Research plays key role during residency

Choosing a medical residency for specialty training is considered one of the most important decisions that medical students face. Once students select their desired specialty, they must apply to residency training programs. Residency training is a time of tremendous growth, both in terms of clinical knowledge as well as professional development. For some individuals, residency can also provide opportunities to explore research and scientific interests.

The University of Iowa Department of Otolaryngology – Head and Neck Surgery is one of a handful of otolaryngology programs that offer a separate research track for resident physicians interested in pursuing the specialty and becoming clinician-scientists.

For over two decades, the UI has been fortunate to have secured a training program grant from the National Institutes of Health-National Institute on Deafness and Other Communication Disorders (NIDCD). Known as a T32 grant, the NIDCD funding provides two-year basic and clinical research training opportunities for physicians considering and pursuing careers in academic medicine. In the case of the UI, it has helped supported resident training and yielded dozens of clinician-scientists over the years.

“We really want to support people who think critically and who want to be involved in research with potential to improve patient care.”

-Kristi Chang, MD, otolaryngology residency program director

Marlan Hansen, MD (left), mentors several residents in his lab. The experiences have led his laboratory to pursue new research questions with the potential to impact patients in the clinic.

Each year, the department selects five applicants for residency training - three are matched to a clinical track (five years) and two to a research track (seven years). The match process requires two separate applicant interview dates: one for those interested in a clinical track and one for research-focused applicants. This separated process has helped the department identify the most qualified candidates for each track.

The combined seven-year clinical research program is designed for an enhanced residency experience with a focus on a career in academics. After an internship year, the resident pursues two years of research, followed by four years of clinical training. The program’s strength lies in its flexibility as residents have a research experience tailored to their interests. A wide assortment of research training opportunities is available with options ranging from the...
Treatment and services are available for:

- Otolaryngology (General)
- Otolaryngology (Pediatric)
- Acoustic Neuroma
- Balance Disorders
- Cleft Palate (Pediatric)
- Cochlear Implants
- Diagnostic Audiology
- Head and Neck Cancer
- Hearing Aids
- Nasal and Sinus Conditions
- Otology/Neurotology
- Plastic Surgery and Cosmetic Services - Facial
- Skull Base Surgery
- Speech and Swallowing
- Tinnitus

Contact Us

Department of Otolaryngology—Head and Neck Surgery
200 Hawkins Drive, 21201 PFP
Iowa City, IA 52242

Department general information:
319-356-3574
iowaoto@uiowa.edu
uihealthcare.org/oto

Appointment scheduling: 319-356-2201

UI Health Access for the general public: 800-777-8442

UI Consult for referring providers: 800-332-8442

Continuing education information:
medicine.uiowa.edu/oto/courses

Department events, news, and information:
medicine.uiowa.edu/oto

American Tinnitus Association partners with UI on information sharing

For over two decades the University of Iowa has offered a unique educational and informational event involving the management of tinnitus, an audiological and neurological condition experienced by nearly 50 million Americans.

The 24th Annual Conference on the Management of the Tinnitus Patient will take place on June 16-17. Guest of honor for the conference is Jennifer Melcher, PhD, from Massachusetts Eye and Ear Infirmary in Boston, Mass.

The conference is intended for otologists, audiologists, hearing aid specialists, psychologists, and healthcare professionals who provide clinical services for patients. The purpose is to provide a review of current evaluation and management strategies for the treatment of tinnitus and hyperacusis.

To extend the sharing of information and reach a broader audience, the UI is collaborating with the American Tinnitus Association (ATA) by posting conference proceedings on the ATA website (ata.org). Webinars on the ATA website will feature speakers on topics of tinnitus research and tinnitus treatment and management.

Information about this year’s conference at medicine.uiowa.edu/oto/tinnituscourse

““This collaboration with the American Tinnitus Association will enable the most up-to-date information to be shared with tinnitus and hyperacusis patients from around the world.””

