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Heads Up

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

Otologists at UNC Provide Innovative Solution for Hearing Loss

On March 28, 2008, Drs. Craig Buchman and Oliver Adunka of the Division of Otolaryngology, Neurotology, and Skull Base Surgery began work on a clinical trial studying the Vibrant Soundbridge (VSB) device for conductive or mixed hearing loss. This device, previously approved by the US Food and Drug Administration (FDA) for sensorineural hearing loss, was implanted by Dr. Buchman for external auditory canal atresia. This patient remains the only adult in the US implanted with this device for this particular indication.

External auditory canal atresia is an uncommon problem characterized by absence of the ear canal and tympanic membrane with a present ossicular chain (hearing bones) and usually normal inner ear function. Thus, patients with canal atresia usually have hearing loss because of a lack of conduction of sound to the inner ear (i.e. conductive hearing loss). Since surgical correction has been challenging over the years because of difficulty with healing and resulting ear canal maintenance, many patients or families have elected to forgo reconstruction in favor of maintaining a clean, dry, carefree ear.

However, unilateral hearing loss resulting from atresia is not without consequences, as individuals with this problem have significant issues with sound localization and hearing in noise. This type of hearing loss can result in difficulties in day-to-day activities, especially when competing background noise or multiple sources are present. Some studies suggest that children with unilateral hearing loss can develop significant educational delays from such auditory deprivation as early as their elementary school years.



Drs. Oliver Adunka (left) and Craig Buchman from the Division of Otolaryngology, Neurotology, and Skull Base Surgery at UNC are surgeons and co-investigators in the US Vibrant Soundbridge Clinical Trial.

Unfortunately, non-surgical interventions such as hearing aids are usually not a good option for atresia patients since the ear canal and external ear are not available for sound transmission or to retain the device. Since the inner ear is normal, bone conduction (i.e. skull vibration) can be used as a method to transmit sound. This approach requires either a very tight-fitting headband or an osseointegrated, percutaneous attachment (bone screw) and a vibratory device behind the ear. While both devices are effective at transmitting sound, there are significant tolerance issues with the headband device because of skin pressure and discomfort as well as aesthetic considerations for school-

age children. For the implantable bone conduction device, surgery is required and care of the implant site can be problematic with skin overgrowth and local infection in some cases. While it is rare for these devices not to provide the intended benefit, aesthetic issues remain a major concern as well.

In 2004, former UNC Otolaryngology resident George Brinson, MD, from Wilmington, North Carolina, sent Danny Sanderson, a 40-year-old man with a life-long history of ear atresia, to see Dr. Buchman for evaluation. Mr. Sanderson was plagued by difficulties with hearing in

noise and sound localization and was very interested in what options were available to him. After hearing about bone conduction hearing devices and surgical reconstruction, he asked what new or alternative options were in the pipeline for his problem. As ear atresia remained an uncommon condition, few attractive alternatives were available.

In the 1998, Dr. Buchman and colleagues at the University of Miami participated in a clinical trial testing an active middle ear implant (Vibrant Soundbridge) that was attached to the ossicular chain to deliver sound energy to the inner ear fluids directly. The device was implanted under the skin and patients wore a button size processor over the internal receiver that was retained with a magnet. While the clinical trial was designed for the rehabilitation of patients with mild to moderate degrees of inner ear hearing loss, it was apparent to Dr. Buchman at that time that this device might ultimately be useful for patients with ear atresia. Specifically, device implantation on to either the ossicular chain or round window of the cochlea would obviate the need for an ear canal reconstruction or a tight fitting headband. Moreover, thick skull bone to hold an osseointegrated implant and a transcutaneous connection would also be unnecessary.

After meeting Mr. Sanderson and looking at his CT scans, it was apparent to Dr. Buchman that he would be an excellent candidate for the Vibrant Soundbridge technology. Unfortunately, it was not available for clinical use for atresia patients in 2004. After discussing this usage in some detail with the manufacturer that produced the device (MedEL, Durham, NC), it was apparent that clinical trials were some time off. Feeling like this still was the best option for his problem, Dr. Buchman and Mr. Sanderson stayed in touch over the years, and in 2008, a clinical trial was initiated to test the Vibrant Soundbridge device in patients with conductive hearing loss. Clinicians at the UNC Ear and Hearing Center were chosen to participate in the trial, given their extensive experience with hearing device trials.

