

# Heads Up

A newsletter for alumni, colleagues, and friends of the Department

## CASTLE Moves Out!



Teacher of the Deaf, Francisca Hernandez-Casillas, MA, works with children in the Durham CASTLE preschool classroom.

CASTLE (Center for Acquisition of Spoken language Through Listening Enrichment) is taking another leap forward. It is the next step in Carolyn Brown's vision of a comprehensive statewide program supporting children with cochlear implants. Grants provided by The Duke Endowment and the Cape Fear Memorial Foundation have permitted CASTLE to begin building on the successful prototype in Durham, which was first initiated five years ago. A first expansion site will begin operations in Wilmington in the coming weeks, and a second is planned for the western part of the State in the fall of 2008.

Staff for the new Wilmington site have been hired and are currently on hand at the Durham Center. The new preschool classroom teacher, Francisca Hernandez-Casillas, comes to us from California. She holds a master's degree from California State University-Fresno in Communicative Sciences and Disorders, with an

emphasis in Deaf Education. She attended the North Carolina Summer Institute at CASTLE in 2005. Francisca has taught children with hearing loss from birth to 12th grade. She has been on staff at the Durham site since September.

Speech/Language Pathologist Maegan Evans, PhD, has joined CASTLE to provide individualized therapy and to serve as trainer/mentor for school professionals in the counties surrounding Wilmington. She has received master's and doctoral degrees in Communicative Sciences and Disorders from the University of South Carolina-Columbia. Portions of Maegan's dissertation, "Acoustic Analysis of Adult Cochlear Implant Users' Voice and Speech", were published in the *Journal of Voice*, September 2006, and she presented the results of the study at the 2006 National A. G. Bell Association Conference in Pittsburgh. She was the recipient of an A. G. Bell Fellowship Grant between August 2005 and August 2006.

## Meeting the Challenge

CASTLE is teaching children who are deaf to listen and to talk. With the development of advanced technologies, supported by the appropriate school and family-based interventions, most children who are deaf or hard-of-hearing have the potential to develop spoken language. This can allow them direct access to mainstreamed education and the potential to become fully productive and enfranchised citizens. After receiving access to these technologies and appropriate interventions, many North Carolina children are now entering kindergarten with self-confidence and age-appropriate language.

This extraordinary development also presents us with a unique opportunity to reduce both the immediate costs of deaf education and the need for long-term support for people who are deaf or hard of hearing with public resources.

The rapidly increasing number of cochlear implants has posed a significant challenge, especially to educators and policymakers. Most professionals working with deaf children have been trained to teach using sign language and are not prepared to meet the new demands involved in developing spoken language in children with the new technology.

## Regionally-Based Centers

The expansion of CASTLE will bring services and training closer to families and schools. Two new regionally-focused centers will provide direct services to children and their families, including auditory-based speech-language therapy and evaluations, and it will serve to focus and coordinate professional support for children in the counties for which it is responsible. In addition, the new centers will serve as bases for professional training and mentoring, made available both to surrounding public school districts and to the early interventionist educators who work with the 0-3 age group. They will house a preschool program in which school professionals and therapists can gain hands-on experience. Each preschool will ultimately have two classrooms serving ages 2-3 and 4-5.

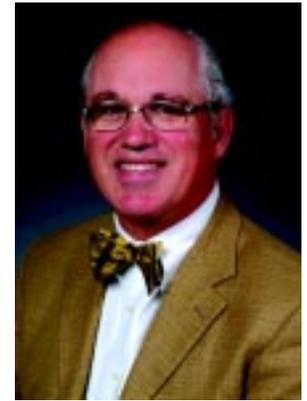
Clinical otologic and audiology services, as well as cochlear implant evaluations, will continue to be provided only at UNC facilities in Durham and Chapel Hill.

## A Cutting-Edge Vision

North Carolina is in a unique position to host such a model because it is the only state, so far as we know, which provides a financial assistance program for families with children who have hearing loss and who are unable to afford the new technologies. Consequently, the minorities represented in our patient population generally reflect the true demographics of the State.

