FISCAL YEAR 2011 ANNUAL REPORT

National Center for Rehabilitative Auditory Research (NCRAR)

(www.ncrar.research.va.gov)

VA Medical Center, Portland, Oregon

Director: M. Patrick Feeney, Ph.D.
Associate Director: Gabrielle Saunders, Ph.D.
Deputy Director/Administrative Officer: Patrick Helt, MA

NCRAR is a Department of Veterans Affairs

Rehabilitation Research & Development (RR&D)

Center of Excellence (Program #C4844C)

Award Dates: October 1, 2007 – September 30, 2012

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I. CORE INVESTIGATORS

Curtis Billings, PhD
Marilyn Dille, PhD
Patrick Feeney, PhD
Robert Folmer, PhD
Frederick Gallun, PhD
James Henry, PhD
Peter Jacobs, PhD
Dawn Konrad-Martin, PhD
Marjorie Leek, PhD
Samantha Lewis, PhD
Michelle Molis, PhD
Gabrielle Saunders, PhD
Mitchel Turbin, PhD
Debra Wilmington, PhD
n = 14

II. AFFILIATE INVESTIGATORS

Donald Austin, MD, MPH
Dennis Bourdette, MD
Michelle Cameron, MD, PT
Theresa Chisolm, PhD
Katharina Echt, PhD
Susan Griest, MPH
David Lilly, PhD
Paula Myers, PhD
Diana Pope, PhD, RN
William Rooney, PhD
Baker Yong-Bing Shi, MD, PhD
Therese Walden, AuD
Eric Wan, PhD
Richard Wilson, PhD
n = 13

III. FULL-TIME EMPLOYEE EQUIVALENT (FTEE)

Core FTEE (12.98) + Affiliate FTEE (3.20) = 16.18 Total FTEE

IV. CORE CENTER OF EXCELLENCE (CoE) FUNDING

Total amount of CoE funding = $1,000,000

V. RR&D MERIT-REVIEWED FUNDING

Total amount of RR&D Merit-reviewed funding = $2,586,357

VI. OTHER VA PROJECT FUNDING

Total amount of funding from other VA sources = $253,663

VII. NON-VA PROJECT FUNDING

Total amount of funding from non-VA sources = $524,555

VIII. TOTAL FUNDING

Sum of core CoE, RR&D Merit-reviewed, other VA, non-VA funding = $4,364,575

IX. RR&D OTHER (ADMINISTRATION)

Administrative projects and supplemental lump sum distributions = $1,974,753

X. CORE/TOTAL (%)

Proportion that core CoE funding represents total funding = 22%

XI. TOTAL:CORE

Ratio of total funding to core CoE funding = 4.36

XII. RR&D MERIT:CORE

Ratio of RR&D Merit-reviewed funding to core CoE funding = 2.58

XIII. OTHER PROJECT (VA AND NON-VA):CORE

Ratio of other VA project funding plus non-VA project funding to core CoE funding = .77

XIV. PERFORMANCE MEASURES

RR&D Funded Principal Investigators

Number of core and affiliate investigators who are PI on active RR&D projects (n = 11)

Merit-reviewed RR&D Publications

Number of publications linked to RR&D Merit-reviewed projects (n = 10)

Other RR&D Publications

Number of publications from non-merit reviewed RR&D funding (n = 5)

RR&D Merit-reviewed Projects and Collaborations

Number of RR&D Merit-reviewed projects and collaborations (n = 16)

RR&D CDA

Number of RR&D CDAs, excluding SRCS and RCS awards (n =6)

Other CDAs

Number of career awards other than RR&D CDAs (n = 2)

Other Publications

Number of publications linked to non-RR&D projects (n = 17)

Other Projects and Collaborations

Number of non-RR&D Merit-reviewed projects or CDAs (n = 11)

Presentations/CoE Products

Number of conference presentations (n = 59)

XV. NARRATIVE SUMMARY

The National Center for Rehabilitative Auditory Research (NCRAR) was established in 1997, and is one of 16 national Centers of Excellence (CoE) funded by the VA Rehabilitation Research and Development (RR&D) Service. It is the only CoE dedicated to the discovery and delivery of cutting-edge solutions to auditory dysfunction, and is unique among auditory research facilities because of its focus on auditory rehabilitation research and translation of findings into audiological clinical practice. The Center uses a multidisciplinary approach to bring diverse perspectives and solutions to common auditory problems. Our research encompasses a continuum that progresses from basic theoretical research to clinical trials focused on improving patient care. The NCRAR's diverse make-up, extensive collaboration network, and developed resources have resulted in a comprehensive national research center that effectively leverages funding to support research programs, and the development of clinical and research tools, and methodologies. The NCRAR also plays an important role in cultivating the next generation of auditory researchers through education and mentoring programs. Joint initiatives with the Department of Defense (DoD), such as the establishment of Hearing Conservation and Education kiosks in DoD and VA facilities, and active participation with the DoD-VA Auditory Research Working Group (ARWG), demonstrate our commitment to advancing hearing health care services for military personnel and Veterans. Furthermore, the NCRAR serves as a national resource for clinicians and researchers throughout the nation by disseminating evidence-based research findings that ultimately benefit Veterans whose quality of life has been diminished by auditory dysfunction. Core funding of the Center has been effectively leveraged to develop one of the country's premier centers for auditory research, and has maximized the acquisition of investigator-initiated research funds from other sources. The NCRAR is a CoE, staffed by VA researchers, who in collaboration with our affiliates, conduct rehabilitative auditory research and development projects of high priority to the hearing health care of Veterans.

When first established, the NCRAR was spread across several buildings at the Portland VA Medical Center (PVAMC). The emphasis during the initial years was on developing infrastructure in the form of shared equipment and facilities, administration, educational resources for patients, and in-house statistical and engineering support. This infrastructure permitted investigators to focus on research, and cultivated an environment that integrated rehabilitation research, education and the development of innovative technologies. Our infrastructure has supported the addition of investigators and expansion of collaborations, creating a powerful, multidisciplinary research consortium with a highly successful funding record. NCRAR is housed within a 20,000 square foot state-of-the-art facility dedicated to auditory rehabilitation research. Currently, the NCRAR comprises 14 on-site core rehabilitation researchers with diverse interests focused on different aspects of auditory dysfunction in Veterans. Through collaborations and internal interactions among investigators, the Center has created a research effort that is greater than the sum of its parts. Our research is multidisciplinary, combining audiology, psychology, neuroscience, neurology, otolaryngology and engineering, with cross-disciplinary resources available to each individual investigator. The Center is a magnet that attracts

investigators at all career levels, from junior investigators mentored at the Center, who bring enthusiasm and new ideas, to senior investigators with established research programs. Also, we have established active research collaborations with other VA CoEs and VA Medical Centers (VAMCs), and with numerous universities, research laboratories, and industry partners.

The NCRAR has continued to serve a unique and important role in the VA RR&D CoE portfolio, providing a continuum of auditory research from basic science to the development of improved rehabilitation technologies and strategies that are being implemented into clinical care. Discoveries from the NCRAR have provided effective solutions for the diagnosis, rehabilitation, and prevention of auditory impairment while fostering the delivery of evidence-based hearing health care. NCRAR's goals, under our new Director, Dr. Patrick Feeney, include continuing established lines of research as well as incorporating new research initiatives of priority importance to VA that will benefit current and future generations of Veterans, for instance in the areas of vestibular diagnostics and rehabilitation, and hearing aid signal processing. Future directions also include plans for an integrated clinical-research cochlear implant program.

Key Impacts

Clinical Standard for Tinnitus Management

A key impact and model of translational research, the Progressive Tinnitus Management (PTM) program developed by Dr. Henry and colleagues at the NCRAR is being implemented throughout the VA health care system as the standard of care for tinnitus management. Clinical implementation of PTM within the Portland VAMC Audiology and Mental Health Clinics is particularly significant because the developers are collaborating directly with the Portland VAMC staff from both clinics to implement PTM exactly as described, providing the opportunity to directly evaluate the program's utility and effectiveness from a clinical perspective.

Henry JA, Zaugg TL, Myers PJ, Kendall CJ, Michaelides EM. A triage guide for tinnitus. J Fam Prac, 2010;59(7):389-393.

Clinical Tool for Assessment of Speech Intelligibility in Noise

NCRAR rehabilitation researchers have long recognized the challenges that select patient populations, such as individuals with hearing-impairment or central auditory processing problems, experience with hearing target speech in backgrounds of noise. Dr. Lilly and colleagues developed a clinical tool that includes a "virtual cocktail party" background to assess the speech intelligibility of sentence material. Already, this clinical tool has been used in two VA RR&D-funded Merit Review studies with patients having multiple sclerosis, a patient population susceptible to central auditory processing problems. It also is anticipated that this new tool will assist audiologists in evaluating the efficacy of various amplification systems. Previous work by this group has used these test materials to assess the benefits of FM technology for patients with multiple sclerosis.

Lilly DJ, Hutter MM, Lewis MS, Folmer RL, Shannon JM, Wilmington DJ, Bourdette DN, Fausti SA. Development of a "virtual cocktail party" for the measurement of speech intelligibility in a sound field. J Am Acad Aud, 2011;22(5):294-305.