- Richard Tyler, PhD, professor of otolaryngology and conference organizer

UI specialists listed among best in America

Best Doctors® recognized several University of Iowa ear, nose and throat doctors in their 2015-16 Best Doctors in America® List. Doctors are nominated by their peers with only about 5 percent of doctors in the U.S. receiving the distinction. The list includes:

- Kristi Chang, MD — Head and Neck Surgery
- Bruce Gantz, MD — Head and Neck Surgery, Neurotology, Otology, Skull Base Surgery
- Scott Graham, MBBS — General Otolaryngology, Sinus and Nasal Surgery
- Marlan Hansen, MD - Neurotology
- Henry Hoffman, MD - Head and Neck Surgery, Laryngology
- Jose Manaligod, MD — Pediatric Otolaryngology
- Richard Smith, MD — Pediatric Otolaryngology
Clinical trial aims to alleviate radiation side effects

Story by David Pedersen

When junior ROTC instructor Stephen Cockrell of Attica, Iowa, began experiencing an earache and sore throat in September 2014, he figured it was a cold he had caught from his students.

But when his symptoms kept returning months later despite antibiotics, his local doctor performed a CT scan. Stephen’s results were abnormal, so he was referred to Holden Comprehensive Cancer Center at the University of Iowa.

More advanced scans revealed a cancerous tumor behind Stephen’s tongue, which required chemotherapy and radiation treatment. Upon diagnosis, he was given the option to participate in a clinical trial taking place at the Holden Cancer Center that aims to reduce a common negative side effect of radiation treatment.

“My thought was, ‘What do I have to lose?’” Stephen remembers.

In patients with head and neck cancer, radiation can be used to damage and kill the cancer cells. But this can also damage healthy tissue around the cancerous cells, resulting in pain, swelling, and blisters in the throat and mouth lining.

“The side effects are significant factors that limit patients’ abilities to complete treatment on schedule, their swallowing function after treatment, and their quality of life both during and after treatment,” says UI head and neck surgeon and assistant professor of otolaryngology Nitin Pagedar, MD. “Seeing improvement in all of these areas would have a large impact on how successful radiation treatment would be.”

“That’s why this research and this drug test are so exciting, because we’re trying to find a way of alleviating and/or preventing the severity of the blistered surface,” adds radiation oncologist Carryn Anderson, MD.

The study drug, administered through an IV, is given to patients before each radiation treatment. It is hoped the drug will counteract the radiation’s impact on healthy cells, leaving normal tissue in the radiation field undamaged.

“The patients I have seen who have been treated with the study drug seem to have much less difficulty with pain and swallowing during and just after treatment than what we’re used to seeing,” says Pagedar. “It’s very promising.”

Stephen participated in the clinical trial throughout his 47-day treatment period, with very few side effects from the radiation. He recommends the trial to others undergoing radiation for head and neck cancer.

“It’s been a very positive experience,” Stephen says. “I’m 100 percent supportive [of the trial].”

To learn more, contact:

Sandy Vollstedt, RN, BSN, OCN, at 319-353-7143 or sandy-vollstedt@uiowa.edu
Heather Brown, RN, BAN, OCN, at 319-384-7912 or heather-brown@uiowa.edu
Ask associate research scientist Hela Azaiez, PhD, and she will tell you that science is a lot like farming. Success depends on the tools and techniques used to produce a research discovery or yield a good crop. New techniques like massively high-throughput genetic sequencing are allowing scientists like Azaiez to analyze more DNA faster, more efficiently, and more cost effectively. The result is a higher yield of scientific answers to address questions such as the genetic causes of hearing loss.