Specific objectives for CASTLE include increasing the number of school professionals trained to provide auditory-based intervention, increasing access to auditory-based intervention services for children in rural areas of North Carolina, and increasing the number of children with hearing loss who have access to an auditory-based

## Chair's Corner



We are just a few months away from hosting our most ambitious meeting ever, CI 2007. In assessing why we were chosen to host this prestigious International Conference on Pediatric Cochlear implantation, it is clear from this issue of *Heads Up* that we have gone beyond most other institutions in providing assessment, evaluation, and rehabilitation for children with hearing loss. Our hearing aid program for children, our CCCDP program for cochlear implantation, and our CASTLE program for mainstreaming children with cochlear implants have allowed us the opportunity to serve over 500 deaf or hard of hearing children in North Carolina for whom cochlear implants have been their best option. This has truly been a team effort, consisting of physicians, audiologists, auditory scientists, and speech pathologists. We have reviewed 340 abstracts for our upcoming meeting in Charlotte, from April 11th to 14th, and we feel that the scientific program for our conference will be fabulous. I encourage anyone who is interested in this field to attend this meeting. We will all be there, doing our very best to host the attendees and presenters, and provide a nice opportunity for them to see the Queen City of North Carolina. I hope you find a way to attend our meeting, or if not, to congratulate those who made it happen.

Harold C. Pillsbury, MD  
Department Chair

preschool experience. The more isolated rural school districts present the greatest challenge to the delivery of training and services from the current centralized location. Given the growing number of these children served by North Carolina Public Schools, we find ourselves confronted with the necessity to build a locally accessible statewide program through which school professionals can obtain the training and assistance they require.



Maegan Evans, PhD, CCC-SLP, (right) works with Grace Wilson and her mom at the Durham CASTLE.

# Onisk-Hancock: Honored for Dedication



Sandra Onisk-Hancock, MS, CCC-SLP

Sandra Onisk-Hancock, Speech-Language Pathologist at CASTLE, was recently nominated by Carla and Koen Laffra for the Oticon Focus on People Award. Originating in 1997, the Oticon Focus on People Awards program is designed to focus attention on common misconceptions about hearing loss, correct negative stereotypes and motivate people with hearing loss to take advantage of the help that is available to them. Oticon created the Focus on People Awards to show the world that hearing loss does

not diminish a person's ability to live life to its fullest and most productive. Carla Laffra learned of the award through her involvement as an Advanced Bionics volunteer and Diplomat.

Mrs. Laffra viewed the nomination as a way of letting Sandra know how much it means for Koen and his family to have her positive influence in their lives. Mrs. Laffra stated, "I'm really thrilled that she is comfortable with Koen's progress and not worried about his delays. She has the energy and creativity to find ways to take him to the next step in his development, adjusting to his interests and abilities."

Koen, who is 7, is profoundly deaf as a result of meningitis suffered at 2 months of age. The meningitis also left him with special learning needs. He received his cochlear implant at age 4 in Ottawa, Canada. When his family relocated to North Carolina in 2005, his cochlear implant care was transferred to the CCCDP/UNC Pediatric Cochlear Implant Program. He began seeing Sandra for therapy on a weekly basis shortly thereafter.

The changes in Koen in the last year as a result of Sandra's therapy have made Carla Laffra and her family very happy. "We need to have positive people around us; life is too short not to tell them how much they are appreciated for the differences they make. Sandra is so good at cheering us on and making the family even more

motivated than we already are. Through therapy with her, we have seen nice progress and changes in Koen that affect the entire family's daily life."

The plaque reads as follows:

## **Sandra Onisk**

*Honored for achievements, dedication and spirit that are changing the perception of what it means to have a hearing loss. You have demonstrated that hearing loss does not limit a person's ability to make a difference in the community and the world. Your contributions have distinguished you as a role model for all, but especially for those with hearing loss.*

Mrs. Laffra stated, "Koen certainly feels Sandra enjoys him and is proud of him. For me, Sandra is a great emotional support."



Koen with his mother, Carla Laffra, holding the plaque honoring Sandra.

## **UNC is proud to be hosting the 11th International Conference on Cochlear Implants in Children**

April 11 - 14, 2007  
Westin Charlotte  
Charlotte, North Carolina



Co-Directors:  
Craig A. Buchman, MD  
Harold C. Pillsbury, MD

For more information and registration, go to [www.ci2007usa.com](http://www.ci2007usa.com)

# Eotaxin: At the Frontier of a Cure for Chronic Rhinosinusitis

by Alisha N. West, MD



Dr. Alisha West with her mentor on the research project, Dr. Brent Senior

I recently had the honor of receiving the Sam Sanders Award for Basic Science Research from the American Academy of Otolaryngic Allergy (AAOA). This award is granted annually to a resident involved in allergy research. In January 2006, I was granted a ROAD scholarship by the AAOA to conduct research pertaining to allergy. Dr. Brent Senior, the Chief of Rhinology here at UNC, alerted me to this wonderful opportunity and subsequently became my mentor.

