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Questions and Answers 2

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Ways through which sound travels from the pinna to the auditory cortex.

Sound is defined as waves that are transmitted via the air. The external part of the ear referred to as the pinna collects the waves inform of motions and transmits them to the brain. The pinna also known as the auricle is the external structure made of cartilages that collects sound signals and directs the signals into the inner canal which is also known as external auditory meatus. The ear canal directs sound waves to the tympanic membrane or the eardrum. It also resonates the waves as well as increases the loudness of the tone. The eardrum transfers sound waves the three bones that are delicate (Foley & Martin 210). The bones are the malleus, stapes and incus whose function is to amplify the sound waves. In the inner ear, the auditory system transforms the sound vibrations into electrical signals. The inner ear is made up of the cochlea that contains corti organs. The corti organs consist of cylindrical cells and hair cells. The Eustachian tube equalizes air temperature and allows ventilation in the middle ear. The vestibular enables the balance between the two ears giving balance to the body. Lastly, the sound reaches the cochlea. It is the part that connects the ear to the brain and the spinal cord.

Hair cells and their function.

Hair cells are also known as columnar cells. They have a bundle of specialized cilia from where they get their names. They are of two types the inner and the outer hair cells. Inner hair cells are the cells that have the responsibility of mechanoreceptors for hearing. They transduce sound vibration into electrical activity in nerve fibers that is

later transmitted to the brain. Outer hair cubicles are mechanical structure. Sound waves bring a change to the shape of the cells hence serving as an amplifier of sound vibrations.

Ways in which sound intensity and sound frequency might be measured.

Sound intensity is the power of a sound per unit area. The normal milieu is the quantity of sound force in the air at a listener's setting (Kandel 2012). Basic units of measuring sound intensity and sound frequency are watts/ m2. Decibel abbreviated as dB is the gauge of sound concentration. It has a logarithmic scale. The scale describes that 20dB is two times louder than 10dB while 30db is twice louder to 20dB. The hearing thread hold is 0dB, and any sound that is above 80db is dangerous for a person's hearing. During normal conversations, the sound is at approximately 60dB. Loudness is distinct from an objective intensity measurement. However, ear's sensitivity should be put into consideration.

Process of auditory localization and the components of the brain involved.

Sound localization is the ability of the listener to identify the origin or location of sound detected in terms of distance and direction. It also includes means in acoustical planning to quicken the post of an auditory signal. The cortex also known as the auditory cortex is the part that process sound and sensory information from the other parts of the ear. It is a part of the brain. The cortex is not the so part responsible for hearing. However, it is vital to understand different sounds. There are other parts and organs such as the cochlea that are

more directly responsible for sound collection (Schnupp & King 2011). The most important function of the cortex is to understand and process sound hence differentiating it from noise. The auditory cortex is mad of two parts with two functions that have a slight difference. The two parts are primary cortex and secondary cortex. The primary cortex is essential in recognizing the start, stop and pitch change in sound. The secondary cortex also known as peripheral cortex is involved in subtle processing of sound.

References

Kandel, E., (2012) ***Principles of Neural Science*** McGraw-Hill Publisher

Schnupp, J., & King J., (2011) Auditory Neuroscience ***MIT Press***

Foley, H., & Martin M., (2010) ***Sensation & Perception*** Prentice Hall Publisher