Mr. Sanderson was enrolled in this new clinical trial and became the first patient in the United States to receive the Vibrant MedEL device in an atresia ear. His surgery was uncomplicated, requiring a single incision behind the ear. The device was activated by audiologists at UNC following

Chair's Corner



Harold C. Pillsbury, MD
Department Chair

The work done by Drs. Adunka and Buchman highlighted in this issue provides a unique solution for individuals with hearing loss which has only recently been reapplied to a different area of the middle ear. That is to say, the Vibrant Soundbridge attached to the round window is a perspective that has not been utilized in the past. The clinical trial that they are presently involved in will help us to do a better job in managing these patients.

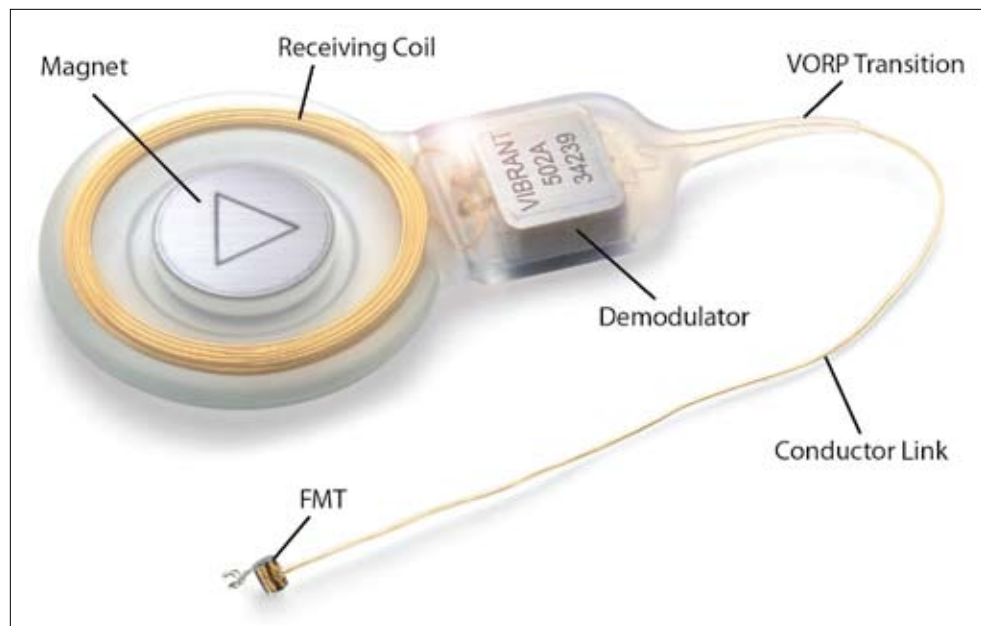
On another note, it is very interesting to witness the reflections of our chief residents who are leaving our program to embark upon their careers. They are all pursuing fellowship training to further enhance their educational opportunities and we are very proud of each of them. The new residents are a very exciting group. They come from various backgrounds, but each of them has a unique passion for service, science, and education. Upon reading their stories, I am certain that you will agree with me that they each have a brilliant future in medicine and will be a tremendous asset to our residency. It would be my sincere hope that they would accomplish as much when they finish their residency as the chief residents who are now moving on to further enhance their education. The entire faculty wishes each of them, both those leaving and those coming in, the very best of good wishes for their continued success in life.

a two-month healing period required by the trial. Mr. Sanderson immediately noticed improvement in his hearing. He wears the device daily and enjoys hearing in daily situations that previously he considered to be challenging.

Since the initial implantation, Drs. Buchman and Adunka have placed three more of these devices in patients with conductive or mixed

hearing loss with favorable results. Pending FDA approval for this indication, future trials will be undertaken to bring this device to children with ear atresia.

