

**SPECIAL POINTS
OF INTEREST:**

Article by Dan
McDermott, M.A.
Diabetes and Hearing.
Pages 1 & 3

NCRAR Newsletter

VOLUME IX, ISSUE II

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Message from the Director: Stephen Fausti Ph.D.

With over 36 million Americans affected by auditory dysfunction, it is not surprising that the media has increased its coverage of this escalating problem. Additional exposure has enabled the National Center for Rehabilitative Auditory Research (NCRAR) to reach a larger audience of veterans, deployed individuals, and the general population to raise awareness of the disabilities caused by auditory impairments and rehabilitation options. Education about hearing conservation, in the workplace and in recreation, is also an essential component for the prevention of hearing impairment. The media has drawn particular focus to harmful noise exposure as the primary contaminant contributing to hearing loss and tinnitus. The NCRAR is committed to research and educational outreach programs to prevent and rehabilitate the hearing disability resulting from noise exposure. The more the NCRAR can get the message out about hearing conservation, the more people will take steps to prevent this disabling and expensive problem.

A major highlight in April was the premier of the Veterans Affairs Research and Development (VA R & D) program overview video during the VACO R&D kickoff activities in Washington, D.C. to promote the

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Diabetes and Hearing by Dan McDermott, M.A.

We have all heard of diabetes; in fact it is very likely that each person reading this article knows someone diagnosed with this disease. For many, their knowledge of diabetes will go something like this: "Diabetes has something to do with blood sugar levels, insulin is involved, and diabetics have to prick their fingers." If that's your general level of understanding, don't be embarrassed, you have plenty of company.

In this brief article our hope is to provide a basic understanding of the disease, explain why a group of scientists studying hearing would be interested in diabetes, and share what we have discovered about how diabetes might affect hearing. We'll start with a simplified explanation of diabetes.

Every cell within our bodies requires energy to function. The most common source of this energy comes in the form of a simple sugar, glucose. Our digestive tract breaks down the various carbohydrates we consume into glucose, which is then absorbed into the bloodstream through the walls of the intestines. Once in the bloodstream, glucose is available for use as an energy source for our cells.

Following a meal, there is a flood of glucose available for use throughout the body. Because meals are commonly followed by several hours with no food intake, the body must manage these periods of relative feast and famine in a manner that maintains a stable level of glucose in the

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Meet ShienPei Silverman, Research Assistant

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Trapped in the elevator with the Director of NCRAR alone, the sentence broke out after an awkward moment of silence. "So, what do you know?" Looking straight into my eyes, he tossed out those words. For someone just starting the job a few months prior, this could be a nerve-racking question. I couldn't pretend I didn't hear it either. But where is he going with that question, and what is he getting at, or how should I answer in a way that would be of interest to him? I wondered in my head for a flash. "Well, I know what I don't know." I replied, deciding to fish around his intention first. Not sure what his reaction really was. He looked me in the eyes again, then said "The more you know, the less you know" with a serious look still. A sigh of relief quietly went through my mind. This is not the thesis defense question or one of those for job interviews. I happily replied "Oh, getting philosophical here."

That was one of the moments capturing the unique experience at NCRAR. Later on I learned, many people were asked the same "What do you know" question. The answers were drastically different, of course.

"What's a non-Audiologist doing at an auditory research center?" is probably the most frequently asked question by many. The last two years as undergrad, my involvement with three island-wide research surveys in Taiwan got me really passionate about face-to-face interviewing and survey research. Subsequently I came to the U.S. for my Master's degree in sociology. This is the formal training and involvement in research, I rationalized.

However, there's that general curiosity I've kept with me since childhood. I remember experimenting on something learned from the 3rd or 4th grade classroom - the honey bees would not survive if they lose their

stingers. Discovering ways of smacking them onto the soil without killing them, grabbing them by their wings, sticking the stem of a wild succulent plant to the rear end of the bee to get the stinger out. Surprised by the fact that the bees all flew away from my hand. In disbelief, I retested by repeating the process many times. Then thought to myself, at age 9, that the teacher was not quite right! There were many other experiments with the insects and animals like that in my childhood, one advantage of growing up in the countryside I suppose.