Clinical Tools for Ototoxicity Early Identification

Drs. Dille and Konrad-Martin, and colleagues responded to a clinical need for an assessment tool that permits ototoxicity monitoring to be conducted in the approximately 30% of Veterans receiving cisplatin who become too sick to submit to behavioral hearing during treatment. Moreover, many VA audiologists have asked for an objective test to use with any patient as a first-line screening measure. To address this clinical need, our researchers optimized previously developed DPOAE protocols and response scoring algorithms, and also developed a portable test system for use on the hospital ward. This portable system has a low noise and system distortion floor, and incorporates our previously-developed probe-fit test to improve test-retest reliability for serial measurements. Combining a newly developed Pre-treatment Susceptibility Assessment with the optimized DPOAE algorithm provides an average sensitivity (over all possible false positive rates) of 0.8, validating these tools as accurate clinical tests. Test accuracy for predicting hearing shifts rises to 91% if the information about ototoxicity susceptibility and DPOAE shifts is combined. Future directions include making our comprehensive ototoxicity monitoring program available to all VA audiology clinics, as well as plans for immediate application of this approach for prevention of noise-related hearing loss in a hearing conservation application, perhaps in collaboration with the military.

Reavis KM, McMillan G, Austin D, Gallun FJ, Fausti SF, Gordon JS, Helt W, Konrad-Martin D. Distortion-product otoacoustic emission test performance for ototoxicity monitoring. Ear Hear, 2011;32(1):61-74.

Electrophysiological Measures of Hearing Aid Effectiveness

There is growing interest in the use of cortical auditory evoked potentials as a measure of neural function in hearing aid users. Aided evoked potentials may be of use to evaluate hearing aid fittings as well as to characterize experience-related plasticity associated with amplification. Dr. Billings, and collaborators at the University of Washington, have identified several important variables (e.g., signal-to-noise ratio, stimuli onset characteristics, etc.) that must be considered when recording aided evoked potentials in a clinical setting. The goal of this program of research is to develop a physiological measure of hearing aid effectiveness that will compliment behavioral testing techniques and inform the clinical treatment of hearing impairment.

Billings CJ, Tremblay KL, Miller CW. Aided cortical auditory evoked potentials in response to changes in hearing aid gain. Int J Aud, 2011;50:459-467.

Mobility and Balance Assessment System

The ability to safely move about is exceptionally important for older adults who seek to maintain independent living within their own homes for as long as feasible. Dr. Jacobs

and affiliate investigator, Dr. Wan collaborated to develop an innovative positional tracking and mobility system to permit remote monitoring of indoor mobility by aging adults as they go about their activities of daily living. Dr. Jacobs has since initiated collaboration with affiliate investigator, Dr. Cameron to conduct a small pilot project using this same technology to study falls in patients with multiple sclerosis. This program of research has the potential to safely extend independent living arrangements for aging Veterans by providing a reliable system for remote home monitoring.

Jacobs PG, Paul A, Wan EA, Embed RF. Position tracking and mobility assessment system: A low-power and low-cost system for indoor pedestrian tracking and mobility assessment. Proceedings from the Institute of Navigation GNSS 2011, Portland OR, 2011;1409-1506.

Portable Device for Ototoxicity Early Identification and Monitoring

Even though treatment with ototoxic medications can produce irreversible cochlear damage in up to 70% of patients, ototoxicity early identification and monitoring practices have not been implemented as a standard of care in medical centers due to time-consuming procedures and limitations in audiometric testing equipment. Many VA clinics do not even have audiometers capable of testing the extended-high frequencies (from 10,000 to 20,000 Hz), which are those frequencies known to be impacted first by most ototoxic drugs. Ototoxicity monitoring also has yet to be introduced into community-based environments such as outpatient clinics and patients' homes. Drs. Fausti and Wilmington, and colleagues have developed a portable audiometric device (the OtoID) to foster the implementation of ototoxicity monitoring as a standard of care. It uses automated software to permit use by audiologists and non-audiologists (e.g., nurses, technicians, etc) in oncology or polytrauma units, and by patients at home, enabling all patients, regardless of location, to be monitored for hearing loss when they receive treatment with potentially ototoxic medications. Ongoing work includes development of a secure data storage and transfer system, which will enable large scale ototoxicity monitoring programs to be maintained and interpreted by audiologists using telemedicine principles. Planned future directions include expanding this platform for additional serial monitoring tests (such as OAEs), as well as for other diagnostic tests such as auditory brainstem response and central auditory processing.

Ellingson RM, Helt WJ, Helt PV, Wilmington DJ, Gordon JS, Fausti SA. Mobile software Apps support personalized-SRO and serial monitoring with results indicating early detection of hearing loss. IEEE, Doi: 1109/IMTC.2011.5944090.

Key Services

NCRAR auditory rehabilitation researchers have been responsive to patient care needs as identified by our clinical colleagues through the development of a multitude of different informational brochures about hearing and hearing loss for Veterans and the community (e.g., Hearing Aids: Wireless Compatibility, Tips for Improving your Listening Experience, etc). Several NCRAR Career Development awardees also have committed a portion of their research-support time to provide expertise to our clinical colleagues in

the areas of: 1) use of DPOAE and SFOAE measures for clinical ototoxicity early identification and monitoring; 2) assessment and rehabilitation of patients who have particular difficulty with speech perception-in-noise; and 3) selection and use of appropriate assistive listening device technologies. The NCRAR's new Director has spent four hours each week seeing patients as an audiologist in the Portland VAMC Audiology Clinic. In addition, now that all NCRAR research audiologists have obtained clinical privileges, many have spent time outside their research tour of duty providing clinical care in the Portland VAMC Audiology Clinic to assist in reducing patient backlogs. Furthermore, NCRAR leadership has worked with leadership in the Portland VAMC Audiology Clinical Service and the Otolaryngology Service to formulate an action plan for enhancing cochlear implant services at the Portland VAMC while at the same time stimulating exciting new ideas for future cochlear implant research.

Dr. Henry and his research group regularly provided Progressive Tinnitus Management (PTM) training workshops to VA audiologists and psychologists around the country. Hundreds of VA clinicians received this training during FY11, which provided them with new skills to provide tinnitus services in their respective clinics. This has effectively enhanced patient care services for Veteran patients who require rehabilitation services to manage their problematic tinnitus at a multitude of VA medical centers across the nation.

Validation of an Ototoxicity Risk Assessment (ORA) by Dr. Dille and colleagues (RR&D Project #C7223R) provided hearing sensitivity information to Veterans and to their oncologists regarding chemotherapy-related hearing shifts that occurred. This research project also provided training to the medical oncology team in the interpretation of the hearing information often resulting in changes in treatment that prevented additional hearing threshold changes.

Serving as Guest Editors, Drs. Gallun and Saunders published a special issue of the Journal of the American Academy of Audiology (*JAAA, 2010; 21:9)*, which was devoted to articles associated with talks given at the NCRAR's 4th Biennial International conference "The ear-brain system: Approaches to the study and treatment of hearing loss." The articles described advancements in the science of auditory rehabilitation that take into account the role played by the central auditory system and cognitive processing. Topic areas included spatial hearing, auditory training, neural encoding of speech in noise, and the possible advantages of considering cognitive functions when fitting hearing aids.

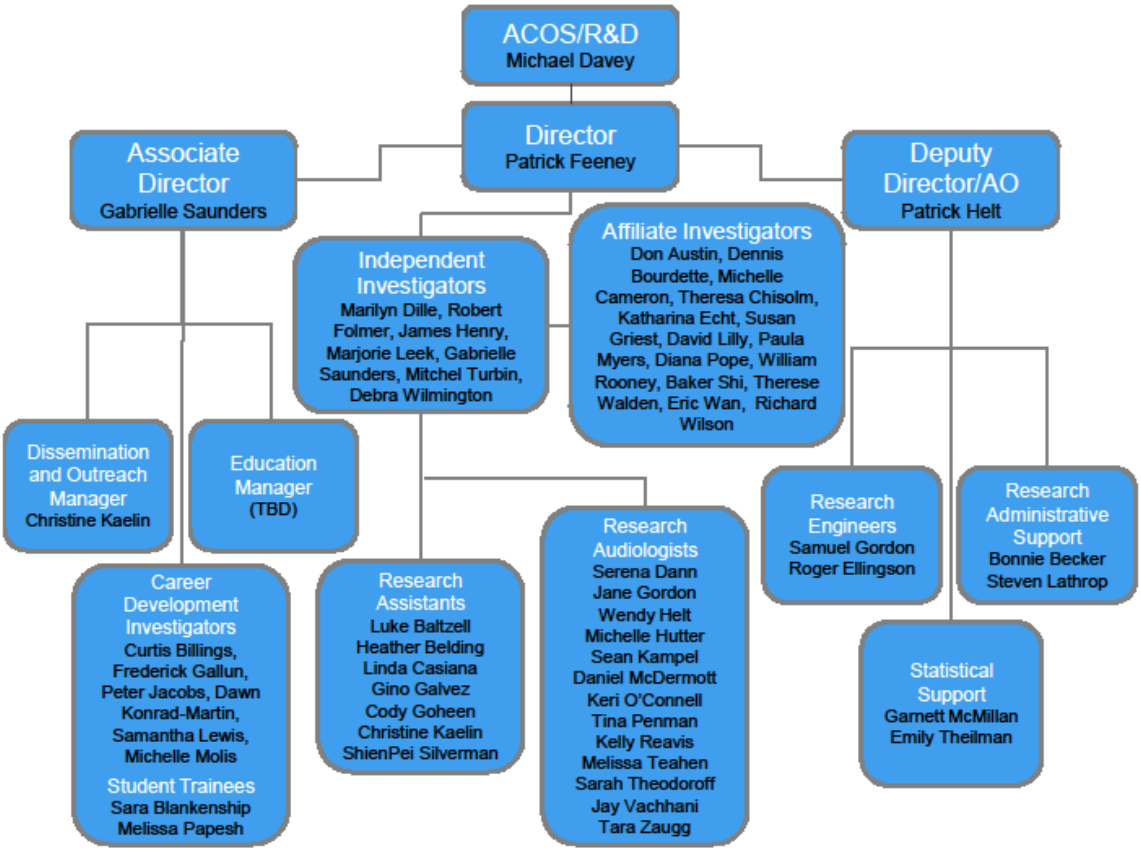
One of the NCRAR's primary objectives has been to sponsor, support and participate in professional education activities that encourage collaboration among clinicians and researchers in order to promote the translation of auditory research and development findings into evidence-based practice to optimize auditory rehabilitation services and outcomes. During FY11, the NCRAR sponsored monthly Clinical Research Seminars, which were broadcast live using the VTEL system and also recorded onto DVDs for distribution to a broad spectrum of health care professionals.

