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**DEPARTMENT: MBBS**

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**Write an essay on the histology of an organ of corti with the aid of diagrams**

The organ of corti which is a specialized sensory epithelium that allows for transduction of sound vibrations into neural signals, it is located on the basilar membrane of the cochlea above is the tectorial membrane . The organ of corti rests on the basilar membrane and contains two types of hair cells : inner hair cells and outer hair cells which have stereocilia protruding from each hair cell

⁃ Inner hair cells : numbering about 3500 with 12 micrometers diameter. they appear in a single row close to the inner pillar cells ,they are enclosed by inner phalangeal cells. they help to transduce sound from vibrations to neural signals via the shearing action of their stereocilia , it accounts for about 90 - 95% of sensory input into auditory system

⁃ Outer hair cells : numbering about 12,000 with 8 micrometers diameter. they are surrounded by outer phalangeal cells and are three rows. They serve as acoustic pre-amplifiers which improve frequency selectively by allowing organ of corti become attuned to specific frequencies by stimulating the inner hair cells, they account for about 5-10% of sensory input into the auditory system. The apices of these cells and their phalangeal cells are joined to form reticular membrane that separates endolymph in scala media from corticolymph & perilymph of the scala tympani.

Other features of the organ of corti are;

i) Outer & inner pillar cells outline the inner tunnel which is filled with perilymph-like fluid called corticolymph, they help to separate the inner hair cells from the outer hair cells

ii) Tectorial membrane : produced and maintained by columnar cells found atop the spiral limbus which moves in response to pressure variations in the fluid filled tympanic and vestibular canals

iii) Nerve fibers : they pass between supporting cells to synapse with hair cells

