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## Feature Story

### New Hearing Protection Campaign Targets Tweens and Their Parents

Spend some time with a “tween”—the trendy term for a kid between the ages of 8 and 12—and you’ll soon discover that the noise level of his or her normal, daily life can be pretty loud. There are alarm clocks and school bells; gym and band practice; lunch in the cafeteria; after-school sports practice; television, video games, and MP3 players; and a commute by car, bus, or subway train. And that’s just on a school day. On weekends, the average tween also may be exposed to the sounds of movies; sporting events; concerts; home, yard, and workshop chores; and seasonal activities such as snowmobiling, boating, and hunting. Many of these sounds reach decibel levels that may cause noise-induced hearing loss, or NIHL, with prolonged exposure.

“Noise is everywhere, and children and adults alike are at risk of hearing loss from overexposure,” said James F. Battey, Jr., M.D., Ph.D., director of the National Institute on Deafness and Other Communication Disorders (NIDCD). Already, more than 26 million American adults have experienced NIHL from work or leisure time activities.

In October 2008, the NIDCD launched a new national public education campaign to help prevent NIHL in young people by focusing on tweens. Called *It’s a Noisy Planet. Protect Their Hearing*, the campaign is designed to educate parents of tweens about the causes and prevention of NIHL so that they, in turn, can encourage their children to develop safe listening habits that can help maintain healthy hearing for life. The Noisy Planet campaign also will help parents and other adults adopt the same practices to protect their own hearing.

### Features of the Noisy Planet Campaign

The Noisy Planet Web site, <http://www.noisyplanet.nidcd.nih.gov>, is the centerpiece of the campaign, offering information and activities for parents and tweens as well as for communities, partnering organizations, and the media. In addition to providing basic information about the causes and prevention of NIHL, the site offers tips



to parents on how to recognize when a child’s hearing is at risk, how to select ear protectors and take other steps to reduce noise exposure, and how to make use of the many teachable moments to discuss healthy listening habits with their tween. Parents can sign up for e-bulletins that will update them about new site content and research advances in NIHL prevention.

The TweenZone page contains interactive information about noise and hearing loss tailored specifically for 8- to 12-year-olds. The Web page includes tip sheets, videos, games, an interactive sound ruler, and “noise in the news” features. One page on hearing protectors offers suggestions on how tweens can respond if their friends ask why they wear earplugs. It also suggests ways they can actually start a trend in hearing protection. The site encourages tweens and their parents to protect their hearing through three simple steps:

- **Blocking the noise** by wearing earplugs or earmuffs.
- **Avoiding the noise** by walking away or limiting time spent in noisy environments.
- **Turning down the sound** on the growing number of tools, toys, and gadgets that add to the cumulative noise level of daily life.

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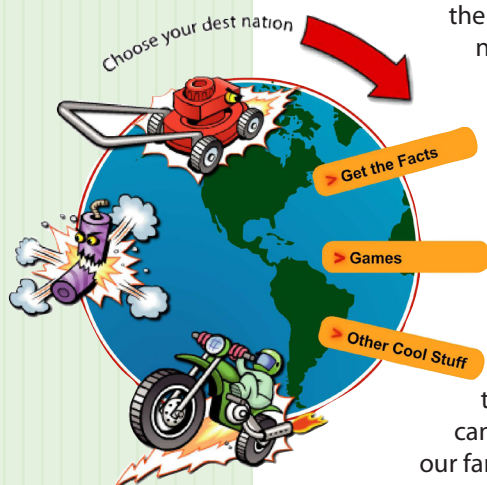
To add your name to our e-mail list, visit <http://www.nidcd.nih.gov/health/inside/>

## Why Noisy Planet Focuses on Tweens

The effect of loud noise on hearing has been a primary area of focus for the NIDCD since its beginning in 1988. According to the National Institute for Occupational Safety and Health (NIOSH), NIHL is the second most commonly reported occupational disease and the most

expensive disability for military and federal workers' compensation. Since 1999,

the NIDCD has led WISE EARS!®, a national campaign to prevent NIHL among the general public and workers. In collaboration with NIOSH and nearly 90 partner organizations, the NIDCD has distributed thousands of publications each year about NIHL and its prevention. Noisy Planet is a continuation of the NIDCD's efforts to draw public attention to the risks of NIHL and how we can better protect ourselves and our families.



The NIDCD selected tweens as the focus of its new Noisy Planet campaign for two reasons. First, tweens are at an age when they are developing as individuals. They are becoming more independent and are starting to make some of their own choices. These choices include how they spend their leisure time, such as listening to music or attending sports events, and how they help around the home, such as mowing the lawn. Tweens also are developing their own attitudes and habits related to their health.