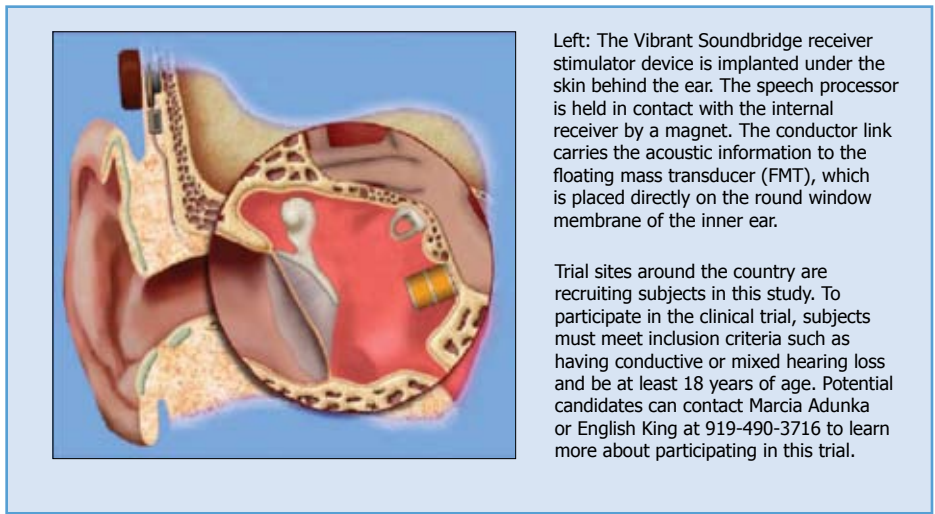
Dr. Adunka's experience with this new application has also been positive for his patients. "The Vibrant Soundbridge allows us to treat a problem that is often frustrating to both patients as well as professionals,"



The internal receiver stimulator of the Vibrant Soundbridge device. The receiving coil communicates with the external processor via radio waves. The conductor link carries sound information to the floating mass transducer (FMT) that generates vibrations.

says Dr. Adunka. “Once this technology has been fully FDA approved, we expect this to become a primary option for many patients suffering from hearing loss that is not easily repairable with conventional techniques.”

Dr. Buchman concludes, “At UNC, our team of audiologists and surgeons remain committed to finding practical and innovative solutions for patients with hearing loss. From our basic research labs to the patient bedside, we are driven by our desire to eliminate the detrimental impact that hearing loss can have on a patient’s educational achievement, employment opportunities, and quality of life.”



Left: The Vibrant Soundbridge receiver stimulator device is implanted under the skin behind the ear. The speech processor is held in contact with the internal receiver by a magnet. The conductor link carries the acoustic information to the floating mass transducer (FMT), which is placed directly on the round window membrane of the inner ear.

Trial sites around the country are recruiting subjects in this study. To participate in the clinical trial, subjects must meet inclusion criteria such as having conductive or mixed hearing loss and be at least 18 years of age. Potential candidates can contact Marcia Adunka or English King at 919-490-3716 to learn more about participating in this trial.

Hearing Again with the Vibrant Soundbridge

by Danny Sanderson



Kathy, Blake, and Danny Sanderson on a Bahamas cruise

My name is Danny Sanderson. I am married to Kathy and we have a son named Blake. We live in Rose Hill, North Carolina. I was born with a birth defect to my right ear that left my ear canal completely closed.

I remember going to UNC Hospitals as a small child to see doctors and they told my parents that the surgery would be too risky. They said if they were to hit a nerve it could paralyze the right side of my face. So, for 40 years I dealt with my limited hearing the best I could. When I started going to school, my mother asked the teachers to sit me in the front of the class so I would be able to hear. I’d try to face

people when they were talking to me so I could understand them, and if someone was talking to me on my right side, I had to ask them to repeat what they had said.

Around 2006, I had a cold and my left ear (the good one) stopped up. That cut my hearing down to just about nothing. That got me to really thinking about what would happen if I lost hearing in my left ear. So I saw an ENT doctor in Wilmington, North Carolina, who told me about Dr. Buchman, and I made an appointment.

After going through some testing, Dr. Buchman gave me some options to think about, one of which was the Vibrant Soundbridge (VSB) device. He said he really felt that this device would give me the quality of hearing I was looking for.

On March 28, 2008, I had surgery. I was the first person in North Carolina and the second person in the United States to have this procedure. I was a little nervous about what to expect. It took me about a week

to recover from the surgery, which was the hardest part for me because I’m not the type of person to just lie around for a week.

Then on May 28, 2008, I returned to the hospital to receive my miracle. When they



Danny reveals the audio processor, the external device he received two months after the surgery.

put on the external device, called the audio processor, I heard sounds in my right ear for the first time in 44 years. I cannot put into words what it feels like to be able to hear out of both ears. I could not believe how much I had been missing out on. I’m glad I chose to go with the VSB device because of the quality of hearing it has provided me.

