

**SPECIAL POINTS
OF INTEREST:**

- NCRAR Conference 2009
- 2009 NIH Summer Research Traineeship

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NCRAR Newsletter

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Message from the Director: Stephen Fausti Ph.D.



This October the NCRAR hosted the 4th International NCRAR Conference, *The Ear-Brain System: Approaches to the Study and Treatment of Hearing Loss*, which brought together researchers, clinicians and students from the VA, Department of Defense, academic institutions, and industry around the world. The conference was a resounding success due to the outstanding efforts of the exceptional speakers, conference organizers, and the NCRAR staff and exemplifies the educational mission of the NCRAR led by our Deputy Director of Education, Dr. Gabrielle Saunders. The conference highlighted the progression of the ear-brain continuum that goes beyond the peripheral end organ. As we increasingly take a comprehensive approach to the evaluation of auditory dysfunction, it is essential to incorporate a multi-disciplinary approach to address the entire ear-brain system, from the cochlea to the cortex. Speakers addressed topics such as the auditory and neurological effects of traumatic brain injury, binaural hearing, rehabilitation and auditory training, and the functional plasticity in the auditory system.

As more and more veterans return from deployment with auditory system impairments, it has become clear that many auditory deficits are associated with damage to multiple, overlapping systems. Interventions therefore involve otolaryngology, neurology, physical therapy and psychology. NCRAR researchers are investigating ways to diagnose and rehabilitate these deficits, as well as distinguish **(Continued on Page 4)**

2009 NIH Summer Research Traineeship by the Summer Students



Students Dana Gladd, Andrew Schuette, Jamie Carlson and Ben Durig (with mentors Erick Gallun, Gabrielle Saunders, Jim Henry, Marjorie Leek and Sarah Melamed in the lobby of the NCRAR.

Three years ago the National Center for Rehabilitative Auditory Research received five years of funding from the NIDCD to host four Au.D. student trainees for the summer to provide them with a research training experience. The four students who come to NCRAR over the Summer of 2009 have each summarized their experiences on pages 6 and 7 of this newsletter.

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NCRAR Conference 2009

The NCRAR held its 4th biennial conference titled *The Ear-brain system: Approaches to the study and treatment of hearing loss* on October 7th-9th in Portland, Oregon. The conference was preceded by a pre-conference workshop *Current directions and interdisciplinary approaches to mild traumatic brain injury (mTBI)*. Gabrielle Saunders and Christine Kaelin were the Conference Co-Chairs and Frederick (Erick) Gallun was the Program Chair.

We were fortunate to receive funding from an NIH-NIDCD R13 small conference grant, and from numerous generous sponsors: VA RR&D, Oticon Foundation, Etymotic Research, Starkey Laboratories, Inc., Phonak, Inc, Frye Electronics, Inc., and Interton Inc.

The goal of the pre-conference workshop was to educate the audience about mild traumatic brain injury and the resulting auditory processing difficulties. A multidisciplinary faculty was invited to provide their differing but complementary approaches to intervention. The workshop took place at the Portland VA Medical Center. Paula Myers was the moderator. We heard presentations from Paula, Erick Gallun—a cognitive psychologist, Dan Storzbach—a neuropsychologist, Michael Sullivan—a Speech-Language pathologist, and Gabrielle Saunders, Jim Henry and Tara Zaugg—NCRAR researchers. There is no doubt, however, that the highlight of the workshop was the presentation by Veteran David Stratford who gave a vivid, informative and moving account of his recent experiences in Iraq.

The main conference began with an Opening Reception at the Portland Hilton Hotel and a keynote address by Robert Shannon, who gave a history of the cochlear implant.



Robert Shannon giving his Keynote Address

Thursday morning's presentations by Nina Kraus and Robert Zatorre addressed neural encoding and plasticity of the brain. Both mentioned the positive impact music has on auditory processing ability. Thursday afternoon we heard presentations from Steve Colburn and Bill Noble who focused on binaural hearing. These were followed by a poster session in the gloriously sunny atrium of the Portland World Trade Center.

On Friday morning we heard from Ervin Hafta and Sridhar Khalluri about auditory scene analysis and how the brain incorporates the many sources of auditory input into a meaningful and interpretable signal. In the afternoon, Arthur Boothroyd and Robert Sweetow provided overviews of the clinical interventions that aim to make use of brain plasticity for auditory rehabilitation. The conference ended with a roundtable discussion of the principles that our speakers raised during their talks.

(Continued on Page 5)

Meet Michele Hutter, Research Audiologist

I was born in the small town of Southbury, Connecticut and lived there until I was 18. I was one of six children (four brothers and one sister), so needless to say I was destined to be a tomboy. Dolls were not an option. Instead I could be found in the sandbox with GI Joes, riding bikes, playing ball, fishing knee-deep in a pond and catching fireflies to serve as a night light. I spent numerous summers riding the Block Island ferry throughout the Cape with my childhood friends. In high school I learned valuable life lessons about team building and the work ethic through sports, playing field hockey, softball and running cross country. I even challenged Title IX to play on the boys' team when one did not exist for girls.

