

# HEARING HEALTH

Spring 2010

## LESSONS FOR LIFE

Learn them at Camp

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D/HH on Facebook:  
Who Would Know?

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RACER KRIS MARTIN  
BREAKS THE SOUND BARRIER

---

THE AUDIOGRAM  
EXPLAINED

---

AUDITORY PROCESSING DISORDERS  
IN CHILDREN

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# HEARING HEALTH

Volume 26 Number 2, Spring 2010

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What an honor it is for me to greet you as the new chairman of Deafness Research Foundation! I stand on the solid footing that our previous chair, Rebecca Ginzburg, along with the rest of our amazing board, has prepared, ready to launch ambitious plans to secure increased funding so that we can facilitate even more ground-breaking research.

We're especially eager to make a positive difference in the lives of young people. And, to do that, of course, we first have to know where to find them. Fortunately, Facebook has made that easy ("D/HH on Facebook? Who Would Know?" p. 6). DRF now has a group page on Facebook, which we'd love to have you join. Since they're not just for the young anymore, social networking sites now offer anyone with hearing loss a powerful avenue through which to stay connected and make new friends. And it's easy for anyone to play on the level field provided by these sorts of Web sites.

For children with hearing loss, the playing field at summer camp is often not so level. But this issue of *Hearing Health* offers a valuable resource to parents seeking a welcoming summer experience for their kids with hearing loss. In "Summer Camp Can Last a Lifetime," (p. 12) former camper Cara Frank recounts her life-changing experiences at a summer camp for kids with hearing loss. She was so deeply affected that she's become a camp professional and now spends her work weeks hiking and snowboarding.

People with hearing loss are having huge impacts in the world of sports. In "Fast-Paced Canadian Race Car Driver Sets Sights on NASCAR" (p. 40) you'll meet Kris Martin, who hasn't let his hearing loss keep him from achieving success on the track. And don't miss "They Shoot! They Score!" (p. 44) about New Jersey ice hockey players and their epic trek to visit all 54 of the Garden State's ice rinks in just 54 hours to promote regular ice time for players with disabilities.

Hearing technology is invaluable when it comes to helping people with hearing loss stay connected, which is why it's exciting to learn about a new procedure that combines hearing aids and cochlear implants ("A+E=Better Hearing," p. 18). Coined "hybrid" hearing, the method takes advantage of remaining low-frequency hearing to improve comprehension and music appreciation for people with a shorter-electrode cochlear implant. Plus, Mark Eckert, Ph.D., is using DRF funding to bring new insights to therapies to help older people hear more effectively with their hearing aids (p. 46).

These are the sorts of innovations that DRF grantees are bringing to fruition – with your help. Thank you for your continued important role in supporting research for better hearing and balance!

Warm regards,

*Cliff Tallman*

Cliff Tallman

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# HEARING HEALTH

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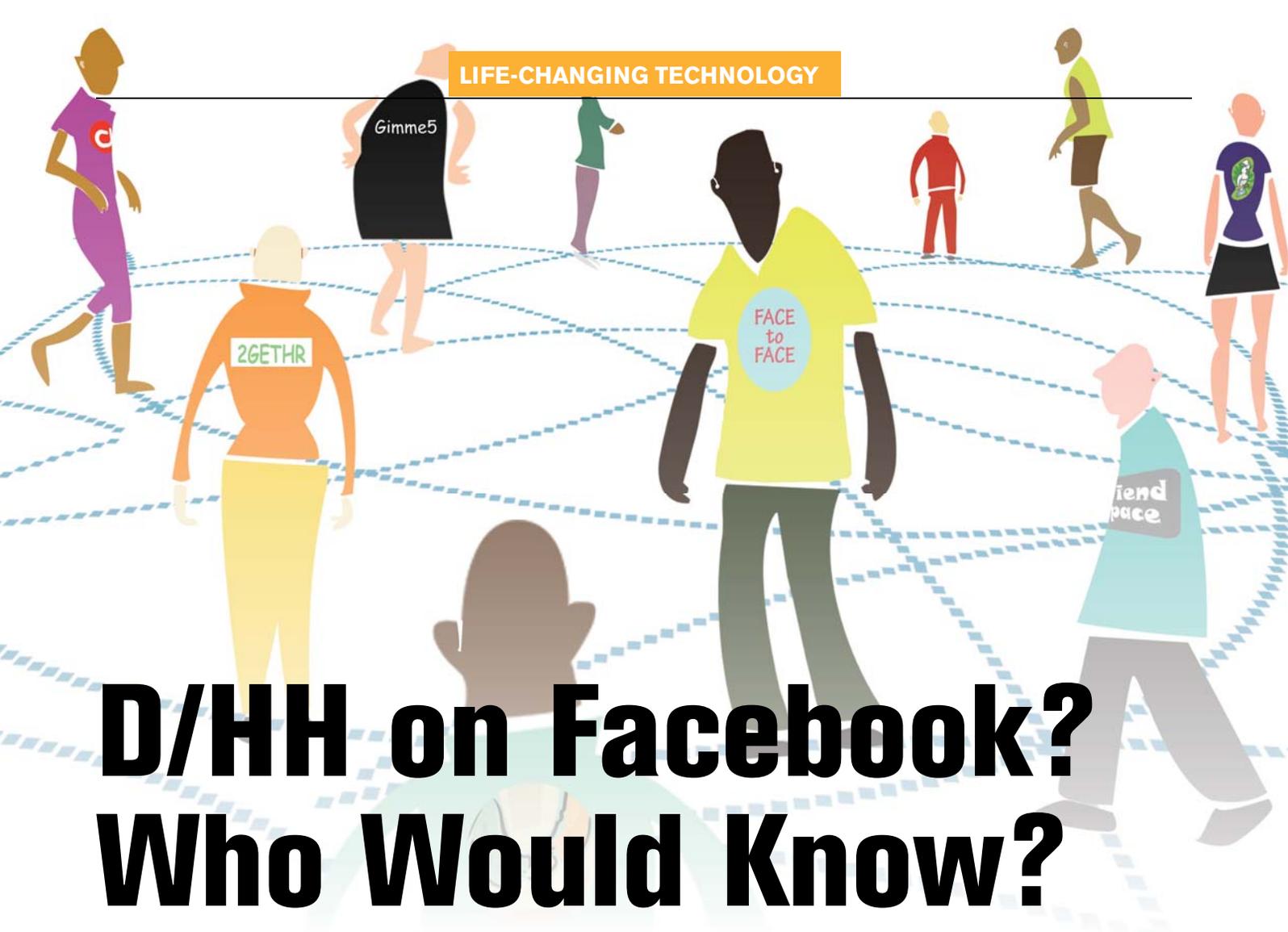
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# D/HH on Facebook? Who Would Know?

BY PAOLA SEGNINI, STAFF WRITER

**B**y now most everyone is aware of the many social networks available via the Internet. Even for those who don't own a computer, or only use theirs for e-mail and occasional Internet surfing, Google and Facebook have become household words. If you're not on Facebook yet, or some other social networking site, it might be time to ask yourself, "Why not?" Facebook is the largest social networking site, with more than 350 million active users worldwide. It, along with other virtual meeting places, has enabled old and new friends to share and express opinions, likes and dislikes, activities, photos, videos and many other interesting bits of information about themselves. However, because of the nature of the interaction, it's possible to keep other things, like having a hearing loss, private if you want.

Even if you unabashedly announce your hearing status on your home page, cyberspace is one place where hearing loss is not a disability. Facebook and other social networks are revolutionizing relationships. Regardless of hearing ability, people can easily build and maintain relationships with friends and family with whom they would not typically communicate on a regular basis. For people who are deaf or hard of hearing (D/HH), online social networks have helped to close the gaps that many experience when

seeking to communicate in public settings. Social networking Web sites provide a powerful and convenient forum for ongoing communication that does not require hearing. "I find it is much easier to communicate and do not feel at all left out by my hearing loss," says Joyce Conser of Florida. "There are no misheard words and thus no miscommunication. I've also found it is much easier for me to communicate my disability to others when I can just type it out and not have to bring up the topic face to face. And, if the person doesn't relate to my problem, it really doesn't matter since we are typing and not talking."

Many people with hearing loss join social networks because they see how these Web sites allow for the blurring of lines between the hearing and nonhearing worlds. Whether or not they choose to disclose their hearing loss, they can interact in the same way as any other person. This provides an experience of ability, control and independence.

"The playing field is more level," says Cathy Zimmerman of Pennsylvania. "We are equal in that we can think, type, respond and listen by seeing. Online, I no longer get 'those looks' that indicate to me that once again I've replied to the wrong question, changed the subject of the conversation or that my intelligence is being questioned. Others don't have to extend their patience for

me, and I don't have to ask them to look at me, speak clearly, pronounce each word distinctly or repeat the message. The frustration is gone. The isolation is alleviated."

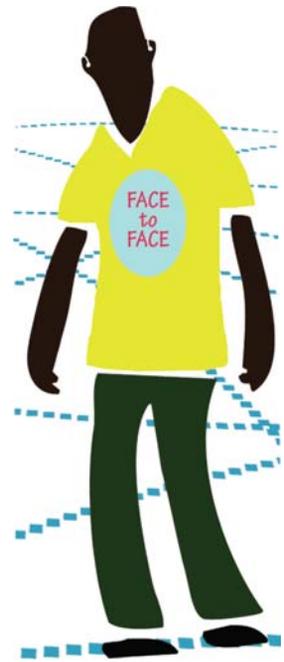
Social networks are not without their critics, yet many people are capitalizing on the advantages they provide. A study, conducted by researchers in the Department of Telecommunication, Information Studies and Media at Michigan State University, suggests that online social networks may be of particular utility for individuals who otherwise have difficulties forming and maintaining both strong and weak ties. Some research has shown, for example, that the Internet might help individuals with low psychological well-being, arising from few ties to friends and neighbors, and that some forms of computer-mediated communication can lower barriers to interaction and encourage more self-disclosure; hence, social networks can enable connections and interactions that would not otherwise occur.

This is especially true for late-deafened individuals who used to be outgoing but now find it difficult to adjust to their hearing loss. Those who once thought nothing of walking up to people and striking up a conversation may have second thoughts about it after a couple of sour experiences where they couldn't hold a conversation like they had in the past.

"I was always a very social person," recalls Amy Saxon Bosworth of Colorado. "As my hearing loss progressed, I disconnected. I wasn't cast out of the hearing world; rather I stepped back into the shadows on my own. Facebook has given me the courage to

put myself back out there again. Being able to make a joke or be included in small talk in the cyber world has reaffirmed my sense of self that was shaken over the years as I had become more and more isolated. I get a little sad at times, thinking of all the lost years I spent isolated. The fear of rejection and the struggle of face-to-face communicating scared me away from people. Now that I have a life full of friends online, it's carried over to the real world and I've been pleasantly surprised at how smoothly that transition has gone. Feeling comfortable in my own skin online and allowing myself to get close to people has translated to a much fuller life."

"For those of us who are late-deafened and have never really belonged to the 'deaf culture,' the Internet is wonderful," says Elizabeth Lareau Whitcomb. "It provides an arena where we can communicate on a par with everyone else."



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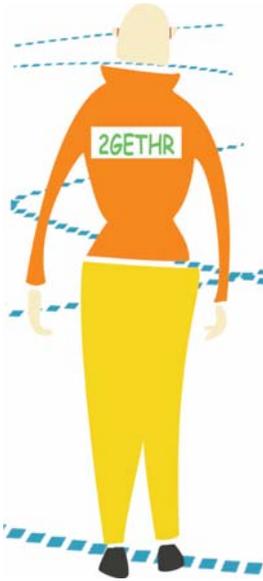


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Regardless of whether a person has had hearing loss all their life or was diagnosed more recently, digital communication is opening the doors to a new era where people with hearing loss have the same opportunities to communicate as hearing people.

“Most D/HH people agree: The Net was made for us!” exults Lorna Schofield of Washington state. “No misinterpretation of speech (often when this happens, much hilarity ensues). People who don’t hear well, even with hearing aids on, are sometimes thought to be ‘stupid’ and this is one of the biggest challenges to overcome – to prove we are not.”

Though there are many social networks especially for people with hearing loss, mainstream sites like Facebook also allow people who share the same interests to get closer and share their ex-

periences. Since most users share relevant information in their profiles, it is easier for people who experience the same issues or enjoy the same activities to connect and offer advice, support and guidance.

“Facebook has one of the largest growing deaf communities of any existing social network site,” explains Profy.com blogger Leslie Poston. “The deaf community connects on Facebook through groups, causes and shared friend lists. Unlike the much-missed Ringo from 2004, the current crop of Deaf, deaf and hearing impaired oriented sites doesn’t seem to be going anywhere anytime soon, and that’s a good thing. Every group needs a support network and a way to find similar people for resources and friendship.”

The consensus is clear: People with hearing loss around the world are joining in on the cyber experience and loving it. If you don’t have a profile on a social network yet and are a bit skeptical, take these people’s experiences into consideration. Talk to friends who already have profiles and do a little research about which social networking Web site would be the best fit for you. If you’ve retreated into a shell because of hearing loss, it’s time to come out. Friends, old and new, are waiting for you online. ■

# Look Who’s on Facebook Now



Deafness Research Foundation (DRF) now has a Facebook fan page. Become a fan and receive updates of the latest foundation news and share with others interested in supporting hearing and balance research. Once you’re logged in to Facebook, search for Deafness Research Foundation.

While you’re searching for pages relevant to hearing, try these in the search bar for more Facebook groups: “Leading a good life with my hearing loss,” or “My hearing may be damaged – but my social skills aren’t.” Both are Facebook groups sponsored by Hear-it (www.hear-it.org). Other good search terms to till up hundreds of groups are “hearing,” “hearing loss” and “deafness.” Search results in the new Facebook format separate results into pages, which include Groups and Fan Clubs, the most popular of which also seems to be the most inane – like “Stopping the microwave before it hits 0:00 to avoid hearing the ‘BEEPs,’” with 1.4 million fans. Be sure to click on the small link at the bottom for more search results. ■

# Does It Have to Be Facebook?

In a word, no. Facebook is an all-encompassing social networking site, but you can also join social networks that revolve around specific interests, such as religion, hobbies, sports and more. These smaller networking sites can be more welcoming to the newcomer, with people literally waiting for you to join so they can befriend you. Members may not post as frequently, but the conversations on these sites can be quite stimulating.

Search Wikipedia.org for "list of social networks" to find more than a hundred networks. But that's nothing – log on to <http://theningdirectory.ning.com/profiles/members> and check out the more than 2,400 social networks hosted through Ning.

Here's a random list of social networks you might never have imagined existed. Find them online by searching their names in a popular search engine, and just know there's a whole lot more where this came from.

 Couch Surfing – 1.5 million members looking for a couch to sleep on

 Frühstückstreff – 14,000 members who eat breakfast together in European and Australian cities

 Live Mocha – 3 million members all learning a language online

 Open Diary – 5 million members and described by its founder as "the first Web site that brought online diary writers together into a community."

 Ravelry – 300,000 knitters and crocheters

 Vampire Freaks – almost 2 million gothic and industrial subculture "freaks"

 Wakoopa – 300,000 people on the lookout for new software and online games

 SayWhatClub – an online group of about 400 late-deafened, hard of hearing and deaf adults and other interested folks who provide support and encouragement to each other through e-mail, as well as convene face-to-face once a year. ■

*Are you tired of saying, "What?" while on the phone?*

*Free Captioned Telephone Services by Sprint enables individuals with hearing loss to read what their caller says, while they speak and listen on the phone.*



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# BUY



## Open for Business 24/7, No Hearing Needed

BY PAOLA SEGNINI, STAFF WRITER

For many people who are deaf and hard of hearing, everyday errands like shopping or paying bills can be a hassle because of the many factors that can obstruct communication in these scenarios. But now, thanks to the Internet, the situation has turned for the better.

It's now possible to conduct more kinds of business from your desk chair than ever before. For people with disabilities, online transactions make things convenient, faster and less worrisome.

"I pay my bills online, order most things online instead of shopping in stores and print my own postage," says Joyce Conser of Florida. "I use Web sites for most anything at all. I order books from my library online, register warranties on new products online, print my own greeting cards. I also get my bills electronically when possible and even financial reports electronically from our financial advisor."

Today's technology offers a great deal of independence to people with hearing loss. Not only can you shop, pay bills, sell items, study and request many services, but the list of things that can be done online keeps growing by the day.