My project is entitled “Eotaxin: at the Frontier of a Cure for Chronic Rhinosinusitis”. In summary, we have harvested endosinus tissue from patients suffering from Chronic Rhinosinusitis (CRS) and normal controls during endoscopic sinus surgery. We then immediately proteased the tissue to break it down into its cellular components, and grew these endosinus cells on an air-liquid interface. This allowed the cells to become ciliated and differentiated (with an apical and basolateral side). Once the cells were differentiated with cilia we were able to challenge the cells with various bacteria in vitro and see how they reacted.

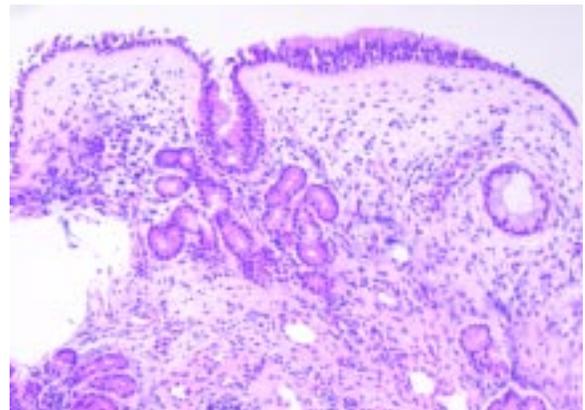
First, we compared the baseline supernatant to that collected after the bacterial challenge. We tested both aliquots for the presence of Eotaxin. Additionally, we contrasted the amount of Eotaxin found in CRS patients when compared to controls before and after stimulation with bacteria. Eotaxin is a chemokine that attracts Eosinophils and is secreted by epithelial cells in response to inflammation. We found that not only did the CRS tissues have higher levels of Eotaxin at baseline, but they also had a significant increase in this chemokine following bacterial stimulation. This finding was statistically significant.

The importance of this project is to identify a potential new cure for CRS. Chronic Rhinosinusitis is one of the leading causes of annual visits to the Otolaryngologist. In fact, 66 million adults in the US reported sinus problems last year. Additionally, nearly \$5.8 billion dollars is spent annually on treatment for CRS that typically gives little to no relief of symptoms, and symptoms usually recur within three months of therapy. Therefore, new targets must be identified, and although a cure is not imminent, great strides have been made to decrease the symptoms of inflammation.

My project aims to identify a new target for a cure for this prevalent disease, or at the very least decrease the symptoms associated with the inflammation including: congestion, headache, runny nose, foul smell, and dry mucosa. Due to Eotaxin’s chemoattractant effect on Eosinophils, by blocking Eosinophil demarginization into endosinus epithelial cells, inflammation will in turn be eliminated or minimized.

I have achieved the initial aims of this project during this first year of work; however, there is a lot more I would like to discover. Therefore, I am currently working on a new grant application for a second year of funding. The future direction of this study will be to develop an in vivo model also looking at the presence of Eotaxin in the milieu of the paranasal sinuses in CRS patients and controls. Not only will we be looking at the presence of Eotaxin, but we will also be identifying the other cytokines that are present in patients with CRS, and not present in the sinuses of normal patients. These additional cytokines that are related to CRS could also be considered for potential targets for therapy.

In conclusion, I would like to thank Dr. Senior for bringing this fantastic opportunity to my attention and helping me so much with it. He is a wonderful mentor and a pleasure to work with. I would also like to thank Dr. Pillsbury for providing us with designated research time, and encouraging all of us to pursue basic science research. I am proud of the work that we have accomplished.



H&E stained slide of the endosinus mucosal epithelium from a subject with Chronic Rhinosinusitis. This slide demonstrates the hypercellularity, eosinophilia, and absent cilia wave seen in diseased sinus mucosa.

# Early Onset Hearing Loss and the Brain: What Do We Do Now?

by Gregory J. Basura, MD, PhD



Dr. Greg Basura in the lab.

It is an honor to be writing in this edition of *Heads Up*. I am excited to share with you the events of the last six months as a second year resident currently on my research block. My pathway to Chapel Hill has involved many stops along the way. After graduating from Albertson College of Idaho, I traveled to the Motor City and the Department of Anatomy at Wayne State University School of Medicine where I attained my Doctorate in Anatomy and Cell Biology. From there I traveled back to the Pacific Northwest and the University of Washington for Medical School. Along this path my interests in basic neuroscience research have continued to grow and the opportunities to continue these pursuits are part of what attracted me to UNC. I have always been interested in how the CNS responds to insults and how plastic and resilient these systems can be.