After graduating from Pomperaug High School I moved to the southwest to attend Arizona State University—Go Sun Devils!!! At the time I didn't know a single person in the state and had not even visited the school prior to being accepted. I have been known to take big risks to promote personal growth and this was one of them. I wanted my college experience to be bigger than academics as I learned about independence.

During my days at ASU I discovered college football, and I've been hooked ever since. Some of my fondest college memories are of climbing "A Mountain" which is part of Sun Devil Stadium, and watching football games in the presence of the giant Sahuaro cactus and the star-filled Arizona sky.



**Michele Hutter and Jordy fly-fishing
on the Deschutes River**

I graduated from ASU in 1995 with a bachelor's degree in Psychology and then headed north and landed in Portland. During my first years in Oregon I attended

Portland State University and graduated with a post-baccalaureate degree in Speech and Hearing Sciences, and a Masters in Audiology. I spent my student practicums and fellowship year working for Dr. John Epley, specializing in vestibular disorders and inner ear disease. Since then I have been a part of the NCRAR team. When I began at the NCRAR I had little interest in research due to minimal exposure, but I have always been a firm believer in looking outside the box. I kept an open mind and clear eyes, and before long found myself greatly enjoying a research environment.

I have just completed my seventh year at the NCRAR. I am the lead audiologist on two research studies: "Auditory Function in Patients With and Without Multiple Sclerosis" and "Effects of Training on Central Auditory Function in Multiple Sclerosis". I am passionate about my current research position and feel fortunate to have the opportunity to continue learning each and every day.



**Michele Hutter and Jeff Shannon with
Elizabeth Eskridge**

I enjoy and have the utmost respect for my colleagues at the NCRAR and I am specifically inspired by the new educational outreach measures taken to incorporate students in the environment. The part of my position that I enjoy most is working in the lab with patients, students, and a diverse team of unique and bright individuals. Of these people a few have served as strong positive mentors for me and it is a privilege to work with them. Hopefully our studies will increase knowledge of how auto-immune disease impacts audition. Ultimately we hope to improve the quality of life for people with MS.

Outside of work, my primary interests revolve around any outdoor activity that involves a body of water, sun, dogs, true friends, and new adventures. My best memories are of fly fishing on the Deschutes River with friends, family, and my beloved dog Jordy.

Upcoming NCRAR Events 2009



November 13 2009: Dawn Konrad-Martin, Ph.D., Investigator, NCRAR Portland, OR. Title: *Fast, Cheap, and Accurate Techniques for Ototoxicity Monitoring.*

December 18 1009: Erica Ryherd, Assistant Professor Georgia Institute of Technology. Title: *TBD.*

January 15 2010: Gabrielle Saunders Ph.D. Investigator, NCRAR Portland OR. Title: *TBD.*

May 14 2010: Brenda Ryals, Ph.D., Professor, Department of Communication Sciences and Disorders, James Madison University, Harrisonburg VA . Title: *TBD.*

Most NCRAR seminars are broadcast live via v-tel to other VA facilities. Contact bonnie.becker@va.gov for information.

Seminars are held from 12 to 1 pm in PVAMC Building 101 Room 109, unless noted.

Director's Message (continued).

symptoms from other systems. For example, traumatic brain injury can result in peripheral and central hearing impairment, as well as problems with attention, cognition, and memory. This issues is further discussed in an upcoming article in the *Journal of Rehabilitation Research & Development*, "Auditory and vestibular dysfunction associated with blast-related traumatic brain injury". It is a challenge to discern the individual components of each injury and essential to find the connections between them to effectively rehabilitate these individuals.

Information about impairments caused by blast injuries can be used to develop rehabilitative interventions for auditory deficits associated with neurological diseases. The NCRAR is currently investigating the auditory system from the periphery to central auditory function in patients with multiple sclerosis. Knowledge gained about the way neurodegeneration affects the ear-brain system and the effect of rehabilitative training may offer important insight into the treatment of patients with brain injuries. In addition, investigations involving the auditory effects of diseases such as diabetes and cancer help us understand the impact of other disease states on auditory function. Continued research in tinnitus and new collaborations in research of the vestibular system have enabled NCRAR researchers to address all aspects of auditory function and to learn comprehensive treatment and rehabilitative techniques for the entire ear-brain system. As auditory dysfunction continues to be the most prevalent service-connected condition in the VA, our continued collaboration with the Department of Defense is essential to the mission of the NCRAR to reduce, and ultimately prevent auditory disability following military service and to ensure readiness for life for our veterans.