"My success with my cochlear implant (CI) truly has opened up a whole new world for me, just as the Internet did," says Andrea in Florida. "I am independent. I can make my own medical appointments. I scheduled my second CI surgery all on my own. For the first one, almost eight years ago, I had to rely on my mom to help me."

Besides the normal everyday issues, there are many other situations that can be solved online. "For the most part I've been pleased with how much I can get done on-

line," relates Amy Saxon Bosworth of Colorado. "For example, I had a very complicated pregnancy last year. My home health agency's standard protocol was twice-daily phone calls to check vitals and stats. I was able to set up a daily online chat instead and I got amazing care."

The Internet is opening up employment in new ways as well. In fact, many jobs that have traditionally put up barriers for people with hearing loss are now accessible thanks to the technology offered online.

"For job searches, I've used the PA Careerlink online application as well as Civil Service registration, which are much easier than the long drive to these facilities that would be required," says Cathy Zimmerman of Pennsylvania. "Answering printed questions is always easier than reading the questions on another person's lips."

H. Stephen Kaye, Ph.D., of the Disability Statistics Center Institute for Health and Aging at the University of California, San Francisco, explains that people with hearing loss have a lot to gain from new technologies in our electronic age, yet often underutilize the resources available to them. Says Kaye, "Many people with disabilities, whether elderly or not, lack an awareness of the potential benefits of this technology, an understanding that, for themselves especially, a computer and an Internet connection could become not a toy, but an important tool with which to gain greater independence and social integration." ■

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**Untreated Hearing Loss in Colombia**

Five million Colombians, about 11 percent of the country’s population, have hearing problems, due mainly to alcohol, medicines, drugs and noise exposure to MP3 players and road noise, according to Asoaudio and Imbanaco, two Colombian organizations that promote awareness of hearing loss in their country. Additionally, untreated ear infections cause much hearing impairment. Only about 30 percent of people with hearing loss, however, seek assistance from a doctor or hearing healthcare professional.

**Thought-Controlled Olympic Light Show**

Visitors to the 2010 Olympic Games in Vancouver controlled the lights 2,000 miles away at Toronto’s CN Tower, Ottawa’s Parliament Buildings and Niagara Falls using thought alone. The technology, developed by InteraXon, measures the brain’s electrical output and reacts to alpha waves, associated with relaxation, and beta waves, associated with concentration. As users relaxed or focused their thoughts, the InteraXon headset and related software connected these thoughts to lighting controls at the major landmarks. The outcome was a thought-generated light show that was projected on massive screens during the Vancouver 2010 Olympic Winter Games.

“InteraXon helps companies looking to engage in the exploding thought-controlled computing market develop their own brainwave-controlled products and services,” explains Chief Operating Officer Trevor Coleman. The implications for people with disabilities are immense. Thought-controlled wheelchairs and prosthetics are already a reality and will become more accessible and affordable in



the coming years. “As the technology gets smaller, more precise and less expensive, there’s no limit to the kinds of things we can control with our minds,” adds Chief Technical Officer Chris Aimone. Could applications for people with hearing and speech impairment be far behind?

**Assistive Technology Conferences**

The Assistive Technology Industry Association will hold its annual Chicago conference from October 27-30, 2010, at the Renaissance Schaumburg Hotel and Convention Center. The Orlando Conference will be January 27-29, 2011, at the Caribe Royale All-Suites Hotel and Convention Center. With several thousand attendees, 275 educational sessions and 120 company and organization exhibits, these conferences showcase the newest and best in assistive technologies to enhance learning, working and independence for people with disabilities.

**Marcia B. Dugan 1932-2010**



**Marcia B. Dugan**  
Photo courtesy of [www.ntid.rit.edu](http://www.ntid.rit.edu)

Marcia B. Dugan, a community volunteer, author and advocate for people with hearing loss, died at age 78 on February 7, 2010, at her home in Yates County, N.Y., after a year-long battle with leukemia. Dugan worked at the National Technical Institute for the Deaf (NTID), a college at Rochester Institute of Technology, from 1980 to 1995 as director of public affairs and special assistant to the NTID Director. She served nine years on the national board of trustees of Hearing Loss

Association of America, including two years as president, and was president of the International Federation of Hard of Hearing People from 2001 to 2006. Dugan was a representative to the International Alliance, which was instrumental in drafting the 2008 United Nations Convention on the Rights of Persons with Disabilities.

**Accessible Travel**

Hotels.com, the largest worldwide lodging service, announced new site features that help travellers easily search for and reserve hotel rooms online with specific accessibility needs in mind. Hotels.com users can now search for lodgings in the U.S. that offer wheelchair-accessible pathways, accessible showers, Braille signage and telephone equipment for people with hearing loss. Customers can also request a room with one or more specific accessibility features on the online reservations page. All such requests will be reviewed by Hotels.com customer service agents, who will contact the traveller directly to confirm the reservation or to offer to locate a similar room at an equivalent rate at another hotel.

**Best Friends for Life Minus Hearing**

Fifteen-year old Arielle Schacter recently launched a new Web site, bf4life-hearing (best friends for life minus hearing, <http://bf4life-hearing.weebly.com>) a social network for teens with hearing loss, which also provides up-to-date information on hearing issues. “I never meet another person just like me who is deaf or hard of hearing. I started thinking that if I can’t meet people who have a hearing loss, then probably tons of other kids have the same difficulties!” says Schacter. ■

**A participant in InteraXon’s Vancouver 2010 Olympic Games Light Show controls lights at Toronto’s CN Tower remotely using thought.**

Photo courtesy of [www.interaxon.ca](http://www.interaxon.ca)

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# Summer Camp Can Last a Lifetime

## Camper's Positive Experience Influences Her Vocation

BY KAREN APPOLD, STAFF WRITER

**C**ara Frank was born with profound hearing loss. When she started school, the Vancouver, Wash., youngster first went to an oral school for the deaf, where she learned speech and hearing skills. During that time, she was among peers with similar disabilities.

Two years later, she was placed in the mainstream setting at her local elementary school. "I noticed that I was the only one at the school and in my community who was deaf," Frank says. "And to make things more noticeable, I wore a cochlear implant (CI) – a device on my ear attached to an awkward box (the processor) that rested on my chest."

Frank recalls being referred to as the deaf girl with the strange accent or the girl with a box on her chest. When people talked to her, they over-emphasized their words, assuming that she couldn't understand normal speech. "Instead of simply saying, 'Hello,' they said something more like 'HELLOOOO,'" she says. At one point, she was recognized as the girl who "stuffed" her bra – which was actually her CI processor wrapped around her chest. Among the

biggest challenges were not being able to follow group conversations or read teachers' lips when they turned their backs.

Frank's response to being different was to become introverted. "I didn't necessarily like the extra attention and curiosity that my cochlear implant brought," she says.

"I grew tired of these challenges and labels and craved for people to acknowledge other characteristics that I possessed," Frank admits. "It was easy for me to want to retreat back into the security of my family and friends (who had hearing loss) where I knew I could make myself understood and where I could truly relax. However, over time I became more attuned to my community and developed strategies that were effective in terms of communication."

### An Awesome Opportunity

When Frank learned about an opportunity to attend a camp through the YMCA, at which attendees would use communication modes similar to hers, she expected it to be a comfortable experience.

### Postcards from Camp

Camp "Hands Up," located in Dayton, Wash., serves deaf and hard of hearing children ages five to 18. It has a junior counselor program for ages 16 to 18. Call 509.967.5345 for more information.

Photo courtesy of Sheila Coles

**Opposite: Cara Frank, 25, serves as the groups and logistics coordinator for the Adaptive Sports Center in Crested Butte, Colo. The center offers various programs throughout the summer for all ages and a variety of disabilities. Contact 866.349.2296 or [info@adaptivesports.org](mailto:info@adaptivesports.org) or visit [www.adaptivesports.org](http://www.adaptivesports.org) for more information.**

Photo courtesy of Pat Brittle



### Camp means fun in the sun and water.



**Intricately crafted boats are launched in hotly competitive races at Camp “Hands Up,” in Dayton, Wash.**

Photo courtesy of Sheila Coles

Sure enough, Frank found the staff to be quite understanding and experienced in working with campers with hearing loss. She was also thrilled to have her best friend at that time, who also had hearing loss, attend the camp.

At camp, people finally saw Frank for who she was, rather than seeing the disability first. “I was the girl who liked to make candles, go beachcombing and play capture the flag,” she says. The YMCA camp provided an inclusive setting. Frank recalls that the staff was extremely encouraging and got everyone involved in one way or another – and none of the staff was apprehensive about being around people with disabilities.

“Everyone was recognized as being unique, regardless of whatever perceived differences they may have had,” Frank says. “Walls were taken down and people were recognized for their personalities and skills. The fact that the camp was centered on recreation gave me an even playing field with my peers and truly just let me be me.”

### An Inspiring Counselor

Year after year, Frank returned to the YMCA camp. One particular counselor, who had hearing loss herself, worked there for several summers while Frank was a camper. “I looked forward to seeing her every summer and interacting with her,” Frank says. “Over time, she became a mentor. By observing her interactions with others, I realized I was often blowing my challenges out of proportion. I realized that I needed to put a more positive spin on things. After all, as she often demonstrated, ‘Communication is a two-way street.’”

Frank believes that people with hearing loss have the same potential as anyone else, though society often limits opportunities and expectations. The possibility of improved attitudes toward and opportunities for people with hearing loss motivated Frank to become a counselor and later influenced her choice of career.

Originally an art major, Frank switched to Western Washington University’s Parks, Leisure and Recreation program. “Working as a camp counselor at the YMCA was one of the greatest jobs I had and I knew I wanted to continue down that career path,” Frank says. “Recreation gives me such a sense of empowerment.” She also loves the dynamics that occur during camp: “Everyone’s

### Camp offers the opportunity to push your personal limits.



**YMCA Camp Kern’s Deaf Adventure Camp in Oregonia, Ohio, is co-hosted by Deaf Community Resource Center of Dayton, Ohio. The camp serves all kids with hearing loss ages eight to 15 living in Ohio. Call 614.841.1991 (voice/TTY), 614.515.6065 (videophone) or e-mail DKTC95@dsc.org. Visit [www.dsc.org](http://www.dsc.org).**

Photo by Thomas Gisler

### Online Exclusive!

Check out our comprehensive directory of summer camps for kids with hearing loss. Log on to [www.hearinghealthmag.com](http://www.hearinghealthmag.com)

**Apache Creek Deaf and Youth Ranch in Reserve, N.M., will hold summer camp for children with hearing loss from July 5-10. It is free for all ages. Call 575.533.6820, e-mail langmail99@gilanet.com or visit www.apachecreek.us for more information.**

Photo courtesy of Apache Creek Deaf and Youth Ranch



always a little timid in the beginning, and at the end of the camp season it's amazing to see the changes that have taken place."

As for the outdoors, Frank says it gives her a sense of balance and satisfies her thirst for adventure. "When I'm out on a back-

packing trip and I've reached the summit, or when I'm out on my wakeboard and I've landed an amazing jump or even when I'm just sitting in solitude under the stars ... that's when I really get my 'ah-ha' moments and a sense of, 'I can do this.'"



Five-week St. Louis listening and spoken language summer program for children 3-12 (d/hoh). Morning classes promote emerging literacy (ages 3-5) and academic skills (5-12). Summer camp activities in the afternoon! Limited enrollment for qualifying students.

**http://cid.edu**  
**314.977.0130**



Aspen Camp is an outdoor recreation camp for children with all degrees of hearing loss, ages 8-18. Experience the great outdoors such as rafting, horseback riding, hot springs and camping in the Rocky Mountains.

**www.aspencamp.org**  
**970.923.2511**



House Ear Institute's 25th Anniversary Family Camp, June 4-6, 2010 - Malibu, Calif. Family Camp offers a weekend of friendship, fun and personal growth for children with hearing loss and their families. Register online today!

**www.hei.org**  
**213.353.7013**



Make New Friends, Build Confidence, Enhance Communication Skills! Summer Adventure Program • July 11-23, 2010; for children 9-14 with hearing loss; Family Weekend • July 23-25, 2010; for families with children birth-12 with hearing loss. Featuring keynote Patricia M. Chute, Ed.D. Located at Clarke's Northampton, Mass., campus.

**www.clarkeschools.org**  
**413.584.3450 (V/TTY)**

## Thriving Today

Today, as the groups and logistics coordinator at the Adaptive Sports Center (ASC) in Crested Butte, Colo., Frank coordinates trip logistics and provides organization and support on outings for people with disabilities, including hearing loss. She enjoys her work because she believes ASC expands opportunities for the diverse populations that come to the center.

“Ultimately, I believe in what ASC does because I think it impacts participants just as summer camp impacted me,” she says. “We have an awesome staff and amazing instructors here. They parallel the same recreational professionals that once worked with me when I was a little girl.”

Through her position, Frank is able to create an inviting environment for people with disabilities to participate in outdoor adventures like skiing, snowboarding, ice climbing, rock climbing, kayaking, horseback riding and more – reminiscent of her own summer camp experiences.

This summer, ASC will be just one of the many camp options for youth with hearing loss. On zip lines, horseback and rafts across the United States, kids with hearing loss will exceed society’s expectations – and maybe even their own. The success they achieve will empower and inspire them, possibly serving as the first step to a fulfilling career. ■

## The counselors at camp rock!



**House Ear Institute’s (HEI) 2009 Family Camp was in Malibu, Calif. The camp program is celebrating its 25th anniversary from June 4-6, 2010. The camp serves all family members, including children with a hearing loss as well as their siblings and parents. Many have normal hearing. It is completely integrated in terms of serving families who have children with any type of hearing loss or mode of communication (ASL, cued-speech or oral). For more information visit [www.hei.org/education/camp/camp.htm](http://www.hei.org/education/camp/camp.htm) or call 800.388.8612 or 213.353.7078. Photo courtesy of HEI © 2010**

## And best of all, camp is about making new friends.



**Camp SignShine is offered by Deaf and Hard of Hearing Advocacy and Resource Center (DHHARC). Pictured on Indian Day, from left, are campers Katina, David, Giselle and Alana. The camp is located at the beautiful facility of Camp Ronald McDonald in Susanville, Calif. Camp SignShine accepts campers ages seven to 19, and is open to kids with hearing loss, hearing siblings and kids of deaf adults. More information can be found at [www.dhharc.org](http://www.dhharc.org) or call 775.355.8994.**

Photo courtesy of DHHARC

## DRF Centurions — At the Forefront of Our Cause

In 1963, the nation's leading ear, nose and throat specialists came together with a simple but important goal: to advance the research crucial to their fields, knowing that their practices and patients would directly benefit from this work. This innovative group became The Centurions – champions and supporters of Deafness Research Foundation (DRF).

The Centurions now enjoy the support of more than 1,800 physicians, researchers and other professionals in fields related to hearing and balance sciences. Under the leadership of President David S. Haynes, M.D., and Secretary/Treasurer John L. Dornhoffer, M.D., The Centurions play an essential role in promoting DRF.

To learn more about The Centurions, how to become a member or identify Centurions members in your area, please contact DRF at 866.454.3924, 888.435.6104 (TTY), visit our Web site at [www.drf.org](http://www.drf.org) or e-mail [centurions@drf.org](mailto:centurions@drf.org).

In each issue, a member of The Centurions fields questions about hearing health and related issues. In this issue, questions were addressed by Centurion Maj. James V. Crawford, M.D., of the Madigan Army Medical Center near Tacoma, Wash.



Got a question you would like one of the nation's leading ear, nose and throat doctors to answer? E-mail it to [info@drf.org](mailto:info@drf.org).

as long as we keep the cotton swabs out! Abrasions in the ear canal caused by scratching or cleaning with cotton swabs increase the risk of developing an infection. The greater risk from "ear kissing" is the so-called "kiss of deaf." There have been several case reports, and I've seen it in my own practice, of patients coming in with hearing loss or other problems after someone kissed on or near their ears. Two things can happen: The pressure change from the kiss can cause the ear drum to rupture (break) or the noise can be loud enough to cause hearing loss, which is usually accompanied by ear pain and intense ringing (also known as tinnitus). There are other theories about exactly how that happens, but the point is that it has been well documented. The two references below are just a couple of examples you could pass on to your boyfriend. I hate to be a party-pooper, but ear muffs may be a solution!