I thank God every day for guiding the doctor’s hands and for the researchers who create devices like this to help people like me. I would like to say a special thanks to Dr. Buchman, his staff, and to Marcia Clark Adunka and her staff for the wonderful job they do. UNC Hospitals is truly a special place to my family and me.

“I heard sounds
in my right ear
for the first time
in 44 years.”

Chief Residents Reflect on Training



Drs. Keith Ladner, Alisha West, Trinitia Cannon, and Greg Basura celebrate the successful completion of residency at a banquet held in their honor on June 5, 2010.

Keith M. Ladner, MD: It is a great honor to be graduating from the UNC Department of Otolaryngology/Head & Neck Surgery residency program. I have benefited immensely from the rich tradition of unparalleled patient care for the last five years. I am greatly indebted for the endless support and guidance extended to me by my peers and mentors alike. I also appreciate the support and dedication of our nurses and staff, both in the clinic and in the operating room. Next year, I will be completing a fellowship in Facial Plastic and Reconstructive Surgery with Dr. Farris in Tampa, Florida. I am confident that no other program in the country prepares residents for their careers as well as UNC. Thank you to everyone who has allowed me to be a part of this tremendous department and participate in the care of your patients.

Alisha N. West, MD: The past five years have been some of the best years of my life. I am eternally grateful to have trained in a residency program with so many dedicated, brilliant, and empathetic teachers. Throughout my experience I was always encouraged to follow my dreams and to strive for the pinnacle of success. I was never limited in any facet of my training, growth, research, and surgical experience. I would like to take this opportunity to sincerely thank all of the attendings in the Department. I would also like to thank the other residents. We have become a family, and the residents in this program always care for and help each other. Dr. Pillsbury has worked hard to build the legacy

that is the Department of Otolaryngology/Head and Neck Surgery at the University of North Carolina, and I hope to carry on that legacy in my future career. I am somewhat saddened to finish my residency training, but I am also extremely excited to begin my fellowship here at the University of North Carolina in Pediatric Otolaryngology/Head and Neck Surgery. Thank you all again.

Trinitia Y. Cannon, MD: Once I decided that I wanted to become an Otolaryngologist, I asked for advice from my mentors on which residency program would be the best. No matter whom I asked, UNC was always at the top of the list. Imagine my surprise and disappointment when the denial letter came in the mail stating “they would be unable to offer me an interview at this time.” Never being one to back down from a challenge, I decided to draft a letter to Dr. Pillsbury. Many were surprised that I would be so bold, but I had nothing to lose and, hopefully, everything to gain. To my delight, I promptly received an e-mail asking me to come in for an interview. My interview day was everything that I had hoped for. The residents could not stop raving about the quality of the education that they were receiving, and they seemed to enjoy working with each other as well as spending time together outside of the hospital. In addition, they felt their surgical training was above par and that getting a fellowship or job with Dr. Pillsbury’s support would be easy. On the day of my interview, I was offered the position as a 7-year, T-32 research resident.

I would follow Dr. Carlos Ebert and become the second resident to fill this role. Because of my limited research background and desire to remain in academics, I gladly accepted and I have never regretted my decision. I worked in the lab for 2 years under the mentorship of Drs. Carol Shores and Marion Couch. In addition to being my mentors and well respected Head and Neck Surgeons, I am honored to count them as friends whom I often turn to for personal and professional advice. I am honored to say that in each discipline, I have received training from the most respected in the field of Otolaryngology. It fills me with pride to go to academic meetings and see the panelists comprised of the very people who train me on a daily basis. I am also honored to say that I have worked alongside the best residents in the country. I have forged lifelong friendships in the halls of UNC and I am very sad to leave this place behind. I will miss everyone as I head off to the Medical University of South Carolina to do a Head and Neck Fellowship.