The second reason Noisy Planet focuses on tweens is to complement existing NIHL campaigns. In recent years, hearing health advocacy groups and the media have raised awareness about the potential risk of hearing loss in young people due to the increased use of MP3 players and other personal stereo systems. The American Speech–Language–Hearing Association, the American Academy of Audiology, the House Ear Institute, and other organizations are promoting national campaigns to encourage safe music listening habits in young children or in teens and young adults. (Read more about these campaigns on page 10 under “Beyond NIDCD:

News from Other Organizations About NIHL.”) NIDCD's Noisy Planet campaign complements these efforts by emphasizing the multiple sources of potentially damaging noise and by promoting healthy hearing habits in tweens. In combination, these programs will provide growing children with a continuous and reinforcing message about the need to protect their hearing.

The NIDCD hopes that, through Noisy Planet, tweens will learn to protect their hearing from noise as naturally as they brush their teeth to prevent cavities. “Our hearing needs to last us a lifetime, so it's more important than ever that we teach children to protect their hearing,” said Dr. Battey.

## Why Young Ears Are at Risk

Unfortunately, many young people aren't yet aware of NIHL or how they can prevent it. In a survey conducted on the MTV Web site, 61 percent of the teens and young adults who responded had experienced tinnitus or hearing impairment after attending a concert. (Tinnitus is a persistent ringing, buzzing, or roaring in the ears after exposure to too much noise.) However, only 16 percent of them reported that they had heard, read, or seen any information on NIHL. Only 14 percent of them had used earplugs.

Playing personal stereo systems too loudly poses a well-publicized risk to young ears, but so does prolonged exposure to the noise level of many other activities popular with tweens. The cheering of fans at a college basketball game, for example, has been recorded as high as 120 decibels—the equivalent of a thunderclap. Movies in theaters can reach the upper 90 decibels. Even school-related noises exceed safe decibel levels. Sharon Kujawa, of the Massachusetts Eye and Ear Infirmary, has measured the decibel level of middle school cafeterias to be 85 to 90 decibels. Carrying on a conversation in a normal voice becomes difficult when the surrounding noise level reaches 75 decibels. You can just imagine the escalating noise level when kids are trying to talk to each other during lunch. For more information, visit “How loud is too loud?” at <http://www.nidcd.nih.gov/health/hearing/ruler.asp>.

The risk of NIHL extends to tweens living in all geographic areas. Although we often think of rural areas as being quieter than the city, people who

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live there are especially at risk for hearing loss, most likely due to exposure to farm machinery and other related noises. In a study of people between the ages of 8 and 92 from one rural Iowa county, most were found to have significant hearing loss.

## Noisy Planet Feedback

Initial public response to the Noisy Planet campaign has been overwhelmingly positive. Parents have voiced their support of the campaign, pointing to the many instances when their children seem to be exposed to excessive noise. As one concerned parent wrote, "I'm constantly frustrated by how loud the music is when I pick our kids up from after-school care at their elementary school. As someone with noise-induced hearing loss myself, I'm really frustrated by the lack of awareness."

The number of visitors to the Noisy Planet Web site continues to grow. After just three months, visits to the site had tripled. The most frequently visited pages include the Noise and Hearing Loss

page, the TweenZone page and the online order page. Noisy Planet materials are a great way to kick-start a conversation with a tween about NIHL. During the first three months after campaign launch, the NIDCD received orders for nearly 8,000 items.

## Noisy Planet Next Steps

To expand campaign outreach, the NIDCD is partnering with other national organizations that can help spread the word about the Noisy Planet message. Public service announcements promoting Noisy Planet and its prevention message should soon hit the airwaves. The NIDCD also will be taking its prevention message on the road to reach tweens directly. Representatives of the institute plan to visit local schools, churches, and health fairs to talk with tweens about NIHL prevention and will sponsor exhibits at kid-oriented venues.

You can order Noisy Planet materials online at <http://www.noisyplanet.nidcd.nih.gov>.

## What Is NIHL?

**A decibel** is a unit for measuring sound. The softest sound healthy ears can hear is 0 decibels—near total silence. An increase of 10 means that a sound is 10 times more intense, or powerful, than the first sound. To your ears, it sounds twice as loud. A whisper is 30 decibels, a normal conversation is 60 decibels, and a shout directly into your ear measures 120 decibels. Noise-induced hearing loss occurs when small sensory "hair cells" in the inner ear are damaged by noises that exceed safe decibel levels over time. Our hair cells convert sound energy into electrical signals that travel to the brain. Once damaged, they cannot grow back.

The higher the decibel level, the less time is needed before NIHL can occur. Our hair cells can be injured instantly by an intense blast of noise, such as the pop of a firecracker, or gradually from prolonged and repeated exposure to excessive noise. Researchers who study hearing loss in the workplace have found that a person who is exposed to noise levels at 85 decibel or higher for a prolonged period of time is at risk for hearing loss. For this reason, these workers are required to wear hearing protectors, such as earplugs or earmuffs, while they are on the job. Many devices that children use today have noise levels much higher than 85 decibels. For example, an MP3 player at maximum level is roughly 105 decibels. That's

100 times more intense than 85 decibels! Scientists recommend no more than 15 minutes of unprotected exposure to sounds that are 100 decibels. In addition, regular exposure to sounds at 110 decibels for more than one minute risks permanent hearing loss.