NCRAR Grants funded August to October 2009

Cameron M. VA RR&D CDA-2. Mechanisms of Imbalance and Falls in Multiple Sclerosis 1/10—12/14

Henry J. & Myers PJ. (Co-PIs) VA RR&D. Multi-site Evaluation of Progressive Tinnitus Management 1/10-12/12

Konrad-Martin D. VA RR&D Career Development Transition Award (pending Merit review funding)

Leek MR. NIH-NIIDCD Hearing Loss and the Perception of Complex Sounds, NIDCD, 7/09-6/14

Leek MR. NIH-NIDCD ARRA Supplement to Hearing Loss and the Perception of Complex Sounds. 8/9-10/10

Saunders GH (PI), Folmer R & Griest S (Co-Is). VA RR&D. A Hearing Loss prevention Program for Veterans 1/10-12/12

NCRAR Publications and Presentations July to September 2009

Publications:

Folmer RL. Media coverage of the persistent vegetative state and end-of-life decision-making; Theresa Schiavo's tragedy and ours, too. *Neurology* 2009;73:909-910.

Saunders GH. You and Your Audiologist: Maximizing the Use of hearing Aids. *Dialogue Magazine*. Invited article. 2009;July-August:50-55.

Submitted publications:

Henry JA, Zaugg TL, Myers PJ, Kendall CJ. Referral guide for patients who complain of tinnitus. *The Journal of Family Practice*. Submitted, 2009.

Leek MR, Molis MR. Beyond audibility: Hearing loss and the perception of speech. *The ASHA Leader*. Invited manuscript. Submitted, 2009.

Lewis MS, Gallun F, Gordon J, Lilly D, Crandell C. A pilot investigation regarding speech-recognition performance in noise for adults in the FM+HA listening condition. *Volta Review*, 2009, in review.

McDermott D, Konrad-Martin D, Austin DF, Gries S, McMillan

GP, Fausti SA. (2009). Effect of diabetes on Veterans' hearing. *The ASHA Leader*. Submitted, 2009.

Molis, M.R. and Leek, M.R. Identification of ambiguous vowel stimuli by hearing-impaired listeners. *Journal of Speech, Language, and Hearing Research*. Submitted 2009.

Reavis KM, McMillan G, Austin D, Gallun F, Fausti SA, Gordon JS, Helt W, Konrad-Martin D. (2009). Evaluation of distortion-product otoacoustic emission test performance for ototoxicity monitoring. *Ear and Hearing*. Submitted, 2009.

Silverman, SC, Cates, MA & Saunders, GH. Reported hearing aid benefit: To see or not to see pre-fitting responses at follow-up? *Ear & Hearing*. Submitted 2009.

Presentations:

Billings CJ. Aided evoked potentials and implications for auditory training in hearing aid users. Invited presentation, Nordic Audiology College: Scientific Seminar about Hearing, Stromstad, Sweden, Sept 24-25,

2009.

Gallun FJ, Diedesch A, Engelking E. Effects of aging and hearing loss on monaural and binaural auditory discrimination. Cognitive Science Association for Interdisciplinary Learning, Hood River, OR, July 30-August 3, 2009.

Henry JA. Progressive Tinnitus Management: Clinical Implementation. Maryland Academy of Audiology Annual Convention, Columbia, MD, September 24, 2009.

Henry JA. Clinical Management of Hyperacusis. Maryland Academy of Audiology Annual Convention, Columbia, MD, September 24, 2009.

Konrad-Martin D, Teahen M. Effects on Hearing Due to Aging and Diabetes. 110th Annual Veterans of Foreign Wars (VFW) National Convention, Phoenix, AZ, August 2009.

Turbin M. Clinical Trial of Group AR: What Do We Know About How Well It Works? University of Washington, Seattle, WA, July 2009.

NCRAR Conference 2009 (continued).

We were lucky—the weather cooperated so we all saw a gorgeous sunset during the opening reception, took a stroll through town to the Networking Dinner held at Aura, basked in the sun shining through the glass roof of the World Trade Center during breaks and got to see Mount Hood and Mount St. Helens from downtown Portland.

No description of the conference would be complete without a thank you to all who helped out with tasks big and small; to Carl Swicord and Ann String of VA Employee Education Service for organizing the videotaping of the event, to Mark Bernadi who traveled from St Louis to oversee the filming, Michael Moody, AV Production Specialist at Portland VAMC who took photos throughout the pre-conference workshop and to all NCRAR employees who gave time before and during the event.—*Gaby, Erick and Christine*

For photos of the conference see Page 8

2009 NIH Summer Research Traineeship

Jamie Carlson, Benjamin Durig, Dana Gladd, Andrew Schuette

National Center for Rehabilitative Auditory Research, Portland, Oregon

**Jamie Carlson**

About Me: I was born and raised in the great state of Kansas. I attended Kansas State University for my undergraduate program in Communication Science & Disorders, and am currently in my second year of the AuD program at Wichita State University. Though I love the Midwest, I have really enjoyed exploring Portland and road tripping through Oregon.

