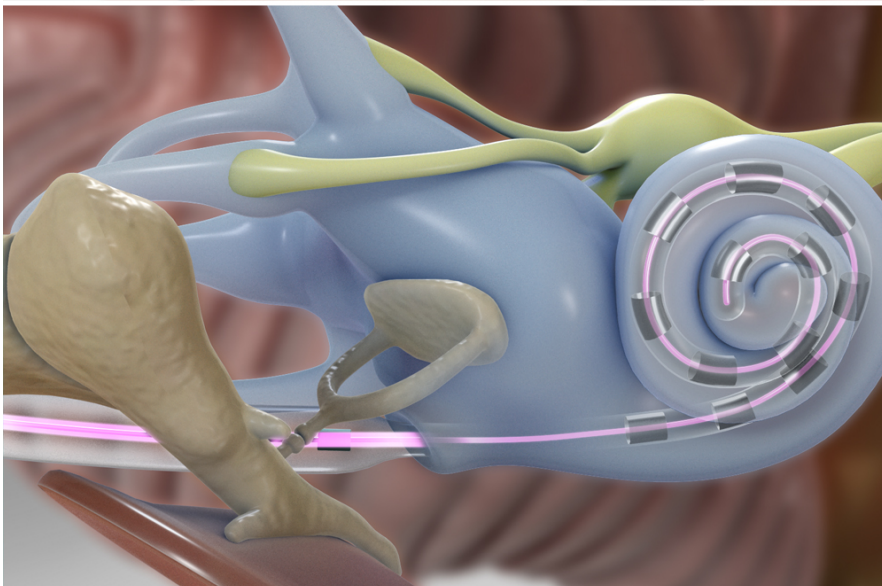
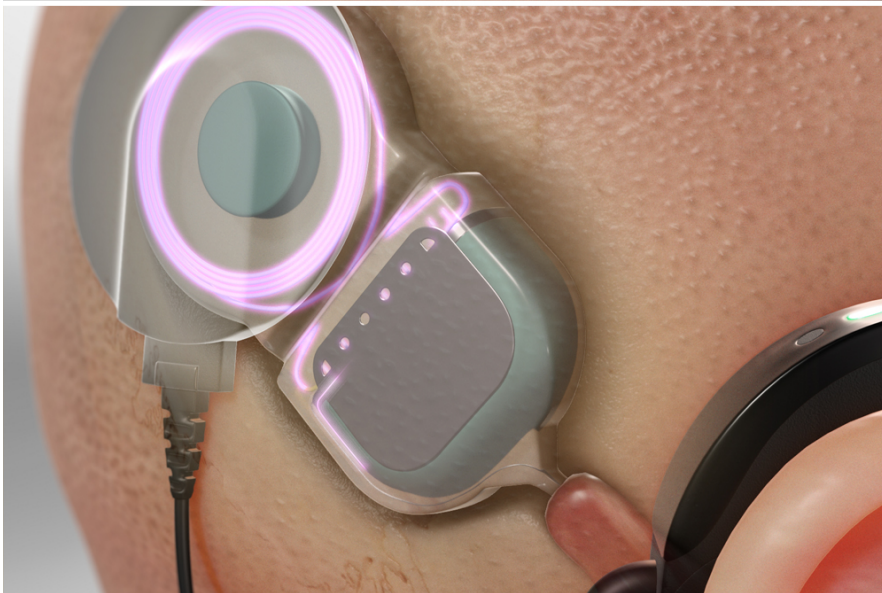




Cochlear Implant



Overview

This electronic device gives a person who is deaf or very hard of hearing a sense of sound. It's not the same as a hearing aid, which makes sounds louder for the ear to process. A cochlear implant changes sound into electrical signals and sends these signals directly to the auditory nerve. Let's trace the path of sound through a cochlear implant to see how it works.

Speech processor

First, sound enters a microphone housed in a part of the device called the "speech processor." It's worn behind the ear. It looks a lot like a hearing aid. The processor changes the sound waves into a digital signal. It sends this signal along a wire to the next part of the device.

Transmitter

Now, the digital signal reaches the "transmitter." This puck-shaped part is worn on the side of the head. It's held in place by a magnet. The transmitter sends the digital signal wirelessly through the scalp.

Receiver

Now, the signal is picked up by the "receiver." It's implanted in a small cavity hollowed out in the skull. The receiver turns the digital signal into an electrical signal. Then, it sends this electrical signal down a wire into a part of the inner ear called the "cochlea." It's shaped like a snail's shell.

Electrode array

At the end of the wire is an array of electrodes coiled in the cochlea. These electrodes stimulate the auditory nerve. The brain interprets these signals as sound. It doesn't sound exactly like what people with working ears hear. Sounds that come through a cochlear implant are more tinny and robotic. But a cochlear implant allows a person to hear and understand speech and other sounds. And with time, the brain can get better at interpreting a wide range of sounds.