A Brief Discussion About the Mankind Hearing Mechanism and the Hearing Device Nowadays--Cochlear

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How do we hear?

1. The sound makes the eardrum vibrate.
2. The eardrum makes the bones vibrate.
3. The bones make the fluid move and hair cell bend.
4. Then the auditory nerve takes the message to the brain.

Photo reserved by Chittka L, Brockmann, from Wikipedia
Cochlear Implant System

External:
- Microphone
- Battery
- Speech processor

RF frequency transmission

Internal:
- Received coil
- Electrodes array

Figure 1. Graphical depiction of the cochlear implant system: (a) speech processor, (b) cochlear implant, (c) electrode array, and (d) cochlea. (Photos courtesy of Cochlear Americas, © 2009 Cochlear Americas.)
Cochlear Implant

Direct stimulation of the auditory nerve is accomplished by an array of electrodes, and is inserted along the length of the cochlea.

Basilar membrane motions at different frequencies (from Encyclopaedia Britannica, Inc.)
Block diagrams of the cochlear implant system

Fig. 1. Block diagram of the CI system. (a) External speech processor, (b) implantable unit.