Reiter LA (2008). "The Kiss of Deaf": A Case Study" by LA Reiter. *The Hearing Journal* 61(8): 32-37.

"An unusual cause of acute tympanic membrane perforation: A case report" by AB Chukuezi and JN Nwosu. *International Journal of Medicine and Medical Science*. Vol 1(4) pp. 097-098, April 2009. ■

The Centurions help ensure that clinical research continues in the field of hearing and balance science. To learn more about The Centurions or how to contribute to the Centurion Clinical Research Award, please visit [www.drf.org/Centurions](http://www.drf.org/Centurions) or e-mail [centurions@drf.org](mailto:centurions@drf.org).

**My church just installed a looping system, but I don't have telecoils in the hearing aids I just bought last year. Can hearing aids be retrofitted with telecoils and, if so, is it expensive?**

**Gracie Kennedy  
Memphis, Tenn.**

Telecoils have been used more extensively in Europe than in the U.S., but that is beginning to change. Ninety percent of British hearing aids have telecoils, whereas about 60 percent of hearing aids in the U.S. have telecoils (which is twice the number fitted in the mid-1990s). It is definitely better if the aids come with the telecoil installed but it is not difficult to have telecoils retrofitted. Telecoils will fit in all hearing aids except for the very smallest completely-in-the-canal (CIC) aids. Your audiologist will be able to give the exact price, but they are not terribly expensive – around \$50 to \$100 – and well worth the cost. Once you have telecoils installed in your hearing aids, you may become aware of other places where you will be able to use your telecoils. Theaters, restaurants and even some

forms of public transportation have loops installed. You can set up a loop in your home for use with a TV or other equipment. Compared with the cost of current digital hearing aids, the addition of a telecoil is a small expense, but well worth it.

**I'm dating a guy who is really into my ears. He literally likes to intensely kiss them and so my ears get pretty slobbery! I am wondering if there's anything unhealthy about this. Does it introduce harmful germs or saliva into the ear canal? Also, it's really loud at times. Could it be damaging my hearing? Any solid rationale to deflect these ear kisses would be appreciated.**

**Lori M.  
Houston, Texas**

It always amazes me what people get into. I'm an ear surgeon, and I can't imagine licking the inside of someone's ear canal! Having said that, it is possible to get an ear infection from saliva, though not very likely. We get moisture in our ears when we bathe or shower; our ears can handle it –

# A+E = Better Hearing

## Preserving Residual Acoustic Hearing with Combined Acoustic and Electric Hearing

BY CHRISTOPHER W. TURNER, PH.D., LINA A. J. REISS, PH.D., AND BRUCE J. GANTZ, M.D., FACS

In recent years, a unique approach in the treatment of severe high-frequency sensorineural hearing loss has been explored. This new approach modifies existing cochlear implantation techniques by preserving any remaining hearing in the implanted ear and has already been implemented in more than 100 people worldwide. Many people who receive cochlear implants (CIs) still have some residual hearing in the opposite, non-implanted ear and sometimes wear a hearing aid in this ear to provide additional beneficial sound stimulation. This new technique involves preserving low-frequency hearing in the implanted ear, with the CI filling in high-frequency sounds. The aim is to produce improved speech understanding and other hearing sensations via combined acoustic (A) and electric (E) hearing. With A+E hearing, one uses both acoustic hearing (sound waves entering the ear in typical fashion, amplified by a hearing aid) plus electrical hearing (sound waves being received by a sound processor, which transmits signals to the electrode implanted in the inner ear, or cochlea). The addition of acoustic hearing, either via the opposite, or the implanted ear, can often improve a person's total hearing abilities.

Research in animals with hearing loss has shown that sensorineural hearing loss exceeding approximately 60 decibels (dB) is due to substantial inner ear hair cell loss. However, people with this level of hearing loss can still perceive speech cues, generally

signaled by intensity differences in the lower frequencies of the hearing spectrum. If low-frequency speech is amplified, even a small number of functioning inner ear hair cells should be capable of transmitting these low-frequency speech sounds to the brain. However, the speech cues located in higher frequencies tend to require a fuller population of inner ear hair cells for accurate transmission. Thus, amplification via a hearing aid is often not very effective for people with severe to profound high-frequency hearing loss. These people, however, can benefit from a CI.

The underlying purpose and function of a CI is to stimulate the auditory nerve directly, via electrical impulses, replacing the inner ear hair cells that have been lost or damaged. The electrical impulses are transmitted into the nearby auditory nerve via an electrode array of varying lengths, which is inserted into the cochlea. In the case of profound or severe hearing loss across the entire frequency range, usually few functioning inner ear hair cells remain in the cochlea and very little, if any, usable speech information can be heard with the ear – thus, hearing aids are not an effective treatment. In these cases, a CI with a standard-length electrode (approximately 20–25 mm) aims to replace the function of all, or nearly all, the inner ear hair cells across the entire hearing frequency range. People with this level of hearing loss, therefore, are generally not appropriate candidates for the new technique of preserving hearing in the implanted ear, although future develop-

ments may include preserving residual hearing in some of these people.

The current generation of standard-electrode CIs is capable of providing very high levels of speech understanding in quiet backgrounds. Although there is a wide range of results with cochlear implantation, this is usually not because of a fault in the device. Individual characteristics play a large role, such as the age at which the person was implanted, with younger patients generally faring better. One might reasonably ask then, why not just implant every person who does not benefit from hearing aids with a standard-length CI? The answer is that in many cases, the remaining low-frequency acoustic hearing can actually improve overall perception of sound when combined with high-frequency hearing via electrical stimulation.

Research has shown that the information from as few as three to four electrodes in an implant is adequate for high levels of speech understanding in quiet backgrounds. However, trying to hear one specific voice in a noisy background requires significantly more electrodes, thereby increasing the ability to distinguish pitches (known as frequency resolution). When the background noise is speech or speech-like in nature, the frequency resolution requirements can be even more demanding, as better frequency resolution is needed to distinguish between various speakers. Even the top-performing implant users cannot take advantage of more than six to eight electrodes of electrical stimulation. This seems to be a result of how the electrodes interact with each other in the cochlear fluids, limiting the independence of each electrode. Therefore, traditional CI users have tremendous difficulty in recognizing speech when there are competing signals, such as hearing a person across the table from them at a crowded restaurant.

One study directly compared the behaviorally measured frequency resolution of three types of listeners: those with normal hearing, those with hearing loss and those with traditional CIs. Normal-hearing listeners had the best frequency resolution, followed by listeners with sensorineural hearing loss; the poorest resolution was observed in the traditional CI users. People with normal hearing can take advantage of various cues, such as pitch, timing and localization cues, that allow them to separate multiple sound sources and focus on the target speech. CI listeners, on the other hand, are presumably unable to perceive some of these cues and, instead, competing speech is confused with the speech they want to hear. This appears to be related to some limitations on frequency resolution and localization abilities in people with CIs; using existing residual hearing offers an opportunity to improve these cues for CI users.

Frequency resolution affects pitch perception, and limited frequency resolution means decreased enjoyment of music. Preserving acoustic hearing in an implanted ear offers a way to enhance music appreciation. One study demonstrated that, while normal hearing listeners had no difficulty in discriminating piano notes one semitone apart (i.e., adjacent piano keys), the CI listener's ability to discriminate notes was generally much poorer: The average listener needed a half-octave difference in pitch to be able to discriminate one pitch from another. Some listeners required as much as two octaves' difference between notes for discrimination. This poor pitch perception makes recognizing melody very

difficult for CI users. The typically poor pitch perception of CI users is most likely a combination of limitations of current electrode technology and poor survival of remaining nerve fibers in the damaged cochlea.

In summary, poor frequency resolution appears to be a major remaining hurdle in improving the listening abilities of people with CIs. It is also interesting that the frequency resolution of still-existing acoustic hearing, even when there is a severe hearing loss, is often better than that provided by a CI. For these reasons, preserving residual acoustic hearing in either or both ears of people receiving a CI has some potential advantages. However, in many patients, the remaining acoustic hearing is only usable for speech recognition in the lower frequency regions.

### **Preservation of Hearing Following CI Surgery**

But how can acoustic hearing be preserved in a person receiving a CI? Implanting only one ear is an obvious option, if the other ear has usable hearing. Recently, however, preserving residual acoustic hearing in the implanted ear has received attention.

Preservation of hearing in the implanted ear has been reported in several animal studies from the 1990s, which found that placement of a short electrode did not cause tissue damage in areas of the ear that are not adjacent to the electrode. These studies found that many hair cells not only survive but can function essentially normally.

Further studies reported that some patients examined after receiving a CI had at least some response to acoustically presented tones. The residual acoustic hearing in one human patient who had received a standard long-electrode device enabled understanding of speech at levels higher than would occur by mere chance. In the late 1990s, a group at the University of Iowa began implanting a newly-designed CI with a modified electrode that was much smaller in diameter and only 6 mm in length to intentionally preserve some low-frequency hearing in selected patients. This electrode was later changed to 10mm in length and even better results were obtained. This device became known as the Iowa/Nucleus Hybrid device. Researchers in Europe proceeded along similar paths at the same time. Based on these early reports of preserving low-frequency hearing following cochlear implantation, a number of other centers have specifically attempted to preserve residual hearing in implanted ears of their patients.

As more people have become eligible for cochlear implantation, we are seeing more individuals with various amounts of still-usable hearing in one ear. These people have the chance to use acoustic hearing in one ear combined with electric hearing in the other. In a number of studies, patients were implanted with a standard-length electrode in one ear, and used a hearing aid in the other ear. When compared to listening with the CI alone, the acoustic/electric combination achieved better speech recognition in noisy backgrounds, presumably because the acoustic hearing assisted in the separation of target voices from background noise, due to its more precise pitch perception. The acoustic ear was found to also contribute to speech recognition in quiet. Similar advantages exist for using preserved acoustic hearing in the implanted ear.



If, as is often the case, the ear opposite the implant is the “better” ear, then improved speech recognition may primarily be a reflection of the better ear’s status. Yet even when this factor is taken into account, the evidence is clear that combining acoustic and electric hearing either within one ear or across two ears can provide a significant advantage for many people.

### **The Impact of A+E Hearing in Quiet**

When evaluating the success of the A+E approach, several factors need to be considered. The first is the many uncontrolled variables when making comparisons across various devices, clinics or patient populations. Some of these variables include: the degree of residual hearing; very low acoustic hearing-alone scores, perhaps indicating poor nerve survival; and very high acoustic hearing-alone scores, possibly limiting how much improvement the added stimulation can provide. For example, recent data from the Iowa/Nucleus Hybrid clinical trial suggests that those with more than 35 years of severe to profound hearing loss above 2,000 hertz often do poorly with the added electric stimulation. This may be because of insufficient surviving nerve cells in the base of the cochlea needed to take advantage of a short 10 mm electrode.

Second, merely showing an increase in speech recognition performance does not, by itself, validate the A+E approach. The combined score must also be better than the electric-alone score, in order to demonstrate that preserving residual hearing was beneficial. A third caution is that, although testing the implanted ear by itself is a good way of evaluating the success of the same-ear A+E approach, in real life many people listen and receive speech cues through both ears.

A 2006 study reported the preliminary results of 47 subjects enrolled in the Food and Drug Administration (FDA) multicenter clinical trial of the Iowa/Nucleus Hybrid 10 mm implant. Of the 19 subjects with nine months of experience with their device, 16 demonstrated significant listening improvement with combined A+E speech processing. The subjects who had 12 months of experience averaged 72 percent correct on a word test in the combined mode, compared to 32 percent correct prior to cochlear implantation when they were tested wearing two hearing aids. Only four of the 47 subjects did not derive benefit from the combined A+E speech processing.

### **The Impact of A+E Hearing in Noise**

In a 2004 study, researchers demonstrated that, compared to electric stimulation alone, A+E hearing had the potential to provide a significant advantage for understanding speech in background noise, particularly when the competing sounds were other talkers, using simulated Hybrid processing of speech and normal-hearing subjects. In that same study, three Hybrid patients were also tested and showed an advantage for understanding speech in noise when compared to top-performing long-electrode (electric alone) patients.

A 2008 study showed that, when compared to traditional CIs and electric hearing alone, the Hybrid group had a significant advantage of four to five decibels, on average. However, it should be noted that some individuals were able to perform the task when sound was 15 to 20 decibels lower than the best performance of traditional CI subjects, thus showing the impressive potential benefits of preserving residual acoustic hearing.

### **The Impact of A+E Hearing with Music**

While CI recipients generally are quite good at perceiving rhythmic cues in music, their recognition of melodies is usually much poorer than normal, especially when rhythmic or lyrical cues are not available. The residual low-frequency acoustic hearing of an A+E approach can provide pitch information needed to enjoy music to a greater degree. In 2006, one researcher tested typical-hearing, traditional long-electrode, and Hybrid short-electrode patients on melody and instrument recognition. It was discovered that Hybrid patients were nearly as accurate as normal-hearing patients for melody recognition, whereas the long-electrode patients performed very poorly. This is a result of the poor frequency resolution provided by electrical stimulation, as described earlier. Hybrid patients did show a deficit compared to those with typical hearing when it came to recognizing instruments, but this was primarily for instruments in the higher-frequency ranges, where the information was received via the CI rather than by the acoustic hearing.

### **How Much Hearing is Worth Preserving?**

Also of practical interest is a consideration of how much residual low-frequency hearing is required for the short-electrode A+E strategy. Research findings suggest that, on average, the advantage of preserving residual hearing exists unless hearing loss approaches profound levels. A 2005 study of traditional CI users who used a hearing aid in the non-implanted ear showed that residual hearing in the non-implanted ear could assist CI users in understanding speech in background noise, even when that ear was not capable of speech recognition by itself. The benefit of acoustic hearing remains as long as the hearing loss is not profound (using a hearing aid, if appropriate, along with the CI). However, in cases of profound or near-total hearing loss there may be little benefit to aided hearing; these people are most likely candidates for a traditional, long-electrode CI.

### **Summary and Future Questions**

The preservation of residual hearing has been shown to be a practical and effective solution for severe, high-frequency hearing loss. It can overcome some of the inherent disadvantages of traditional, electric-only, long-electrode cochlear implantation. These advantages of the A+E approach are primarily a result of the better frequency resolution provided by the residual acoustic hearing as compared to electric stimulation. Thus the advantages of the A+E approach are most evident in situations where frequency resolu-

tion is important, such as music perception and recognizing speech amid background noise.

The clinical trials of the A+E approach are still in their early years and it will be some years before FDA approval is secured; therefore, the issue of long-term success rates deserves continued attention. How stable is residual acoustic hearing over longer periods of time? A 2006 study retrospectively looked at the changes over time in the hearing of non-implanted ears that had audiograms that at one time fit the criteria for the short electrode. These were people who were not subsequently implanted, since, at the time, they did not meet the criteria for standard-length cochlear implantation. They found that in adults, low-frequency hearing remained relatively stable and consistent. However, for children the rate of hearing loss was generally greater and much more variable from child to child. Research looking at the long-term stability of low-frequency hearing in people who are implanted with electrodes designed to preserve hearing will become available in future years as the current patients have their devices for longer periods.

The optimal length of the electrode for A+E hearing is also a matter of debate. Although it would seem to be a logical assumption that longer electrodes present more risk to residual hearing, this has not been conclusively demonstrated. Hearing preservation must be balanced against the possibility that a shorter electrode may or may not provide as much information to the auditory system as a longer electrode, particularly in the few unfortunate cases where residual acoustic hearing is not preserved. It is possible,

however, to successfully re-implant with a standard electrode those few who do not benefit from a short electrode. In addition, future developments in electrode design or surgery may serve to reduce the risk of damage for any electrode insertion.

In a somewhat related issue, the ability of the auditory system to adapt to cochlear implantation may also influence the choice of electrode length. Further research in this area is certainly needed.

A+E hearing shows promise in preserving and capitalizing on residual low-frequency hearing, resulting in better hearing for implant recipients. This may take the form of merely encouraging people with a traditional long-electrode CI in one ear to use a hearing aid in the other ear. It may now also be accomplished by preserving residual low-frequency hearing in the implanted ear of people with severe high-frequency hearing loss. This would provide a rehabilitative solution for a group of people for whom there were previously no attractive treatment options. ■

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# The Audiogram Explained, At Last!