Many people have a hard time with my given name. I usually try to help them by saying "It's like champagne, but no n at the end." I thought about selecting an English nickname before, but that impulse wasn't strong enough to get me actually doing it.

The juxtaposition of my first name and Silverman is another source of amusement for some. Well, my given name, aside from my apparent Asian looking facial features, is my way of holding on to my roots. Silverman comes in through marriage and led to an introduction to American culture. Hard to find a better way to acquaint oneself to a different culture than by a cultural anthropologist!

So don't be surprised if you see someone eating matzo ball soup with chopsticks at NCRAR!



**ShienPei's welcome to her office after
her US citizenship ceremony in
January 2009**

Diabetes and Hearing (Cont from Page 1)

bloodstream. Therefore, after our cells have absorbed all of the glucose they immediately require, the body must store the excess in order to have sufficient energy to provide fuel during the hours between meals.

When the body is functioning normally, the hormone insulin is released from the pancreas into the bloodstream at the start of the digestive process. Insulin has two important roles in the body. First, it assists in the movement of glucose from the bloodstream into the cells, where it is needed as fuel in the near term. Insulin's second function is to help move excess glucose into the liver, where it is stored for later use in the form of glycogen.

As the cells throughout the body deplete their stored supply of glucose, they restock by absorbing additional glucose from the bloodstream. This in turn reduces the level of glucose in the bloodstream. The body must then utilize its glucose (glycogen) stored in the liver in order to maintain a healthy blood sugar level. When the body senses less than optimal levels of glucose in the bloodstream, a second hormone, glucagon, is released. This stimulates the liver to release stored glucose into the bloodstream.

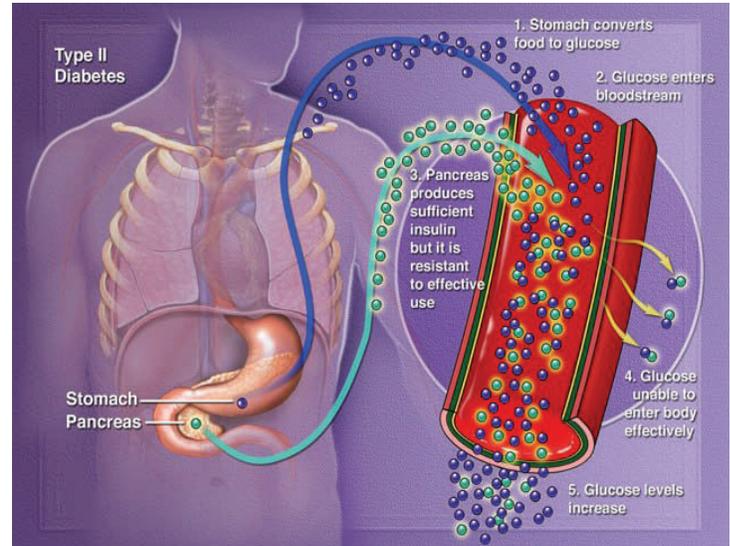
So, to summarize:

- Insulin helps to move glucose into cells for use as fuel and into the liver for storage;
- Glucagon stimulates the release of the stored glucose when blood sugar levels drop beneath healthy levels
- Both hormones are produced by the pancreas.

In those who are not diabetic, this system works well to keep the level of blood sugar within a healthy, and relatively narrow, range. In patients diagnosed with diabetes, the level of glucose in the bloodstream can vary wildly, with elevated levels immediately following large meals and dangerously low levels after periods without food.

This lack of control may be due to one of two causes: an absence of insulin production by the pancreas (Type I Diabetes), or an inability to produce enough insulin to adequately supply all of the cells in the body (Type II Diabetes). Type II diabetes is often accompanied by a resistance to the insulin (i.e. the body does not respond to its presence as effectively as normal), further exacerbating the problem. According to the American Diabetes Association, greater than 90% of diabetic patients are characterized as Type II diabetics.

Low blood sugar levels are an immediate health threat



The physiology of Type II Diabetes

to diabetics. If not corrected, low blood sugar levels can lead to confusion, loss of consciousness, and seizure. High blood sugar levels are not as much of an immediate danger, but if not controlled over time, cause damage to the eyes, kidneys, and blood vessels, and impair the function of some nerve pathways in the body.

