

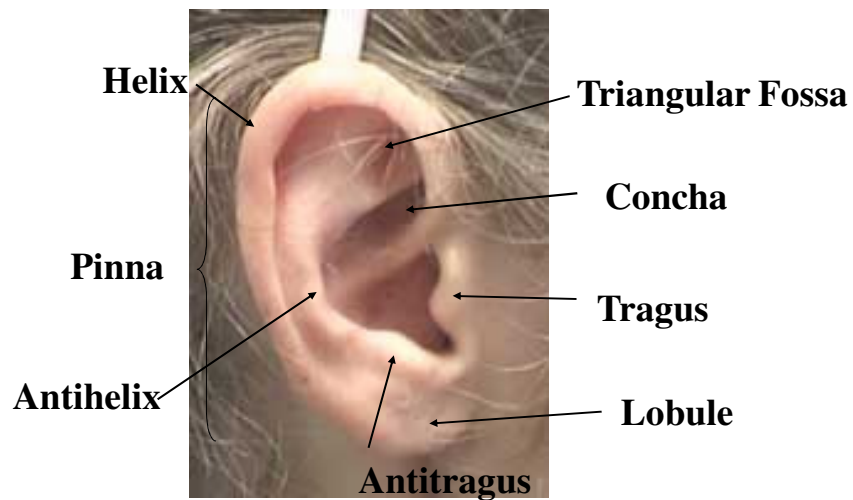
A&P Unit 4

Lecture 6A

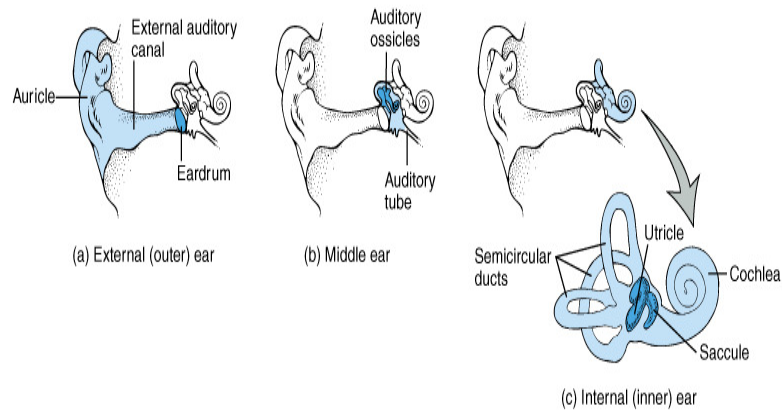


Granule Cell

External anatomy of the ear

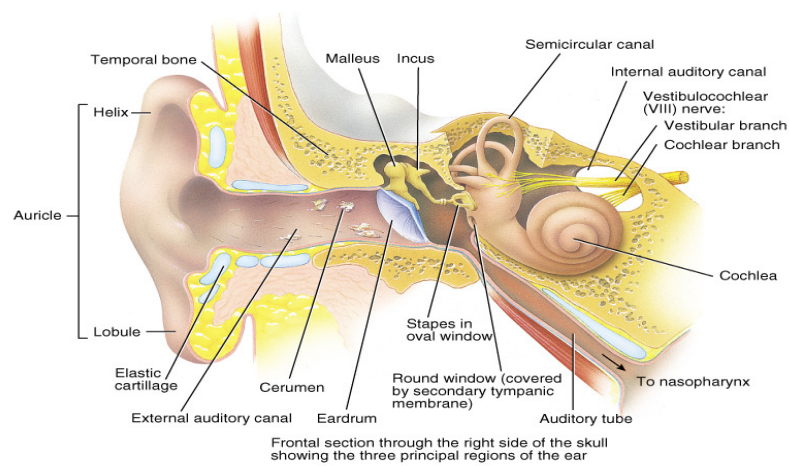


Three Parts of the Ear



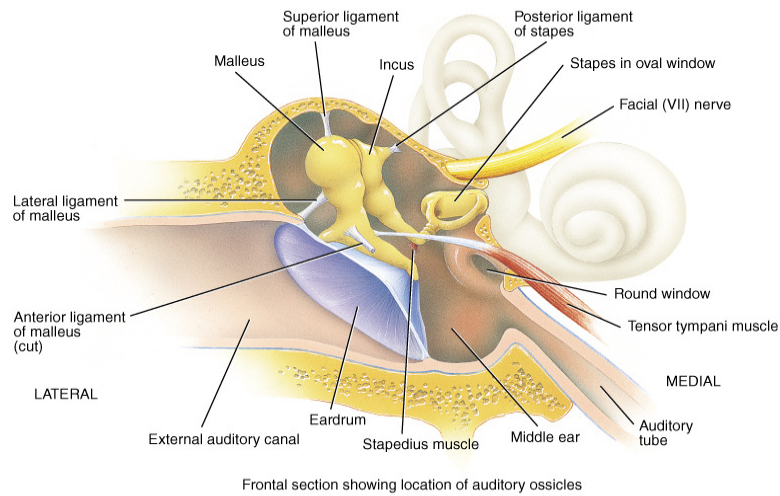
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Overview of the anatomy of the external ear, middle ear and internal ear

