

# Neuroaudiology Newsletter

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## ArizonaLEND 2016

The University of Arizona **Leadership Education in Neurodevelopmental and Related Disabilities (LEND)** is a program that trains future clinicians, researchers, and policy makers to better the health of children, adolescents, and their families. Audiology students from the University of Arizona, **Whitney Mast** and **Page Beukelman**, were selected out of many applicants to be two of this year's LEND fellows.



**Whitney Mast** (pictured left): "I am currently a third year doctoral student in the Audiology program at the University of Arizona. This year, I am looking forward to participating as a trainee of the Arizona Leadership Education in Neurodevelopmental Disabilities (LEND) program as a way to engage in cross-professional collaborations with other healthcare professionals who work with children and their families."

**Page Beukelman** (pictured right): "My name is Page Beukelman and I am a third year audiology doctoral student at the University of Arizona. I am originally from Portland, Oregon and moved to Tucson in 2010. I am excited to participate in the Arizona Leadership Education in Neurodevelopmental Disabilities (AzLEND) program in the 2016-2017 academic year. I hope to use my experience as an AzLEND fellow to improve my interdisciplinary skills and to help me become a more well-rounded clinician. I look forward to working with peers from various healthcare professions in an effort to provide holistic care for my patients in the future."



## International Hemispherectomy Conference

**Dr. Frank Musiek** was fortunate to have the opportunity to speak at **The International Hemispherectomy Conference** in Denver on July 9. This event was sponsored by the **Brain Recovery Institute** in Los Angeles and there were approximately 200 people at the session. The following is Dr. Musiek's thoughts and summary of the presentation.

"The reason that I was asked to speak was the concern of parents and professionals who work with children who have hemispherectomies that many seem to have "**auditory difficulties**"

### *Did you know?....*

Dyslexia, which seems to have a strong relationship with various types of central auditory dysfunction such as poor temporal resolution as measured by gap detection procedures can be a result of acquired neurologic deficits. For example, head trauma or various kinds of strokes can cause deficits in reading skills. One possible underlying reason for this may be poor neural communication between the occipital and temporal lobes, secondary to neural damage.

despite passing hearing tests. I believe more people have become aware of the problem due to an increased prevalence of hemispherectomy. In 2009, approximately 160 surgeries were carried out. Therefore, an accumulative effect becomes a factor in the prevalence.

Obviously resection of a major portion of the brain such as in hemispherectomy can and will have many effects on the individual. However, the variability of these effects are significant. Many factors can contribute to how well an individual does after hemispherectomy however, one of the major ones is the age at the time of surgery. The trend is that the younger the individual is at the time of surgery, the better the recovery. This seems to be the case in regard to audition; however,

often deficits in hearing linger. Parents and professionals, it seems, recognize the various **central nervous system (CNS)** deficits of cognitive, motor, vision, and limbic systems but are (by my view) somewhat confused about hearing. Some of this might be related to the very early research on hemispherectomy and hearing. The classic paper by Goldstein in 1957 was a case report on a young adult with hemispherectomy which was performed many years earlier. The report related essentially normal hearing on a pure tone audiogram. Since at that time so little **auditory research** was done on this clinical population this finding was the mainstay reference on the topic for many years and perhaps still is.

In 1972, Netley and colleagues and then in 1975, Berlin and his associates reported on a series of patients with hemispherectomy who were tested with **dichotic listening** procedures. Both of these reports showed rather marked deficits on dichotic listening for the ear contralateral to the side of the brain with the hemispherectomy. This was a somewhat expected finding due to the work by Bocca and colleagues and others who had demonstrated this "contralateral" finding in patients with brain lesions of the **auditory cortex**. Though these findings were not ignored they were not highly integrated into the various medical communities and certainly not into the lay public. Perhaps one of the reasons for this was the low prevalence of hemispherectomy at that time and the generally poor understanding of "**central hearing**".

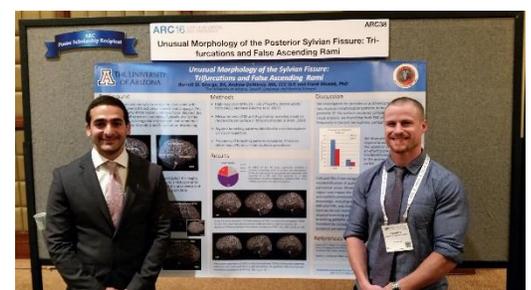
More recently in excellent reports by Bode et al. 2007, Boatman et al. 2003, and Lessard et al. 1999, showed marked deficits for **dichotic listening, speech in noise, and localization tasks** respectively. Hence, there is emerging evidence of **auditory deficits** in those with hemispherectomy. With the prevalence becoming greater more clinical research is needed to continue to define the auditory problems that those with hemispherectomy have to confront. In addition, much more needs to be done to seek rehabilitative approaches that may ameliorate these **auditory difficulties**.

## XXXIII World Congress of Audiology 2016

Neuroaudiology Lab members, **Andrew DeMarco** and **Barrett St. George** (pictured from left to right) will be presenting a poster titled, *Modern Views on the Anatomy of the Planum Temporale*, at the **World Congress of Audiology Conference** on September 18-22, 2016 at the Sheraton Wall Centre in Vancouver, Canada alongside **Dr. Frank Musiek**.