Researchers here at the VA National Center for Rehabilitative Auditory Research (NCRAR) are interested in these long-term effects of diabetes, specifically the effects of damage to the nervous system and the kidneys. We want to know first whether damage to the various nerve groups throughout the body also impairs the cranial nerves associated with hearing; and if so, how it impacts the ability to understand speech. Second, we are interested in discovering if diabetes, a disease known to damage the kidneys, also adversely affects the cells of the inner ear, and if so, what influence this has on hearing. We hypothesize that there will be damage to the inner ear because the cells of the inner ear show considerable similarities to those of the kidney.

Recently completed research at NCRAR has determined that patients with diabetes may have hearing difficulties related to the disease; and that these problems begin to appear before age 50. These difficulties seem to be of two types: First, there is a decrease in the ability of the inner ear to detect sounds, which primarily affects those with milder diabetes who do not use insulin. This problem is noted particularly in very low frequency tones and for very high frequency tones (beyond what would normally be tested in a clinic). The second type of problem occurs in the nerve

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Upcoming NCRAR Events



May 8 2009: David Stapells, Ph.D., Professor, School of Audiology & Speech Sciences, University of British Columbia, Vancouver, Canada *Title: The Auditory Steady-State Responses: Current status and future possibilities.*

June 19 2009: Frank Musiek, Ph.D., Professor, University of Connecticut. *Title: Auditory Evoked Potentials and TBI: A review and discussion.*

September 11 2009: Robert Burkard, Ph.D., Professor and Chair, Department of Rehabilitation Science, University at Buffalo, NY. *Title: Vestibular Evoked Myogenic Potentials.*

October 7 2009: NCRAR Pre-conference workshop. *Title: Current Directions and Interdisciplinary Approaches to TBI.*

October 8-9 2009: NCRAR Conference. *Title: The Ear-Brain System: Approaches to the Study and Treatment of Hearing Loss.*

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

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

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

The NCRAR Pre-conference workshop will be held in the auditorium of Portland VAMC;

The NCRAR conference will be held at the World Trade Center, Portland OR.

For more information go to: www.ncrar.research.va.gov/Education/Documents/NCRAR_2009_conference.pdf

News from the NCRAR

Welcome to:

Sean Kampel, Au.D., Research Audiologist who has joined us after graduating with an Au.D. from the University of Washington.

Emily Thielman, MS. Research Assistant who has joined us from the Casey Eye Institute where she was a research assistant.

Other:

NCRAR had a BIG presence at the AudiologyNOW! 2009 meeting of the American Academy of Audiology (AAA) in Dallas, TX.

See article on Page 7 for more details.

Marilyn Dille, Bob Folmer, Dan McDermott, Jane Gordon, Serena Dann and Keri O'Connell represented NCRAR at the Patient Safety Awareness Fair that took place in February at the Portland VAMC and at the Vancouver VAMC.

Jim Henry, Tara Zaugg (and Caroline Kendall) traveled to the Employee Education Service studios in Salt Lake City to film tinnitus videos for

distribution throughout the VA system.

Marjorie Leek, Erick Gallun, Michelle Molis, Dawn Konrad-Martin, Roger Ellingson, and David Lilly are all involved with organization of the upcoming Spring meeting of the Acoustical Society of America that will take place in Portland, OR, in May. See <http://asa.aip.org/portland/portland.html> for more details

NCRAR Publications and Presentations Jan to April 2009

Publications:

Fausti, SA, Wilmington DJ, Gallun FJ, Myers PJ, Henry JA. Auditory and Vestibular Dysfunction Associated with Blast-related Traumatic Brain Injury. *J Rehab Res Dev* (In Press).

Henry JA, Zaugg TL, Myers PJ, Kendall CJ, Turbin MB. Principles and application of counseling used in progressive audiologic tinnitus management. *Noise and Health*, 2009;11(42):33-48.

Henry JA, James KE, Owens KK, Zaugg TL, Porsov E, Silaski G. Auditory test result characteristics in subjects with and without tinnitus. *Journal of Rehabilitation Research and Development*. (In press).

