORGANS**

**TOPIC : EAR**



## SENSE ORGANS



- Sensory Organs provide us with data for perception, and it is the physiological capacity of all living organisms.
- Five sense organs are equipped in the human body. Those organs provide us with first-hand information about our external or internal world.



The names of those organs are stated below

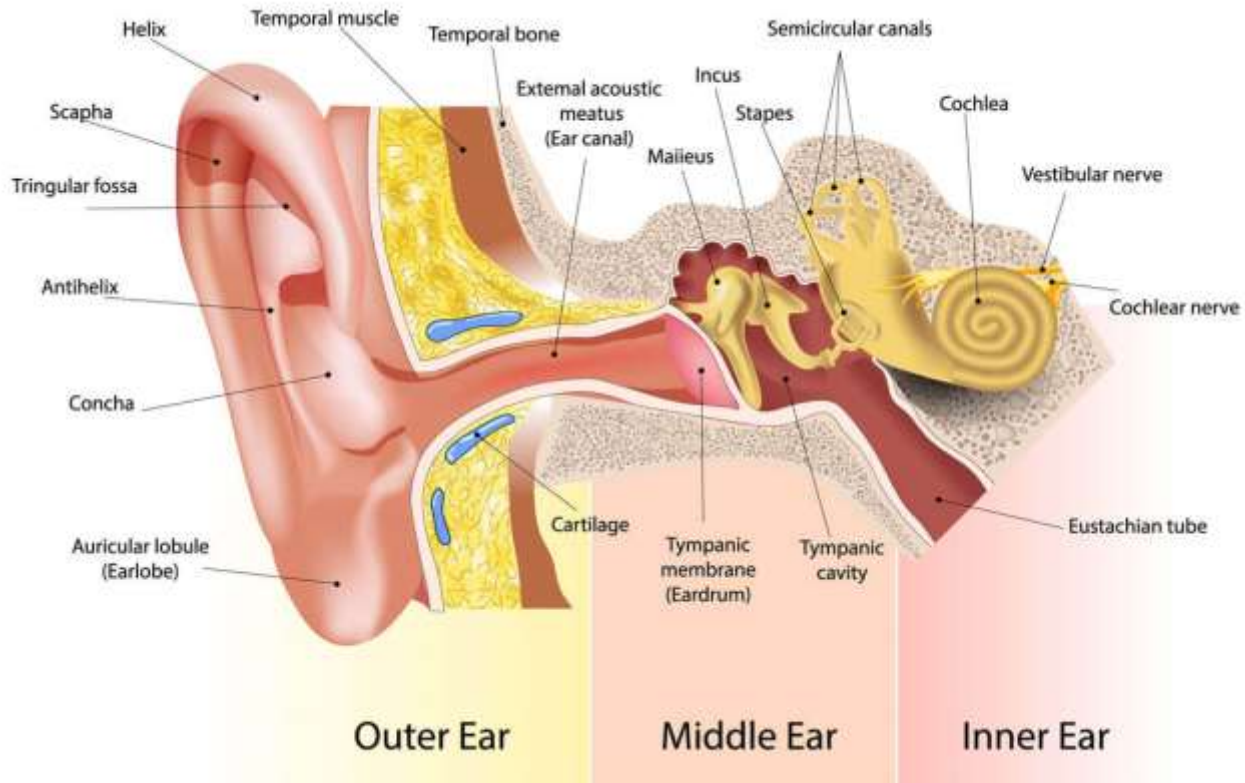
- Eye: perceives vision.
- Ear: perceives sound.
- Skin: perceives touch, temperature, roughness.
- Nose: perceives smell.
- Tongue: perceives taste.



## EAR



- The outer ear is called the pinna and is made of ridged cartilage covered by skin. The ear is made up of three different sections that work together to collect sounds and send them to the brain.
- There is no bone in the outer ear. Human ears have two main functions, which are stated below:
  - Hearing
  - Maintenance of balance of the body





The human ear can be divided into three major sections:

## Outer Ear

- It comprises the pinna and the external auditory meatus or canal.
- The pinna collects the vibrations in the ear which produce sound.
- The external auditory meatus leads inwards and extends up to the tympanic membrane or the eardrum.



- There are very fine hairs and wax-secreting glands in the skin of the pinna and the canal.
- The tympanic is composed of connective tissues covered with mucus membrane inside.

## **Middle Ear**

- It contains three ossicles called the malleus, incus and stapes which are attached to one another in a chain-like fashion.
- The malleus is attached to the tympanic membrane and the stapes is attached to the oval window of the cochlea.



- The ear ossicles increase the efficiency of transmission of sound waves to the inner ear.
- A Eustachian tube connects the middle ear cavity with the pharynx.
- The Eustachian tube helps in equalizing the pressure on either side of the eardrum.
- The fluid-filled inner ear called labyrinth consists of two parts.





The bony labyrinths.

The membranous labyrinths.

- The bony labyrinth is a series of channels. Inside these channels lies the membrane labyrinth, which is surrounded by a fluid called perilymph.
- The membranous labyrinth is filled with a fluid called endolymph. The coiled portion of the labyrinth is called the cochlea.
- The organ of Corti is a structure located on the basilar membrane which contains hair cells, these cells act as an auditory receptor.



## Inner ear

- It also contains a complex system called the vestibular apparatus.
- It is located above the cochlea.
- Three semicircular canals and the otolith are there found in the vestibular apparatus.
- These systems are responsible for maintaining body balance.



## WORKING OF HUMAN EAR



- The external ear collects sound waves and directs them to the eardrum. The eardrum vibrates in response to the sound waves and these vibrations are transmitted through the ear ossicles consisting of the malleus, incus and stapes to the oval window.
- The vibration is passed through the oval window onto the fluid of the cochlea. In the cochlea, the wave stimulates the hair cells and thus the sensation of sound is produced and passed in the brain by auditory nerves. In these ways, we hear sound.



## APPLIED ANATOMY



- Noise-Induced Hearing Loss.
- Otosclerosis.
- Pendred Syndrome.
- Sudden Deafness.
- Tinnitus.
- Usher Syndrome.
- Vestibular Schwannoma (Acoustic Neuroma) and Neurofibromatosis.



## ASSESSMENT



- How Human ear is working ?
- What all are the Applied anatomy of ear ?