Symptoms of NIHL often develop gradually over time. As a person ages, sounds may become distorted or muffled, and it may be difficult to understand speech. Someone with NIHL may not even be aware of the loss, but it can be detected with a hearing test. Excessive noise also may cause tinnitus, a ringing or buzzing sound in the ear. Similar to NIHL, tinnitus can be permanent.

*Scientists recommend no more than 15 minutes of unprotected exposure to sounds that are 100 decibels. In addition, regular exposure to sounds at 110 decibels for more than one minute risks permanent hearing loss.*

## Recent Research and News

### NIDCD Panel Proposes New Benchmarks for Gauging Language Development in Children with Autism

A more standardized approach is needed to evaluate the language skills of young children with autism spectrum disorders, says a soon-to-be published article in the *Journal of Speech-Language-Hearing Research*. The authors, a panel of experts assembled by the NIDCD, are advocating the new method so that researchers, clinicians, and other professionals are better able to compare the effectiveness of intervention strategies used for treating children with autism spectrum disorders.

Current approaches are inconsistent, and the most widely used benchmark for these children has been the development of “functional speech,” an ambiguous term with no defined criteria.

In designing the new approach, panel members focused on the window of time during which a child develops spoken language, which can be broken down into three phases: the use of a single “first word” to describe an object or event, the combination of two or three words to communicate something, and the progression to complete sentences. The panel recommends the use of several tools to evaluate the child’s language skills, including a sample of the child’s natural conversational patterns, a parent’s description of the child’s language skills, and a standardized test of a child’s language skills. The panel then developed a set of measurable benchmarks for each of the three phases and evaluation tools.

Read the NIDCD article at [http://www.nidcd.nih.gov/news/releases/09/1\\_15\\_09.htm](http://www.nidcd.nih.gov/news/releases/09/1_15_09.htm), or read the paper (in press) at NIDCD’s Web site at [http://www.nidcd.nih.gov/funding/programs/vsl/language\\_benchmarks.htm](http://www.nidcd.nih.gov/funding/programs/vsl/language_benchmarks.htm).

### Healthy People 2010 Update: Preventing NIHL in Children

*In October 2008, NIDCD participated in a U.S. Department of Health and Human Services meeting on progress being made toward hearing health objectives set by Healthy People 2010 (<http://www.healthypeople.gov>), our national blueprint for better health. The following article summarizes information that NIDCD presented related to NIHL prevention in children.*

A common concern among parents and grandparents is that the next generation of young people might be damaging their hearing by misusing personal stereo systems. But how real is this concern? Are there statistical data that support the assertion that young people are losing their hearing at an early age?

The NIDCD has a profound interest in finding the answer to these questions. One hearing objective of *Healthy People 2010*, for which the NIDCD has lead responsibility, is to reduce NIHL in young people under age 18. To measure progress toward this objective, NIDCD epidemiologists recently compared hearing data from two national health surveys conducted during different periods of time. The two surveys were the National Health Examination Survey, with data collected between

1963 and 1970, and the continuing National Health and Nutrition Examination Survey (NHANES), with data collected between 1988 and 1994.

Hearing thresholds are the lowest possible levels of sound at which an individual can hear sounds at a given frequency, or pitch. When the hearing thresholds of children were compared, the data indicated that the hearing health of children ages 6 to 19 had actually improved over the years. American children had more high frequency hearing loss—which is where NIHL first occurs—in the earlier time period than the later period.

While this finding may be considered good news, it may not reflect the long-term hearing health of today’s youth. NIHL can increase over time, and susceptibility to NIHL can vary from person



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to person depending on one's genes. NIHL often goes unnoticed for many years, even though damage has occurred. To establish a more detailed baseline of the hearing health of youth, the NIDCD—together with the National Center for Health Statistics—will continue to collect hearing-related data from youth participating in NHANES. The NHANES, which is conducted annually and includes audiometric evaluations, can provide data for estimating hearing loss, tinnitus, use of hearing protection and hearing aids, and risk factors for hearing loss by age group. Once these data are analyzed, the NIDCD can use the findings to improve prevention efforts by targeting

education programs to high-risk groups.

What is known is that the potential for NIHL in children remains. Children frequently are exposed to sounds at potentially harmful decibel levels and for extended amounts of time. In addition, research studies supported by the NIDCD suggest that NIHL experienced at an early age may accelerate age-related hearing loss. Clearly, adolescents and young adults need to learn more about the risks and prevention of NIHL, as well as its long-term impact on their quality of life. Hearing the prevention message now can help them maintain healthy hearing for life.