### Did you know?....

Dr. Brian O'Hara who developed the auditory processing disorder questionnaire (APDQ) and is commonly present at many of our audiology meetings is a pediatrician. Dr. O'Hara for many years has had a strong unwavering interest in audiology and more specifically, CAPD.



## Historical Vignettes- William “Bill” Rintelmann, (1930 – 2016)



One of pioneers in our field **William “Bill” Rintelmann** passed away on August 21, 2016 at his home in Carefree, AZ. His exceptional academic career in audiology started with his graduation from Arizona State College, followed by M.A. and Ph.D. degrees from Indiana University. He was the **first post-doctoral student in audiology** in the United States working with **Raymond Carhart** at Northwestern University in the early 1960s. Bill chaired audiology departments at The University of Pennsylvania and Wayne State University. He also served on faculties at the University of North Dakota, Northwestern and Michigan State Universities. He retired from Wayne State University in 1995. His many contributions to the field included key investigations on word recognition tests, various aspects of **diagnostic audiology**, and was perhaps **the first audiologist directly involved in functional imaging studies** at Brookhaven labs back in 1979. Bill is credited with over **80 articles** in scientific and professional journals as well as **14 book chapters**. He also edited or co-edited 4 popular textbooks in audiology which included first and second editions of “Hearing Assessment”, in 1979 and 1991, “Principles of Speech Audiometry”, in 1983 and “Contemporary Perspectives of Hearing Assessment” in 1999. In 1997 received the “**Career Award in Hearing**” from the American Academy of Audiology, a fitting tribute to his many contributions to audiology. Bill was a consummate teacher providing vivid historical accounts of important aspects of audiology to his students, many of which have become leaders in the field. Moreover, he was a kind and dear friend to many students and professionals in speech and hearing generously sharing his time, expertise and guidance over many years. **He will be dearly missed.**

### The University of Arizona Audiology Journal Club

Do you enjoy discussing the latest audiologic and vestibular research with friends and colleagues?

If so, then the **Audiology Journal Club** invites you to join its monthly discussions this semester! The Audiology Journal Club is open to all who have an interest in the **speech, language, and hearing sciences**. Last year, the club discussed a range of topics to include theories surrounding the **traveling wave, hierarchical organization of speech perception, and sound lateralization following corpus callosum dysfunction**. However, what makes these discussions exceptional are the collective interests and perspectives of its members. **Membership is free and food is provided at**

#### Did you know?....

Dr. von Békésy (1961 Nobel Prize recipient) developed the Békésy audiometer in 1947 – at least that is the year commonly used in accounts of this device. It was eagerly accepted into the audiology community at both the research and clinical levels. During the 1950’s, 60’s and 70’s, considerable clinical research was conducted using Békésy audiometry primarily as a diagnostic tool. The Békésy audiometer used a tracking method to determine hearing threshold, a method that even now is considered the most accurate approach. Yet despite common use of Békésy audiometry for determining hearing threshold and diagnostic purposes, audiology distanced itself from this technique –much to the regret of many. Even today those who remember the E-800 Békésy audiometer wish it had not disappeared from the audiology scene and still with bewilderment wonder why.

**each meeting.** For the Fall semester, meetings will be held on the last Wednesday of the month from 5:15-6:15 pm in Room 409 at the University of Arizona Speech Language and Hearing Sciences building. Those dates are:

- September 28
- October 26
- November 30

If you are interested in joining or want to be added to the email distribution list, please contact **Diane Cheek** ([descheek@email.arizona.edu](mailto:descheek@email.arizona.edu)) or **Bryan Wong** ([bryanwong@email.arizona.edu](mailto:bryanwong@email.arizona.edu)).

## Upcoming Presentations-Dr. Musiek

Invited Lectures	Date and Location	Lecture Title
International Hemispherectomy Conf.	July 9, 2016: Denver, Colorado	Hearing after Hemispherectomy: Why a Single Hemisphere has Trouble Processing Sounds and Words
Pitch Discrimination Project Meeting	August 26, 2016: Los Angeles, California	Round Table Discussion
World Congress of Audiology Conf.	September 18-21: Vancouver, Canada	The Vertebro-basilar System: It's Neuroanatomical and Neuroaudiological Correlates
Oregon Academy of Audiology Conf.	October 5-7: Portland, Oregon	Part 1: The Vertebro-basilar System: It's Impact on Audiology Part 2: Application of Gap Detection Procedures
Inaugural Address Grand Rounds Louisville School of Medicine	November 7: Louisville, Kentucky	When Silence is Good: Application of the GIN Procedure
Joint DOD & VA Audiology Conf.	February 6-8: Anaheim, California	Adult Clinical Populations & CAPD
Association of Research in Otolaryngology	February 11-15: Baltimore, Maryland	TBA
Speech & Hearing Association of Virginia	March 23-25: Richmond, Virginia	TBA
American Academy of Audiology; AudiologyNOW!	April 5-7: Indianapolis, Indiana	TBA
International Evoked Response Study Group	May 21-25: Warsaw, Poland	TBA

### Past Neuroaudiology Newsletters

All past newsletters can be found at:  
<http://musiek.faculty.arizona.edu/>

### Recent Article of Interest

**Development of the Word Auditory Recognition and Recall Measure: A Working Memory Test for Use in Rehabilitative Audiology; *Ear & Hearing***  
 S. L. Smith, K. Pichora-Fuller, & G. Alexander