Leek M, Molis M, Kubli L, Tufts J. Enjoyment of music by elderly hearing-impaired listeners, *Journal of the American Academy of Audiology* 19, 519-526, 2008.

Saunders GH. Performance Perceptual Test (PPT): Clinical applications. Featured article, *AudiologyOnline*: http://www.audiologyonline.com/articles/article_detail.asp?article_id=2194

Saunders GH, Griest S. Hearing loss in veterans and the need for hearing loss prevention programs. *Noise and Health*, 11 (42), 14-21 (2009).

Submitted publications:

Austin D, Diabetes-Related Changes in Hearing submitted to *Laryngoscope*.

Best V, **Gallun FJ**, Mason CR, Kidd G Jr, Shinn-Cunningham BG. The impact of noise and hearing loss on the processing of simultaneous sentences. *Ear and Hearing*, 2009.

Lewis MS, Lilly D, Hutter M, Bourdette D, Fitzpatrick M, Fausti S. Subjective and audiometric

hearing status of individuals with and without multiple sclerosis. *International Journal of MS Care*.

Presentations:

Anders M, Saunders GH, Silverman S. Questionnaire Completion and Hearing Aid Benefit – T35 Trainee Project. Student poster presented at the American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.

Billings C, Tremblay K, Stecker GC. Signal-in-noise encoding and implications for people with hearing loss. Podium presentation at the American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.

Dille MF, Konrad-Martin D, Jacobs P, McMillan G, Fausti SA. Using DPOAE Magnitude and Phase in the Early Detection of Ototoxicity. Poster Presentation, American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.

Fitzer J, Dille M, Diedesch A, Billings C, Gallun F. Electrophysiological measurements of the auditory attentional blink. American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.

Folmer RL, Saunders GH, Griest SE, Dann S, Leek MR, Fausti SA. Development of a joint department of defense-VA hearing loss prevention program. Poster presented at the National Hearing Conservation Association Annual Conference, Atlanta, GA, February 2009.

Folmer RL, Saunders GH. Hearing loss in veterans hearing loss prevention. Invited seminar at the Oregon Association of

Audiology Winter Workshop Salem, OR, February 2009.

Gallun FJ, Dille M, Diedesch A, Billings C. Human auditory memory for intensity. Poster presented at the 32nd Midwinter Research Meeting of the Association for Research in Otolaryngology, Baltimore, MD, February 2009.

Henry JA, Zaugg TL, Myers PJ. Progressive audiologic tinnitus management. Invited half-day workshop presented at the Carl T. Hayden VA Medical Center and Department of Veterans Affairs Employee Education System in cooperation with Southwest Health Care Network VISN 18, Ninth Annual Audiology Conference, Phoenix, AZ, February 2009.

Konrad-Martin D, Jacobs P, Gallun F, McDermott D, Dann S, Owens K. Cochlear Gain and Compression Estimates Using SFOAEs in Older Adults. American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.

Lawson N, Thompson K, Brown D, Richardson J, Pope D, Gates N, **Saunders GH, Caldwell M, Saiz J.** (2009) Sound Intensity and Noise Evaluation in a Critical Care Unit. Paper presented at the Seattle Nursing Research Consortium, January 27.

Leek MR. NIHL: Are we winning the war? (Discussion panel member) Presented at Joint Defense/VA Audiology Conference, Mesa, AZ, March 2009.

Leek MR. Essential information for research audiologists. (Discussion

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NCRAR Publications and Presentations (Cont. from Page 5)