## NIHL Prevention on the Job: Researcher Develops Computer Program to Help Latino Construction Workers

Construction sites can be noisy places. Just think of all the jack hammering, bulldozing, concrete mixing, soil grading, air compressing, steel welding, and more going on for long hours, sometimes all at once. Exposure to loud noises for a long time can result in noise-induced hearing loss, or NIHL, one of the most common occupational injuries in the country. Although the Occupational Safety and Health Administration has set strict guidelines regarding the protection of workers from exposure to too much noise, the availability of training for many workers has been limited. For Latino workers, who make up about 25 percent of the construction work force in the United States, the availability of training is even less, considering their need for an intervention that is culturally and linguistically relevant.

With this in mind, NIDCD has funded the development of a computer-based bilingual intervention program to help disseminate NIHL-prevention messages among Latino construction workers. Madeleine J. Kerr, Ph.D., R.N., and her team at the University of Minnesota School of Nursing are working on the new program based on a previous intervention she developed in English. The

new health education intervention is not a mere translation, however. With this intervention, Dr. Kerr and her team are addressing barriers they had found earlier in their research. They found that to change Latino construction workers' behavior, an effective intervention must address issues such as limited English-language proficiency, cultural attitudes, and perceptions of noise exposure.

The new educational intervention was developed in phases in order to incorporate feedback from volunteer construction workers while changes could easily be made. Early in the process, the research team held six focus group sessions, each involving roughly ten bilingual or monolingual Spanish-speaking Latino construction workers. The researchers asked the volunteers about their experiences with noise and noise protection on the job. The study was published in an April 2007 article in the *American Association of Occupational Health Nurses Journal*.

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The next stage included the development of a questionnaire and computer training program based on the researchers' previous findings and observations. Here, Dr. Kerr and her team set out to learn if Latino workers would find the computer-based intervention both acceptable and useful. The development process consisted of four sessions that were administered to small groups of volunteers. After each session, the researchers made changes to the program, based on the participants' suggestions. The responses led to a reformatting of the questionnaire and new audio, video, animations, and graphics for the training sessions. These adjustments helped improve the original English version as well.

The resulting intervention is a 45-minute training conducted on a laptop computer with audio headsets. Participants can choose their language of preference, English or Spanish, which can be readily switched by pressing a button on the screen. The computer randomly offers one of two versions of the final intervention. One version presents the health information in an individually tailored or personalized manner. The other version

covers the same material in a standard way.

The researchers have conducted an intervention trial of the revised computer program with 145 workers in Minnesota. Dr. Kerr and her research team are now measuring if the training has helped in changing the workers' behavior. In the baseline data collection, Dr. Kerr found that Latino workers reported wearing hearing protection significantly more often than non-Latinos (47 percent versus 35 percent, respectively), although the use of hearing protection for both groups was significantly lower than the desirable 100 percent of the time.

Dr. Kerr believes that this health education intervention could be adapted to other languages and cultures as well. She is exploring several distribution opportunities to disseminate the health education intervention free to Latino construction workers throughout the United States.

For more information on this study contact Dr. Kerr at [kerrx010@umn.edu](mailto:kerrx010@umn.edu). Read NIDCD's fact sheet on noise-induced hearing loss at <http://www.nidcd.nih.gov/health/hearing/noise.asp>.

## NIDCD Highlights

### NIDCD Celebrates 20 Years of Communication Research with Scientific Symposium

Author **Lee Woodruff** knows what it's like to have her whole world turned upside down—twice. The first time was when she learned that her smiling, contented 9-month-old daughter, one of twins, had a severe hearing loss. The second time occurred just six years later, when her husband, ABC World News anchor and reporter Bob Woodruff, was critically wounded by a roadside bomb in Iraq.

"It was an in-an-instant moment," she told an audience of rapt listeners in the National Institutes of Health's (NIH's) Natcher Auditorium, borrowing from the title of the best-selling book that she and her husband coauthored about their family's experience.

Ms. Woodruff was quick to point out that such moments don't have to be as extreme as being hit by a 155 millimeter shell laden with rocks. These

are moments that can happen to any of us at anytime.

"It's anything," she said. "It's breast cancer. It's the diagnosis of Alzheimer's for your father. It's the drunk driver who slips across the median and, God forbid, kills or injures your child. It's all of those little things that collectively make up life."

Such life issues—from the discovery of an infant's hearing loss to a husband's newfound difficulty in retrieving words to any number of devastating disorders that affect the way people interact with the world around them—were the focus of attention when NIH staff members, intramural and extramural researchers, former and current administrators, and others gathered to celebrate the 20th anniversary of the NIDCD. Held Thursday,



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NIDCD Director James F. Battey, Jr., M.D., Ph.D., welcomes participants to the 20th Anniversary Symposium at NIH's Natcher Conference Center.