During FY11, NCRAR continued to support and promote its DoD-VA Joint Incentive Fund (JIF) Health Care Sharing Initiative, 'A Joint DoD-VA Hearing Loss Prevention Program,' which involved use of multimedia hearing loss prevention kiosks deployed at our own VA medical center and one of two planned DoD sites. These kiosks have been used by many hundreds of Veterans, active duty Soldiers, and their family members. Users have reported the hearing loss prevention program has changed their knowledge and attitudes to hearing conservation.

The NCRAR's website (www.ncrar.research.va.gov) continued to serve as an effective platform for disseminating education and research information to Veterans, clinicians and scientists alike through such postings as research findings, clinical information about hearing, the NCRAR patient brochures, and links to external websites.

Finally, NCRAR rehabilitation researchers hosted quarterly tinnitus support group meetings for Veterans and the general public, and participated in local community health fairs to disseminate information about hearing loss and tinnitus.

XVI. INVESTIGATORS



(See accompanying spreadsheet, 'Investigator Table' tab for listing of CoE investigators, degrees, titles, employment information and research interests/expertise)

XVII. STEERING COMMITTEE (EXTERNAL ADVISORY BOARD)

NCRAR National Advisory Board (NAB)

Committee Member	Degree	Position
Cynthia G. Fowler (Chair)	PhD	Professor, Department of Communicative Disorders; Affiliate Professor, Institute on Aging; Director, AuD Program, University of Wisconsin Madison
Walter J. McDonald (Co-Chair)	MD, FACP	Emeritus CEO, American College of Physicians
Leslie M. Burger (Member)	MD, FACP	Major General, Medical Corps, US Army, Retired; Former Network Director, VISN 20 Department of Veterans Affairs
John D. Durrant (Member)	PhD	Professor and Vice Chair, Department of Communication Science and Disorders, University of Pittsburgh
COL Kathy Gates (Member)	PhD	Integrated Audiology and Speech Service Chief, Walter Reed Army Medical Center
James F. Jerger (Member)	PhD	Distinguished Scholar-in-Residence, University of Texas at Dallas
Douglas W. Ohlin (Member)	PhD	Military Consultant, Aearo Technologies 3M
Allen F. Ryan (Member)	PhD	Director of Research, University of California, San Diego School of Medicine
Leonard Rybak (Member)	MD, PhD	Professor, Department of Surgery, Division of Otolaryngology, School of Medicine, Southern Illinois University

NAB role in supporting the NCRAR's mission: The NAB is composed of nationally and internationally recognized scientists and health care administrators who are committed to the success and development of the NCRAR. Board members advise the Director on broad policy and research direction, and recommend new initiatives. They prepare a formal report of their meetings, which are then submitted to NCRAR and Portland VAMC leadership. Through this Board, the Center maintains its focus and responsiveness to the scientific, VA, and military communities.

Meeting dates during rating period: None (group meets biennially – last meeting was September 14-15, 2010)

Overview of committee's recommendations (from September 2010 meeting):

Research

- Broaden base of funding support beyond the VA and NIH.
- Establish a minimum guideline of one publication per project each year.

- Each junior investigator should have as a mentor, a senior investigator who can provide feedback on their progress and help in transition from smaller grants to more comprehensive grants.
- Due to continued difficulties with the Institutional Review Board and Human Resource Office, investigators are encouraged to document progress of protocols to determine where impediments occur. Some IRB issues might be facilitated with electronic submission of protocols, expedited review of non-invasive projects, and NCRAR members serving on IRB panels to increase communication.
- Renegotiate contracts with OHSU or use of the VA Foundation to capture overhead dollars.
- Include new clinical-researchers with 5/8 appointment in the Audiology Clinic as NCRAR investigators to have better interaction between the NCRAR and the Audiology Clinic.

Education

- Continue to prioritize educational activities.
- Consider partnering with OHSU to establish a post-doctoral research-training program for audiologists who want to conduct clinical research.
- Develop outcome measures on various activities to help determine success of activities.
- May be beneficial to devote some Center funds to pay for clerical or secretarial support for education activities.

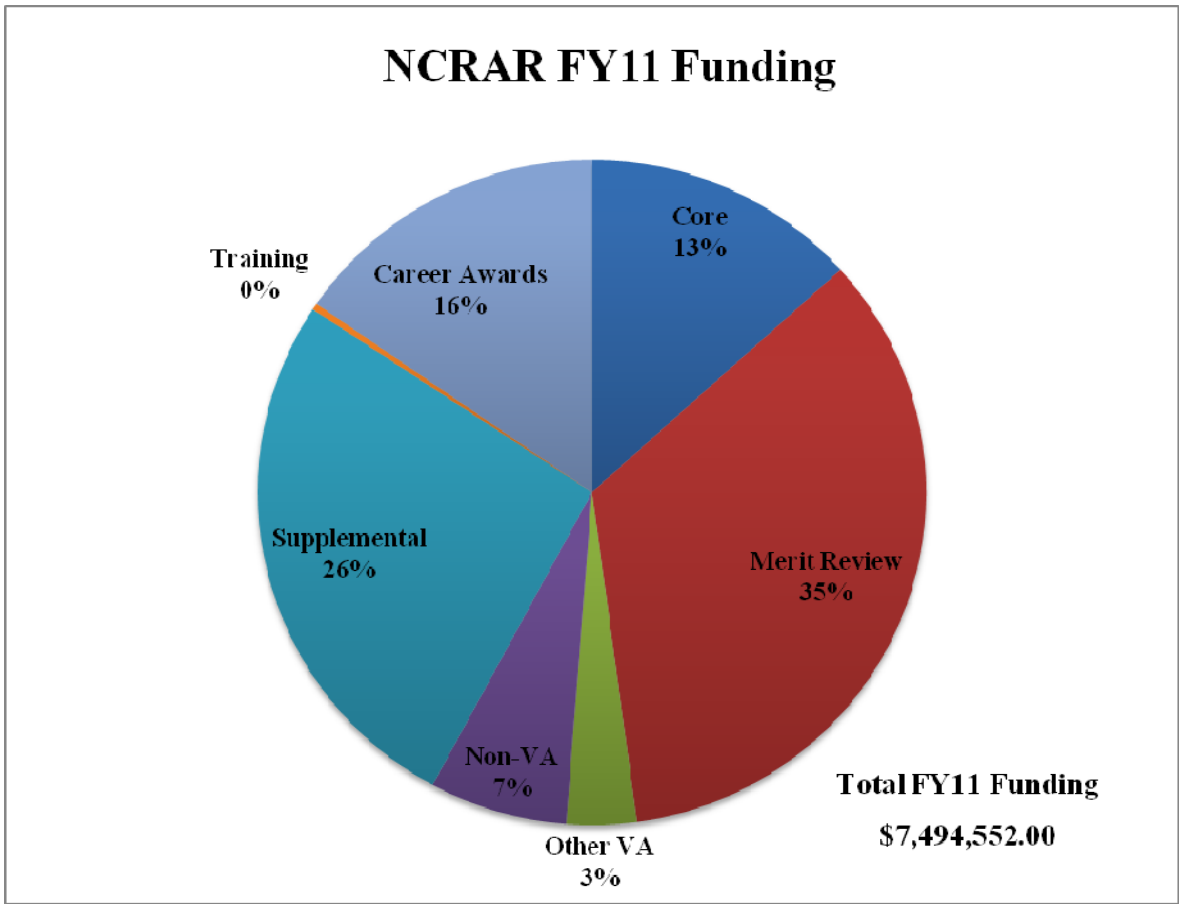
Administration

- Appoint a new permanent Director for the NCRAR.
- Consider a new Associate Director and what functions that individual would have.
- Number of supervisors may need to be increased to include all Deputy Directors.
- Local Advisory Board may not be necessary, but communication with the Hospital Director and ACOS for Research is important.
- Mandatory attendance for town hall meetings may facilitate better dissemination of information to all NCRAR staff.
- As more funding sources are tapped, NCRAR needs to have a conflict of interest policy to prevent any problems.

