

Helmholtz Place theory: states that we hear different pitches because specific *places* in the cochlea are stimulated.

Frequency theory: states that we hear different pitches because the rate of neural impulses traveling to the brain matches the *frequency* of a tone and allows us to discriminate pitch.

We can tell which **direction** a sound is coming from because if it is closer to our right ear, the right ear will receive the sound slightly faster than left ear and the brain calculates this difference. Consequently, if the sound is directly behind or in front, where the distance between two ears is the same, then it is difficult to judge direction.


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Two types of **deafness:**

1. **Conduction Deafness** - loss of hearing due to damage of the eardrum (tympanic membrane), and/or the tiny bones in middle ear. This type of deafness is often corrected with the use of a hearing aid.

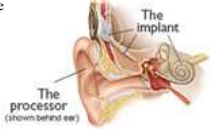
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Cochlear Implant Surgery...



Now that's something to smile about.

Deaf Culture



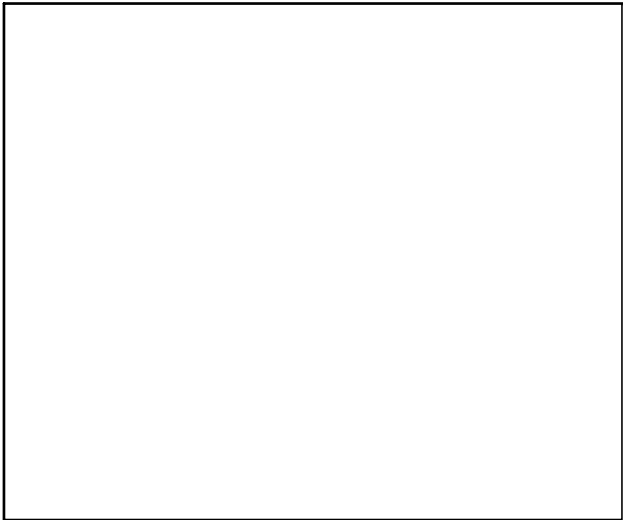
The processor (shown behind ear)

The implant

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Oct 19-4:28 PM



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