October 23, 2008, the symposium shone a light on advances that have been made in the last two decades toward our understanding of hearing, balance, smell, taste, voice, speech, and language disorders. It also showcased the stories and talents of several individuals who have experienced a communication disorder—be it directly or indirectly—and who have likely benefited in some way from this research.

The events were kicked off by **James F. Battey, Jr., M.D., Ph.D.**, director of the NIDCD since 1998. Dr. Battey noted the sheer numbers of people who are affected by communication disorders and stressed the need for increased study of their potential causes, diagnosis, and treatment. Ten percent of Americans between the ages of 20 and 69 have suffered hearing loss due to loud noise exposure; 47 percent of adults 75 years old or older have a hearing loss; almost eight million Americans report a chronic problem with balance; nearly one million Americans have aphasia, a disorder that affects a person's ability to express and understand language; and 15 percent of Americans over 55 have an impaired sense of smell. That incidence doubles for people between 70 and 80 and doubles again for people over 80.

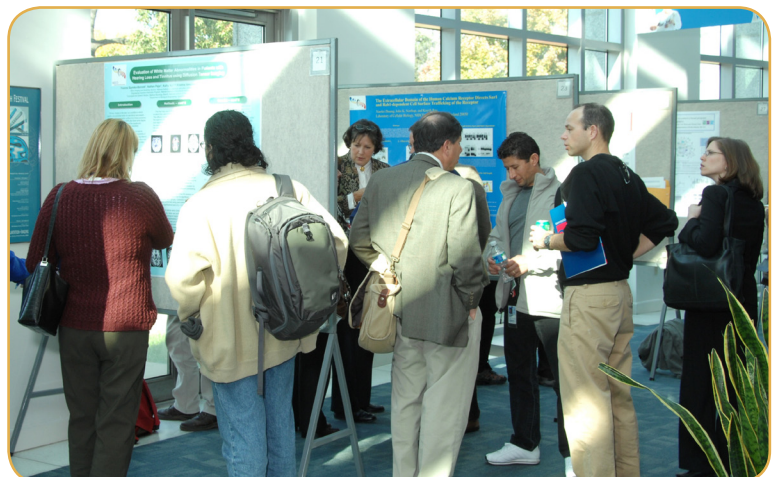
Dr. Battey pointed to several areas in which we've made significant progress since the institute's start, with genetics ranking high on the list.

"In 1988 we knew that deafness could be inherited, but the specific genes were not known at that time," he said. "Today we know of literally hundreds of genes that are linked to hearing loss."

Other areas of progress include the enhancement of the cochlear implant, which enables a person with severe hearing loss to communicate without relying on visual cues; the development of imaging tools that make it possible for us to understand brain activity patterns that are critical for communication; and the discovery of a family of odorant receptors that allow us to understand the molecular basis for how the olfactory system detects up to 10,000 different smells.

Dr. Battey also recognized the contributions of former administrators who provided vision and leadership during the institute's nascent years. In attendance were Jay Moskowitz, M.D., who served as acting director at the institute's inception; James Snow, M.D., the institute's first director, who served from 1990 through 1998; Donald Luecke, M.D., the institute's first deputy director; and David Lim, M.D., the NIDCD's first scientific director.

**Raynard Kington, M.D., Ph.D.**, acting director of NIH, paid homage to the individuals who helped pave the way for the creation of the NIDCD. Principal among them were Geraldine Fox, formerly with the Deafness Research Foundation, and Robert Rubin, M.D., of Albert Einstein College



NIDCD intramural scientists discuss their latest research findings with participants during the afternoon poster session.



During a health break, participants share ideas and resources with representatives of professional and advocacy organizations.

*Scientists whose research has been funded by NIDCD presented overviews of how far along their fields—representing all seven of NIDCD’s mission areas—have progressed in the past 20 years.*

of Medicine, and a fervent advocate for children with hearing loss. Said Dr. Kington, “Dr. Rubin and Mrs. Fox found the right person at the right time who understood this agenda for understanding, ameliorating, and preventing communication disorders very personally.” That person was Senator Tom Harkin (D-IA), who sponsored the legislation that created the NIDCD. On October 28, 1988, Public Law 100-553 was signed by President Reagan.

“As many of you know, this is personal with me,” **Senator Harkin** said in videotaped remarks in which he congratulated the institute on its milestone and achievements to date. “My late brother Frank was deaf from an early age. He inspired me to sponsor the Americans with Disabilities Act and he also inspired me to do whatever I can to make possible new therapies to improve the lives of millions who confront hearing loss and other communication disorders.” He noted with pride that the institute’s budget has more than quadrupled since the first year, from \$94 million in 1988 to \$396 million today.

Scientists whose research has been funded by NIDCD presented overviews of how far along their fields—representing all seven of NIDCD’s mission areas—have progressed in the past 20 years. These extramural scientists also offered their predictions about the questions tomorrow’s grant applications will be addressing.