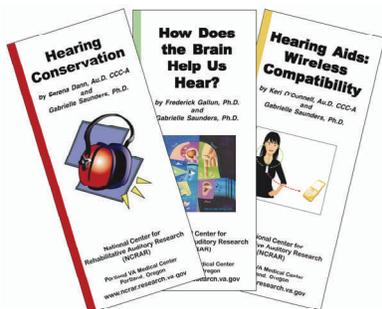
<p>panel member). Presented at Joint Defense/VA Audiology Conference, Mesa, AZ, March 2009.</p> <p>Mehraei G, Gallun F, Melamed S, Leek M, Shamma S, Bernstein J. Spectrotemporal modulation sensitivity in hearing-impaired listeners. Poster presented at the MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore, MD, February 2009.</p> <p>Melamed S, Zaugg TL, Henry JA. Managing your tinnitus: what to do and how to do it. (Parts 1 and 2) NCRAR Tinnitus Education Group</p>	<p>Workshop, VA Medical Center, Portland, OR, February 2009.</p> <p>Reavis K, McMillan G, Austin D, Gallun F, Fausti SA, Gordon J, Helt W, Konrad-Martin D. Evaluation of Distortion-Product Otoacoustic Emission Test Performance for Ototoxicity Monitoring. American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.</p> <p>Saunders GH, Forsline A, Caldwell M. The impact of counseling based on Performance-Perceptual Test scores on self-reported hearing aid outcome. Poster presented at the</p>	<p>5th International Adult Aural Rehabilitation Conference, Tampa FL, March 2009.</p> <p>Souza P, Hoover E, Gallun F. Consonant feature transmission in spectrally reduced and amplitude-compressed speech. American Auditory Society Annual Conference, Scottsdale, AZ, March 2009.</p> <p>Turbin M. Clinical Trial of Short Term Group Aural Rehabilitation. Podium presentation at the 5th International Aural Rehabilitation Conference, Tampa, FL, March 2009.</p>
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NCRAR Grants funded Jan to April 2009

<p>Billings, CJ. Neural encoding of signals in noise: effects of hearing impairment & age. CDA-1 Award, VA RR&D.</p> <p>Gabrielle Saunders (PI), Frederick Gallun (Co-I). NIH-NIDCD R13 Award. The Ear-Brain System: Approaches to the Study and treatment of hearing Loss. Small Conference grant. 2009-2010</p>

Message from the Director (Continued from Page 1)

research projects and programs in the VA. The NCRAR was included in this film which will also be shown at VA medical facilities throughout the country and to Veteran Service Organizations. In addition, VA Research Currents is spotlighting the NCRAR in an article on tinnitus treatment efforts by the NCRAR and Men’s Health magazine interviewed NCRAR investigators for a feature on hearing conservation. The NCRAR has also developed several brochures that address research on different aspects of hearing health. These brochures, How Does the Brain Help Us Hear; Why Can’t I Understand Speech?;



Hearing Conservation; Hearing Aids: Wireless Compatibility; and Tips for Improving Your Listening Experience, are available on the NCRAR website. Educational outreach at the NCRAR also extends to the next generation of hearing health scientists with the continuation of the National Institutes of Health sponsored summer research internship. This summer we will mentor four Au.D. students from Kentucky, Wisconsin, Kansas, and Ohio to educate and expose them to careers in clinical research. The multi-disciplinary setting of the NCRAR provides students a unique research experience approaching common questions from perspectives ranging from audiology, neuroscience, and psychology. This training program has played a role in training audiologists for careers both in research and its translation to the clinic. The educational and research programs of the NCRAR have positioned the NCRAR as a national resource for the diagnosis, rehabilitation, and prevention of auditory dysfunction, influencing patient care throughout the VA and in the general population.

NCRAR's BIG presence at AudiologyNOW!

by Anna Diedesch and Melissa Teahen

It is said that “Everything is Bigger in Texas,” and indeed the NCRAR made a BIG presence recently at the annual meeting of the American Academy of Audiology (AAA). During the first week of April, several NCRAR staff members traveled to Dallas, Texas to take part in the yearly AudiologyNOW! AAA conference. NCRAR was represented in many aspects of the meeting

- One very big presence was that of NCRAR investigator Samantha Lewis, who was this year's Chair of the Program Committee for the conference.
- Investigator Dawn Konrad-Martin was a member of the organizing committee for the first ever Academy Research Conference (ARC) that immediately preceded AudiologyNOW! The theme of the meeting was Otoacoustic Emissions. Dawn, as well as several other NCRAR staff, had four posters present at the poster session.
- NCRAR investigator Jim Henry and NCRAR audiologist Tara Zaugg presented an all day pre-conference learning lab on Tinnitus Management in the Clinic. In addition this research team also presented during the poster sessions held later in the week.