Other

- Develop a strategic plan for the future.

XVIII.COE FUNDING



(See accompanying spreadsheet, 'Funding Table' tab for budget information associated with Core Funds, Supplemental Funds, Research Projects, Career Awards, LIPs, and Administrative and Travel Reimbursements)

XIX. RESEARCH PROJECTS

(See accompanying spreadsheet, 'Research Projects Table' tab for detailed listing of information about active research projects at the NCRAR during the reporting period)

XX. BIBLIOGRAPHY

Journal articles linked to RR&D Merit-reviewed projects

1 Ellingson RM, Helt WJ, Helt PV, Wilmington DJ, Gordon JS, Fausti SA. Mobile software Apps support personalized-SRO and serial monitoring with results indicating early detection of hearing loss. IEEE, Doi: 1109/IMTC.2011.5944090.
Center Author(s): Ellingson RM, Helt WJ, Helt PV, Wilmington DJ, Gordon JS, Fausti SA
Project: RR&D #C6373R, A Portable Audiometric Monitoring Device (the OtoID)
PI: Stephen Fausti, PhD

2	Folmer RL. Repetitive transcranial magnetic stimulation for tinnitus. Arch Otolaryngol Head Neck Surg, 2011;137(7):730-732. **Center Author(s):** Folmer RL **Project:** RR&D #C7448I, Clinical Trial of Transcranial Magnetic Stimulation for Tinnitus **PI:** Robert Folmer, PhD
3	Henry JA, Istvan J. An independent review of neuromonics tinnitus treatment controlled clinical trials. Austral New Zeal J Aud, 2010;32(1):41-55. **Center Author(s):** Henry JA, Istvan J **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
4	Henry JA, Zaugg TL, Myers PJ, Kendall CJ, Michaelides EM. A triage guide for tinnitus. J Fam Prac, 2010;59(7):389-393. **Center Author(s):** Henry JA, Zaugg TL **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
5	Lewis MS, Lilly D, Hutter M, Bourdette D, McMillan G, Fitzpatrick M, Fausti S. Audiometric hearing status of individuals with multiple sclerosis and without multiple sclerosis. J Rehab Res Dev, 2010;47(7):669-678. **Center Author(s):** Lewis MS, Lilly D, Hutter M, Bourdette D, McMillan G, Fausti S **Project:** RR&D #B2568R, Auditory Function in Patients with and without Multiple Sclerosis **PI(s):** David Lilly, PhD; Stephen Fausti, PhD
6	Lilly DJ, Hutter MM, Lewis MS, Folmer RL, Shannon JM, Wilmington DJ, Bourdette DN, Fausti SA. Development of a “virtual cocktail party” for the measurement of speech intelligibility in a sound field. J Am Acad Aud, 2011;22(5):294-305. **Center Author(s):** Lilly DJ, Hutter MM, Lewis MS, Folmer RL, Wilmington DJ, Bourdette DN, Fausti SA **Project**: RR&D #B2568R, Auditory Function in Patients with and without Multiple Sclerosis **PI(s):** David Lilly, PhD; Stephen Fausti, PhD **Trainee:** Jeffrey Shannon, AuD Extern
7	McMillan GP, Saunders GH, Hanson TE. A statistical model of horizontal auditory localization performance data. J Acoust Soc Am Exp Ltrs, 2011;129(6), EL229-235. **Center Author(s):** McMillan GP, Saunders GH **Project:** RR&D #C3737R, The Impact of Hearing Aid Directional Microphones on Sound Localization **PI:** Gabrielle Saunders, PhD
8	Reavis KM, McMillan G, Austin D, Gallun FJ, Fausti SF, Gordon JS, Helt W, Konrad-Martin D. Distortion-product otoacoustic emission test performance for ototoxicity monitoring. Ear Hear, 2011;32(1):61-74. **Center Author(s):** Reavis KM, McMillan G, Austin D, Gallun FJ, Gordon JS, Helt W, Konrad-Martin D **Project:** RR&D #C3213R, Investigation of Individualized Otoacoustic Emission Techniques for Early Detection of Otoxocity; RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Stephen Fausti, PhD

9	Teahen M, Saunders GH. Resource Review: Brain Fitness Software by Posit Science. Ear Hear, 2011;32(4):541-542. **Center Author(s):** Teahen M, Saunders GH **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD
10	Wilmington DJ, Konrad-Martin DL, Helt WJ, Dille MF, Gordon JS, Fausti SA. Ototoxicity monitoring: Program approaches and considerations. Semin Hear, 2011;32(3):248-261. **Center Author(s):** Wilmington DJ, Konrad-Martin DL, Helt WJ, Dille MF, Gordon JS, Fausti SA **Project:** RR&D #C4697R, Prevention of Cisplatin Ototoxicity with the Antioxidant Alpha-Lipoic Acid; and #C6373R, A Portable Audiometric Monitoring Device (the OtoID) **PI:** Debra Wilmington, PhD

Other RR&D Publications linked to non-merit reviewed projects (CoE, CDAs, etc)

1	Billings CJ, Tremblay KL, Miller CW. Aided cortical auditory evoked potentials in response to changes in hearing aid gain. Int J Aud, 2011;50: 459-467. **Center Author(s):** Billings CJ **Project:** RR&D #C6971M, Neural Encoding of Signals in Noise: Effects of Hearing Impairment and Age **Trainee:** Curtis Billings, PhD
2	Cameron MH, Poel A, Haselkorn J, Linke A, Bourdette D. Falls requiring medical attention among veterans with multiple sclerosis: A cohort study. JRRD, 2011;48(1):13-20. **Center Author(s):** Cameron MH, Bourdette D
3	Lawson N, Thompson K, Saunders G, Saiz J, Richardson J, Brown D, Ince N, Caldwell M, Pope D. Sound intensity and noise evaluation in a critical care unit. Am J Crit Care, 2010;19(6):e88-98. **Center Author(s):** Saunders GH, Caldwell M, Pope D **Project:** RR&D #C4844C, National Center for Rehabilitative Auditory Research **PI:** Stephen Fausti, PhD
4	Molis MR, Leek MR. Vowel identification by hearing-impaired listeners in response to variation in formant frequencies. J Speech Lang Hear Res, 54;1211-1223. **Center Author(s):** Molis MR, Leek MR **Project:** RR&D #C6116W, Improving Vowel Perception by Hearing-Impaired Listeners **Trainee:** Michelle R. Molis, PhD **Project:** NIDCD #R01DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
5	Saunders GH, Konrad-Martin D, Hull R. (2011). Hearing loss in older adulthood: Auditory and non-auditory barriers to communication. In: Raymond H. Hull, ed. Hearing in Aging. Plural Publishing, Inc., San Diego. **Center Author(s):** Saunders GH, Konrad-Martin D **Project:** RR&D #C7450, Determinants of Word Recognition Speed in Older Adults **PI:** Dawn Konrad-Martin, PhD

Other Publications linked to non-RR&D projects

1	Billings CJ, Bennett KO, Molis MR, Leek MR. Cortical encoding of signals in noise: Effects of stimulus type and recording paradigm. Ear Hear, 2011;32(1): 53-60. **Center Author(s):** Billings CJ, Bennett KO, Molis MR, Leek MR **Project:** NIDCD #R01DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
2	El Youssef J, Castle JR, Branigan DL, Massoud RG, Breen ME, Jacobs PG, Bequette BW, Ward WK. A controlled study of the effectiveness of an adaptive closed-loop algorithm to minimize corticosteroid-induced stress hyperglycemia in type 1 diabetes. J Diab Sci & Tech, 2011;5(6), 1312-1326. **Center Author(s):** Jacobs PG **Project:** JDRF, An Automated Pacreas Based on a Fully Implantable Glucose Sensor **PI:** Kenneth Ward, MD **Trainee:** Peter Jacobs, PhD
3	Flores M, Saunders GH, Pickett BP. Aging and the auditory system. In ML Albert and JE Knoefel (Eds.). The Clinical Neurology of Aging, Oxford University Press: Oxford, 2011, Pp.363-372. **Center Author(s):** Saunders GH
4	Folmer RL. Adolescent hearing loss on the rise. Hearing Health, 2010;26(4):27. **Center Author(s):** Folmer RL
5	Folmer RL, Billings CJ, Diedesch AM, Gallun FJ, Lew HL. Electrophysiological assessments of cognition and sensory processing in TBI: Applications for diagnosis, prognosis and rehabilitation. Int J Psychophysiol, 2011;82(1):4-15. **Center Author(s):** Folmer RL, Billings CJ, Diedesch AM, Gallun FJ
6	Folmer RL, McMillan GP, Austin DF, Henry JA. Audiometric thresholds and prevalence of tinnitus among male Veterans in the United States: Data from the National Health and Nutrition Examination Survey, 1999-2006. J Rehab Res Dev, 2011;48(5):503-516. **Center Author(s):** Folmer RL, McMillan GP, Austin DF, Henry JA
7	Folmer RL, Saunders GH, Dann S, Griest S, Leek MR, Fausti SA. Development of a computer-based, multimedia hearing loss prevention education program for Veterans and Military Personnel. Perspectives in Audiology, 2010;6:9-19. **Center Author(s):** Folmer RL, Saunders GH, Dann S, Griest S, Leek MR, Fausti SA **Project:** DoD-VA Joint Incentive Fund Project: A Joint DoD-VA Hearing Loss Prevention Program (HLPP) **PI(s):** Stephen Fausti, PhD; Marjorie Leek, PhD
8	Folmer RL, Shi Y, Theodoroff S. Chronic tinnitus following electroconvulsive therapy. Case Reports in Psychiatry, 2011, [Epub: http://www.hindawi.com/crim/psychiatry/2011/607061]. **Center Author(s):** Folmer RL, Theodoroff S
9	Gallun FJ, Saunders GH. The ear-brain system: Approaches to the study and treatment of hearing loss. J Am Acad Aud, 2010;21(9):564-566. **Center Author(s):** Gallun FJ, Saunders GH **Project:** NIDCD #1R13DC010081-01, The Ear-Brain System: Approaches to Study and Treatment of Hearing Loss **PI:** Gabrielle Saunders, PhD