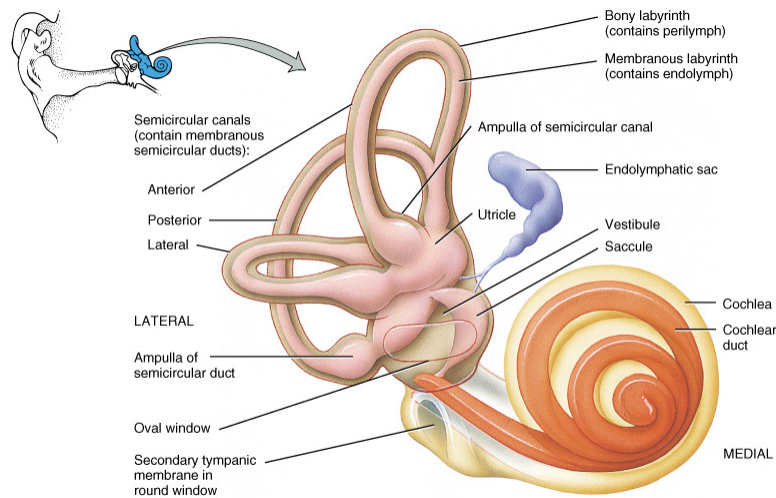


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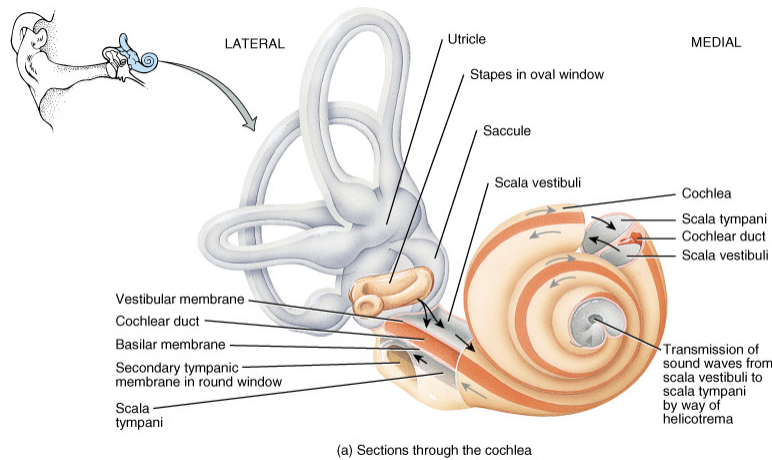
Gross Anatomy of the Middle Ear



Gross Anatomy of the Inner Ear

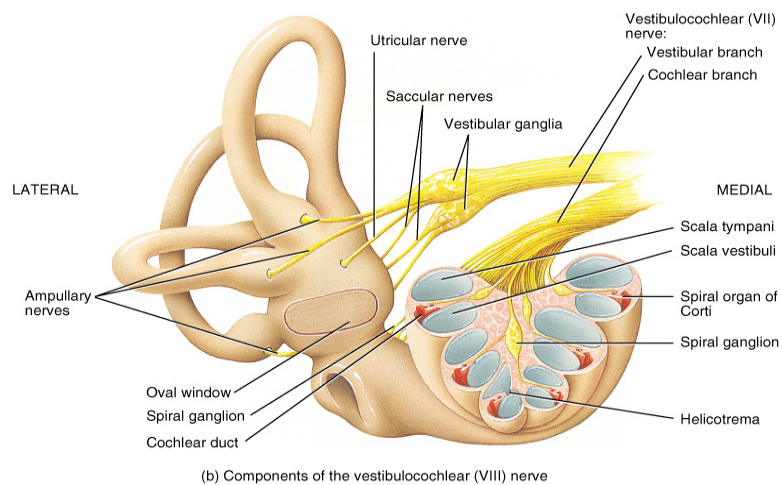


Anatomy of the Cochlea



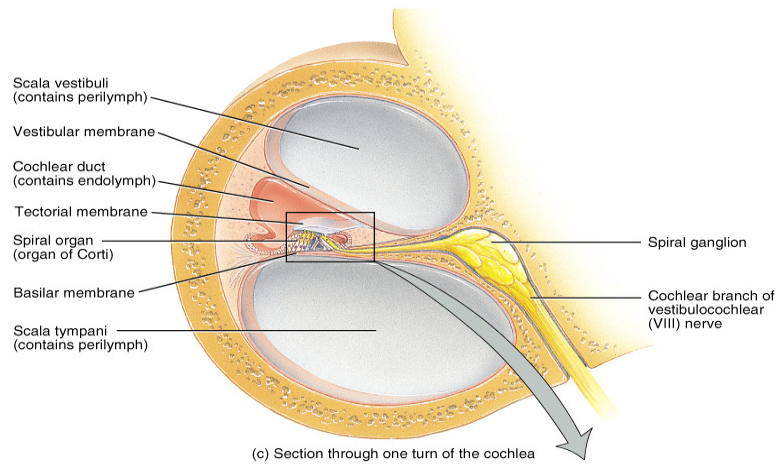
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Sectional View of the Cochlear as it will appear on a microscope slide