Gregory J. Basura, MD, PhD: Five years. Seems like a long period, but has truly been a blur. When I stop to reflect on the last five years, my mind swirls with thoughts and reflections of moments; moments that run the gauntlet from jubilation to frustration, from confusion to fatigue and occasionally, sheer terror. What stands out most, however, are the people. The faces of the patients; the grateful patients reassured that everything will be ok, to the frightened as we roll back to the operating room, to the confused who just were told they have cancer, to the smiles, smiles from turning off the light or getting a blanket. Residency has truly been a ride; an emotional, physical tasking that pushes both the spirit and the body. What have sustained me in this journey are the little things. From brief moments of laughter on rounds, sitting with patients and families talking about the plan, or running the list with my colleagues, I will always look back on my residency at UNC and realize that was the time in my life when I learned the most about myself. My impetus for taking this journey has always been rooted in the desire to make a contribution. I am honored and privileged to be in a profession that allows me to contribute to the lives of others in this capacity and I will always be thankful to the department, my attendings, nurses, and fellow residents for shaping my development as a physician. Although I will shortly find myself in a land of maize and blue at the University of Michigan for a neurotology fellowship, I will keep a Carolina blue t-shirt on underneath my scrubs. Thank you, friends.

Get to Know the New Residents

The new Otolaryngology/Head and Neck Surgery residents bring an array of interests, skills, and experiences to the Department. They began their training in June 2010.

Anna Hang, MD, was born in Shanghai, China, but grew up mostly in the St. Louis and Chicago areas. She attended the University of Illinois at Urbana-Champaign and received her Bachelor's degree in Chemistry. Afterwards, she earned her medical degree at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. Anna is particularly interested in hearing loss research, especially noise-induced hearing loss. She looks forward to practicing Otolaryngology in the United States Air Force after residency. She is also a first-time homeowner and is excited to plant her vegetable and flower gardens.



Dr. Anna Hang

Deepak Raj Dugar, MD, is originally from Beaumont, Texas, where he graduated Valedictorian from his high school class of 525, and earned the Boy Scouts rank of Eagle Scout. He attended the 7-year BA/MD combined program at The George Washington University, where he majored in Biology and received his MD. Deepak is particularly interested in sinus disease, head and neck cancer and reconstructive surgery. He is a nationally-ranked racquetball player and enjoys spending time outdoors. As an avid Texas sports fan, he is always rooting for the Dallas Cowboys, Houston Rockets, and The University of Texas basketball and football.



Dr. Deepak Dugar

Anthony O. Okobi, Jr., MD, PhD, is from Pittsburgh, Pennsylvania, home of the mighty Steelers. He graduated from Cornell University with a Bachelor of Science in Neurobiology and Behavior. Following his undergraduate education, Anthony spent some time in Japan and Ecuador, immersing himself in the different languages and cultures, before returning to the United States and obtaining his Masters of Science in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (MIT). He then returned to Japan on the Monbukagakushoo, a Japanese Government sponsored fellowship. During his one year in Japan, Anthony conducted research in acoustic analysis of native Japanese speaker production of lexical prosody at the University of Tokyo's School of

Engineering. Before entering medical school, he went on to obtain his PhD in Speech and Hearing Bioscience and Technology from the Harvard-MIT joint program in Health Sciences and Technology. Anthony earned his MD from Brown University's Warren Alpert School of Medicine and is enthusiastic about joining the UNC Otolaryngology family. Outside of medicine, he enjoys cooking, mountain biking, and watching football.

Grace G. Kim, MD, is originally from Orange County, California. Grace received her BS in Biological Sciences with Research Honors and minors in Business Administration and Chemistry from Carnegie Mellon University in Pittsburgh, Pennsylvania. After college, she continued her research in head and neck tumor immunology at the University of Pittsburgh



Dr. Anthony Okobi



Dr. Grace Kim

Medical Center, then completed a post baccalaureate program at the University of Pennsylvania and researched coagulation management at the Hospital of University of Pennsylvania and Children's Hospital of Philadelphia. Grace earned her MD with Distinction in Research at the University of Medicine and Dentistry of New Jersey - Robert Wood Johnson Medical School in Camden, New Jersey. During medical school, she conducted transoral robotic surgery research at the University of Pennsylvania and participated in a medical mission to Ghana, Africa. Grace was accepted to the 7-year research track of our program and plans to pursue an academic career. Outside of medicine, she enjoys traveling and experiencing new adventures. She recently returned from Peru where she trekked the Inca trail to Machu Picchu and explored the Amazon.

Sounds of Celebration!



Everyone enjoyed lots of great food!



Kids played percussion instruments and sang along as Hinda played her guitar.



They danced the hokey pokey and the funky chicken.



2-year-old Teyha Mason has bilateral cochlear implants.

