



Curiosity Guide #407

Sense of Hearing

Accompanies Curious Crew, Season 4, Episode 7 (#407)

I Can't Hear You

Investigation #7

Description

Can you hear me now?

Materials

- Computer
- Frequency Samples at <http://www.noiseaddicts.com/2009/03/can-you-hear-this-hearing-test/>
- Friends

Procedure

1. On the internet, locate audio files that play tones of different frequencies.
2. Play the tones one at a time to determine if each listener can hear the tones or not.

My Results

Explanation

The sense of hearing is largely dependent on one's age. As we get older, we begin to lose the ability to detect the higher frequencies. For example, a frequency of 8000 hertz is high-pitched but easy for everyone to hear. When the frequency is raised to 12,000 hertz, people under 50 years old tend to be able to hear the sound. People under 40 can generally hear 15,000 hertz; people under 30 can still hear 16,000 hertz; people under 24 can hear 17,000 or 18,000 hertz; and people under 20 can hear sounds at 19,000 hertz. People under 20 can usually hear all of these frequencies, but with age, the ability to detect those sounds goes away. The hair cells in your ears do not regenerate like the cells in your skin. With age, these hair cells break, bend, or get destroyed, making the interpretation of some sounds impossible. Cells that identify higher-frequency sounds are the first to detect sounds at all, so they are used more often and are more susceptible to stress and degeneration; and because they are not replaced, tend to fail with age.

Think about this: Many people experience hearing challenges, including the 200,000 people in the United States who are deaf, and the 3 million with serious hearing problems. Protecting your ears from extremely loud noises is a great way to save the tiny hair cells in your inner ear so they can detect higher frequencies. Because once these hair cells are damaged, they never heal. We are lucky that engineers have designed hearing aids and cochlear implants to amplify sound and help people with hearing loss, but be sure to keep those ear plugs at the ready!

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