The family of local farmer John Dane and his wife had no family history of hearing loss; however, four of their five children developed it. Seeking answers to this puzzle, John Dane’s curiosity led him to the Molecular Otolaryngology and Renal Research Laboratories (MORL), directed by Richard Smith, MD, professor of otolaryngology and Sterba Hearing Research Professor at University of Iowa Hospitals and Clinics. The MORL has been focused on the genetics of deafness for over 25 years and has the most comprehensive approach to understanding hereditary hearing loss of any lab worldwide. Many members of the Dane family lived in the area and were willing to participate in the genetic research that they hoped would provide the answers they were seeking. They were interested in not only identifying the cause of hearing loss, but also in determining whether something could be done to prevent further loss or restore hearing. In the early years of the partnership, the emphasis was on collecting genetic samples and establishing audiometric baseline measures of hearing thresholds in family members, which ranged from a mild loss to a profound loss. Using a next-generation sequencing platform developed in the MORL called OtoSCOPE® coupled with comprehensive bioinformatic analyses, the team went to work on the Danes’ DNA information.

The breakthrough came when Azaiez and Kevin Booth, a graduate student in the MORL, discovered two mutations in a gene called TMC1 gene. The TMC1 gene (TMC1 stands for transmembrane-channel like 1) encodes a protein that is fundamental for proper hearing. While the precise function of this protein is not completely understood, mutations in it lead to progressive postlingual hearing loss and profound prelingual deafness, which turned out to be the case in the Dane siblings. “Working with the family is a great reminder about why we do research. The discovery was one of those moments that really keeps us going,” according to Azaiez.

Having discovered the root cause of the hearing impairment, the MORL team next set out to explain the clinical differences seen amongst the Dane siblings. Using a second genetic approach called whole exome sequencing, which requires the study of over 20,000 genes, Azaiez and Booth waded through...
the over 200,000 variants found in the Danes’ genome for a clue, dropping from 200,000 variants to approximately 3,000 variants by making assumptions highly likely to be true. And although 3,000 is still a daunting number, Azaiez and Booth looked at these variants and identified seven in genes that are likely to interact with TMC1. This interaction is likely to be the key to this riddle. Currently, the MORL team is investigating how one of these seven genes might modify the baseline hearing loss in the Dane family caused by TMC1, thereby accounting for the observed variability.

For the family, establishing a genetic diagnosis has been a major step forward as it provides a starting point from which to understand their hearing loss. Having a genetic answer also makes it possible to predict whether the hearing loss will be inherited by future generations. According to Smith, “We can answer why the hearing loss is occurring and provide meaningful information and counseling to the family.” He adds, “The golden nugget in this unfolding story is that the MORL is currently spending a lot of effort on identifying and understanding modifier genes. If we can discover why two of the four Danes siblings have better hearing than expected when all four carry the same genetic mutations, perhaps we will discover a new approach to modifying the hearing loss a person has, making it less severe than expected. Studying families like the Danes potentially offers important insight as we move forward to develop different treatments for hearing loss.”

Learn more about research involving the genetics of hearing loss at medicine.uiowa.edu/MORL

**Collaboration brings new hearing device to market**

University of Iowa physicians and researchers collaborated with Earlens Corporation on development of the world’s first hearing device that uses light to transmit sound. The Earlens Light-Driven Hearing Aid uses light to stimulate a patient’s natural hearing system, resulting in a richer and more natural sound.

The UI was one of three sites, and the only academic medical center, to participate in clinical studies proving the safety and efficacy of the device. Early study efforts focused on technical feasibility of the device and patient improvement in sound quality. Results revealed a significant functional gain across the 125-10,000 Hz range.

“The device provides more amplification in the high frequency region where traditional hearing aids cannot meet target. Patients have reported that sound is crisper and cleaner,” states Camille Dunn, PhD, CCC-A, director of the Cochlear Implant Program at University of Iowa Hospitals and Clinics.

Once the Food and Drug Administration approved the Earlens Hearing Aid, collaborators pursued further trials addressing scalability, battery life, durability, and proper fitting. The additional efforts and study findings led the FDA to grant commercialization of the new hearing aid, thus creating a new treatment option for hearing-impaired patients. The UI is the first academic medical center in the United States to offer the device to patients.