Hearing impairments during development can produce significant changes in speech maturation, sound discrimination, and cognitive function. Clinically, this may lead to a permanent loss of auditory perceptual skills and impairment of language acquisition. To date, hearing loss research has predominantly focused on cochlear and cochlear nuclei functioning in animal models of deafness, while alterations in the primary auditory cortex (A1) remain largely unexplored. Understanding potential elements of plasticity in the central nervous system following sensorineural hearing loss (SNHL) is important as it may suggest novel clinical interventions leading to restorative hearing.

In the laboratory of Dr. Paul Manis I am investigating elements of plasticity within the A1 in response to early onset SNHL. Using a rodent model of bilateral cochlear ablation in pre-hearing animals, I am using electrophysiologic techniques to evaluate how A1 pyramidal neurons behave following an early loss of sensorineural inputs. More specifically, I am addressing serotonin (5-HT), a known early modulator of normal cortical function and development, and specific 5-HT receptors and how they may be contributing to elements of plasticity following SNHL.

I was fortunate enough to be awarded a Deafness Research Foundation Grant for the first year studies entitled: *Synaptic Organization and Plasticity in the Auditory Cortex Following Cochlear Ablation: Role of Serotonin Neurotransmission*. Specifically, these studies were designed to characterize the influence of serotonergic neurotransmission, via 5-HT<sub>2</sub> receptors, on auditory neuronal excitability following bilateral SNHL.

Since our last application to the DRF, we have made considerable progress in understanding the influence of 5-HT and 5-HT<sub>2</sub> receptors on pyramidal cell excitability within the normal developing A1 and following cochlear ablation as a model of early onset SNHL. We have demonstrated that 5-HT largely suppresses layer II/III cell excitability in the sham-operated A1; an effect exacerbated by 5-HT<sub>2</sub> receptor blockade suggesting that 5-HT<sub>2</sub> receptors normally positively regulate A1 neurons. Interestingly, following cochlear ablation, A1 cell excitability is not appreciably suppressed by 5-HT, an effect that is not altered by 5-HT<sub>2</sub> receptor antagonism, suggesting that 5-HT<sub>2</sub> receptor coupling to A1 layer II/III neurons is disrupted following cochlear ablation. Because 5-HT application to whole cell recordings stimulates multiple receptor subtypes, our present second year application for continued funding from the DRF seeks to utilize selective 5-HT<sub>2A</sub> receptor agonist and antagonist compounds to better elucidate changes in 5-HT<sub>2A</sub> receptor coupling to pyramidal cells following cochlear ablation. Moreover, we have utilized radio-ligand binding and high performance liquid chromatography assays to characterize 5-HT<sub>2A</sub> receptor protein expression and 5-HT and metabolite levels, respectively in A1 during normal development. These studies have characterized the normal developing A1 for trends within the 5-HT system that will be re-evaluated for elements of plasticity following cochlear ablation.

The clinical importance of this research lies in the identification of mechanisms contributing to plasticity and compensatory functioning in the central nervous system following sensorineural hearing loss. The evaluation of A1 neuronal functioning in an animal model of deafness and the progressive identification of neurotransmitter receptor systems that may modulate their activity after hearing loss, may lead to the development of pharmacologic tools to facilitate restorative hearing. Such findings could suggest simple neuropharmacological approaches to prevent permanent changes in auditory cortex transmission so that when hearing is restored, normal A1 function is achieved.

# Whatever happened to... Dr. David White?



The White Family, Christmas 2006. Left to right: Patrick, Patricia holding Robert, and David with Ana.

After completing my residency in the summer of 2003, my family and I moved to Cincinnati, Ohio, where I completed a two year pediatric otolaryngology fellowship at Cincinnati Children's Hospital Medical Center. We moved back to my hometown of Charleston, South Carolina, where I joined the Department of Otolaryngology-Head and Neck Surgery at the Medical University of South Carolina as an assistant professor. I joined a department which has grown rapidly in the last few years and now has fourteen attending otolaryngologists.