- Fourth year NCRAR audiology externs, Elizabeth Eskridge and Jeff Shannon also attended the conference. Jeff presented a poster focusing on home-based computerized auditory training.
- As the pre-conference activities were taking place, NCRAR audiologists Melissa Teahen and Anna Diedesch were busy setting up the NCRAR booths. As one of 2700 exhibitors attending AudiologyNOW!, the NCRAR unveiled a brand-new exhibit poster highlighting our Portland facility, current research and projects, and our upcoming biennial conference that will take place in October.
- The NCRAR was also one of 18 exhibitors at the first ever Student Academy of Audiology Fair. This exhibit gave students the opportunity to learn about the NIH T35 summer research traineeships and the 4th year audiology externships that are available.

While NCRAR did indeed make a BIG presence in Texas, several of the travelers were able to enjoy and explore Dallas, including the Sixth Floor Depository and the Grassy Knoll. As always, AAA held a wonderful conference and the additions of ARC and the Student Fair were exciting opportunities for NCRAR to participate in. We will have to wait and see what else will develop for AudiologyNOW! 2010 in San Diego. Until next year...



NCRAR's new exhibit poster

Photos by NCRAR staff



Pictures of the Grassy Knoll and the Sixth Floor Depository museum dedicated to John F. Kennedy

Special article about Dr. Dennis Smith, Consultant to NCRAR

by Marjorie Leek

Visitors to the NCRAR are pleased and surprised by the beautiful pictures hanging in the hallways. Some of them are original art work donated or loaned to the Center by Dr. Dennis Smith. A recent donation is an oil painting depicting the microscopic haircells that are critical to hearing. By using a lace overlay, Dr. Smith captured the fragility of these structures in the inner ear. It is the loss of these and other inner ear structures that underlie much of the hearing loss experienced by Veterans.



**Dr. Smith with his painting titled
"A Precarious Balance"**

Although his art beautifies the NCRAR, Dr. Smith's contributions to the development and growth of the Center have had a more far-reaching impact. He was involved in the first Center Grant submission that was funded to establish the NCRAR. He served as the first Deputy Director of the Center, during the period 1997-2003. He stepped down when he retired from his position as Deputy Chief of Staff at the Portland VA Medical Center, but he has continued active involvement with the direction and growth of the NCRAR, serving as a Consultant, and as a member of the Executive Committee.

His fingerprints are all over the NCRAR. And one can see the threads of his views about clinical research and dedicated Centers of Excellence in the mission and implementation of the Center.

Dr. Smith earned his MD from Albany Medical School in 1965, and completed a residency in Neurology at Yale University School of Medicine. He began a career in academic medicine at the University of Vermont, and subsequently spent 10 years as a professor of neurology at the Medical College of Georgia, and Chief of the Neurology Service at the Augusta, Georgia VA Medical Center. He became Chief of Staff at the VAMC in Hampton, Virginia, and Professor of Neurology and Associate Dean at Eastern Virginia Medical School in Norfolk, Virginia. While in Virginia, a challenging and interesting opportunity came his way, as Director of the Oregon Comprehensive Epilepsy Program (OCEP), an NIH Center of Excellence at the Good Samaritan Hospital and Medical Center, in Portland, Oregon. He directed the development of the OCEP into a regional and national resource for neurologists, providing education and medical care. He emphasized the role of the OCEP in training physicians, and working with the Oregon Health & Science University (OHSU), established a residency and student rotation through OCEP. He saw the importance of leveraging the funding provided by the NIH for the Center, with additional research grants and contracts. These ideas that characterized the success of the OCEP can be seen clearly in his work with the NCRAR.

On to the next challenge, as Director of Research and Development, and Associate Undersecretary at the Department of Veterans Affairs, in Washington, D.C. It was 1991, and VA research as a separate government research funding source was under attack. Some members of Congress believed that funds supporting VA research should be rolled into the NIH budget, and all VA supported research would become NIH funded research. In his role as Chief Research and Development Officer (CRADO), Dr. Smith worked to differentiate VA research from the broader arena of biomedical research supported by the NIH. He worked to change VA research emphasis to research related to Veterans' illnesses and disabilities, and to focus more on translational, health services, and rehabilitative issues. Even basic science research, which may not have immediate applications, is now linked more closely to improving the health and quality of life of Veterans. Although

Special article about Dr. Dennis Smith (Continued from Page 8)

VA research contributes significantly to the overall biomedical knowledge important to the entire American population, he emphasized the need for VA research to be driven by the needs of Veterans.

