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Bengali



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Document History

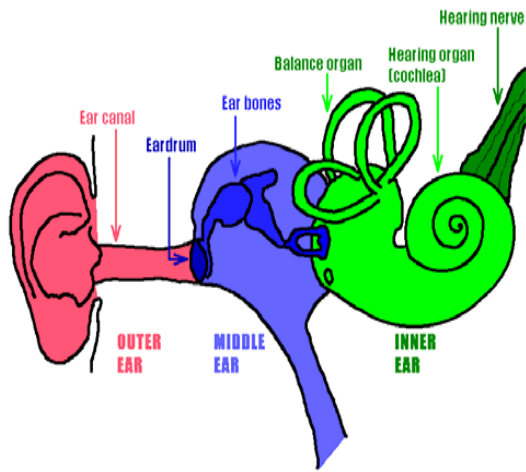
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The Paediatric Audiology Service

Patient Information

The Ear and How it Works





The Ear can be divided into three parts:

1. The outer ear
2. The middle ear
3. The inner ear

The outer ear consists of:

- The "ear" on the outside of the head
- The ear canal

The middle ear consists of:

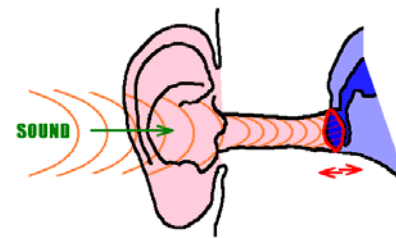
- The eardrum (tympanic membrane)
- The 3 ear bones (ossicles)
 - the hammer (malleus)
 - the anvil (incus)
 - the stirrup (stapes)

The inner ear consists of:

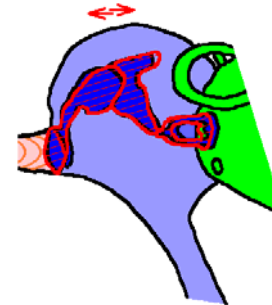
- The hearing organ (cochlea)
- The balance organ (vestibular system)
- The hearing (auditory) nerve
- The air space of the middle ear

How does the ear work?

1. Sound enters the ear, passes down the ear canal, and causes the eardrum to vibrate.



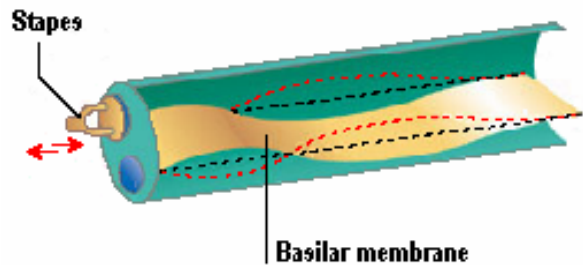
2. As the eardrum vibrates, so do the ossicles (earbones) in the middle ear.



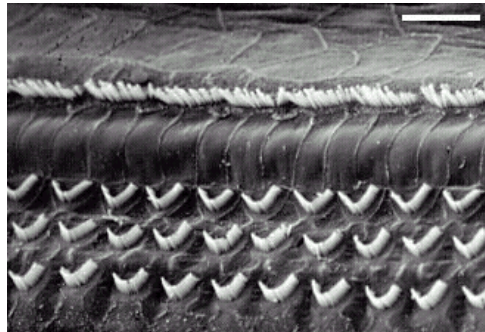
3. The vibration of the ossicles causes the stapes to pump back and forth into the cochlea.



4. This pumping action creates waves along the Basilar membrane inside the cochlea

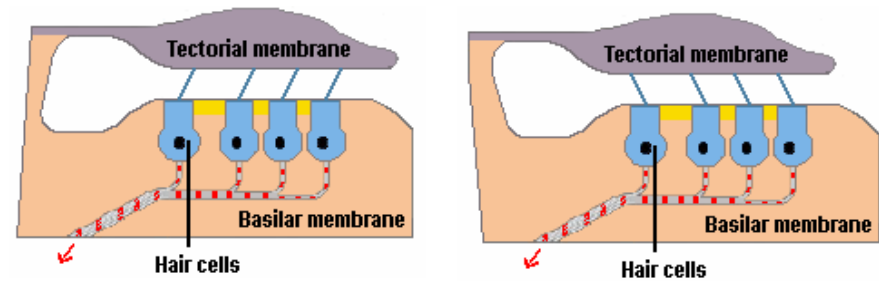


5. There are four rows of tiny hair cells which sit in the Basilar membrane (photo below)



- one straight row of inner hairs cells
- three rows of v-shaped hair cells

6. The tops of the hairs are embedded in the Tectorial membrane which is positioned above the Basilar membrane. As the basilar membrane moves, the hairs are bent



7. The bending of the hairs cells generates an electrical signal, which passes up the hearing (auditory) nerve to the brain

Below is a diagram showing how different pitches are distributed along the coiling cochlea