The UNC Department of Otolaryngology/Head and Neck Surgery, in conjunction with UNC Hospitals Speech and Hearing Department, hosted the first annual Sounds of Celebration: UNC Cochlear Implant Patient Picnic on Saturday, April 24th. The event was held at the UNC Business School's Latane Plaza, and was a collaboration between the Adult Cochlear Implant Program, the Carolina Children's Communicative Disorders Program (CCCDP), and the Center for the Acquisition of Spoken language Through Listening Enrichment (CASTLE). Adult and pediatric patients, along with family members and friends, joined the cochlear implant program team members for an afternoon of food, games, and an opportunity to share experiences with fellow cochlear implant recipients. Members of the UNC Women's Basketball Team autographed basketballs, while UNC mascot, Rameses, posed for pictures with excited fans. Cochlear implant manufacturer booths offered patients an opportunity to meet and ask questions of their company's representatives. Students from the UNC Doctorate of Audiology Program led basketball relays and corn-hole games for kids of all ages, while preschoolers played instruments and were led in song by a musician.



Marcia Adunka with Roz Birnbaum, whose husband Martin Birnbaum has bilateral cochlear implants.



Hannah Eskridge, Velma Grose, and John Grose



Cochlear implant recipient Ruth Deberry with Rameses.

Special thanks to our sponsors: Advanced Bionics, Cochlear, and Med-EL Corporation; and to the student volunteers from the UNC Doctorate of Audiology Program.



Kids enjoyed playing cornhole.



Left to right: Deb Hatch, Lisa DiMaria, Rameses, Holly Teagle, and Melissa Hall



Richard Collette (middle), President and CEO of MedEL, with Drs. Craig Buchman (left) and Oliver Adunka.

Announcements

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

Emily Buss, PhD, was elected a Fellow of the Acoustical Society of America, to be inducted in October 2010. She is also beginning a three-year term as an Associate Editor of the *Journal of the Acoustical Society of America*.

Douglas C. Fitzpatrick, PhD, won the "Medical Student Research Mentor Award" from the UNC School of Medicine Academy of Educators. This award recognizes excellence in training medical students in the fundamentals of medical research and research ethics.

Brent A. Senior, MD, will serve as President of the American Rhinologic Society beginning in September 2010 for one year. The mission of the ARS is to serve, represent and advance the science and ethical practice of rhinology. Dr. Senior is a Fellow of the American Rhinologic Society and has served in the past as First and Second Vice President, Secretary, Editor of the ARS newsletter, and on numerous committees.

Harold C. Pillsbury, MD, will serve as President-Elect of the American Academy of Otolaryngic Allergy beginning in September for one year. In September 2011, he will become President of this organization. The AAOA represents over 2000 Board certified otolaryngologists and other health care providers who devote part of their practice to otolaryngology, including the diagnosis and treatment of allergic and other related upper respiratory disorders.

Oliver F. Adunka, MD, received a 2010 Career Development Award from the Triological Society in the amount of \$40,000. Dr. Adunka is the Principal Investigator for the project entitled "Electrophysiologic Correlates of Intracochlear Electrode Positioning." Dr. Doug Fitzpatrick is the Co-Investigator, and Dr. Craig Buchman is the Consultant. The award was given to further establish the functional consequences of intracochlear electrode positioning. Over the past few years, Drs. Adunka, Fitzpatrick, and Buchman have developed an animal model that allows identification of cochlear damage and positioning of the cochlear implant electrode carrier relative to other structures in the inner ear. In more recent experiments, they have been able to demonstrate the near real-time feasibility of this approach so that it might be used in a clinical setting in the operating room. Also, the grant will help to merge electrode experiments and

a noise-induced hearing loss model in the gerbil and to further establish the recording algorithm in this setting. Ultimately, the goal is to translate the knowledge obtained in the animal model to a human application that will help to optimize intracochlear electrode positioning.

Gregory J. Basura, MD, PhD, was one of six resident physicians selected to win a 2010 Robert C. Cefalo House Officer Award. These physicians were recognized for showing dedication to their patients and demonstrating clinical expertise in their respective fields. Excerpts from the letters of nomination: "Dr. Basura demonstrates true academic skill and a high level of compassion towards patients. During his residency, he has exemplified great empathy and responsibility to his patients, developing long lasting relationships. Dr. Basura's dedication to being a leader in the field of clinical and translational research has proven his professionalism and respect both toward patients and academia. His commitment to caring and understanding of patient relationships has allowed Dr. Basura to be a strong team player in his department, always putting those in need before himself."