Patricia and I celebrated our tenth wedding anniversary in June of 2005, shortly before leaving Cincinnati. Our first year in Charleston was highlighted by the birth of our third child, Robert, in April of last year. Patrick (7) and Ana (5) express their love for their little brother by intermittently hugging and mauling him. Patrick is in first grade and spends his time reading about all things creepy and crawly, while Ana is in kindergarten and remains a princess. We do not miss the long, cold winters of Cincinnati and even Chapel Hill (after all it is North Carolina).

After spending the first two months here complaining to two of my mentors, Drs. Amelia Drake and Carlton Zdanski, about slow clinics and low patient volume, their predictions came true: my practice is now overflowing and I occasionally wish for one of those slow days. The most satisfying part of my job is working with our excellent residents. I was fortunate to be the recipient of our departmental teaching award after my first year here, a testament to the excellent teachers from my residency and fellowship who remain my role models. On a daily basis, I try to imprint my behavior with the

patience of Dr. Shockley, the precision of Dr. Weissler, the kindness of Dr. Senior, the Socratic method of Dr. Meredith, and the honesty of Dr. Buchman. And, in the last eighteen months, no resident in South Carolina has made it through a week without hearing such timeless Pillsburyisms as, "You can delegate authority but you can't delegate responsibility", "Don't come here with problems, come here with solutions", "Surgery is like sailing", and "Get your light in the sore".

The most difficult transition for me has been learning to teach in the operating room. Attaining a balance between the amount of freedom given to the pupil and the teacher's responsibility to the patient is a complex and multifactorial challenge which is, in most cases, far more difficult than choosing or executing the appropriate treatment. My appreciation of this fact was incomplete during my residency, and my respect for my teachers has increased monumentally since I have been in their shoes.

I am proud to follow the growth of the department in Chapel Hill, which has evolved in recent years from an excellent academic training program to a national leader in research and patient care. Starting at the top with Dr. Pillsbury, the sense of responsibility and collegiality of the faculty has helped foster camaraderie between residents which extends beyond the training years. In the last year, I have enjoyed catching up with the successes of many of my fellow residents at meetings and other visits. Patricia remains close with several friends from residency days as well. We look forward to the frequent reunions at Newton D. Fischer Society meetings, NC/SC Otolaryngology meetings, and national meetings.

## Fourth Year AuD Students an Asset to UNC Audiology



AuD students Laura Fleenor and English King

During the past year, the UNC Hospitals Audiology Clinic has provided a fourth year externship experience for two AuD students completing requirements for their clinical doctorate in audiology. Laura Fleenor from Greensboro and English King, a Greenville native, both completed their undergraduate degrees at UNC-Chapel Hill. Laura is now in her fourth year of the AuD program at East Tennessee University and English is in her fourth year at James Madison University. Both women are scheduled to graduate in May. Laura's primary placement is in the UNC Hospitals Pediatric Audiology Program, while English has her primary assignment in the Adult Cochlear Implant Program. When the students are not busy working with patients, both assist the audiology staff in the clinic's hearing aid dispensary. We have enjoyed and appreciated their hard work and positive attitude.

## Pediatric SLP Specializes in Traumatic Brain Injury

Leah MacMillan, MS, CCC-SLP, is a Pediatric Speech-Language Pathologist who began working at UNC in December of 2005. She earned her Master's degree from the University of Redlands in California and was previously employed for many years at the Children's Hospital in Los Angeles where she served as the Senior Acute Care SLP.

Leah specializes in the assessment and treatment of pediatric traumatic brain injury and pediatric swallowing assessment. She is primarily responsible for the provision of services in the Special Infant Care Clinic here at UNC. Leah is currently the lead site investigator for UNC's participation in the multi-site research study investigating a new protocol for assessment of pediatric traumatic brain injury.

In her free time, Leah enjoys working in and around her new home in Pittsboro. She and her husband, Ramsay, enjoy all outdoor activities, including hiking and camping. They recently competed in the Outer Banks Triathlon in October of 2006.

Leah is an outstanding clinician and we are pleased to have her on our staff.



Leah MacMillan, MS, CCC-SLP

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## Announcements

*Just a few of the many exciting things happening in our Department*

**Adam M. Zanation, MD**, a chief resident, won the James Harrill Resident Research Award from the Triologic Society for his study: "A controlled outcomes study of radiation resistance in spindle cell variant squamous cell carcinoma of the head and neck." He will present this work at the 2007 Southern Section Meeting in February 2007, Marco Island, Florida. His co-authors include **Marion E. Couch, MD, PhD**; **William W. Shockley, MD**; **Carol G. Shores, MD, PhD**; and **Victor Lai, BS**.