10	Gates GA, Anderson ML, McCurry SM, Feeney, MP, Larson EB. Central auditory dysfunction is a harbinger of Alzheimer's dementia. Arch Otolaryngol Head Neck Surg, 2011;137(4):390-395. **Center Author(s):** Feeney MP **Project:** NIDCD #DC01525, Presbycusis: Biomedical Risk Factors **PI:** George A. Gates, MD
11	Gladd D, Saunders GH. Ambient Noise Levels in the Chemotherapy Clinic. Noise and Health, 2011;13,449-455. **Center Author(s):** Saunders GH **Project:** NIDCD #T35DC008764, Ruth L. Kirschstein NRSA Short-Term Institutional Research Training Grant **PI:** Marjorie Leek, PhD
12	Jacobs PG, El Youssef J, Castle JR, Engle JM, Branigan DL, Johnson P, Massoud R, Kamath A, Ward WK. Development of a fully automated closed loop artificial pancreas control system with dual pump delivery of insulin and glucagon. Proceedings of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology, Boston, MA, 2011;397-400. **Center Author(s):** Jacobs PG **Project:** JDRF, An Automated Pancreas Based on a Fully Implantable Glucose Sensor **PI:** Kenneth Ward, MD **Trainee:** Peter Jacobs, PhD
13	Jacobs PG, Paul A, Wan EA, Embed RF. Position tracking and mobility assessment system: A low-power and low-cost system for indoor pedestrian tracking and mobility assessment. Proceedings from the Institute of Navigation GNSS 2011, Portland OR, 2011;1409-1506. **Center Author(s):** Jacobs PG **Project:** NIDCD #1R41AG035400-01, Position Tracking and Mobility Assessment System for Indoor Monitoring of Elders **PI:** Eric Wan, PhD **Trainee:** Peter Jacobs, PhD
14	Paul A, Wan EA, Jacobs PG. Sigma-point kalman smoothing for indoor tracking and auto-calibration using time-of-flight ranging. Proceeding of the Institute of Navigation GNSS 2011, Portland, Oregon, 2011;3461-3469. **Center Author(s):** Jacobs PG **Project:** NIDCD #1R41AG035400-01, Position Tracking and Mobility Assessment System for Indoor Monitoring of Elders **PI:** Eric Wan, PhD **Trainee:** Peter Jacobs, PhD
15	Saunders GH, Echt KV. Dual Sensory Impairment (DSI) in an aging population. The ASHA Leader, 2011;16(3)5-7. **Center Author(s):** Saunders GH (NCRAR), Echt KV (Atlanta COE)
16	Theodoroff SM, Chambers RD, Folmer RL, McMillan GP. Auditory middle latency responses in individuals with debilitating tinnitus. Int Tinnitus J, 2011;16(2):104-110. **Center Author(s):** Theodoroff SM, Folmer RL, McMillan GP

Publications submitted or in press

1	Bennett KO, Billings CJ, Molis MR, Leek MR. Neural encoding of speech signals in informational masking. Ear Hear, 2011 (in press). **Center Author(s):** Bennett KO, Billings CJ, Molis MR, Leek MR **Project:** NIDCD #R01DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
2	Bernstein JGW, Mehraei G, Shamma S, Gallun FJ, Theodoroff S, Leek M. Spectrotemporal modulation sensitivity as a predictor of speech intelligibility for hearing-impaired listeners, J Am Acad Aud, 2011 (in press). **Center Author(s):** Gallun F, Theodoroff S, Leek M **Project:** Oticon TRUE Foundation #07-0406, Auditory Modeling of Suprathreshold Distortion in Persons with Impaired Hearing **PI(s):** Marjorie Leek, PhD; Brian Walden, PhD; Kenneth Grant, PhD; W. Van Summers, PhD
3	Billings CJ, Tremblay KL, Willott JW. The aging auditory system. In: Translational Perspectives in Auditory Neuroscience. Editors: K. Tremblay & R. Burkard. Plural Publishing, Inc., San Diego (in press). **Center Author(s):** Billings CJ
4	Brennan M, Souza P, Gallun FJ, Stecker GC. Temporal resolution and speech recognition with a hearing aid. Ear Hear, 2011 (submitted). **Center Author(s):** Gallun FJ
5	Dille MF, McMillan GP, Wilmington D, Fausti SA, Konrad-Martin D. Development and validation of a cisplatin dose-ototoxicity model. J Am Acad Aud, 2011 (submitted-accepted). **Center Author(s):** Dille MF, McMillan GP, Wilmington D, Fausti SA, Konrad-Martin D **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD **Project:** RR&D #C7113N, Career Development Transition Award **PI:** Dawn Konrad-Martin, PhD
6	Feeney MP, Keefe DH. Physiological mechanisms assessed by aural acoustic transfer functions. Chapter 4 in K Tremblay and R Burkard, eds, Auditory Neuroscience: Hearing Across the Lifespan - Assessment and Disorders. In Press, Plural Publishing, San Diego. **Center Author(s):** Feeney MP
7	Feeney MP, Sanford CA. Application of wideband acoustic transfer functions to the assessment of the infant ear. Chapter in J Kei and F Zhao, Assessing Middle Ear Function in Infants. In Press, Plural Publishing, San Diego. **Center Author(s):** Feeney MP
8	Folmer R, Hutter M, Lilly D, Shannon J, Casiana L, Wilmington D, Lewis MS, Billings C, Krisky C, Berlow Y, Pollaro J, Rooney W, Bourdette D. Electrophysiologic measures of auditory processing in patients with multiple sclerosis. Multiple Sclerosis, 2011 (submitted). **Center Author(s):** Folmer R, Hutter M, Lilly D, Shannon J, Casiana L, Wilmington D, Lewis MS, Billings C, Bourdette D. **Project:** #C4762R, Effects of Training on Central Auditory Function in Multiple Sclerosis **PI:** Dennis Bourdette, MD

9	Gallun FJ, Diedesch A, Beasley R. Impacts of age on memory for auditory intensity. J Acoust Soc Am, 2011 (submitted). **Center Author(s):** Gallun FJ, Diedesch A, Beasley R
10	Gallun FJ, Lewis MS, Folmer RL, Diedesch AC, Kubli LR, McDermott DJ, Walden TC, Fausti SA, Leek MR. Implications for blast exposure for central auditory function. J Rehab Res Dev, 2011 (submitted). **Center Author(s):** Gallun FJ, Lewis MS, Folmer RL, Diedesch AC, McDermott D, Fausti SA, Leek MR **Project:** RR&D #B5067R, Central Auditory Processing Disorders Associated with Blast Exposure **PI(s):** Marjorie Leek, PhD; Stephen Fausti, PhD
11	Galvez G, Turbin MB, Thielman E, Istvan J, Andrews JA, Henry JA. Feasibility of ecological momentary assessment to assess hearing difficulties encountered by hearing aid users. Ear Hear, 2011 (submitted). **Center Author(s):** Galvez G, Turbin MB, Thielman E, Istvan J, Henry JA **Project:** NIDCD #R03DC009012, Ecological Momentary Assessment in Hearing Disorders **PI:** James Henry, PhD
12	Henry JA, Zaugg TL, Myers PJ, Kendall CJ, Kaelin C, Thielman E, Griest S, Legro M, Storzbach D, McMillan G, Carlson K. Pilot study to develop telehealth tinnitus management for persons with and without traumatic brain injury. J Rehab Res Dev, 2011 (in press). **Center Author(s):** Henry JA, Zaugg TL, Kaelin C, Thielman E, Griest S, McMillan G **Project:** RR&D #C6770R, Centralized Tinnitus Management for TBI Patients: Pilot Study **PI:** James Henry, PhD
13	Henry JA, Galvez G, Turbin MB, Thielman E, McMillan G, Istvan J. Pilot study to evaluate ecological momentary assessment of tinnitus. Ear Hear, 2011 (in press). **Center Author(s):** Henry JA, Galvez G, Turbin MB, Thielman E, McMillan G, Istvan J **Project:** #R03DC009012, Ecological Momentary Assessment in Hearing Disorders **PI:** James Henry, PhD
14	Hoover E, Souza P, Gallun FJ. A technique for the focused study of consonant distortion. J Speech Lang Hear Res, 2011 (submitted). **Center Author(s):** Gallun FJ
15	Jacobs PG, Konrad-Martin D, Mcmillan GP, McDermott D, Kagen D, Fausti SA, Wan EA. Influence of acute hyperglycemia on otoacoustic emissions and the medial olivocochlear reflex. J Acoust Soc Am, 2011 (submitted). **Center Author(s):** Jacobs PG, Konrad-Martin D, Mcmillan GP, McDermott D, Fausti SA **Project:** NIDCD #1R21 DK079283-01, Noninvasive Blood Glucose Monitoring using Otoacoustic Emissions **PI:** Eric Wan, PhD **Project:** RR&D #C7113N, Career Development Transition Award **PI:** Dawn Konrad-Martin, PhD
16	Konrad-Martin D, Dille MF, McMillan G, Griest S, McDermott D, Fausti SA. Age-related changes in the auditory brainstem response. J Am Acad Aud, 2011 (in press). **Center Author(s):** Konrad-Martin D, Dille MF, McMillan G, Griest S, McDermott D, Fausti S **Project:** RR&D #C7450R, Determinants of Word Recognition Speed in Older Adults; and #C7113N, Career Development Transition Award **PI:** Dawn Konrad-Martin, PhD