John P. Dahl, MD, PhD, MBA, has been selected to receive a Resident Research Award via the CORE grant program sponsored by the American Academy of Otolaryngology-Head and Neck Surgery Foundation. The grant title is "Flexible cartilage in microtia repair: umbilical cord stem cells on Nano-Implant." His mentors are Dr. William Shockley and Dr. John van Aalst (Plastic Surgery). Dr. Dahl has also received the 2010-2011 Wolf and Daisy Losken Craniofacial Research award given by the UNC Division of Plastic and Reconstructive Surgery (Department of Surgery).

What does the future hold for this year's chief residents? They have all matched with their first choices for fellowships next year! Dr. Deidra Blanks will be heading out to the University of Missouri in Springfield to do her Facial Plastic and Reconstructive Surgery fellowship under Dr. Keith LaFerriere. Dr. Paula Harmon going down south to the University of Alabama-Birmingham and the Children's Hospital of Alabama to do her Pediatric Otolaryngology fellowship under Drs. Jimmy Hill, Brian Wiatrack, Audie Woolley, and William Shirley. Dr. Michael Stadler is going west, to Washington University to do a Head and Neck Oncology and Microvascular Reconstruction fellowship under Dr. Bruce Haughey. Finally, we are thrilled to announce that Dr. Mitchell Gore will be staying on for another year right here at UNC as the first Rhinology and Endoscopic Skull Base Surgery Fellow in our Department, under Drs. Adam Zanation, Charles Ebert, and Brent Senior.

The Department extends congratulations to Mary Kathryn ("Kathy") Harris, Executive Assistant to Dr. Harold Pillsbury, for earning her Bachelor of Arts degree from the University of North Carolina at Chapel Hill in May 2010. Kathy completed her course of study by taking one or two classes per semester over the last six years, majoring in Management and Society. Well done!

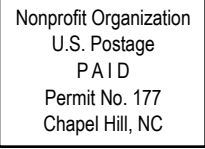


Kathy Harris with Dr. Pillsbury at her graduation party.

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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

Harold C. Pillsbury, MD, FACS, Chair, Thomas J. Dark Distinguished Professor of Otolaryngology/Head and Neck Surgery
Craig A. Buchman, MD, FACS, Vice Chair for Clinical Affairs
Brent A. Senior, MD, FACS, Vice Chair for Academic Affairs
Carolyn Hamby, Clinical Academic Departmental Administrator

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Trevor G. Hackman, MD, Assistant Professor
Andrew F. Olshan, PhD, Professor
D. Neil Hayes, MD, MPH, Assistant Professor
Brian K. Kanapkey, Speech Pathologist

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Carlton J. Zdanski, MD, FACS, Associate Professor
Austin S. Rose, MD, Associate Professor
Alisha N. West, MD, Pediatric Otolaryngology Fellow

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Linda F. Hube, MS, CCC-SLP, Speech Pathologist

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Patricia A. Roush, AuD, Associate Professor, Director, Pediatric Audiology

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English R. King, AuD, CCC-A, Audiologist
Margaret T. Dillon, AuD, CCC-A, Cochlear Implant Research Audiologist

W. Paul Biggers Carolina Children's Communicative Disorders Program

Craig A. Buchman, MD, FACS, Professor, Admin. Director
Harold C. Pillsbury, MD, FACS, Professor, Executive Director
Carlton J. Zdanski, MD, FACS, Associate Professor
Oliver F. Adunka, MD, Assistant Professor
Holly Teagle, AuD, Assistant Professor, Program Director
Hannah R. Eskridge, MSP, CCC-SLP, LSLC Cert. AVT, Clinical Instructor, Director of CASTLE

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Carol G. Shores, MD, PhD, FACS, Associate Professor
Brett E. Dorfman, MD, Assistant Professor
Esa A. Bloedon, MD, Assistant Professor
Allen F. Marshall, MD, Assistant Professor

Residents:

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Paula J. Harmon, MD	Joshua B. Surowitz, MD	Scott Shadfar, MD	Alexander Farag, MD	Anna Hang, MD
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Deidra A. Blanks, MD	Rose J. Eapen, MD	Mihir R. Patel, MD	Joseph P. Roche, MD	Baishakhi Choudhury, MD
			Kibwei A. McKinney, MD	Grace G. Kim, MD