BY MELANIE SISSON, A.U.D., CCC-A

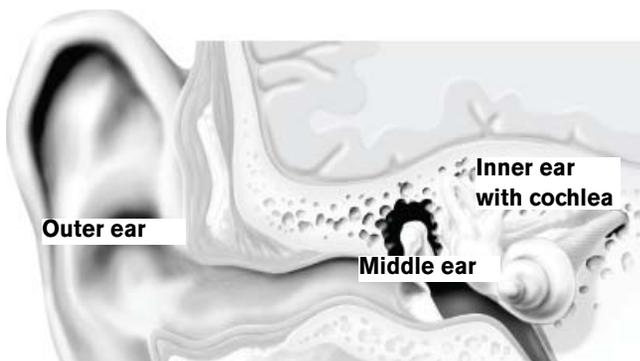
**D**oes an audiogram show test results that help you make sense of hearing loss, or is it a confusing series of lines and circles that leaves you frustrated? Audiograms are not as complicated as they look – if you know what you’re looking at. And you will by the end of this article. Let’s start with some details about what to expect when you or your child has a hearing test and what those results tell you and your hearing healthcare professional about hearing loss. Finally, let’s look at how this information helps you both best decide what the next steps should be.

## Types of Hearing Loss

When we hear, the outer ear collects sound, the middle ear transmits it and the inner ear passes it on to the brain. The inner ear, which consists of the hearing organ (the cochlea) and the hearing nerve (cranial nerve VIII), introduces an electrical signal to the brain, which processes sound into comprehensible information. A problem in the outer or middle ear that prevents sound from reaching the inner ear is called conductive hearing loss. Factors that can cause conductive hearing loss include ear infection, fluid in the ear, a hole in the eardrum and blockage as a result of excess earwax. Conductive hearing loss is usually temporary and can last a few days, several weeks or even a number of months. It can also improve or get worse. The amount of hearing loss, the length of time the hearing loss persists and how it changes all depend upon what is causing the conductive hearing loss.

Sensorineural hearing loss is caused by damage to the inner ear – most often involving the hearing organ and rarely affecting the hearing nerve. The hearing organ is shaped like a snail shell and is filled with fluid and tiny hair cells. The hearing nerve is part of the central nervous system and transmits sound to the brain. In some cases, sensorineural hearing loss may get worse over time, but it is unfortunately most often lifelong and cannot be corrected in one visit to the doctor.

Mixed hearing loss is a combination of conductive and sensorineural hearing loss. Since conductive hearing loss can be temporary, someone with sensorineural hearing loss may experience a short-term decline in hearing due to a conductive problem, but that is usually quite easily rectified.



Now that we have the basics under our belt, let’s find out what normally happens on the first visit to have your hearing tested.

## The Actual Test

Hearing tests are conducted in a sound-treated booth. You, or you and your child, will sit inside and the hearing healthcare professional will sit outside the booth, on the other side of a window. Testing for adults and children older than five involves wearing earphones or ear inserts (like an MP3 player’s small earbuds), listening for soft tones and raising a hand or pressing a button when you hear them. This type of testing is called air conduction testing, meaning that tones are emitted from the earphone and travel through the air to reach the eardrum. The results are plotted on a graph called an audiogram.

A game can be used to test young children, who may or may not wear earphones or ear inserts. Parents are usually asked not to do anything while their child is tested so that they do not cause their child to appear to be responding to a sound when he or she is really responding to the parent. If your child becomes upset during testing you could soothe her as you would in any other context.

Along with air conduction testing, older children and adults repeat words and undergo tests to check eardrum movement, among other possible assessments.

A test that can help identify what type of hearing loss a person has is a bone conduction test, results of which are also plotted on the audiogram. This involves placing a small box, called a bone oscillator, behind the ear or on the forehead, held in place by a headband. The oscillator vibrates the bones of the skull, which is not painful. When the bones vibrate, sound goes straight to the inner ear, bypassing the outer ear and the middle ear. As with a normal hearing test, you are asked to listen for soft tones created by the oscillator and respond when you hear them.

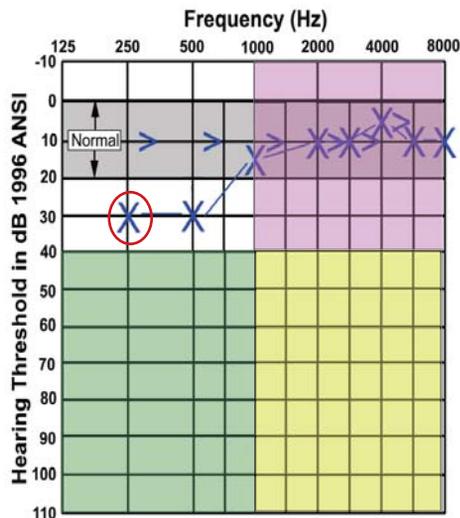
When the bones vibrate, both the right and left inner ears, or cochleae, hear the tone at the same time. What is often necessary, though, is to test each inner ear individually so that only one inner ear at a time hears the tone. In order to do this, a technique called “masking” is employed. The cochlea of the ear wearing the bone oscillator is tested while the other ear hears static through a head- phone or ear insert to stop that ear from hearing the tone.

Don’t worry – none of the tests are painful.

## Reviewing the Results

The audiogram is a graph that plots the hearing test results which reveal how well you hear a range of pitches, particularly those most common in speech. The audiogram helps hearing healthcare professionals decide what the best next step is, such as how much amplification a hearing aid needs to provide.

Across the top of the audiogram, a normal range of hearing is displayed. If your results are graphed in that range, your hearing is normal.



**Figure 1. Reading the Graph.** The circled “X” falls on the intersection of 250 hertz and 30 decibels (dB), indicating that this person first heard a 250-Hz pitch in his left ear when the volume reached 30 dB. A person with normal hearing could have heard it between 0 and 20 dB of volume. Therefore this person has a 10-dB hearing loss at this particular frequency. Also, note the relationship of sound to location on the audiogram. Colors on this graph are added to aid in understanding. White = soft, low-pitch sounds, such as the humming of an appliance. Pink = soft, high-pitch sounds, such as a bird chirping. Green = loud, low-pitch sounds, such as a foghorn. Yellow = loud, high-pitch sounds, such as a siren.

Audiogram images courtesy of Samuel R. Atcherson, Ph.D.

Down the side of the graph labeled “Hearing Threshold” is the measurement of volume in decibels (dB), with lower numbers representing softer, harder-to-hear sounds, such as a pin drop, and higher numbers representing something loud like a rock band concert.

Across the top of the graph, the audiogram displays pitch (Frequency), measured in hertz (Hz). Lower numbers represent lower pitches, like a foghorn or bass drum, and higher numbers represent higher pitches, such as the chirp of a small bird or the whistle of a tea kettle (see Fig. 1).

The very softest sound you are able to hear at any given pitch is called your hearing threshold. In other words, a threshold is the volume at which you begin to hear a certain pitch. Thresholds in air conduction testing are graphed using “X” and “O”, with X always

## Time to Get Your Hearing Tested?

If you answer “Yes” to two or more of the following questions, you should make an appointment with a hearing healthcare professional:

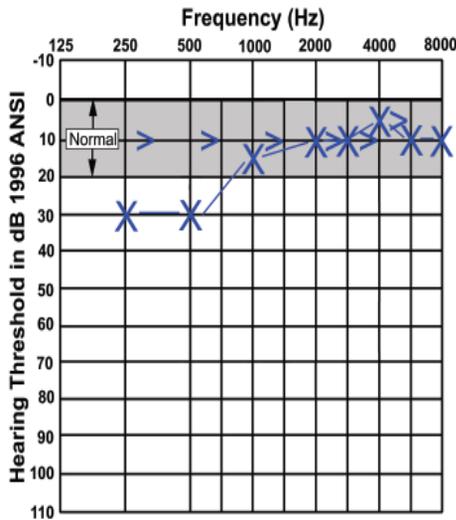
- Are you having trouble hearing the television set?
- Are you having difficulty hearing on the telephone?
- Are you having difficulty hearing the doorbell, telephone, clock or other devices?
- Do you feel that people “mumble” and don’t speak clearly?
- Do you frequently ask other people to repeat themselves?
- Do you feel like your hearing is “cloudy” or “not clear”?
- Do other people ask you if you have problems hearing?
- Do you hear people, but just don’t quite make out what they are saying?
- Do you find yourself avoiding situations because you are not able to hear other people properly?
- Do you find that your hearing is not what is used to be?

According to the National Institute for Occupational Safety and Health, “Anyone regularly exposed to hazardous noise should have an annual hearing test. Also, anyone who notices a change in his hearing (or who develops tinnitus) should have his ears checked. People who have healthy ears and who are not exposed to hazardous noise should get a hearing test every three years.” ■

Source: Home Audiology Services, East Moriches, N.Y., [www.homeaudiologyservices.com](http://www.homeaudiologyservices.com)

## If You Do Get Hearing Aids...

- ✓ Daily maintenance can keep hearing aids working properly for as long as five to seven years. Experts recommend taking the hearing aids off each day and wiping them with a soft cloth or tissue. Many devices come with a brush or wire pick to remove earwax from the hearing aid. Or with Jodi Consumer Vac ([www.jodivac.com](http://www.jodivac.com)), you can get the same kind of hearing aid vacuum cleaning the professionals use to remove wax. It’s also a good idea to remove the batteries and leave the battery compartment door open, both to prolong battery life and to allow moisture to dissipate.
- ✓ Next, store hearing aids in an electronic dry-aid kit like those manufactured by TransEar ([www.eartech.com](http://www.eartech.com)). These kits normally feature a germicidal light that kills bacteria and other germs. And the kits’ fans circulate air around the hearing aid, while desiccants absorb moisture to ensure that the device stays dry.
- ✓ It helps to keep the ears clean too. Wax is productive for ears, but too much is problematic for both hearing and keeping a hearing aid working properly. Health Enterprises Ear Irrigator ([www.healthenterprises.com](http://www.healthenterprises.com)) features a saline solution and clinically tested “tri-stream” tip with a pressure-control bottle. It can be used up to three times a week to clean ears and prevent damaging earwax buildup. Consult a physician before cleaning your own ears for the first time.
- ✓ According to Brendan Leonard, president of Health Enterprises, “Research indicates that 75 percent of all hearing aid repairs are due to earwax and moisture and almost 100 percent of these repairs are preventable with proper maintenance.” For repairs that can’t be prevented, there’s the protection of a hearing aid warranty, which can be purchased separately from companies like SoundAid ([www.soundaid.com](http://www.soundaid.com)). ■



**Figure 2. Conductive hearing loss.** “>” represents the softest tones heard at different pitches in bone conduction testing, which tests only the inner ear. “X” represents the softest tones heard in the left ear during the air conduction hearing test, which tests inner, middle and outer ear together. In this case, inner ear hearing is normal, but whole-ear hearing is not, which means hearing loss is not related to the inner ear, but rather the outer or middle ear.

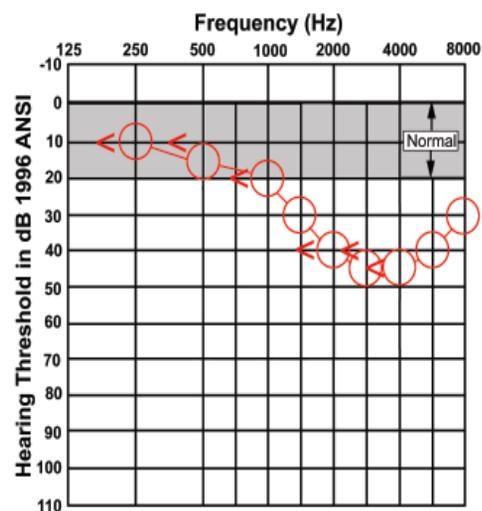
representing the left ear and O always representing the right ear.

Detecting thresholds on a small child can be tricky because movement and even breathing can interfere with accurate results. When testing is new to a young child, it will likely be minimal response levels that are noted. As the child gains practice with the testing, thresholds will more likely be obtained. Often early testing of infants and young children will give only a general idea of hearing levels and type of hearing loss. It can take some time and a few test sessions to get a complete picture of a young child’s hearing levels for all pitches. Treatment can begin based on the general idea of a young child’s hearing loss while still working to more accurately define the audiogram.

The softest sounds you could hear during the bone conduction test appear on the audiogram as a pointed bracket symbol, “<” or “>”, when the results are for both ears. No matter the direction (to the left or the right), the pointed bracket shows the response from both inner ears working together. Results for just one inner ear are graphed with a straight bracket, “[” or “]”, representing the left or the right inner ear.

If these bone conduction bracket symbols are above your Xs and Os on the graph, then hearing loss is all or partly conductive. This indicates that your inner ear is hearing better than the outer, middle and inner ear working together but something in the outer or middle ear is blocking hearing (see Fig. 2). Recall that conductive hearing loss can be temporary and can get better or worse over time. Your hearing healthcare professional will want to monitor a conductive loss by doing audiograms on different days. Changes would be evident if air conduction symbols (X and O) were at a higher or lower point on a newer audiogram when compared with the older one. If symbols on the new audiogram are closer to the top of the graph than the symbols on the old one, your hearing has improved since the last test. If the symbols are lower on the more recent audiogram, as compared to previously, then hearing has worsened since the last test.

If the bracket symbols match up closely with the Xs and Os on your audiogram, then your hearing loss is sensorineural, that is, based in the inner ear, not the middle or outer ear. As mentioned previously, sensorineural hearing loss is not likely to improve. A decrease in sensorineural hearing (or cochlear/inner ear function) from one test day to another would be apparent on an audiogram if the bone conduction symbols (<, >, [, ]) were moving further toward the bottom of a more recent audiogram when compared to a prior audiogram. If



**Figure 3. Sensorineural hearing loss.** The inner ear test results, shown with “<”, match the whole-ear test results for the right ear, shown with “O”, meaning hearing loss is related to something in the inner ear (most likely the cochlea).

hearing loss is not a mixture of sensorineural and conductive hearing loss, the Xs and Os would also move downward on a newer audiogram. This is because results for all three parts of the ear – the outer, middle and inner ears – are indicated by the Xs and Os.

Once you have your audiogram in hand, your hearing healthcare professional can discuss follow-up options. In some cases, such as with conductive hearing loss, you may need to see a doctor to address the cause of the conductive portion of the hearing loss. If the cause of the hearing loss cannot be treated, you may wish not to take any immediate action, but rather wait to see if hearing loss gets worse or look into options for hearing aids or cochlear implants. This will depend on the type of hearing loss, amount of hearing loss and your personal preferences. Follow-up options may be different for adults versus children, whose language development is enhanced by good hearing ability.

It is important to schedule regular audiograms with your hearing healthcare professional to check for possible further changes in your hearing. The plan for retests will be put together by your hearing healthcare professional and will depend on your age and type of hearing loss.

Audiograms do not provide the whole picture of a person's hearing loss. For example, they do not show how successfully you function in your daily listening environments. When you are talking with people, you use many other cues to help you communicate, such as body language, gestures, lip movements and facial expressions, as well as context provided by the topic and meaning of the conversation. Each person is unique. Even if two people have

**Hearing Loss Help offers a comprehensive description of a complete audiological evaluation, including word recognition testing, uncomfortable loudness level testing, most comfortable listening level testing, tympanometry and acoustic reflexes. Visit [www.hearinglosshelp.com/articles/hearingtesting.htm](http://www.hearinglosshelp.com/articles/hearingtesting.htm).**

the exact same audiogram, the effects of hearing loss, the amount of success with listening and communication and the amount of success with amplification (hearing aids, cochlear implants, etc.) will be unique.

Audiograms help you and your hearing healthcare professional to decide what, if anything, should be done to make sound more usable for you. Audiograms also help you to see if hearing is getting better or worse by testing at different times. They do not define what life with your hearing loss will be like. That is up to you, with some help from your friends, family and your hearing healthcare professional. ■

**Melanie Sisson, Au.D., CCC-A**, is associate director of clinical trials at Pfizer, Inc. and a practicing pediatric audiologist at Lawrence & Memorial Hospital in New London, Conn. She is the author of the *Workbook for Parents of Children who are Newly Identified as Hard of Hearing*, published by Oticon Pediatrics. Contact her at [melanie.sisson@pfizer.com](mailto:melanie.sisson@pfizer.com). To obtain a copy of the workbook, contact Oticon Pediatrics at 888.OTI.PED1. 888).