For her discussion on hearing loss and aging, **Karen Cruickshanks, Ph.D.**, an epidemiologist with the University of Wisconsin, cited statistics from the Beaver Dam Study, a longitudinal epidemiological study of vision and hearing loss in residents of Beaver Dam, Wis.

According to Dr. Cruickshanks, 20 years ago, hearing loss was considered a normal part of aging. Today, researchers have discovered that certain factors—including noise, genetics, and cardiovascular health—may play an important role in determining one’s risk for age-related hearing loss. With improvements such as better noise restrictions in the workplace, increased exercise, and healthier diets, hearing health may actually be better for baby boomers in comparison to people who lived in earlier eras, she said.

**David Corey, Ph.D.**, neurobiologist with Harvard Medical School, described for attendees the extraordinary collective effort that has been made to understand the mechanism by which sensory structures in the inner ear, also known as hair cells, convert sound vibrations into an electrical signal. Because of research of the past two decades, we now have a more precise picture of the molecular composition and properties of these sensory structures.

**John Niparko, M.D.**, a cochlear implant expert at Johns Hopkins School of Medicine, charted the history of the cochlear implant, beginning with very rudimentary studies in France in the early 1950s and progressing to the sophisticated multichannel implants of today. He presented data from a multicenter study he oversees in which the language abilities of children who received cochlear implants at various ages are being evaluated in comparison to each other and to children with normal hearing. His team has discovered that socioeconomic status can impact the language abilities of young cochlear implant wearers. Also two cochlear implants seem to be preferable to one in helping a child learn language.

What we know about our sense of smell and what we’ve yet to find out were addressed by professor and Nobel laureate **Richard Axel, M.D.**, Howard Hughes investigator at Columbia University. Dr. Axel, together with Linda Buck, Ph.D., transformed the study of olfaction when they

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identified a large family of genes that encode the olfactory receptors located high in the nasal cavity. In his discussion, Dr. Axel focused less on the nose and more on the brain, tackling the question: How does the brain know what the nose is smelling? Although we still don't have the answer, sophisticated imaging demonstrates that individual smells exhibit distinctive patterns in the brain. His research team is currently studying the fruit fly to find out how the brain interprets smells to elicit certain behaviors, both innate and learned. He's also exploring how experience, emotion, and expectation play a role in the way we perceive smells.

**Gary Beauchamp, Ph.D.**, director of the Monell Chemical Senses Center in Philadelphia, described work in the field of taste research. Twenty years ago, he said, scientists were trying to determine what the taste receptors were. This all changed when investigators identified the genes that encode the receptors for sweet taste. Researchers have recently found these same receptors present in the gut, which could have an impact on our understanding of obesity, diabetes, hypertension, and other important health issues. Dr. Beauchamp is also exploring how experience determines how someone perceives taste. In several studies conducted by his laboratory, babies demonstrated a like or dislike for a taste depending on the point of time at which they were first introduced to it.

Child language expert **Helen Tager-Flusberg, Ph.D.**, of Boston University School of Medicine, described two areas that have emerged in the field since the NIDCD's start: specific language impairment (SLI) and autism spectrum disorders.

SLI is a childhood communication disorder in which language does not develop on schedule despite the child's having normal skills in other areas. Autism is characterized by difficulties in understanding and using language in addition to other social and behavioral impairments. Among the findings she described are that children with SLI and high-functioning children with autism are comparable in their ability to understand and express certain language patterns. In addition, a child's use of gestures seems to be a good predictor of language development and may one day help in the diagnosis and treatment of both SLI and autism.

**Robert Remez, Ph.D.**, a professor of cognitive psychology and an expert on speech perception at Columbia University, addressed the question of how we are able to recognize speech sounds from the many sounds that surround us. Using synthesized speech technology that mimics the frequencies of normal speech, he demonstrated that acoustic modulation—the subtle changes in pitch and tone when we talk—is required to capture the brain's attention to interpret those sounds as speech.

In addition to Ms. Woodruff, musicians **Richard Reed** and **Yew Choong Cheong** offered a human dimension to the topic of communication disorders. Reed, who formerly played organ and piano with Junior Walker and the All Stars, used his keyboard as background to demonstrate how his cochlear implant changed the way he perceives music. Yew Choong Cheong, a doctoral student with hearing loss at West Virginia University, played classical music in the atrium of the Natcher building during the morning registration and afternoon reception.

Also showcased at the reception was the NIDCD's intramural program, which has contributed significantly to the NIDCD's research success over the past 20 years. The NIDCD scientists presented posters in such areas as cellular and molecular biology; genetics; neurochemistry; developmental neuroscience; auditory mechanics; otolaryngology; brain imaging and modeling; head and neck surgery; and vaccine research.