Dr Smith's own research interests spanned both basic science and clinical work. His work in intracranial source localization of EEG potentials in collaboration with a mathematician friend, resulted in the development of the first dipole localization model in humans - a model still used with minor modifications today. He studied the relationship of folic acid metabolism to epileptogenesis and the mechanism of action of antiepileptic drugs using a rat model, and was a co-PI of the seminal Nationwide VA cooperative study comparing the four major antiepileptic drugs in use in the 1980s. He has edited three medical books, published over 75 papers in peer-reviewed journals, and authored five computer-based teaching packages.

When Dr. Smith left his position in Washington, D.C., he came back to Oregon, as a Professor at OHSU, and Deputy Chief of Staff of the Portland VA Medical Center. It was a time of initial development of the NCRAR, and he saw in the goals of the Center all the concepts he had been advocating as CRADO. This was a Center of Excellence bringing together a diversity of scientists to approach a significant set of disabilities experienced by Veterans. He believed that such a Center should be a national resource, providing education to Veterans, professionals, and students, and leveraging the Center funding through individual investigator-initiated research grants from multiple sources, including the VA research program, the NIH, and the Department of Defense, among other funding agencies. His contributions to the growth of the NCRAR cannot be overestimated, as he continues to provide his expertise and experience in developing new scientists and new projects, and navigating the waters of VA research administration.

But back to those paintings. Dennis has been painting most of his life, encouraged in his early efforts by supportive parents. By the time he went to college, he had accumulated enough experience so that the Chair of the Art Department at Wesleyan University assigned him his own studio, and personally mentored his development as an artist. Like all artists, he uses his art as expressions of his thoughts and emotions. One set of paintings (some of which hang at the NCRAR) evoke the pain and sadness of the terrorist bombings at the World Trade Center in 2001. On a happier note, he says his beautiful painting of a white

sailboat on swirling blue waters was compensation for having to give up sailing on the Chesapeake Bay in Virginia when he moved to Oregon.



Dr. Smith lives with his wife Bonnie, who is the Director of the Neurosciences Program at the Providence hospitals of Oregon, in a beautiful old Portland home, filled with souvenirs of his extensive travels (and lots of menus from exotic restaurants). The NCRAR is ever grateful to him for his enthusiastic support of the work we do.

Diabetes and Hearing (Continued from Page 3)

transmission of signals from the ear to the hearing centers in the brain. This second type mostly affects those with more severe diabetes and who use insulin. We are doing further analyses to explore whether these same patients have greater difficulties understanding speech in the presence of noise or speech presented at a challenging rate. To the patient with a hearing loss due to diabetes, it may not make a difference which of these is the cause of their difficulties, but investigators hope that by more specifically identifying the source of the hearing problem, different strategies for rehabilitation can be developed.



**Dan McDermott is a
Research Audiologist at
the NCRAR**

VA RR&D



NCRAR

Save the Date

The 4th biennial NCRAR Conference
“The Ear-Brain System: Approaches
to the Study and Treatment
of Hearing Loss”

will take place on October 7th to 9th
2009 in Portland, OR

Session Topic Areas:

*Hearing with the Brain: A
Neural Perspective*

*Binaural Processing: Using the
Brain to Use Both Ears*

*Attending to the Auditory Scene:
How We Put It All Together*

*Helping the Brain Help Itself:
Aiding the Ear-Brain System*

Invited speakers:

Arthur Boothroyd Ph.D.

Steve Colburn Ph.D.

Ervin Hafter Ph.D.

Sridhar Kalluri Ph.D.

Nina Kraus Ph.D.

William Noble Ph.D.

Robert Shannon Ph.D.

Robert Sweetow Ph.D.

Robert Zatorre Ph.D.

**Information about registration, accommodation and
applications for scholarships will be posted on the
NCRAR website by May 18th 2009**