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# Cliff Tallman Brings New Perspective to DRF Chair

BY JAMIE MORRISON, ASSOC. EDITOR

**H**e's a Yankee fan and a Mets fan, a Giants fan and a Jets fan. Cliff Tallman, who became chairman of the Deafness Research Foundation's Board of Directors on Jan. 1, 2010, has a knack for understanding all sides of an issue. "My wife is a big Mets fan and tells me I can't be a fan of both teams," he says. "But I am."

Tallman has had a distinguished career in magazine publishing, cable television and Internet advertising sales. He is currently the founder and owner of Soskin Tallman, Inc., a consulting firm specializing in strategic planning, marketing, sales and direct response, located in Norwalk, Conn.

In light of his magazine and marketing experience, Tallman was enlisted about two years ago as a consultant to *Hearing Health* magazine. After his contract concluded, Tallman says, "The Deafness Research Foundation wanted to continue the relationship, and asked if I'd consider being on the Board. I enjoyed working with DRF, so I was happy to be a part of the Board. It's been a labor of love."

Tallman sees that, "for all foundations, the key to success is fundraising. More than anything else, that entails smart marketing." Because of DRF's half century of work and the solid reputation built up during those years, "Many people know what we've done in the scientific community," Tallman says. "We have several



**Cliff Tallman, Chairman, Deafness Research Foundation Board of Directors**

Photo courtesy of Deafness Research Foundation

Board members who are well known and well-regarded in the scientific community. Extending our message effectively into the marketplace to generate awareness

will help us raise more money to support vital hearing research. A lot of people aren't aware of the foundation and the good work we do, so a big priority will be

broadening our appeal, our image and our name to secure more corporate, foundation and individual gifts.”

Tallman is married to Connie, a director of guidance at a girls’ school in Milford, Conn. They have a son, Matthew, who lives in Los Angeles and is married with an 18-month-old daughter named Megan. Tallman’s daughter Sarah has her own business in New York as a decorator, floral designer and fragrance developer.

After playing as a defensive halfback for the Villanova University football team, Tallman went to Army officer candidate school, followed by parachute jump school and special warfare training. He became a Green Beret and served for three years in Germany in the late 1960s. An avid runner for 30 years, knee problems have forced him more recently to take up golf and walking his Rottweiler to stay in shape.

But he enjoys sports of all types. And if you press him, Tallman will admit that, deep down, he’s most of all a Yankees and Giants fan.

### Noteworthy

DRF has been named recipient of the **Todd M. Bader Research Grant**, which is generously provided by **The Barbara Epstein Foundation**. This new scientific initiative will provide direct support for advanced research programs in hearing loss. DRF is thrilled to have a partner as dedicated as the Barbara Epstein

Foundation in our efforts to remain at the cutting edge of this critical work. DRF thanks The Barbara Epstein Foundation for their kindness, and looks forward to sharing the results of the work that they are helping to make possible in future issues of this publication.



**Carey D. Balaban, Ph.D.**

Photo courtesy of Carey D. Balaban

the Department of Defense and Veterans Administration.



**Debra Tucci, M.D.**

Photo courtesy of Debra Tucci

**Carey D. Balaban, Ph.D.**, professor of otolaryngology at the University of Pittsburgh, was elected a member of the DRF Council of Scientific Trustees in December 2009. Balaban will assist in strategic planning and advocacy for the DRF scientific agenda, including efforts relevant to

Congratulations to DRF Council of Scientific Trustees member **Debra Tucci, M.D.** who was recently elected president-elect of the Association for Research in Otolaryngology (ARO). Tucci is a

professor of surgery in the Division of Otolaryngology – Head and Neck Surgery at Duke University Medical Center. A former DRF grantee, her research interests have included the study of central auditory system development and changes in auditory anatomy and function following conductive hearing loss, as well as clinical otology and neurotology.

Tucci serves on the editorial board and board of directors of the journal *Otology & Neurotology*. She is an elected fellow of the Triological Society, the American Otological Society, the American Neurotology Society, the American Academy of Otolaryngology – Head and Neck Surgery and the American College of Surgeons, and is past president of the American Auditory Society. She has served the American Board of Otolaryngology as an oral board examiner, most recently as a senior examiner.

For more information on ARO, visit [www.aro.org](http://www.aro.org). ■

# eBay Community Gives Record \$50 Million to Nonprofits in 2009

In a tough economic year that forced decreases in consumer spending globally, eBay buyers and sellers nonetheless rallied to raise a record \$50 million for U.S. and U.K. nonprofit organizations. eBay Giving Works, eBay’s marquee online fundraising program that allows individuals to donate while using eBay, has enabled users to contribute more than \$162 million to their favorite causes since 2003. The program has provided a new online fundraising channel to more than 21,000 organizations, including Deafness Research Foundation.

Sellers have been able to use the program to donate thousands to causes they believe in, like Irene Goodman has done for Deafness Research Foundation (see p.29).

### How it works:

eBay Giving Works enables eBay users to support their favorite causes whenever they buy and sell. Today the program offers five easy ways to make a difference:

- **Community Selling:** Any seller can donate part of their sale price to a nonprofit. The seller decides

which organization to support and how much to give (10 to 100 percent), and gets a tax deduction for their gift.

- Direct Selling: Nonprofits can sell their own items on eBay to raise funds. eBay waives most basic selling fees for nonprofits, making Direct Selling practically free.
- Shop eBay Giving Works: Every item posted by a Community or Direct Seller bears the eBay Giving Works blue and yellow charity ribbon, so it's easy for buyers to shop for items that support causes important to them.
- Give at Checkout: 1.5 million eBay shoppers each day are invited to add a donation on top of their eBay purchase, when they pay via PayPal. Give at Checkout has raised nearly \$5 million in its first 12 months.
- Donate Now: eBay and PayPal users who discover an eBay Giving Works organization they care about can give as little as one dollar right away without buying or selling.

### Fast facts about eBay Giving Works:

- Each minute, more than \$91 is raised for charities on eBay
- Eight nonprofits in the U.S. have raised more than \$1 million with eBay Giving Works
- The most money raised for charity from a single listing on eBay was \$2.1 million in 2008, for a power lunch with Warren Buffett, benefiting the Glide Foundation. The same auction in 2009 went for \$1.68 million
- Kim Kardashian, a top-rated eBay seller and avid eBay Giving Works supporter, has raised more than \$47,700 for charity through the sale of her own clothing, including \$26,000 in 2009 alone
- In November and December of 2009, eBay matched \$230,000 in funds that were committed via Give at Checkout.

If you sell on eBay, please consider contributing to the Deafness Research Foundation through eBay's Giving Works program. ■

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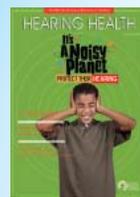
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# Bidding for a Brighter Future

BY DEVORAH FOX, STAFF WRITER

For Irene Goodman, having her five-year-old son, Rob, develop mild hearing loss was hard enough. Fifteen years later, when Rob began to experience vision loss as well, it was “the shock of our lives,” she says.

The diagnosis was a genetic disorder, Usher syndrome, which resulted in the visual impairment retinitis pigmentosa, combined with hearing loss due to a problem in the cochlea. Vision loss advances as a person ages, often leading to legal blindness. The severity of the hearing loss ranges from mild to profound.

The dual impairment of two major senses and progressive worsening of the condition presents an overwhelming challenge to a person with Usher syndrome. As dire as the prognosis appeared, Irene said, “No, we do not accept this, that there isn’t anything that can be done.” When Rob’s hearing loss was first discovered, the Goodmans were told that their hope would be found in technology: Better hearing aids could ameliorate his hearing loss, but it was unlikely that there would be a medical cure for it. However, Irene points out, now there are cochlear implants, something that no one imagined when Rob was a child. Irene is further encouraged by research, such as that of Stanford University’s Stefan Heller, Ph.D. A former Deafness Research Foundation (DRF) grantee and member of DRF’s Council of Scientific Trustees, Heller and his colleagues have shown that primitive stem cells can be coaxed to grow into mature hair cells. Eventually such stem cells may be implantable into the inner ears of deaf people to restore hearing. Heller envisions that substantial progress in this direction will be made in the next decades or, as Irene says, “within Rob’s lifetime, if not mine.”

Strides are being made in researching genetic vision loss, too. Irene is cheered by a gene therapy clinical trial that researchers plan to launch this year, and another treatment that has just passed clinical trials.

As reassuring as these developments are, the Goodmans are not content simply to sit idly by and wait for a cure. Irene recognized that this kind of research costs a lot of money. Thus was born “Irene’s eBay auction.”

A successful and accomplished literary agent for the past 25 years, Irene is sought after by authors seeking

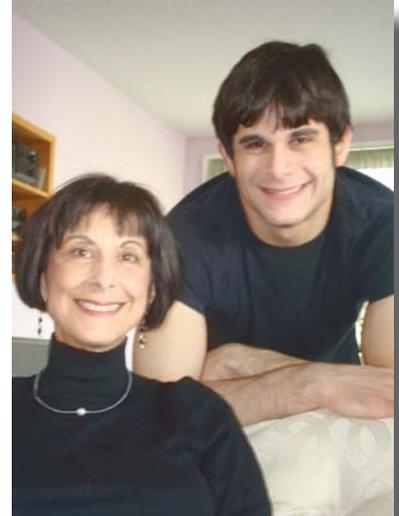
access to a publisher. When she attends writers’ conferences, she is often asked to donate a manuscript review that can be auctioned off to raise money to offset conference expenses. So Irene decided to take the manuscript-review auction idea and use it to raise funds for hearing and blindness research.

In December 2009, Irene auctioned off professional manuscript reviews using the Internet

auction site eBay.com, with the proceeds going directly to DRF and the Foundation Fighting Blindness. News of the upcoming auction spread throughout the writing community via Web sites, blogs and Twitter alerts. eBay policies do not allow for more than one winning bidder in each auction, so Irene conducted 25 separate week-long auctions. When it was over, she had raised \$15,000. “That’s just the tip of the iceberg,” she says. Thrilled with the success of the auctions, she plans to repeat them monthly and has added a third to benefit Doctors Without Borders in their efforts to provide aid to victims of the recent catastrophic earthquake in Haiti.

Meanwhile, the Goodmans cope with Rob’s condition. Her son lives in the moment, Irene says, doing the best he can. “We don’t dwell on a doomsday future,” she says, outlining the Goodmans’ two-part plan. Part 1 is to cope and make the best of it. Part 2 is to work for a brighter future.

For more information about Irene Goodman’s manuscript-review eBay auction, visit [www.irenegoodman.com/ebay.php](http://www.irenegoodman.com/ebay.php). ■



**Irene Goodman and her son, Rob.**  
Photo courtesy of Irene Goodman

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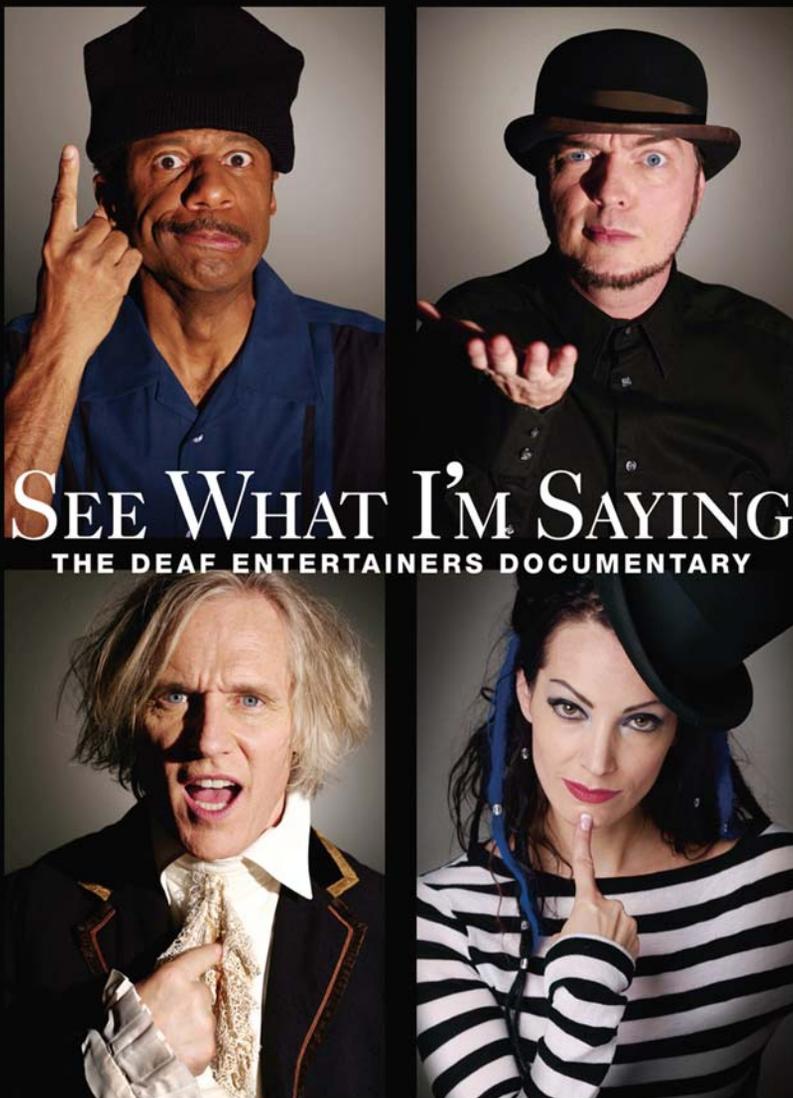
Learn more about Irene Goodman and “The Strength of Convictions.”  
Log on to [www.hearinghealthmag.com](http://www.hearinghealthmag.com)

# See What I'm Saying

## Pioneering Documentary Features Deaf Entertainers

BY ELIZABETH THOMPSON

"A unique and powerful film."  
-- Scott Bowles, USA Today



A film by Hilari Scarl

**W**hat do a comedian, a singer, a drummer and an actor have in common? First, they are all featured in the new movie "See What I'm Saying." Second, these performers are deaf.

"These are not deaf artists; they are artists that just happen to be deaf," says Hilari Scarl, the documentary's director and producer. The film takes viewers backstage, behind the bright lights, for an intimate look at what life is really like for these four performers.

Internationally known and loved C.J. Jones presents his comedy show to a hearing audience, but for three nights in a row, only a few people show up. Rock singer T.L. Forsberg polishes her sign language, uses computers to check her pitch and wonders if she is deaf enough to fit in with others in the deaf community. Bob Hiltermann's band, Beethoven's Nightmare, a deaf rock band, is a surprise and delight. And actor Robert DeMayo, who teaches once a year at the renowned Juilliard School in New York, becomes homeless but not hopeless.

Performing is not easy for anyone, but combining a gift for entertaining with hearing loss is a unique challenge which the documentary explores. Additionally, the film makes history as the first open-captioned film to run in mainstream theaters, fulfilling a long-sought-after dream to bridge a major gap between the hearing and deaf worlds.

Scarl was one of a small number of aspiring filmmakers chosen by Steven Spielberg in 2007 to appear on his reality TV show, "On the Lot." "I asked everyone who was going to vote for me to send me \$20 to make this documentary," Scarl says. With the \$8,000 she raised, filming began. Investors came on board during production and post-production, with further funding coming via a grant from the Arnold Glassman Fund and sponsorship from Microsoft Corporation.

Challenges appeared at nearly every turn, and as Scarl followed the drummer, singer, comedian

and actor, she ended up filming more than 50 deaf entertainers in more than 12 cities in the U.S. and overseas. “Situations kept arising, keeping us scrambling and booking two and sometimes three different crews at one time,” Scarl said. “But the perks of filming in sign language were unique as well. I could hold interviews in noisy places.”

The interpreters also faced unique challenges during production. “Three different interpreters rotated in and out of the editing bay,” Scarl says, “laying down temporary audio voice-over for my hearing editor as I transcribed more than 700 pages of 300 hours of footage.” It took six months of 80-hour work weeks to complete production of four complete storylines and another three months to “weave the story together.”

Production saw another nine months of test screenings, focus groups with audience discussions and full-time editing to polish the final product.

Scarl, who has neither deaf relatives nor hearing loss herself, had no compelling motives for learning American Sign Language until she saw a performance at the New York Deaf Theatre of “night, Mother.”

“The performance came to life with a visceral impact that was visually and emotionally powerful, translated simultaneously by unseen voicing actors. I was hooked,” she said. She took sign language classes and, since her roommate was deaf, put what she

learned to good use. Then she took a leap and auditioned for the National Theatre of the Deaf and was cast as a voicing actor. During the play’s yearlong tour, Scarl immersed herself in deaf culture and met DeMayo.