To watch the Webcast of the 20th Anniversary Symposium go to NIDCD's web site at [http://www.nidcd.nih.gov/about/20th\\_symposium\\_video.htm](http://www.nidcd.nih.gov/about/20th_symposium_video.htm) or go to the NIH webcast site at <http://videocast.nih.gov/Summary.asp?File=14909>.



Members of the audience try out a smell identification test developed with NIDCD funding.

## Grants News

### NIH Receives \$10 Billion in Recovery Act Funds



On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act, ARRA. Among the goals of the Recovery Act are to preserve and create jobs, promote economic recovery, and provide investments to increase economic efficiency by

spurring technological advances in science and health.

As part of the Recovery Act, NIH has received \$10 billion to be used in Fiscal Years 2009 and 2010. NIDCD's portion of this is approximately \$100 million. Already, NIH has released several funding opportunities through the Recovery Act, including:

- **Challenge Grants** to support research on topic areas that address specific scientific and health research challenges in biomedical and behavioral research that would benefit from significant 2-year jumpstart funds.
- **Administrative Supplements** to provide funds for up to two years of support, as funds allow, to current R, P, U, or K series grant award recipients in key areas of interest.

Learn more about the Recovery Act and opportunities for NIDCD's scientific community at <http://www.nidcd.nih.gov/recovery.htm>.

## Beyond NIDCD: News from Other Organizations About NIHL

Several organizations that promote hearing health have developed campaigns and materials aimed at preventing NIHL in young people. Visit the Web sites of the following organizations to find out more about their programs and how you can become involved.

### American Academy of Audiology

Recognizing that the risk of permanent hearing loss from noise exposure is very real for individuals of all ages, the American Academy of Audiology launched its "Turn It to the Left" campaign (<http://www.turnittotheleft.com>) to raise public awareness about the dangers of exposure to loud sound and to raise funds to support NIHL-related research. The campaign takes its name from the title of an educational rap song on NIHL written by the Academy's good friend, musician Benjamin Jackson. The rap's "hook" urges all to take the volume control and "turn it to the left." Copies of the CD and other educational materials are available through the campaign Web site and through the AAA web site at <http://www.audiology.org/Pages/default.aspx>.

(continued on page 11)

The screenshot shows the NIDCD website interface. At the top, it reads "NIDCD National Institute on Deafness and Other Communication Disorders" and "ONE OF THE NATIONAL INSTITUTES OF HEALTH". Below this is a navigation menu with links for Home, Research, Funding for Research, Health Info, News & Events, and About Us. The main content area is titled "NIDCD and the American Recovery and Reinvestment Act (ARRA) of 2009". It contains a paragraph describing the Act, followed by a list of links: Overview of the Recovery Act, Implementing the Recovery Act, NIH Background Information, Learn more about programs that issue grants under the Recovery Act, and NIH & the Recovery Act. There is also a section for "Announcements" with links to Recovery Act Limited Competition, NIDCD ARRA Administrative Supplements, NIDCD ARRA Challenge Grant Areas, NIDCD ARRA Competitive Revision Applications, and NIDCD ARRA Administrative Supplements Providing Summer Research Experiences. The footer includes contact information, a "CELEBRATING 50 YEARS OF RESEARCH 1958-2008" logo, and the USA.gov logo.

<http://www.nidcd.nih.gov/recovery.htm>

## American Speech–Language–Hearing Association (ASHA)

ASHA's health education campaign "Listen to Your Buds" is an effort to teach young children about safe listening habits. The campaign web site, <http://www.listentoyourbuds.org>, features interactive information for children and offers advice to parents, educators, and the media.

In November 2008, ASHA took the NIHL prevention message on the road by featuring children's music star Justin Roberts at the first "Listen to Your Buds" concert at Chicago's Museum of Science and Industry. ASHA is partnering with the Parents' Choice Foundation to form a national coalition of musicians popular with young children to promote safe listening.

## Centers for Disease Control and Prevention (CDC), Division of Adolescent and School Health (DASH)

The CDC's Division of Adolescent and School Health (DASH) works to prevent behaviors by children, adolescents, and young adults that may harm their health. DASH programs are based on the conviction that each school day provides an opportunity for our nation's 55 million students to learn about their health and how to promote it. Among other offerings, the DASH Web site provides links to health educational materials and curricula for classroom use. The CDC's new information about NIHL is available at <http://www.cdc.gov/HealthyYouth/noise/index.htm>.

## Hearing Education and Awareness for Rockers (H.E.A.R.)

Started in 1988 by rock-and-roll musician Kathy Peck, H.E.A.R.'s mission is to prevent hearing loss and tinnitus among musicians and music fans (especially teens) through educational awareness and grassroots outreach and advocacy. The H.E.A.R. Web site at <http://www.hearnet.com/index.shtml> provides information to help individuals determine if they are at risk for NIHL and select earplugs that will protect their hearing. The site also offers free downloadable public service announcements by popular musicians as well as educational materials for high schoolers. In addition, the site links to a hearing conservation exhibit at the Exploratorium

in San Francisco, with online listening activities for all ages.