Image courtesy of Earlens Corporation

“The family was extremely excited to hear this disclosure. It relieved my mind to know the deafness was genetic, instead of being caused by something we as parents did or did not do.”

– John Dane

Dane family members gather with researchers from the UI’s Molecular Otolaryngology and Renal Research Laboratories at a presentation where researchers discussed efforts leading up to the discovery of the genetic cause of hearing loss among family members.
“Projects like this have the potential to improve and change the field of otolaryngology and it is exciting to be able to take part in that process as part of my training at the University of Iowa.”

-Alex Claussen, MD

molecular biology of the auditory system and craniofacial deformities to clinical investigations involving hearing loss, head and neck cancer, speech disorders, and more.

During the clinical training years, all residents undertake two research rotations to explore those aspects of research that are of interest to them. For research track residents, this extra time allows them to continue pursuing projects begun in their first two years, publish and present findings, and pursue grant funding.

Faculty members who themselves have gone through the research track during residency training include Douglas Van Daele, MD, and Marlan Hansen, MD. Their experiences provided a solid foundation for a career in science and academic medicine. Hansen oversees a laboratory in the Iowa Center for Auditory Regeneration and Deafness and has mentored research track residents for several years.

“It’s been great being involved as a mentor. Each resident brings different skills and has taken projects in different directions. This has led to new directions for our lab and research here at UI,” states Hansen.

Hansen and other faculty mentors meet regularly with residents to discuss ideas and projects they are involved in. Conversations delve into research questions and grant opportunities as well as what it is like running and funding a lab. During the research years, residents collaborate with researchers and specialists in chemical engineering, biology, audiology, and other areas of the university. They also get exposed to collaborative projects with other institutions and corporations.

One of the residents training under Hansen is Alex Claussen, MD. Claussen is developing a mouse model of hybrid cochlear implantation in order to study the mechanisms of residual acoustic hearing loss and identify potential therapies to prevent this loss. His project involves industry collaboration with the Cochlear Corporation.

“This collaborative project is an exciting example of bench-to-bedside translational research at the University of Iowa. We were able to identify this problem of residual acoustic hearing loss in our hybrid cochlear implant patients, then take this problem to the lab and scientifically address the question of ‘why is this happening and what can we do to prevent it and improve our patient’s hearing experience?’ with the ultimate goal of returning to our patients with a solution,” explains Claussen.

Another resident training in Hansen’s laboratory is Elise Cheng, MD. She is working with colleagues in the Department of Chemical and Biochemical Engineering to develop novel biomaterials for cochlear implants. Her group is using a variety of photopolymerizable hydrogel systems to attempt to bring cochlear implant electrode arrays closer to spiral ganglion nerve fibers in the modiolus, as well as to attract and guide spiral ganglion nerve fibers toward the electrode array. Their goal is to change cochlear implant design in order to improve hearing fidelity.

Projects like this have the potential to improve and change the field of otolaryngology and it is exciting to be able to take part in that process as part of my training at the University of Iowa.”

- Alex Claussen, MD

Research track resident Dr. Alex Claussen is developing a mouse model of hybrid cochlear implantation in order to study the mechanisms of residual acoustic hearing loss and identify potential therapies to prevent this loss. An x-ray shows a mouse with an implant in its left ear.

“I have been interested in the neurosciences for quite a few years, but I particularly enjoy our current area of research because it is readily applicable to problems we encounter in the clinic. As both clinicians and scientists, we have a unique perspective allowing us to focus on the questions that directly affect patient lives. We are able to ask our own questions and figure things out independently. At the same time, there is a great atmosphere of collaboration here.”

- Elise Cheng, MD
Student power! With the help of undergraduate student Stephanie Epstein (right), the Iowa Head and Neck Protocols website is increasing the cases and material available through the complementary educational resource.

Epstein, a student of the Pre-Physician Assistant Program at the University of Iowa, is collaborating with professor of otolaryngology Henry Hoffman, MD, and other physicians to generate new reference materials and educational pages for physicians, nurses, speech pathologists, and patients. She will also assist with redesigning the website to draw greater attention to areas such as the “Modified Operative Notes by Organ Site” section.