“I was a minority on tour with 17 deaf actors who lived in a world with a unique bond I couldn’t share,” Scarl says. After a year of building trust and witnessing the chasm between deaf and hearing people, Scarl moved to Los Angeles, eager for others to come to know these talented actors as well.

Scarl wants to create more opportunities for deaf performers based on their talent, not hearing loss, and wants directors to realize they can cast actors who are deaf in roles typically filled by hearing people. “I hope you see what they are saying,” says Scarl.

“See What I’m Saying” opened a 25-city tour at the Egyptian Theater in Hollywood on March 18, 2010. More screenings are scheduled throughout the year. For tour updates, please visit [www.seewhatimsayingmovie.com](http://www.seewhatimsayingmovie.com). ■

**Elizabeth Thompson** is a columnist for Suburban News Publications and lives in Grove City, Ohio. Her book, *Day by Day, the Chronicles of a Hard of Hearing Reporter* was published in June 2008 by Gallaudet University Press.

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# Just a Song at Twilight

## A New Play about Growing Up in a Deaf Household

BY WILLARD MANUS, PLAYWRIGHT

I was about two or three when I first realized that my mother was deaf. It was when the doorbell rang and she didn’t respond. I ran to her, yelling, “The door, the door!” There were many other cries like that as I grew older: “The phone, the phone!” “The egg lady’s outside, asking for you.” “Aunt Mag called and wants to know when you want to meet tomorrow.” And so on.

All through childhood I was my mother’s ears, a responsibility that seemed quite natural and unremarkable at the time. It was a fact of life, like having to go to school or sharing a small bedroom with my Uncle Louie.

It was the mid-1930s. The place: a three-and-a-half-room apartment in the Pelham Parkway section of the Bronx. My mother, Henriette, was in her early 30s. She had been born with good hearing, as had her older sister, Marion – my Aunt Mag. Both of them, however, were stricken with otosclerosis in their early 20s. The disease left them with almost no hearing in one ear and only a little in the other. Of the two, Marion had the better hearing. In

those pre-hearing aid days, they compensated for their hearing loss by lip-reading their way through life.

This resulted in another thing I took for granted as a kid: that I should always face my mother directly and manipulate my face and mouth as emphatically as I could so that she could “read” what I was saying. Much later I came to realize that my mother had been bullied into lip-reading by her sister. Mother, backed up by my Uncle Louie, had favored studying sign-language, if only because it was indeed a complete language, one which would have provided them with the tools to communicate fully – not only with each other, but with the world at large.

Aunt Mag shot this argument down, on the grounds that American Sign Language, with its gestures and grimaces, was a dead giveaway that you were deaf – a handicapped and inferior person, according to her.

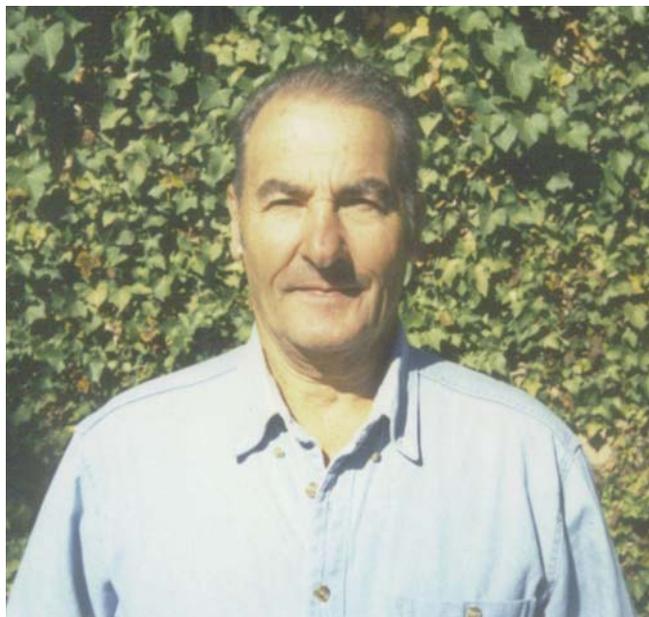
This conflict lies at the heart of my new play, “Just a Song at Twilight,” which closed recently in Hollywood at the Write Act Repertory Theatre after a world-premiere

run of seven weeks. The play is personal and autobiographical. I waited to write it until most of the key characters – my mother and father, Uncle Louie, Aunt Mag and her husband Carl – were safely dead. With them not around to take issue with – or possibly feel hurt by – the way I portrayed them, I had the freedom and license to write about them as honestly and fully as I could.

Writing “Just a Song at Twilight” was a cathartic and rewarding experience. Not only was I finally able to tell a long-held, deeply-felt story, the response from audiences and critics was heartwarming. *The Toluca Times*, for example, called the play “a thoughtful, compassionate look at hearing impairment and changing family dynamics.” Even more meaningful, to me, was the comment of a deaf person who attended the opening-night performance. He sat in the front row, following the action by virtue of his remarkable skill as a lip-reader. After the curtain came down, he sought me out and, with tears in his eyes, thanked me for the play. “It was touching, true and beautiful,” he said. “I’m coming back to see it again.”

My only regret is that the production’s tight budget did not allow for signers to be hired to interpret the show for the larger deaf community in Los Angeles. Not being able to reach out to them was disappointing, but perhaps that will be remedied the next time the play is produced. In the meantime, I will have to be satisfied with the knowledge that I have brought my mother and aunt to life again as vibrantly and faithfully as I could, and that I have paid tribute to those courageous and remarkable women – and to

every other person with hearing loss who has walked in their shoes. ■



**Willard Manus** is not only a much-produced playwright but a journalist and novelist as well. His best-known books are *This Way to Paradise – Dancing on the Tables*, a memoir of the 35 years he lived in the Greek islands, and *Mott the Hoople*, the novel from which the 1970s British rock band took its name. Manus publishes *Lively Arts*, an Internet cultural magazine at [www.lively-arts.com](http://www.lively-arts.com).

## New Releases

### ***The Artificial Ear: Cochlear Implants and the Culture of Deafness*** by Stuart Blume

©2010 Rutgers University Press, Paperback \$29.95, 240 pp., ISBN 9780813546605

Through an analysis of scientific and clinical literature, *The Artificial Ear* reconstructs the history of cochlear implants from their conceptual origins in the 1930s, to the first attempt at implantation in Paris in the 1950s, to their widespread clinical use today. Part ethnography and part historical study, *The Artificial Ear* is based on interviews with researchers who were pivotal in the early development and implementation of implant technology. Recommended for hearing healthcare professionals.

### ***Advanced Sign Language Vocabulary: Raising Expectations, A Resource Text for Educators, Interpreters, Parents, and Sign Language Instructors*** by Janet Renee Coleman and Elizabeth England Wolf

©2009 Charles C. Thomas, Publisher, Ltd. Spiral bound, \$39.95, 208 pp. ISBN 9780398079017

Don't look for Apple, Ball or Cat in this sign language dictionary. With an emphasis on courtroom, medical and educational vocabularies, one will find words like Alcoholic, Bibliography and Circumcise in this simply illustrated volume. The table of contents reads like a high school student's class schedule, including chapters on English, social studies, science, mathematics, health and more. A good resource for parents whose ASL vocabulary has been outsmarted by their high school-aged signing children. ■

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# Auditory Processing Disorders in Children

SAMUEL R. ATCHERSON, PH.D.

**W**hat is it about hearing that enables us to determine if the lyrics to a Creedence Clearwater Revival song are: “There’s a bad moon on the rise” or “There’s a bathroom on the right”? How is it possible to have a conversation on a cell phone while riding the noisy MARTA train in downtown Atlanta? How can someone know from which direction a speeding car is approaching in the midst of traffic noise? How can we tell if someone is being serious or just joking when they maintain a straight face? All of these scenarios demonstrate that hearing is not just about soft or loud sounds. It is auditory processing within the brain that makes it possible for us to make sense of the world of sound in which we live – and for children, who are trying to figure out everything all at once, auditory processing is especially important.

Auditory processing has been defined loosely as “what we do with what we hear.” Intuitively, hearing involves input to the brain, but the brain must then take what it hears and process it into meaningful units of information. Given the many different ways in which auditory behaviors can be observed, it often helps to think of auditory processing as a set of abilities or skills that are rooted in the neurobiology of the brain. Some of the “real-life” abilities or skills include: knowing from which direction a sound is coming (localization); telling the difference between two keys on a piano (discrimination); following a melody (ordering); understanding someone in a noisy restaurant (competing sounds); or even understanding someone who does not speak clearly (degraded sounds). None of these skills take place in isolation. A deficiency in one or more of the auditory processing abilities or skills mentioned above might indicate an auditory processing disorder (APD). Also, auditory processing is influenced by other higher-order processes in the brain including language, attention and memory.

When language, attention and memory are typical, a deficiency in one or more auditory processing skills might indicate an auditory processing disorder. Diagnosing APD is difficult, however, when a child may also have a language, learning or attention disorder. It is not easy to differentiate among these disorders, particularly when they may share many of the same behavioral symptoms that affect the ability to listen to or comprehend speech.

Unfortunately, APD is highly variable and diverse from person to person and there simply is not a one-size-fits-all approach to diagnosis, management or treatment. In other words, there is a continuum of APDs, where different profiles, or categories, of the disorder can be expected. Because the reasons for APD can vary so widely, recent discussions among experts in audiology suggest that a multidisciplinary approach is necessary for diagnosing APD. An audiologist may be the one to conduct a comprehensive hearing evaluation, complete with a battery of auditory processing tests aimed at revealing auditory processing deficits; however, the audiologist will only make the diagnosis of APD on the basis of related information from other professionals. School and clinical psychologists would be able to provide information about cognitive, attention and social interactions, as well as measures of verbal and nonverbal intelligence. Teachers and parents could provide information about academic performance and general auditory/listening skills at home and school. A physician would be able to determine if there might be any underlying medical or anatomical concerns that might lead to symptoms of deficient auditory processing. A school speech-language pathologist would be able to rule out a language or learning problem, or infer that auditory deficits are leading to the language or learning deficit. In many cases, it will be the school speech-language pathologist who administers auditory training for APD or auditory-based training to try to improve other weak language or learning areas.

Before any child is tested for APD, some experts recommend screening for APD. Whereas there is no universally accepted screening method, a variety of published and commercialized tools does exist. And screening for APD does not have to be conducted by an audiologist. Some tools that have become available recently include the Differential Screening Test for Processing (DSTP) and Auditory Processing Abilities Test (APAT). These tools, along with recommendations of a multidisciplinary team, may determine whether comprehensive testing is needed or not.

When warranted, comprehensive testing includes a battery of tests. Most clinics use behavioral tests, in which the child listens to certain sounds and then performs a task in response to the sounds. For example, there are dichotic listening tests, in which the child may hear one or more words in each ear, but the words presented



to both ears are different. Either the child is asked to name every word regardless of which ear heard the words, or he must attend to one ear and ignore the other and name only the words in the attended ear. Some tests involve speech sounds or sentences that have been filtered or presented in a background of noise. Another group of tests examines how well the child can organize simple tones either by pitch or by how long or short the tones are. Still other tests provide insight into a child's ability to put individual speech sounds into complete words and reveal the duration of a child's attention span while performing an auditory task. For most tests, the child must be at least seven or eight years old. This is because typically-developing children vary so much in their verbal and motor skills below age seven. Thus, many tests simply lack normative data for children below age seven. Another critical issue is whether or not younger children can understand the instructions and perform the tasks necessary to obtain reliable results. Finally, there are also the issues of the child's attention, motivation and energy levels.

In the last few years, several clinics around the country have considered adding auditory evoked potential (AEP) test measures to their APD test battery. AEP tests provide information about how the auditory nervous system is functioning through the analysis of recorded brainwaves. Electrodes are placed on the skin surface of the child's head and ears and the child will nap, sit quietly, watch a movie or perform a task. The recorded brainwaves then can be compared to the brainwaves of other children in the same age range, or they may be compared for differences between ears or hemispheres of the brain. Any differences found may support the findings of the behavioral tests or may identify subtle abnormalities not found in behavioral tests. If APD is diagnosed and an auditory training program is implemented, the brainwaves may be recorded later to determine if there were improvements.

If APD is diagnosed, the multidisciplinary team determines how to treat and manage the disorder. While there are many approaches to helping children with auditory processing difficulties, it should not be assumed that all approaches will work for every child. There are three generally accepted approaches that may be implemented alone or in combination with one another: environmental modifications, compensatory strategies and auditory training.

Environmental modifications generally involve making a change within the educational setting to improve access to sound. Many

classrooms are noisy simply because they are full of active children whose voices bounce off linoleum floors and concrete walls. In order for a child to understand the teacher (or other students in the classroom), he needs to be able to hear the teacher's voice at a louder level than the surrounding background noise. This could be accomplished by reducing noise, making the teacher's voice louder or a combination of both. Simply adding carpeting and drapery to a classroom can go a long way in helping to reduce noise because the soft material will absorb sound rather than reflect it. There is only so much that can be done about noise, though, which is why it is also a good idea to enhance the teacher's voice using an amplification system involving a microphone and speakers. Commonly referred to as a soundfield system, this modification benefits everyone in the class. In fact, research has indicated that amplification in the classroom is helpful for children even up to 15 years of age. When it is cost-prohibitive to provide a soundfield system in every classroom, a personal amplification system (assistive listening device) that the child can take from class to class is also helpful. The teacher still wears a microphone but the enhanced sound is delivered directly to the ears of the student with APD, using a personal device. Recently, researchers found that ear-level assistive listening devices were beneficial to children with APD. A hearing health-care professional can be consulted for recommendations about a soundfield or personal device.

Compensatory strategies generally involve helping the child cope with APD by enhancing other cognitive skills, such as language and social skills. For example, children with APD could be taught to use their language skills to fill in the blanks when they hear partial or degraded speech. Compensatory strategies that work are bound to help improve auditory behaviors even when the auditory system, or auditory processes themselves, have not improved.

Finally, auditory training generally involves informal and formal methods that aim to positively influence the structure and function of certain auditory processes within the brain. Indeed, the brain is constantly developing and changing (a process known as "plasticity"), and the child with APD might benefit from some type of auditory training. Some informal methods that most children could benefit from include playing games like Marco Polo, MadGab, Simon or Bop It; playing rhyming games or listening-in-noise games and musical chairs; tackling verbal math problems; reciting phone numbers; and finding key words to a spoken passage or story.

In summary, APD encompasses one or more auditory processing abilities or skills. However, because APD is often difficult to differentiate from language disorders, learning disorders and attention disorders, diagnosis requires a multidisciplinary approach. When a diagnosis of APD is made, the multidisciplinary team should develop an intervention strategy specific to the auditory processing deficit, being aware that not all intervention approaches will help all children with APD, and keeping in mind that the strategy must be dynamic to meet the child's needs. ■

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# Music is in the Air

BY NANNETTE NICHOLSON, PH.D., AND DAWN O'BRIEN TAYLOR, M.A., M.Ed.

For years, hearing aids have been designed primarily for amplifying live speech. However, sound can also come via many other sources, including MP3 players, cell phones, computers, TVs and the Internet. Until recently, receiving these other signals has been an afterthought in hearing device design. Finally, hearing aid and cochlear implant manufacturers are tuning in to your needs.

**Oticon's Epoq** hearing aid has a wireless magnetic transmitter/receiver that enables two hearing devices to act as one and to communicate with a body-worn

gateway device called **Streamer**. Streamer uses Bluetooth® wireless technology to pump audio directly into both hearing devices from external sound sources. For example, Epoq can function as a wireless MP3 player or an iPod headset with clean, clear sound in both ears for a truly enjoyable experience. Learn more at [www.OticonUSA.com](http://www.OticonUSA.com), by following the Consumers/Products links to Epoq and Streamer.

When Doc Childre released "Heart Zones," a CD of music specifically designed to reduce stress, the album spent 50 consecutive weeks on Billboard's Adult Alternative chart and introduced a new genre known as "designer music." Created with the intention of affecting mood and emotion, "Heart Zones" was said to induce calmness and clarity in the listener. Recent research points to other positive effects of

music, causing hearing aid manufacturer **Widex®** to take note. Zen, a Widex-only patented program, uses fractal technology to generate soothing harmonic tones and chimes which can aid in relaxation. Zen is available on **Mind™440** and **Passion™440** models, offering hearing aid users a meditative break on demand.