17	Konrad-Martin D, Reavis KM, McMillan GP, Dille MF. Multivariate DPOAE metrics for identifying changes in hearing: Perspectives from ototoxicity monitoring. Int J Aud, 2011 (in press). **Center Author(s):** Konrad-Martin D, Reavis KM, McMillan GP, Dille MF **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD **Project:** RR&D #C7113N, Career Development Transition Award **PI:** Dawn Konrad-Martin, PhD
18	Leek M, Gallun F, Diedesch A, Kubli L, Walden T, Folmer R, Lewis MS, McDermott D, Fausti S. Central auditory processing deficits associated with exposure to high-intensity blasts. Int J Aud, 2011 (submitted). **Center Author(s):** Leek M, Gallun F, Diedesch A, Folmer R, Lewis MS, McDermott D, Fausti S **Project:** RR&D #B5067, Central Auditory Processing Disorders Associated with Blast Exposure **PI(s):** Marjorie Leek, PhD; Stephen Fausti, PhD
19	Lewis MS, McMillan G, Wilmington D, Hutter M, Lilly D, Bourdette D, Fitzpatrick M, Fausti S. Some effects of the disease process associated with multiple sclerosis on hearing. J Rehab Res Dev, 2011 (submitted). **Center Author(s):** Lewis MS, McMillan G, Wilmington D, Hutter M, Lilly D, Bourdette D, Fausti S **Project:** RR&D #B2568R, Auditory Function in Patients with and without Multiple Sclerosis **PI:** David Lilly, PhD; Stephen Fausti, PhD; Dennis Bourdette, MD
20	Lilly D, Hutter M, Lewis MS, Gallun F, Folmer R, Bourdette D. Spatial release from masking in multiple sclerosis. J Am Acad Aud, 2011 (submitted). **Center Author(s):** Lilly D, Hutter M, Lewis MS, Gallun F, Folmer R, Bourdette D **Project:** RR&D #B2568R, Auditory Function in Patients with and without Multiple Sclerosis **PI:** David Lilly, PhD; Stephen Fausti, PhD; Dennis Bourdette, MD
21	McMillan GP, Hanson TE, Saunders GH, Gallun FJ. A Two-Component Mixture Circular Regression Model for repeated measures auditory localization performance data. J Royal Stat Soc, 2011 (submitted). **Center Author(s):** McMillan GP, Saunders GH, Gallun FJ **Project:** RR&D #C3737R, The Impact of Hearing Aid Directional Microphones on Sound Localization **PI:** Gabrielle Saunders, PhD
22	McMillan GP, Konrad-Martin D, Dille MF. Accuracy of distortion-product otoacoustic emission-based ototoxicity monitoring using various primary frequency step-sizes. Int J Aud, 2011 (submitted). **Center Author(s):** McMillan GP, Konrad-Martin D, Dille MF **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD
23	McMillan GP, Saunders GH, Hanson TE. A statistical model of horizontal auditory localization performance data. J Acoust Soc Am Exp Ltrs, 2011;129(6):EL229-235 (in press). **Center Author(s):** McMillan GP, Saunders GH **Project:** RR&D #C3737R, The Impact of Hearing Aid Directional Microphones on Sound Localization **PI:** Gabrielle Saunders, PhD

24	Meikle MB, Henry JA, Griest SE, Stewart BJ, Abrams HB, McArdle R, Myers PJ, Newman CW, Sandridge S, Turk DC, Folmer RL, Frederick EJ, House JW, Jacobson GP, Kinney SE, Martin WH, Nagler SM, Reich GE, Searchfield G, Sweetow R, Vernon JA. The Tinnitus Functional Index: A new clinical measure for chronic, intrusive tinnitus. Ear Hear, 2011 (in press). **Center Author(s):** Henry JA, Griest S, Folmer RL **Project:** Tinnitus Research Consortium, Development of an Outcome Measure for Tinnitus **PI(s):** Mary Meikle, PhD, James Henry, PhD
25	Saunders GH, Echt KV. Blast exposure and dual sensory impairment. Invited article for Special Issue: Sensory and Communicative Disorders in Blast-Related Injuries. J Rehab Res Dev, 2011 (in press). **Center Author(s):** Saunders GH (NCRAR), Echt KV (Atlanta COE)
26	Saunders GH, Forsline A. Comparison of two forms of single-session hearing-aid counseling. J Am Acad Aud, 2011 (submitted). **Center Author(s):** Saunders GH **Project:** RR&D #C2645R, Effect of Individualized Counseling on Hearing Aid Acceptance **PI:** Gabrielle Saunders, PhD
27	Silverman S, Cates M, Saunders GH. Is measured hearing aid benefit impacted by seeing baseline outcome questionnaire responses? Am J Aud, 2011;20(2):90-99 (in press). **Center Author(s):** Saunders GH, Silverman S **Project:** NIDCD #T35DC008764, Ruth L. Kirschstein NRSA Short-Term Institutional Research Training Grant **PI:** Marjorie Leek, PhD
28	Souza P, Hoover E, Gallun FJ. Application of the Envelope Difference Index to spectrally-sparse speech. J Speech Lang Hear Res, 2011 (in press). **Center Author(s):** Gallun FJ
29	Summers V, Makashay M, Theodoroff S, Leek MR. Suprathreshold auditory processing and speech perception in noise: Hearing-impaired and normal-hearing listeners, J Am Acad Aud, 2011 (in press). **Center Author(s):** Theodoroff S, Leek M **Project:** Oticon TRUE Foundation #07-0406, Auditory Modeling of Suprathreshold Distortion in Persons with Impaired Hearing **PI(s):** Marjorie Leek, PhD; Brian Walden, PhD; Kenneth Grant, PhD; W. Van Summers, PhD

Conference Presentations

1	Arnold M, Saunders GH, Myers PJ, Chisolm TH, Teahen M. Evaluation of approaches to auditory rehabilitation for mild Traumatic Brain Injury (mTBI). Paper presented at the 6th international Adult aural rehabilitation conference; 2011 May; St. Pete Beach, FL. **Center Author(s):** Saunders GH, Teahen M **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD

2	Bever J, Diedesch AC, Lewis MS, Gallun FJ. Assessing hearing aid benefit in complex listening environments. Poster presented at NCRAR Biennial International Conference; 2011 Oct 9; Portland, OR. **Center Author(s):** Diedesch AC, Lewis MS, Gallun FJ **Project:** RR&D #C4963W, Modeling Auditory Integration in People with Impaired Hearing **Trainee:** Frederick Gallun, PhD
3	Billings CJ. Cortical auditory evoked potentials in clinical research. Invited presentation at the 7th Tanta International Meeting on Advanced Otorhinolaryngology; 2011 Jan; Cairo, Egypt. **Center Author(s):** Billings CJ **Project:** RR&D #C6971M, Neural Encoding of Signals in Noise: Effects of Hearing Impairment and Age **Trainee**: Curtis Billings, PhD
4	Billings CJ, Bennett KO, Molis MR, Leek MR. Event related potentials and perception of speech in several types of noise background. Poster presented at the Meeting of the Acoustical Society of America; 2011 May; Seattle, WA. **Center Author(s):** Billings CJ, Bennett KO, Molis MR, Leek MR **Project:** NIDCD #R01DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
5	Billings CJ, Ong S. Electrophysiology and perception of speech in noise. Poster presented at the American Auditory Society Annual Meeting; 2011 Mar; Scottsdale, AZ. **Center Author(s):** Billings CJ **Project:** RR&D #C6971M, Neural Encoding of Signals in Noise: Effects of Hearing Impairment and Age **Trainee:** Curtis Billings, PhD
6	Brickman DS, Reiss LR, Leek MR. Bimodal simulations of speech discrimination in noise: Effects of loudness mismatch between devices. Poster presented at the Conference on Implantable Auditory Devices; 2011 Jul; Asyllomar, CA. **Center Author(s):** Leek MR
7	Chisolm TH, McArdle R, Saunders GH, Smith S, Wilson R. A randomized-controlled trial of auditory training in adults: Preliminary results. Invited presentation at the International Collegium of Rehabilitative Audiology Meeting; 2011 May; Toronto, Canada. **Center Author(s):** Saunders GH **Project:** RR&D #C6303R, Supplementing Hearing Aids with Computerized Auditory Training **PI(s):** Richard Wilson, PhD; Theresa Chisolm, PhD
8	Dams-O'Connor K, Saunders GH, Mahncke H. Plasticity-based computerized training: A novel approach to cognitive rehabilitation for traumatic brain injury. Symposium presented at the Federal interagency Conference on Traumatic Brain Injury; 2011 Jun; Washington DC. **Center Author(s):** Saunders GH **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD
9	Dann S, Saunders GH, Griest S, Galvez G, Shannon J. Development of the Hearing Conservation Knowledge, Attitudes, and Behaviors (KAB) Questionnaire. Poster presented at the National Hearing Conservation Association Meeting; 2011 Feb; Mesa, AZ. **Center Author(s):** Saunders GH, Dann S, Galvez G **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD

10	Diedesch, AC, Gallun, FJ. Perception versus performance of binaural hearing capabilities. Poster presentation at American Auditory Society; 2011 Mar 6; Scottsdale, AZ. **Center Author(s):** Gallun FJ, Diedesch AC **Project:** RR&D #C4963W, Modeling Auditory Integration in People with Impaired Hearing **Trainee:** Frederick Gallun, PhD
11	Dreisbach L, Konrad-Martin D, Dille MF, Reavis KM. Tips and tricks for making reliable OAE measurements. Invited half day workshop presented at the National Hearing Conservation Association Annual Conference; 2011 Feb; Mesa, AZ. **Center Author(s):** Konrad-Martin D, Dille MF, Reavis KM **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD
12	Ellingson RM. IEEE TV Event Showcase and Video Proceedings. IEEE Oregon Virtual Worlds Symposium 2011. https://ieetv.ieee.org; 2011 Mar; Portland, OR. **Center Author(s):** Ellingson RM **Project:** RR&D #C4844C, National Center for Rehabilitative Auditory Research **PI:** Stephen Fausti, PhD
13	Ellingson RM, Helt WJ, Helt PV, Wilmington DJ, Gordon JS, Fausti SA. Mobile software Apps support personalized-SRO and serial monitoring with results indicating early detection of hearing loss. Podium presentation at the Instrumentation and Measurement Technology Conference (I2MTC) IEEE. 2011 May; Hangzhou, China. **Center Author(s):** Ellingson RM, Helt WJ, Helt PV, Wilmington DJ, Gordon JS, Fausti SA **Project:** RR&D #C6373R, A Portable Audiometric Monitoring Device (the OtoID) **PI:** Stephen Fausti, PhD
14	Feeney MP, Hunter LL. Clinical application of wideband acoustic transfer functions. Invited Featured Session presented at the Annual Convention of the American Academy of Audiology; 2011 Apr; Chicago, IL. **Center Author(s):** Feeney MP **Project:** NIDCD #5R01DC010202-02, Wideband Clinical Diagnosis and Monitoring of Middle-Ear and Cochlear Function **PI:** M. Patrick Feeney, PhD
15	Folmer RL. Development of a portable device for assessment of auditory processing. Podium presentation at the ASHA Annual Convention; 2010 Nov; Philadelphia, PA. **Center Author(s):** Folmer RL **Project:** RR&D #C6373R, A Portable Audiometric Monitoring Device (the OtoID) **PI:** Debra Wilmington, PhD
16	Folmer RL. Transcranial Magnetic Stimulation: A Treatment for Tinnitus? Podium presentation at the American Academy of Audiology 23nd Annual Convention, Chicago, April 8, 2011. **Center Author(s):** Folmer RL **Project:** RR&D #C7448I, Clinical Trial of Transcranial Magnetic Stimulation for Tinnitus **PI:** Robert Folmer, PhD

17	Gallun FJ, Diedesch AC. Distinguishing the effects of central and peripheral auditory dysfunction. Podium session presented at 17th Meeting of Cognitive Science Association for Interdisciplinary Learning; 2011 Aug, Hood River, OR. **Center Author(s):** Gallun FJ, Diedesch AC **Project:** RR&D #C4963W, Modeling Auditory Integration in People with Impaired Hearing **Trainee:** Frederick Gallun, PhD
18	Gallun FJ, Diedesch AC. Predicting spatial benefit in older listeners. Podium session presented at Association for Research in Otolaryngology; 2011 Feb, Baltimore, MD. **Center Author(s):** Gallun FJ, Diedesch AC **Project:** RR&D #C4963W, Modeling Auditory Integration in People with Impaired Hearing **Trainee:** Frederick Gallun, PhD
19	Gallun FJ, Diedesch AC. Predicting performance in a multitalker environment. Invited talk presented at Heuser Hearing Institute Symposium– Spatial Hearing and Hearing Loss; 2011 Apr; Louisville, KY. **Center Author(s):** Gallun FJ, Diedesch AC **Project:** RR&D #C4963W, Modeling Auditory Integration in People with Impaired Hearing **Trainee:** Frederick Gallun, PhD
20	Hall J, Henry JA, Davis P, Formby C, Folmer R. Tinnitus management strategies: Contrasts and commonalities. Invited presentation at AudiologyNOW! Annual Convention of the American Academy of Audiology; 2011 Apr; Chicago, IL. **Center Author(s):** Henry JA, Folmer R **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
21	Havard J, Teahen M, Saunders GH. The QuickSIN and the HINT as stimuli for the PPT. Poster presented at the American Auditory Society Annual Meeting; 2011 Mar; Scottsdale, AZ. **Center Author(s):** Saunders GH, Teahen M **Project:** NIDCD #T35DC008764, Ruth L. Kirschstein NRSA Short-Term Institutional Research Training Grant **PI:** Marjorie Leek, PhD **Trainee:** Jovina Havard, NIH-T35 AuD Student
22	Henry JA. Essentials of Progressive Tinnitus Management for audiologists. Invited half-day presentation at the 3rd Annual Joint Defense/Veterans Audiology Conference (JDVAC); 2011 Mar; San Diego, CA. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
23	Henry JA. Essentials of Progressive Tinnitus Management for audiologists. Invited half-day training workshop for VA Audiologists at the ReSound Government Services National Seminar; 2011 Apr; Phoenix, AZ. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD

24	Henry JA. Essentials of Progressive Tinnitus Management for audiologists. Invited half-day training workshop for VA Audiologists at the ReSound Government Services National Seminar; 2011 Jun; Austin, TX. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
25	Henry JA. Overview of Progressive Tinnitus Management. Invited videoconference presentation for AuD students at Northwestern University; 2011 May; Evanston, IL. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
26	Henry JA. Principles of tinnitus management learned from five controlled studies. NCRAR Clinical Research Seminar at the Portland VA Medical Center; 2011 May, Portland, OR. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
27	Henry JA. Progressive Tinnitus Management. Invited half-day presentation at the British Columbia Association of Speech/Language Pathologists & Audiologists (BCASLPA) Conference; 2010 Oct; Burnaby, British Columbia, Canada. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
28	Henry JA. Progressive Tinnitus Management: How-to workshop. Invited half-day presentation at the International Otology Symposium; 2011 Aug; Beijing, China. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
29	Henry JA. Progressive Tinnitus Management: What audiologists need to know. Invited lecture for Au.D. students at the University of Washington, Department of Speech and Hearing Sciences; 2011 Aug; Seattle, WA. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
30	Henry JA. Progressive Tinnitus Management: Workshop for audiologists. Invited full-day training workshop at the Madigan Army Medical Center; 2011 Aug; Tacoma, WA. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
31	Henry JA. Tinnitus research—lessons learned and help for veterans. Invited presentation at Research Day 2011, Portland VA Medical Center; 2011 May; Portland, OR. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD

32	Henry JA. Tinnitus research at the VA: Helping our veterans. Invited presentation at the American Tinnitus Association Board of Directors Meeting; 2011 Apr; Portland, OR. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
33	Henry JA, Bea S. The 'tinnitus assessment' – what really matters. Invited presentation at AudiologyNOW! Annual Convention of the American Academy of Audiology; 2011 Apr; Chicago, IL. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
34	Henry JA, Schmidt CJ. Progressive Tinnitus Management: How-to workshop. Invited full-day training workshop at the Buffalo VA Medical Center; 2011 Sep; Buffalo, NY. **Center Author(s):** Henry JA **Project:** RR&D #C7413R, Multi-site Evaluation of Progressive Tinnitus Management **PI:** James Henry, PhD
35	Hoover E, Souza P, Gallun FJ. A role for modulation sensitivity in age related declines in speech understanding? Poster presentation at Aging and Speech Conference; 2011 Oct; Bloomington, IN. **Center Author(s):** Gallun FJ
36	Hoover E, Souza PE, Gallun FJ. Modulation frequency discrimination and high-rate modulations in spectrally reduced speech. Poster presentation at American Auditory Society, 2011 Mar; Scottsdale, AZ. **Center Author(s)**: Gallun FJ
37	Hoover E, Souza P, Gallun F. Relationship between amplitude modulation in psychophysical tasks and speech in listeners with normal and impaired hearing. Podium presentation at Acoustical Society of America; 2011 May; Seattle, WA. **Center Author(s):** Gallun FJ
38	Jacobs PG, Wan EA, McMillan G, McDermott D, Kagen D, Konrad-Martin D. Correlation of SFOAE amplitude and medial olivocochlear inhibition with hyperglycemia in people with diabetes. Presented at ARO Midwinter Meeting; 2011 Feb; San Diego, CA. **Center Author(s):** Jacobs PG, McMillan G, McDermott D, Konrad-Martin D **Project:** NIDCD #1R21 DK079283-01, Noninvasive Blood Glucose Monitoring using Otoacoustic Emissions **PI:** Eric Wan, PhD **Trainee:** Peter Jacobs, PhD
39	Kharlamova A, Thielman EJ, Henry JA. Development of an automated test to assess the presence of tinnitus. Poster presented at the American Auditory Society Annual Meeting; 2011 Mar; Scottsdale, AZ. **Center Author(s):** Thielman EJ, Henry JA **Project:** RR&D #C4698R, Development of an Automated Test to Assess the Presence of Tinnitus **PI:** James Henry, PhD **Trainee:** Anna Kharlamova, NIH-T35 AuD Student