## House Ear Institute

In 2006, the House Ear Institute launched the "It's How You Listen That Counts" campaign, featuring a cartoon ear with legs named Ear Bud. Ear Bud is designed to appeal to teens and young adults as a wacky "buddy" who loves hanging out with friends and listening to music. The main purpose of this campaign is to encourage teens to be smart about their listening habits and to protect their hearing so they can enjoy their music. Materials are available at the campaign Web site at <http://www.hei.org/news/presskits/listen/listen.htm>.

## National Hearing Conservation Association (NHCA)

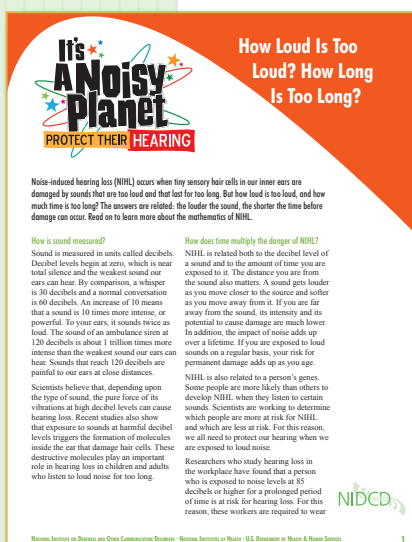
NHCA encourages and disseminates research about hearing conservation, and also promotes "Crank It Down" an outreach effort to encourage local communities and schools to educate children and adolescents about the risk of NIHL. The "Crank It Down" brochure and other educational materials are available on the NHCA web site at <http://www.hearingconservation.org>. In addition, the NHCA site links to other programs and materials aimed at NIHL prevention for children.

## Sertoma

Sertoma is a not-for-profit civic organization, which assists the more than 50 million people with hearing health issues. In 2009, Sertoma and Hearing Charities will introduce "Celebrate Sound," a national public awareness campaign to prevent NIHL in people of all ages. The campaign will feature an interactive Web site that will offer a simple hearing test and enable users to experience some hearing health issues. The site will link to other components of the campaign, including online information, educational materials, and a new national hearing aid bank of free or reduced-cost hearing aids for those in need. The "Celebrate Sound" campaign supplements Sertoma's SafeEARS project. The SafeEARS project involves giving kits—containing educational materials on hearing loss prevention, earplugs, and a media package—to members of Sertoma's 650 clubs. Club members use the kits to raise local public awareness of the need to protect hearing from excessive noise. The Sertoma web site is <http://www.sertoma.org>.

## New Resources

### Download Noisy Planet Materials



Help spread the message to kids and their parents that noise-induced hearing loss (NIHL) is preventable. You can download free fact sheets and posters online at NIDCD's Noisy Planet Web site (<http://www.noisyplanet.nidcd.nih.gov/>). Check the site for current availability. Noisy Planet publications are not copyrighted, so we encourage you to duplicate these items and distribute them at events attended by parents and tweens.

### NIH Launches New Web Tool to Report Detailed Funding Information

In an effort to provide consistent and transparent research funding information, the National Institutes of Health (NIH) launched the Research, Condition, and Disease Categorization process, or RCDC. This Web tool gives you access to the same 215 major research funding areas used to report to Congress. You can find the detailed list of categories by visiting the "Estimates of Funding for Various Diseases, Conditions, and Research Areas" at <http://report.nih.gov/rcdc/categories/>.

For the first time, you can view the total funds spent in each category for the current fiscal year and previous fiscal years based on grants, contracts, and research conducted in NIH's laboratories and clinics. By clicking on each of the categories, you can access a list of all funded projects for that category and view, print, or download a detailed report. Links to patents and publications associated with each project also will be available in the next few months.

The RCDC process does not reflect the entire NIH research portfolio and budget. For more information about the RCDC go online to <http://report.nih.gov/rcdc>.

### Updated Fact Sheets on Aphasia and Stuttering

NIDCD recently updated its fact sheets on Aphasia and Stuttering. The fact sheets describe the symptoms, diagnosis, and treatment of aphasia and stuttering.

Read them online at <http://www.nidcd.nih.gov/health/voice/aphasia.htm> (Aphasia) and <http://www.nidcd.nih.gov/health/voice/stutter.htm> (Stuttering). To request print copies of either publication online go to [http://www.nidcd.nih.gov/order/pubs\\_type.asp?type=voice](http://www.nidcd.nih.gov/order/pubs_type.asp?type=voice). Also you can contact the NIDCD Information Clearinghouse by calling (800) 241-1044 or sending an e-mail to [nidcdinfo@nidcd.nih.gov](mailto:nidcdinfo@nidcd.nih.gov).

