Medicine’s Next Big Thing: The Buzz On Hearing

BACKGROUND: Nearly 1.5 million people rely on the use of sign language because they are deaf. Another 28 million Americans have some form of hearing loss or “nerve deafness” caused by the damage or deterioration of hair cells in the inner ear. Although many people lose their hearing as they age, hearing loss can also result from loud noise, illness, infections, head trauma, birth defects, certain drugs and even the mumps and measles.

THE PROBLEM WITH HEARING AIDS: Many people with hearing aids say they have a few problems. Besides not being very stylish, they cause feedback. Often, it’s difficult for a person with hearing aids to follow a conversation in a crowded room. The hearing aid does not make it easy to block out background noise. Furthermore, only between 10 percent and 20 percent of people considered good candidates for hearing aids actually use them.

A SOLUTION? Ron Miles, Ph.D., from Binghamton University in Binghamton, N.Y., is studying new ways to make life easier for the hearing impaired. He is currently pursuing research inspired by an insect! He and his colleagues are working to create biologically inspired acoustic sensors. By studying directional hearing in the fly, Ormia ochracea, Dr. Miles is hoping to apply the fly’s unique hearing mechanisms to a new design of hearing aids. If it works, he could help more than 28 million Americans who have or face hearing loss. That number could become even bigger as the Baby Boomer generation ages.

This species of fly depends on hearing to survive. The females deposit larvae on singing crickets. The young fly burrows into the cricket where it matures and eventually kills the cricket. Finding a cricket where it matures and eventually kills the cricket. Finding a cricket in a large field would be a daunting task for a tiny fly, unless it had the ability to zero in on the source of sounds. Dr. Miles reports the inner workings of the fly hear allows it to quickly identify the directional source of a sound and move right to it. Larger animals are able to do this because their ears are several inches apart. By turning it’s head, a dog is able to pinpoint the location of a sound. However, a fly’s ears are a fraction of a centimeter apart, therefore it must have a specialized mechanism inside its ear to locate a sound.

Dr. Miles says eventually the directional hearing aids could be designed to tune in to any criteria including directionality, frequency, or volume of sounds. Now, researchers are focusing on direction, because most hearing-aid users want to hear the speaker they are facing. He says it could be many years before the hearing aids will be available to the public. It has not yet been tested in humans.

FOR MORE INFORMATION, PLEASE CONTACT:
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