HISTOLOGY ASSIGNMENT.

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With the aid of a diagram, write an essay on the histology of an organ of Corti.

The organ of corti is a specialized sensory epithelium that allows for the transduction of sound vibrations into neural signals. The organ of corti itself is located on the basilar membrane. The organ of corti rests on the basilar membrane and contains two main types of hair cells: the inner hair cells and outer hair cells, then supporting cells

Inner hair cells transduce sound from vibrations to neural signals via the shearing action of their sterocilia. They are connected to type 1 neuron peripheral fibers of spiral ganglion, these connections are very divergent. The luminal part of the cell is immerged in endolymph, the basal one is immerged in normal extracellular fluid. The luminal portion is formed by bundles of sterocilia, whose tips are connected by filamentous structures called tip-links.

Outer hair cells serve a function as acoustic pre-amplifiers which improve frequency selectivity by allowing the organ of corti to become attuned to specific frequencies, like those of speech or music. These cells are connected to type 2 amyelinic neurons, the connections are very convergent. They have also an afference from superior olivary nucleus. They have contractile activity. The fibrous tectorial membrane rests on top of the sterocilia or the outer hair cells. Mutations in a alpha-tectorin, which encodes a protein specific to the tectorial membrane, cause deafness.

Supporting cells: these cells are of four different types; corti pillars, hensen cells, deiters cells and Claudius cells.