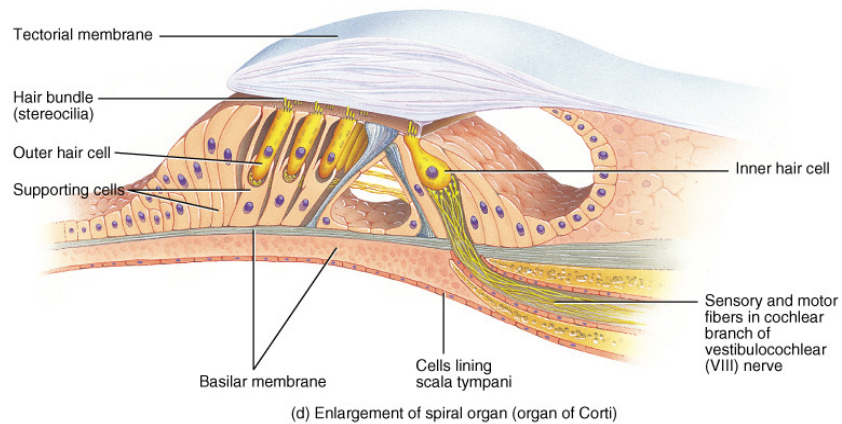
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Internal Anatomy of the Cochlea with details of the Bony Labyrinth



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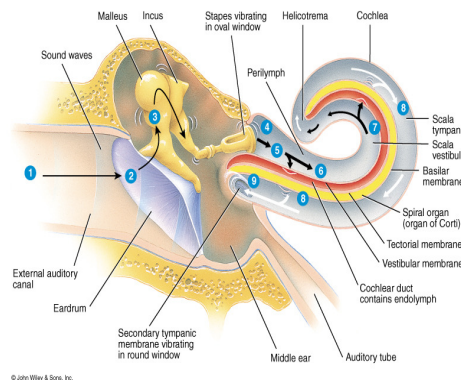
Internal Anatomy of the Bony Labyrinth with details of the Organ of Corti



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Events involved in the creation of an Auditory action impulse

1. Pinna directs sound waves into the external auditory meatus.
2. Sound waves cause the tympanic membrane to vibrate.
 - a. Slowly for low-frequency sounds
 - b. Rapidly for high-frequency sounds
 - c. Distance the membrane travels during these vibrations relates to loudness or decibels.

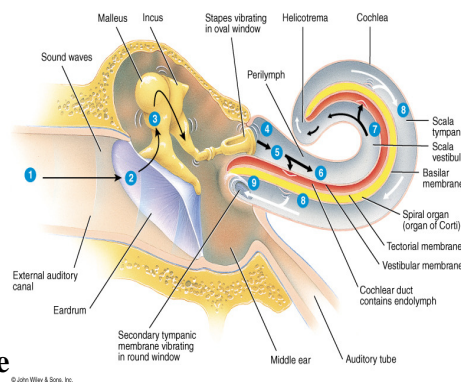


Events involved in the creation of an Auditory action impulse

3. Vibrations are communicated from the tympanic membrane to the auditory ossicles.

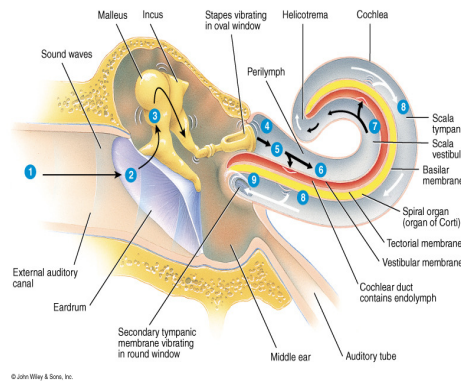
Malleus → Incus → Stapes

4. Stapes vibrates back and forth in the oval window, thus vibrating the oval window membrane.
5. Vibration of oval window membrane causes fluid pressure waves in the perilymph of the scala vestibuli.



Events involved in the creation of an Auditory action impulse

6. Perilymph pressure waves are transmitted to the scala tympani and eventually to the round window causing the secondary tympanic membrane to bulge outward.
7. Vibrations of the vestibular membrane cause vibrations of the endolymph within the cochlear duct.
8. Endolymph pressure waves cause the basilar membrane to vibrate.



Events involved in the creation of an Auditory action impulse

- 8a. Vibrations of the basilar membrane cause the the hair cells of the Organ of Corti to vibrate.
- 8b. Hair cells vibrate upward, bending the stereocilia against the tectorial membrane.
- 8c. Bending the stereocilia produces a receptor potential that ultimately leads to a action potential on Cochlear nerve.