40	Konrad-Martin D, Dille MF, McMillan G, Reavis, KM. Novel multivariate DPOAE metrics that identify changes in hearing. Invited podium presentation at the National Hearing Conservation Association (NHCA) Annual Conference; 2011 Feb; Mesa, AZ. **Center Author(s):** Konrad-Martin D, Dille MF, McMillan G, Reavis KM **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD
41	Konrad-Martin D, McMillan G, Wilmington D, Dille MF. Sensitive and sensible measures for identifying ototoxicity. Podium presentation at the Joint Department of Defense Veterans Affairs Audiology Convention (JDVAC); 2011 Mar; San Diego, CA. **Center Author(s):** Konrad-Martin D, McMillan G, Wilmington D, Dille MF **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **PI:** Marilyn Dille, PhD
42	Leek MR. Closer to the edge: Vowels, pitch, and hearing loss. Presentation to the Department of Speech and Hearing Science, University of Minnesota; 2011 Sep; Minneapolis, MN. **Center Author(s):** Leek MR **Project:** NIDCD #RO1DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
43	Leek MR. Hearing loss and the perception of complex sounds. Invited podium presentation at the Meeting of the American Auditory Society; 2011 Mar; Scottsdale, AZ. **Center Author(s):** Leek MR **Project:** NIDCD #RO1DC00626, Hearing Loss and the Perception of Complex Sounds **PI:** Marjorie Leek, PhD
44	Lewis MS. Auditory function and multiple sclerosis. Guest lecture in Au.D. student current issues course; 2011 Sep; Gainesville, FL. **Center Author(s):** Lewis MS **Project:** RR&D #B2568R, Auditory Function in Patients with and without Multiple Sclerosis **PI(s):** David Lilly, PhD; Stephen Fausti, PhD
45	Lewis MS, Babeu L. Assisting patients through the rehabilitation process. Learning module presented at AudiologyNOW!; 2011 Apr; Chicago, IL. **Center Author(s):** Lewis MS **Project:** RR&D #C7067W, Auditory Rehabilitation from the Perspective of the Significant Other **Trainee:** M. Samantha Lewis, PhD
46	Liimatta N, Dille M, Diedesch-Rouse AC, Gallun FG. The effects of age on the auditory attentional blink. NIH T35 poster presented at the American Auditory Society's annual meeting; 2011 Mar; Scottsdale, AZ. **Center Author(s):** Dille M, Diedesch-Rouse AC, Gallun FG **Project:** RR&D #C7223R, Individualized Objective Techniques for Early Detection of Ototoxicity **Trainee:** Nick Liimatta, NIH-T35 AuD Student **PI:** Marilyn Dille, PhD
47	Myers PJ, Saunders GH, Chisolm T, Arnold, M. Evaluation of approaches to auditory rehabilitation for mild TBI. Poster presented at the Sixth Annual VA Blast Injury Conference; 2010 Dec; Tampa, FL. **Center Author(s):** Saunders GH **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD

48	Saunders GH. Blast exposure, mTBI and impacts on hearing. Invited presentation and panel discussion participant at Visual Function and its Management in mTBI, Smith Kettlewell Eye Research Institute; 2011 Mar; San Francisco, CA. **Center Author(s):** Saunders GH **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD
49	Saunders GH. Rehabilitation of blast-related TBI. Invited presentation and panel discussion participant at Visual Function and its Management in mTBI, Smith Kettlewell Eye Research Institute; 2011 Mar; San Francisco, CA. **Center Author(s):** Saunders GH **Project:** RR&D #C7054R, Evaluation of Approaches to Auditory Rehabilitation for Mild TBI **PI:** Gabrielle Saunders, PhD
50	Saunders GH. The effects of aging on hearing help-seeking behavior. Invited presentation at the 2nd Starkey Research Summit; 2011 Sep; Sonoma, CA. **Center Author(s):** Saunders GH
51	Saunders GH, Dann S, Vachhani J, Folmer RL, Griest S. A multimedia hearing loss prevention program. Podium presentation Learning Module at AudiologyNow!; 2011 Apr; Chicago IL. **Center Author(s):** Saunders GH, Dann S, Vachhani J, Folmer RL **Project:** RR&D #C7214R, A Hearing Loss Prevention Program for Veterans **PI:** Gabrielle Saunders, PhD
52	Saunders GH, Teahen M, McArdle R, Chisolm TH, Smith S, Wilson R. Auditory training and hearing aid outcome. Paper presented at the 6th International Adult Aural Rehabilitation Conference; 2011 May; St. Pete Beach, FL. **Center Author(s):** Saunders GH, Teahen M **Project:** RR&D #C6303R, Supplementing Hearing Aids with Computerized Auditory Training **PI:** Richard Wilson, PhD; Theresa Chisolm, PhD
53	Shearer DE, Leek MR, Molis M, Bennett KO. Auditory stream segregation of iterated rippled noises. Poster presentation at the NCRAR Biennial International Conference - Expanding our Horizons: Medical Conditions and Audiology; 2011 Sep; Portland, OR **Center Authors:** Leek MR, Molis M, Bennett KO **Project:** NIDCD #T35DC008764,Ruth L. Kirschstein NRSA Short-Term Institutional Research Training Grant **PI:** Marjorie Leek, PhD **Trainee:** Daniel Shearer, NIH-T35 AuD Student
54	Still K, Molis MR, Kampel S. Identification of vowels in silent-center syllables by hearing-impaired listeners. Poster presented at the American Auditory Society Annual Meeting;, 2011 Mar; Scottsdale, AZ. **Center Author(s):** Molis MR, Kampel S **Project:** RR&D #C6116W, Improving Vowel Perception by Hearing-Impaired Listeners **Trainee:** Michelle Molis, PhD

55	Tremblay KL, Billings CJ. Auditory evoked cortical potentials do not reliably reflect hearing aid gain. Poster presented at the Association for Research in Otolaryngology 34th Midwinter Meeting; 2011 Feb; Baltimore, MD. **Center Author(s):** Billings CJ **Project:** RR&D #C6971M, Neural Encoding of Signals in Noise: Effects of Hearing Impairment and Age **Trainee**: Curtis Billings, PhD
56	Turbin M. Counseling Hard of Hearing Adults: Issues and Resources. Graduate seminar at the National Summer Program for Rehabilitation Counseling of Deaf and Hard of Hearing Adults, Western Oregon University; 2011 Jun; Monmouth, OR **Center Author(s):** Turbin M
57	Turbin M. Dual sensory loss or deaf-blindness: Do all names smell so sweet? Podium presentation at Region X Northwest Training Forum: Building Bridges for Successful Employment for Deaf, Hard of Hearing, Late Deafened and Deaf-Blind Adults; 2011 Sep; Portland, OR **Center Author(s):** Turbin M **Project:** RR&D #C7460P, Pilot Study: Self Management Groups for Veterans with Dual Sensory Loss **PI:** Mitchel Turbin, PhD
58	Turbin M, Echt K. Self management groups for adults with dual sensory loss: A pilot study. Podium presentation at the Hearing Research Foundation Sixth Adult Aural Rehabilitation Conference; 2011 May; St. Pete Beach, FL. **Center Author(s):** Turbin M **Project:** RR&D #C7460P, Pilot Study: Self Management Groups for Veterans with Dual Sensory Loss **PI:** Mitchel Turbin, PhD
59	Vachhani J, Dann S, Gallun FJ, Ellingson R, McMillan GP, Konrad-Martin D. Comparison of click- and chirp-evoked auditory brainstem responses. Poster presented at the American Auditory Society Meeting; 2011 Mar, Scottsdale, AZ. **Center Author(s):** Dann S, Gallun FJ, Ellingson R, McMillan GP, Konrad-Martin D **Project:** NIDCD #RO3DC008203, Temporal Resolution of Cochlear and Auditory Nerve Responses in Older Adults **PI:** D. Konrad-Martin, PhD **Trainee:** Jay Vachhani, AuD Student Extern

XXI. NATIONAL LEADERSHIP ROLES

(See accompanying spreadsheet, 'Leadership Roles' tab for a complete listing of substantive research dissemination activities (journal articles, books, conference presentations, etc) during the reporting period from the NCRAR)