**Unitron™** is blazing a trail with **myMusic™** technology and the introduction of **Indigo™**. myMusic enables hearing professionals to shape the frequency response of the hearing aid based on a person's listening preferences and



**Advanced Bionics' Harmony cochlear implant processor.**

Photo courtesy of [www.advancedbionics.com](http://www.advancedbionics.com)



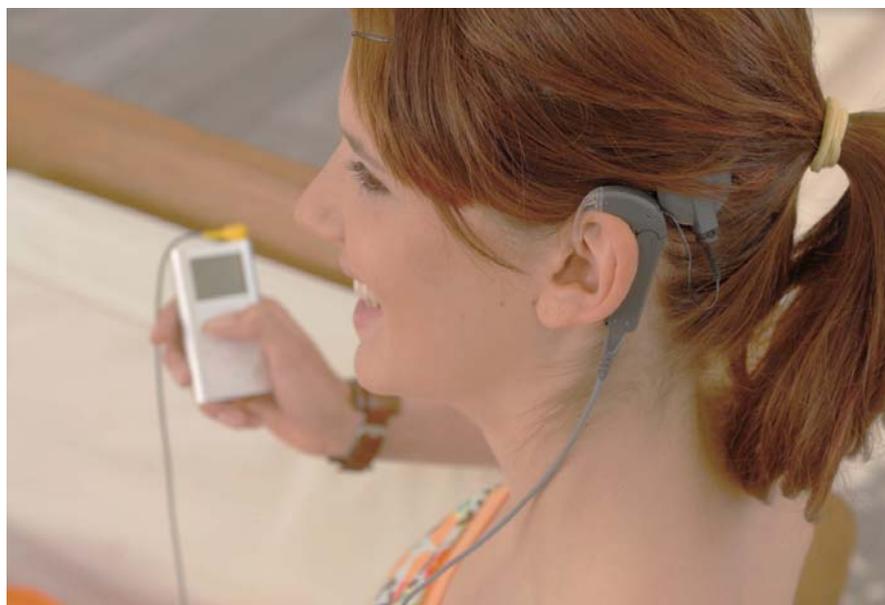
**A user of MED-EL's Maestro system enjoys listening to her MP3 player.**

Photo courtesy of www.medel.com

favorite music genres: rock/pop, classical, jazz/blues or general music listening.

**Phonak** offers the **SmartLink+** dynamic FM transmitter as the gateway to connectivity. The SmartLink+ features Bluetooth wireless technology for simple cellphone and MP3 player use, and audio input for wireless TV and other audio enjoyment. The SmartLink+ acts as the hearing instrument's remote control. Learn more at [www.phonak.com](http://www.phonak.com).

Researchers working with **Advanced Bionics** have been studying the impact of a new sound processing option in their **Harmony**® cochlear implant processors. The T-Mic® on the sound processor is fully compatible with ear buds like those that come with MP3 players. Advanced Bionics' newest sound processing option has an increased number of spectral bands with AutoSound™, a feature that continually adjusts the volume as you listen. In addition, their wide input dynamic range provides for hearing musical instruments and lyrics with better clarity ([www.advancedbionics.com/CMS/Your-Journey-to-Hearing/Best-for-Music.aspx](http://www.advancedbionics.com/CMS/Your-Journey-to-Hearing/Best-for-Music.aspx)). With a number of resources for developing rhythm and pitch, Advanced Bionics' **Listening Room** is the perfect accompaniment for new cochlear implant users. Activities include recognition of music styles, famous tunes, musical instruments, music listening practice and music guides. Visit [www.hearingjourney.com](http://www.hearingjourney.com).



transmit a wide range of tones, allowing users to better appreciate the richness and complexity of music. SoundScape is MED-EL's rehabilitation Web site, offering interactive listening and age-appropriate activities for toddlers through adults ([www.medel.com/US/Rehabilitation/](http://www.medel.com/US/Rehabilitation/)

[sound-scape.php](http://www.medel.com/US/Rehabilitation/sound-scape.php)) For the serious musician, there's Mu S.I.C., a tool to assess the listener's skill with pitch, rhythm and melody, as well as distinguishing chords, instruments, dissonance and emotional perception. ([www.medel.com/US/Rehabilitation/Adult-Assessment.php](http://www.medel.com/US/Rehabilitation/Adult-Assessment.php)).



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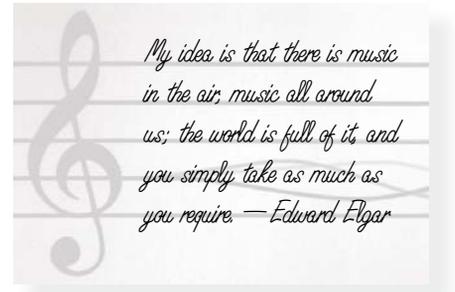
### Cochlear's Nucleus 5 system

Photo courtesy of [www.cochlear.co.uk](http://www.cochlear.co.uk)

sound from cell or cordless phones directly into the sound processor. In addition, the auto telecoil can automatically detect sound from a Bluetooth headset when it is worn on the ear (<http://products.cochlearamericas.com/cochlear-implants/nucleus-5-system/getting-connected>). Cochlear recently introduced the world's first programmable sound processor designed for bone conduction: The **Baha® BP100** has the same easy access and connectivity as Cochlear's other implant devices (<http://bp100.cochlear.com/us/consumers>). ■

Music Notes, a resource for therapists and rehabilitation professionals, offers activities for young listeners, music focus groups and music-making ([www.medel.com/US/Rehabilitation/Adult-Habilitation.php](http://www.medel.com/US/Rehabilitation/Adult-Habilitation.php)).

The **Cochlear™ Nucleus® 5** sound processor, featuring a dedicated MUSIC Power Program, offers both direct and wireless access to MP3 players, stereos, computers, televisions and gaming systems, and is compatible with many FM systems. Personal Audio Cables (PACs) are used for battery-operated audio devices that have a headphone jack. The T-Link is designed for use with the CI's telecoil, to direct

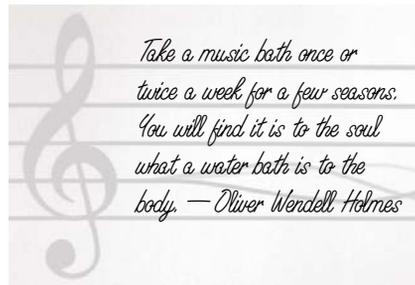


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The authors would like to express their appreciation to **Ashley DeLaune**, an audiology graduate student at the University of Arkansas for Medical Sciences, for her assistance with this article.



# Musicians, Listen Up!

Here's an irony: Hearing is basic to being able to make and appreciate music, but that same music cranked too loud for too long can damage hearing and impede appreciation of music! Don't be a victim of irony! Gear up before you chime in to ensure a long and happy future of hearing the music you make and love. Here are some tools to help.

In-ear monitors (IEMs) are devices used by musicians, sound engineers and audiophiles to listen to music or to hear a custom-crafted mix of vocals and stage instruments for live performance or studio mixing. They are often custom fitted and provide a high level of noise reduction from ambient sounds. **Westone®**

([www.westone.com](http://www.westone.com)) was a pioneer in IEM development as well as in custom ear pieces for monitors. They have worked with hundreds of famous musicians. **Microsonic Music™** ([www.microsonicmusic.com](http://www.microsonicmusic.com)) is another full-service earmold laboratory that has state-of-the-art IEMs. Westone, Microsonic and **Starkey** ([www.trytunz.com](http://www.trytunz.com)) make custom ear pieces to fit MP3s, gaming devices, computers and more. We're not talking about fancy, high-priced earbuds or headphones; check out these manufacturers' Web sites to learn more about the listening and hearing preservation advantages of a custom fit.

In tandem with IEMs, ear filters





*In music one must think  
with the heart and feel with  
the brain. — George Szell*

it 25 dB to 75 dB. According to the Occupational Safety and Health Administration, these are safe levels for eight hours of continuous exposure. These filters can be worn with universal ear tips or can be custom fit. You must see a hearing healthcare professional to get ear impressions taken for all custom products.

If you have already sustained a hearing loss, consider joining the **Association of Adult Musicians with Hearing Loss** ([www.aamhl.org](http://www.aamhl.org)). Or for treatment of your specific music-induced hearing loss, check out the **Musicians' Clinics of Canada**, specializing in musicians' hearing ([www.musiciansclinics.com](http://www.musiciansclinics.com)). An informative article on hearing considerations for six different types of musicians by the clinic's Marshall Chasin, Au.D., can be downloaded at [www.audiology.org/news/interviews/Documents/Chasin6Musicians.pdf](http://www.audiology.org/news/interviews/Documents/Chasin6Musicians.pdf).



*Great music is that which  
penetrates the ear with  
facility and leaves the  
memory with difficulty.  
Magical music never leaves  
the memory. — Sir Thomas  
Beecham*

org/news/interviews/Documents/Chasin6Musicians.pdf.

Music is one of many types of sound that can be toxic to hearing. To learn more about noise-induced hearing loss and the National Institute of Health's "It's a Noisy Planet" campaign, in cooperation with Deafness Research Foundation, visit [www.dr.org/NoisyPlanet](http://www.dr.org/NoisyPlanet). ■

specifically designed to help protect musicians' hearing can be used. Two popular filters from **Etymotic Research** ([www.etymotic.com](http://www.etymotic.com)) are the ER15 and ER25. The ER15 filter reduces sound equally across frequencies by 15 decibels (dB), meaning that you still hear music accurately, but at a safer level. For example, the ER15 would reduce a sustained sound level of 100 dB to 85 dB, and the ER 25 would reduce

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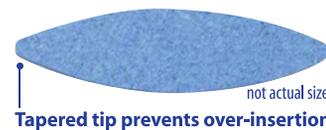


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Side view image of AfterSwim™

**DRY**  
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# *Fast-Paced* Canadian Race Car Driver Sets Sights on NASCAR

**Race car driver Kris Martin is  
rarin' to go.**

Photos by Michael Scordia

BY JULI A. GINN, STAFF WRITER

If the name Kris Martin sounds familiar, it could be you're thinking of the Kawasaki motorcycle racer from England. Or perhaps you know of the popular singing Brit from Coldplay, also named Chris Martin. But there's another Kris Martin who is up and coming with amazing velocity – and we mean that quite literally. Canadian race car driver Kris Martin has the pedal to the metal to become a racing legend – for his racing skill and for being the first North American race car driver born profoundly deaf.

Born to Kim and Mike Martin in Burlington, Ontario, where he still lives, Martin comes from a racing family. “My cousin Ryan Coniam raced dirt track and is actually now working for the Furniture Row NASCAR team and is the crew chief for Regan Smith,” Martin states. His grandfather, Doug Syer, and uncle, Warren Coniam, were both inducted into the Canadian Racing Hall of Fame. Martin chose to follow their lead at the age of 10.

“Coming from a racing family, it definitely adds a little pressure, but I think of it as a positive,” he says. “My grandfather and uncle were great racers and have a lot of knowledge they have given to me. I plan on following in their footsteps. My grandfather is a role model for me and a great coach. My ultimate goal is to one day

race NASCAR with the big boys. I will be there one day; I just need that opportunity.”

Martin received a cochlear implant (CI) at age eight and developed hearing and speech as a result. Nonetheless, Martin has to rely more on his instincts and tactile senses than the sound of the car and the voice of his spotters when racing. “Believe it or not, having to learn to feel the car instead of hear it has made me the driver I am today.”

At age 18, Martin was introduced to additional technology that has thrown him into high gear. On the recommendation of a teacher, Martin obtained a Phonak FM SmartLink+ system. The device hooks into his Cochlear™ CI and the race radio in the car, taking the place of ear buds that hearing drivers use. “I use the FM system in the car so I can hear my spotters and communicate with my team. Having the Phonak system has helped me become an even better driver.”

Now, at age 23, Martin has met with success on both the Canadian and American racetracks. “I raced a NASCAR Whelen All-American Series in 2008 and finished seventh of 28 cars,” he reports.

Off the track, Martin is in demand as a speaker and advocate for people with hearing loss. Teaming up with Canadian organizations such as London Health Sciences Centre (LHSC), Canadian

Hard of Hearing Association (CHHA) and VOICE for Hearing Impaired Children, Martin uses his racing success to give back to the hearing impaired community. “I believe it is very important that these kids know they can do anything they want. I always say, ‘Follow your heart and follow your passion and you can do whatever you want to do.’”

Currently, Martin is assisting LHSC in fundraising for their CI program. According to the organization’s Web site ([www.lhsc.on.ca](http://www.lhsc.on.ca)), LHSC “is one of only five hospitals in Ontario that offers a CI program and the only one that provides implants to both adults and children.” LHSC is also where Martin was implanted. “Teaming up with LHSC was perfect because they have done so much for me and they are an amazing hospital,” Martin says.

His involvement with VOICE, which mainstreams children with hearing loss in education, was a family mission. “My Mom was a member of VOICE so I became involved at an early age. I started to become a spokesperson for VOICE when I started racing and it is a wonderful organization.”

Martin also eagerly participates in other opportunities to advocate for people with hearing loss, including speaking for the Deaf Action Center in Texas in 2008 and appearing this past January at the St. Thomas Sports Spectacular, a Canadian event which supports the Special Olympics. “I was honored to be a part of it. I got to sit at the celebrity table and meet some great people, and more importantly, we were there to raise money for the Ontario Special Olympics.”

Martin’s fame receives a boost in horsepower every time he gets closer to finishing first. Without sponsorship, though, his racing fame and support of people with hearing loss is in danger of wrecking before the checkered flag waves. “I tell everyone that racing is my passion. I feel at home when I am inside a race car. I feel that this is what I was born to do and I am very happy that I am getting to do it. We are hoping to find full sponsorship for the 2010 season so I can race a full season. We have been offered a ride in Canada and the U.S., but as racing goes, you need that sponsorship money. It takes roughly \$100,000 for a full season of racing, with trailer costs, damage, tires, etc.”

There’s more at stake here than a gold cup and a young man’s dream of crossing the finish line first. Martin’s participation in racing means raising awareness about hearing loss and what it does not stop a person from doing. “I would mostly like to see the sports world know more about the hearing impaired community,” Martin says.

### **Kris Martin takes a breather.**

Photo courtesy of Kris Martin

“When I raced down in North Carolina there were protests from people who did not want me to race because they thought I would wreck the field because of my hearing. After the race, it was the exact opposite and everyone was coming up to me and very excited about the way I raced. I hope that these worries disappear and everyone realizes that [hearing loss] does not inhibit us in the sports world.”

Martin says a part of his racing inspiration comes from American racing favorite Dale Earnhardt, Jr. “Dale is my favorite driver because he can flat-out drive, and even though he is the most popular driver, he handles himself properly. Also, I appreciate how much he gives back to the community and to up-and-coming racers.”

Perhaps one day, if all the cars line up perfectly for Martin, he will race with Earnhardt. Until then, Martin’s racing passion uplifts those who are like him. Equal to the ultimate goal of racing with the big boys and joining the family in the Racing Hall of Fame is Martin’s aim to help children with hearing loss. When he speaks at events where children are present, Martin hopes they are encouraged by these words: “If you follow your passion, nothing can stop you from getting what you want. Trust yourself and listen to your heart; don’t listen to any negativity from anyone around you. If you want it, you can get it, no matter your situation.”

Check out Kris Martin’s Web site at [www.krismartinracingteam.com](http://www.krismartinracingteam.com) for more information on upcoming engagements and follow him on Facebook and Twitter. Martin will also be racing at Delaware Speedway during the 2010 season. Contact him at [kris\\_martin@hotmail.com](mailto:kris_martin@hotmail.com) or his publicist at [pturkington@stratcommsolutions.ca](mailto:pturkington@stratcommsolutions.ca). ■





# MAY IS BETTER HEARING AND SPEECH MONTH

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Original, two-dimensional artwork on an 8.5" x 11" sheet of paper should be mailed to DRF at 641 Lexington Avenue, 15th Floor, NY, NY 10022-4503 and must be received by April 16, 2010.

Artwork will not be returned, and becomes the property of DRF. By submitting your artwork, you release DRF to use it in various and unlimited media, including online and print. Be sure to include your name, age, school, and the name and email address or telephone number of a parent or guardian. One entry per person.

# I Believe

BY KIM WATERS

**M**y son Jay is about to turn nine years old. Nine-year-old boys are much like Labrador puppies, with their boundless energy and enthusiasm.