**The 8th Annual Carolina Course in Sinus Surgery and Facial Plastic Surgery** will take place April 13th and 14th in Savannah, Georgia. Residents, reserve your place now for this unique and ever more popular course, combining lectures with cadaveric dissection. **Brent A. Senior, MD**; and **William W. Shockley, MD**, continue to co-direct, and as always, invited speakers will be outstanding! For information and registration, contact Kathy Harris at 919-966-8926 or kharris@med.unc.edu.

**Luke Richey, BA** a fourth-year medical student, has recently completed his year of ENT research in the lab of **Carol G. Shores, MD, PhD**, as a Doris Duke Fellow. His research resulted in the publication of a paper in the January 2007 issue of *Otolaryngology-Head and Neck Surgery*, titled "The effectiveness of salvage surgery after the failure of primary concomitant chemoradiation in head and neck cancer." **Mark C. Weissler, MD**, had identified the need for the study based on his clinical experience with primary chemoradiation failures and making the difficult decision of whether to attempt surgical salvage. We now have a cohort of over 200 head and neck cancer patients who received chemoradiation intended for cure. This is generating new ideas for future studies in which we could use the same cohort. Along with Richey, Shores, and Weissler, co-authors include **Jonathan George, BA** (also a Doris Duke Fellow); **Steve C. Lee, MD, PhD**; **David K. Sutton, BS**.

Comments, suggestions, or questions about *Heads Up?* Contact Elizabeth Perry, 919-966-8926, or eperry@med.unc.edu.

*The Department of Otolaryngology/Head and Neck Surgery is proud of its skilled faculty and staff who are committed to providing patients with the highest quality health care. Get to know us!*

#### **The Department of Otolaryngology/Head and Neck Surgery**

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William W. Shockley, MD, FACS, Vice Chair, W. Paul Biggers Distinguished Professor of Otolaryngology/Head and Neck Surgery  
Carolyn Hamby, Clinical Academic Departmental Administrator

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William W. Shockley, MD, FACS, Professor  
Scott D. Meredith, MD, FACS, Associate Professor (WakeMed ENT, Chief)  
Carol G. Shores, MD, PhD, FACS, Associate Professor  
Marion E. Couch, MD, PhD, FACS, Assistant Professor  
Andrew F. Olshan, PhD, Research Professor  
Brian K. Kanapkey, Speech Pathologist

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Carlton J. Zdanski, MD, FACS, Assistant Professor  
Austin S. Rose, MD, Assistant Professor

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Raymond D. Cook, MD, Assistant Professor (WakeMed ENT)

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Harold C. Pillsbury, MD, FACS, Professor  
Oliver F. Adunka, MD, PhD, Clinical Instructor

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Michael O. Ferguson, MD, Assistant Professor (WakeMed ENT)

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Ellen S. Markus, MA, Coordinator  
Linda F. Hube, MS, Speech Pathologist

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Marion E. Couch, MD, PhD, Assistant Professor

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Paul B. Manis, PhD, Professor  
John H. Grose, PhD, Professor  
Charles C. Finley, PhD, Research Associate Professor  
Douglas C. Fitzpatrick, PhD, Research Assistant Professor  
Emily Buss, PhD, Research Assistant Professor  
Patricia A. Roush, AuD, Clinical Assistant Professor, Director of Pediatric Audiology

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Harold C. Pillsbury, MD, FACS, Professor, Executive Director  
Carlton J. Zdanski, MD, FACS, Assistant Professor  
Carolyn J. Brown, MS, CCC-SLP/A, Clinical Assistant Professor, Program Director  
Holly Teagle, AuD, Clinical Assistant Professor, Clinical Director

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Marc K. Bassim, MD	Joshua C. Demke, MD	Paul C. Bryson, MD	Keith M. Ladner, MD	Paula J. Harmon, MD
Charles S. Ebert, MD, MPH	Karen A. Kölln, MD	W. Derek Leight, MD	Rose J. Payyapilli Eapen, MD	Mihir R. Patel, MD
Krishna G. Patel, MD, PhD	Jeffrey B. LaCour, MD	Allen F. Marshall, MD	Alisha N. West, MD	Michael E. Stadler, MD
Adam M. Zanation, MD	Steve C. Lee, MD, PhD			

**[www.unc-ent.org](http://www.unc-ent.org)**

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