Why I Applied: I applied for the trainee program to gain experience in audiology through a research prospective and learn from prominent individuals who are dedicated to sharing their knowledge with the next generation of investigators. This has been an amazing opportunity to become involved in research projects that are shaping the field, and I've really become interested in becoming more involved in research as my career progresses.

My Research: This summer I was fortunate to work with Dr. Erick Gallun on a psychoacoustics study. Our research looked at whether or not age and/or hearing loss has an impact on an individual's ability to hear sounds in different locations, while also considering their performance when an interference is present. During the course of the summer, I was involved in many stages of the research project, and learned valuable lessons in forming research questions, carrying out a study, interpreting data, as well as the interaction with subjects and colleagues who all play an important role in making research happen.

**Benjamin Durig**

About Me: I am going into my second year of the AuD program at The University of Cincinnati. As of right now, my areas of interest include aural rehabilitation, counseling and working with patients. When I am not in school, I like to travel to warm places, meet new people, and be with my family.



Why I Applied: I applied for the summer traineeship at the NCRAR because I knew that this program would provide me with exposure to subject matter in the area of audiologic rehabilitation, instruction regarding research design and implementation that would allow me to more effectively critique other research in the future. I wanted to further explore whether a PhD is something I might consider as well as clarify future educational goals. I knew this experience would give me a better understanding of information obtained through VA research as well as the VA's overall value to the profession.

My Research: Combat Arms Earplugs (CAEP) are dual purpose earplugs with a linear and non-linear setting. The linear setting is designed to help protect against steady-state noise and the non-linear setting is designed to help protect against impulse noise without interfering with the ability to hear important information. The purpose of my study is to establish whether wearing these earplugs negatively affects speech understanding in noise. A secondary purpose is to investigate the effect of mild hearing impairment on speech understanding while wearing CAEs. This study will measure the performance of both subject groups and evaluate the degree to which CAEs affect speech understanding in noise.

2009 NIH Summer Research Traineeship

Jamie Carlson, Benjamin Durig, Dana Gladd, Andrew Schuette

National Center for Rehabilitative Auditory Research, Portland, Oregon



Dana Gladd

About Me: Although I grew up in Utah, I have since lived all over the country including Virginia, Wisconsin, and now Oregon. I am currently starting the third year of my AuD program, and have a strong interest in working with newborns and families in early identification of hearing loss. I like to spend time in the mountains, play the piano and hang out in tea shops.



Why I Applied: I applied to this program because of my increasing interest in research and the desire to develop better methods of helping patients. With so many students taking a purely clinical route, I think it is important to maintain a foundation in research and evidence-based practice. The entire concept of research, developing new ideas and constantly asking questions, is very exciting to me. A summer traineeship at the NCRAR certainly seemed like an invaluable experience, and has proven to be so.

My Research: This summer, I have had the opportunity to work with Dr. Gaby Saunders in a variety of hearing aid outcome studies. For my main project, I am measuring sound levels in the chemotherapy outpatient rooms and conducting a noise disturbance survey. Because of the potential synergistic reaction between ototoxic medications (like cisplatin) and noise, it is important that noise levels in the chemotherapy rooms remain relatively low. Noise disturbance can also result in fatigue, irritation, and poor motivation. Patient and staff disturbance surveys will help determine whether or not these noise levels are creating a problem.



Andrew Schuette



About Me: I am from a small town in Western Kentucky called Poole with a population of 46. I am currently starting my third year in the Au.D. program at the University of Louisville. I enjoy the great outdoors, road trips, and building fires.

Why I Applied: I applied to this program in order to expose myself to high-level translational research. At my university, though the clinical experience is unmatched, research is not a strong component of the training. In addition, I wanted to test the waters of research in order to determine if I want a career in the field. Finally, I would be lying if I said that Portland didn't have something to do with it.

My Research: The project I worked on is tentatively titled, "Are there Associations between Individual Patient Factors Recorded at Baseline in Responders and Non-responders to Tinnitus Treatment?" I worked with Jim Henry Ph.D. and Susan Griest M.P.H. The study was conducted because of the heterogeneous nature of tinnitus, combined with the plethora of available treatments, to test the idea that certain patients respond to certain treatments for a reason (individual patient factors). The purpose of the study was to determine if there are factors that can be recorded at baseline that will predict how a person will respond to tinnitus treatment. The study was performed by conducting a retrospective data analysis from a previous clinical trial with a large sample size ($n=123$). The results showed that several factors are predictive indicators of tinnitus treatment success, most notably various measures of tinnitus self-report (duration, fluctuation, number of sounds reported, and level of tinnitus problem).

NCRAR Conference Photo medley