Come to think of it, they kind of smell like them, too. Jay wears the same shoe size as I do now, and is almost as tall as I am. As unbelievable as his physical growth has been, his language development has been no less incredible. Just a little over five years ago, when Jay was diagnosed with hearing loss, his speech was very unclear and most of the time people looked to me to translate for him, which I would try to do in a way that was not obvious to him.

Now everyone understands every word that he says, although sometimes he uses the wrong verb tense or a word in the wrong context. Occasionally he will mispronounce a word by pronouncing it strictly according to the spelling, but I blame the English language for that. Compared to where he was when he first got hearing aids, his expressive language is nothing short of amazing. I remember so many frustrating years of speech therapy, working with him for endless hours to make the “f” sound correctly, and I was convinced at one point that adding “s” to plurals was going to be forever out of his reach. His improvement since then has made even a cynic like me reconsider miracles. He still has his little quirks, like pronouncing stomach as stom-itch but, to be honest, I let that one go because it’s just so darn cute.

Those first years of laying the foundation of language were so hard. I felt like I was constantly correcting Jay, endlessly repeating speech exercises. To this day I occasionally find myself wanting to emphasize the “s” at the end of words along with the cued speech sign. I remember that feeling of being overwhelmed, like when I realized that my four-year-old son did not know the names for everyday objects: stove, hair dryer, camera. As a writer,

I have always loved words and how the choice of one over another can completely change

the tone of a sentence. But during Jay’s preschool years, I found myself cursing the diversity of our language. Why do we have to have so many different words that all mean the same thing? Why can’t we just call something “big” and be done with it?

Back then, all new words and sentences Jay learned were triumphs, even if they weren’t cloaked in proper etiquette. What people didn’t understand was how much of an improvement “I want the truck” was to just pointing and grunting. In the South, where we live, one could just as well be raising a child to hate kittens or the elderly if he’s not taught to say “Ma’am” and “Sir” when speaking to an adult. I found I could live with people thinking I was raising a rude child because “May I’s” and “Excuse me’s” weren’t always there. Of course, we emphasize manners to Jay, but when we are constantly correcting almost everything coming out of his mouth, while simultaneously trying to encourage more conversation, we have to choose our battles. I’m happy to say that Jay is a very polite young man today – well, if you discount the fascination with flatulent humor (but I’m pretty sure that’s human nature for nine-year-old boys).

Learning to ignore the judgment of others was one of the hardest lessons for me to embrace as a parent. Jay threw more than his share of toddler tantrums. Although I realize that his difficulties communicating played a major role in his behavior, that realization did not diminish the humiliation I felt whenever there was a public meltdown. Haircuts in particular were a nightmare. I don’t know why, but Jay absolutely hated getting them. A trip to the barber usually resulted in tears on both our parts and it seemed to me that everyone else in the salon was shaking



**Jay is nine! Arriba, arriba!**

Photo courtesy of Kim Waters

their heads as if to say, “If that were *my* child...” I think those incidents were probably the hardest on my already shaky confidence as a mother.

One thing that helped me get through those times was the realization that I was not alone. During the years when I spent two hours every week in the waiting room where Jay received speech therapy, I got to know many amazing mothers and took comfort in sharing experiences. Many had children with autism and I empathized as I heard stories of embarrassing episodes in grocery stores and the unbelievably rude remarks people looking on would make. Since then I have reserved judgment whenever I see so-called “problem” children out in public – you just never know what is really going on in people’s lives. Some parents are under enough stress already without the added condemnation of bystanders.

Today I look back at those difficult times and feel a lot of pride in how far we have all come. When Jay was first diagnosed with hearing loss, I never imagined that things would work out so well for him. When I contemplate his progress, I’m reminded of a Christmas party we attended once. A jingle bell was handed to each of the children and they were told that if they heard the ringing of the bell it meant that they believed in Santa Claus. I remember my stomach clenching in knots as I looked at that tiny little ornament and prayed, “Please, please let him hear it ring,” and the immense relief I felt when he did. For days afterward I would wake up to the ringing of that bell and Jay whispering to himself, “I believe.”

So do I, Jay. So do I. ■

Contact **Kim Waters** through her blog, “A Little Less Conversation” at <http://kimwaters.wordpress.com>.



At the John Piccolo Arena in Old Bridge, N.J., are (left to right) David Reid, Tim Jones, Brian Nadolske, Josh Pauls, Jon Schwartz, Mike Wonoski and Joe Bowser.

Photo courtesy of Carter Farmer

# They Shoot! They Score!

BY SHERRY PEREZ

**W**hy would anyone want to visit all 54 of New Jersey's ice skating rinks in 54 hours? For a group of physically and developmentally disabled athletes, the motivation was to convince the Garden State's ice rink owners to allocate one hour of practice time per week to disabled hockey. "We wanted to convince rink owners that it's worth time engaging with us," said Jon Schwartz, co-founder of EveryBODY Skates New Jersey (ESNJ), which coordinated the effort. "We're self-sustaining; we pay our own way. It's just a matter of getting regular ice time."

To help change misconceptions about the disabled and the sport of hockey,

11 disabled players embarked on the marathon mission. Two of those on the Team ESNJ trek were ice hockey players Mike Wonoski and David Reid, both deaf. Twenty-one-year-old Wonoski, who was born with severe to profound hearing loss, won a gold medal as a member of the U.S. deaf ice hockey team at the 2007 Winter Deaflympics in Salt Lake City, scoring the game-winning goal against Canada. Reid is a 17-year-old high school senior who plays on the varsity hockey team for Freehold Township and is hoping to represent the U.S. at the 2011 Winter Deaflympics in Slovakia. The other nine elite and recreational athletes included U.S. Paralympians Tim Jones and Josh Pauls; U.S. National Amputee Hockey

Team team member Sgt. 1st Class (Ret.) Joseph Bowser; and players with a variety of disabilities, from autism to Down syndrome.

The skaters' journey began at the National Hockey League (NHL) store in New York City on Jan. 29, featuring a kickoff event with NHL deputy commissioner Bill Daly. They then traversed New Jersey – braving snowstorms – and concluded their whirlwind tour on Jan. 31 at the 54th and final rink: the Prudential Center in Newark, where the athletes were honored at a New Jersey Devils home game.

"It truly was an amazing and historic journey," said ESNJ co-founder Andrew Schwartz. "To see these players' faces after realizing what they accomplished, and

**Mike Wonoski, sporting an ESNJ jersey, scored the winning goal to defeat Canada and win the gold for the U.S. in the 2007 Winter Deaflympics in Salt Lake City.**

Photo courtesy of Carter Farmer



people's reaction to us, it was definitely worth all the hours and fatigue."

"We let the state of New Jersey know who we were and what we were trying to do," Wonoski said. "Getting an hour of ice helps not only us but other disabled people in the country who love the game of hockey."

Nearly 1.4 million people with disabilities, 16 percent of the state's population, call New Jersey home. That's double the state poverty rate. It's also the same number of students enrolled in New Jersey's 2,500 high schools. Additionally, there is a higher incidence of obesity and depression among the disabled in New Jersey, leading to other health issues. Physical fitness and team sports have been proven to help combat these issues.

However, ice time at New Jersey's 54 rinks is at a premium because preference is given to established travel and high school programs who buy in bulk. Convincing rinks to set aside ice time for disabled hockey can be a struggle because many rinks don't realize that disabled hockey programs can pay their own way. These programs just need access to some ice and a little community support. "I think we really got the word out there," Jon Schwartz observed. "We received a lot of positive feedback from the rink owners, fans and other disabled players. The response was overwhelming."

"It was a very rewarding experience for me," said David Reid. "I hope that by volunteering and helping out with Everybody Skates, rinks in New Jersey and around the country will provide more ice time to disabled ice hockey players. It was a weekend that I will always remember for the new friends that I made."

To further the cause, organizers have created a petition at [www.everybodyskates.com](http://www.everybodyskates.com). Nearly 2,500 supporters have signed it, including several professional hockey stars such as Team USA Captain Jamie Langenbrunner. ■

**Sherry Perez** has worked in the media for 11 years, first as a journalist and now in public/media relations. Originally from California, she was a sports reporter at *The Sacramento Bee*, *The Bakersfield Californian*, *The Contra Costa Times* and *The Riverside Press-Enterprise*. In 2004, she became a senior account executive at Brener Zwickel and Assoc. (BZA) sports public relations/marketing in Los Angeles. She and her husband, A.J., a sports reporter at AOL FanHouse, moved to Leesburg, Va., in April 2006 where she headed up the Washington, D.C. office of BZA. In May 2009, Perez brought her TV and radio-booking expertise to Lyons PR, where as a senior account executive she works on such rewarding projects as EveryBODY Skates New Jersey. E-mail her at [sherry@lyonspr.com](mailto:sherry@lyonspr.com).

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# Scanning for Relevant Sound



**Mark Eckert, Ph.D., right, prepares for an imaging experiment in the MUSC Center for Imaging Research, with colleagues Kenneth Vaden, Ph.D., and Stefanie Kuchinsky, Ph.D.**

Photo courtesy of Mark Eckert

BY JAMIE MORRISON, ASSOC. EDITOR

**N**ot all hearing impairments arise from problems in the ear itself. Some can stem from issues in the brain. Gaining a deeper understanding of brain-based hearing loss is the aim of Mark Eckert, Ph.D., associate professor in the Department of Otolaryngology – Head and Neck Surgery (Hearing Research Program) at the Medical University of South Carolina (MUSC) in Charleston.

“A lot of hearing difficulties experienced by older adults, especially with respect to hearing speech, stem from hearing problems within the ear,” says Eckert. “But once you account for those, there are still some unexplained factors that we think could be due to changes in brain function. This would involve changes in the central auditory pathway or attention-related systems in the brain.”

Eckert and his colleagues believe this is the case because older adults with hearing loss seem to have more difficulty listening to and understanding speech in noisy environments when compared to younger adults with hearing loss. This observation suggests that older adults must have problems either filtering out irrelevant sound, or focusing on relevant sound.

The project Eckert is currently undertaking, with funding from the Deafness Research Foundation Centurion Clinical Research Award, will contribute to greater understanding of a treatment

regimen developed by Larry E. Humes, Ph.D., professor in the Department of Speech and Hearing Sciences at Indiana University. Humes’ treatment involves having participants listen to speech that has been amplified to sound like what a person wearing hearing aids would hear, with background noise. On a computer screen, the participant looks for words or sentences they just heard via amplification. Over a 12-week training session, with much repetition, people get better at identifying speech that is presented as it would sound through a hearing aid.

Of course, when speech is amplified via a hearing aid, the background noise gets amplified also, because it is difficult to make a hearing aid that amplifies only the speech you want to hear. Additionally, when someone gets a hearing aid, at first, words sound strange and quite different from how they used to sound, making it difficult for a new hearing aid-user to understand them. “What Larry Humes figured out was that you could effectively increase the signal-to-noise ratio through training,” says Eckert. “So he uses a person’s neural representation of visual words or orthography to help the brain re-learn the sounds of speech as heard via a hearing aid.”

Eckert’s job is to find out why Humes’ program is working and to discover what aspects of the training are most effective. He employs functional magnetic resonance imaging (fMRI) to detect in-



**Mark Eckert, Ph.D.**

Photo courtesy of Mark Eckert, Ph.D.

creased blood flow to certain parts of the brain, which occurs when neurons become more active and require more energy as the result of outside stimulation.

Eckert evaluates brain response in participants both before and after they've undergone Humes' training regimen. Sometimes participants hear words and sometimes they see them. With fMRI, Eckert can identify which regions of the brain are excited by these different methods. By understanding the brain systems that are important in the success of Humes' program, the training can be optimized and may eventually be offered for home use, rather than requiring participants to go into a lab for 12 weeks.

Born in Ghana as the child of Peace Corps volunteers, Eckert studied psychology at Villanova University near Philadelphia, then earned a master's in experimental neuropsychology from George Mason University near Washington, D.C. He received a Ph.D. in psychobiology from the University of Florida, where he met his wife, Anita Ramsetty, an endocrinologist.

Though his research and family keep him busy, he does find time now and then to surf. "I like to fall off my surfboard," he jokes. "I'm not very good."

While Eckert's current focus is on hearing issues affecting older adults, his previous research was on childhood developmental disorders. "I still do developmental work," he says, "but the aging work has really become very exciting and fascinating to me, so it's taken over much of what I do. And my developmental background informs how I think about aging."

Part of his childhood development work involved studying twins. In an example of life imitating research, he and Anita have twin four-year-old girls of their own. "My wife won't let me scan them," he says, "but it's great to see them develop!"

For more information on the Deafness Research Foundation Centurion Clinical Research Award or The Centurions, visit [www.drf.org/Centurions](http://www.drf.org/Centurions). ■

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### **iPod Users Must See to Their Own Hearing Protection**

A federal appeals court rejected a class-action lawsuit brought against Apple in which the plaintiffs claimed that iPods cause hearing loss. Their arguments against iPods: no volume meters; the ability to produce sound as loud as 115 decibels; and earbuds that are designed to be placed deep in the ear canal. The plaintiffs sought not only monetary damages, but also wanted Apple to improve the safety of iPods and its disclosures, to provide better headphones and to test iPod users for hearing loss. The court ruled, however, that Apple is not liable for hearing loss induced by iPods because it advises its customers to exercise caution with high-volume sound; cautions against using iPod headphones with lanyards (earbuds); and against using iPods while operating a vehicle or performing any other activity that requires full attention.

### **Senior-Friendly HDTV**

TV Ears unveiled the first “senior-friendly” LCD high-definition television in January 2010. The 32-inch set includes a



built-in wireless transmitter and headset for better listening, an automatic shut-off feature that turns the TV off after four hours of inactivity and extra-large screen text for easier viewing. It also comes with the company’s “White Glove” specialty service that includes delivery with complete hook-up, programming and one-on-one instruction on operating the TV and

associated TV Ears headset. The set retails for \$1,199 via [www.TVEars.com](http://www.TVEars.com) and through select audiologists and specialty retailers.

### **Improvements in Hearing Protection Device Ratings**

The National Hearing Conservation Association (NHCA) has asked for two major changes to the U.S. Environmental Protection Agency’s proposed legislation regarding the noise reduction rating (NRR) for hearing protection devices. First, the labeled NRR values should account for hearing protectors fit by both trained and untrained users of hearing protection devices. Second, the labeling of hearing protectors should be simplified. “The new NRR needs to account for the fact that hearing protectors are used both in the workplace, where users should be trained on how to protect their hearing and how to wear protectors correctly, as well as recreationally, where users are likely to be less knowledgeable about how to best protect their hearing,” said Rick Neitzel, Ph.D., NHCA president. ■

## Hot Tips & News Clips

A white paper from **US Airways** outlines best practices for occupational hearing conservation. Tips include involving employees, making audiometric testing accessible to all employees and using motivational materials to support employee understanding of the program. Read it at [www.hearforever.org/usairways](http://www.hearforever.org/usairways).

**Cochlear™** is offering incentives to its users of Nucleus® Freedom™ to upgrade to Cochlear’s Nucleus 5® System, which is compatible with users’ current implants and features Cochlear’s smallest sound processor, Remote Assistant, dual microphone technology and AutoPhone™ automatic phone detection. Call 800.587.6927, visit [www.CochlearAmericas.com/upgrades](http://www.CochlearAmericas.com/upgrades) or e-mail [upgrades@cochlear.com](mailto:upgrades@cochlear.com).

**Phonak Acquires InSound Medical.** Sonova Holding AG, parent company of Phonak, announced in January 2010 that it acquired InSound Medical, the manufacturer of Lyric®, an invisible, extended-wear hearing solution for those with mild to moderate hearing loss.

**Siemens Hearing Instruments** announced its third annual partnership with Quota International’s Sound Beginnings program to provide vouchers for 100 free hearing instruments to children and young adults up to age 23 who have been diagnosed with hearing loss. For more, visit: [www.hearitfortheirstime.us/financial-assistance](http://www.hearitfortheirstime.us/financial-assistance).

**Sonic Innovations, Inc.,** a Utah-based global provider for hearing care services and solutions, is partnering with the Utah Department of Health, Hearing, Speech and Vision Services and the Utah Newborn Hearing Screening Advisory Committee to help children with hearing loss. The program, entitled Sonic Kids, will provide two hearing aids per month to Utah children at no cost to their families. ■

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