“Stephanie is a talented addition to our team. She brings established computer skills and a focus on developing her education as a Physician Assistant in a manner that has been valuable in advancing the educational impact of our web-based resource,” shares Hoffman.

The department appreciates the support of benefactors who share our desire to provide valuable, informative content through Iowa Head and Neck Protocols.

For more, visit https://iowaheadneckprotocols.oto.uiowa.edu/display/protocols
Residents compete at TRO meeting
Iowa resident physicians shared their knowledge at the “Resident Bowl” competition at this year’s Triological Society combined sections meeting in Miami Beach.

During this highly interactive session, resident teams from academic programs across the nation answer questions to demonstrate their knowledge of otolaryngic diseases. University of Iowa representatives included (left to right) Jarrett Walsh, MD, Andrew Davis, MD, and Nate Schularick, MD.

ALUMNICALUMNICORNALUMNICORNALUMNICORNALUMNICORNALUMNICORNER
Alumni from the University of Iowa were recognized by the American Academy of Otolaryngology – Head and Neck Surgery in 2015.

2015 Honor Award Recipients
Jack J. Jiang, MD, PhD (’86F, ’91PhD). University of Wisconsin School of Medicine and Public Health, Madison, Wis.

Pamela C. Roehm, MD, PhD (’06F). Temple University Lewis Katz School of Medicine, Philadelphia, Penn.

Receive a special award or distinction? Change your contact information lately? Let us know so we can share department news and keep in touch. Send an email with details to iowaoto@uiowa.edu.

Role of philanthropy
The Department of Otolaryngology – Head and Neck Surgery recently installed new signage in the clinic that welcomes patients and visitors to the department. The captivating display of donor recognition acknowledges philanthropic giving and the importance it plays in the success of the department.

Endowed positions support a number of critical areas and leadership of the department. Specific areas include hearing research and cochlear implants; head, neck and craniofacial abnormalities; hereditary hearing loss; clinical genetic testing capabilities; and others. Funds help the department sustain excellence while serving the community through outstanding surgical and medical care, innovative research, and exceptional training experiences. Contributions also honor current and former faculty and trainees of the department.
“With significant philanthropic support, the Department of Otolaryngology – Head and Neck Surgery’s team will advance to an unparalleled level in their research and clinical efforts. We strongly believe in their work and are delighted to be part of what they are accomplishing.”

—Marvin A. and Rose Lee Pomerantz

Fully funded chair and professorship positions include:

Brian F. McCabe Distinguished Chair in Otolaryngology – Head and Neck Surgery
- held by Bruce J. Gantz, MD

Sterba Hearing Research Professorship
- held by Richard J. Smith, MD

Marvin and Rose Lee Pomerantz Professorship in Otolaryngology
- held by Marlan Hansen, MD

Paul N. Johnson Professorship in Craniofacial Abnormalities
- held by Deborah S. Kacmarynski, MD

Faculty members honored through endowed positions are pushing the envelope of research, and they are passionate about the care of their patients. The most recent professorship, created in 2014, supports craniofacial abnormalities and was named for Paul Johnson, father of Norman E. Johnson. The elder Johnson was born in 1920 with cleft lip and palate, before the advancements in surgery and treatment known today were available. “I know my father would be very proud that we are helping further research and improve patient care and quality of life for many,” states Norman Johnson.

There are many ways to make a difference through charitable donations. To learn more about how philanthropic support helps advance the important work of the UI Department of Otolaryngology—Head and Neck Surgery, please contact:

Sean Matthys, Associate Director of Development
University of Iowa Foundation
319-467-3649 or 800-648-6973
sean-matthys@uiowa.edu

The UI acknowledges the UI Foundation as the preferred channel for private contributions that benefit all areas of the university.

For more information or to make a donation, visit the UI Foundation’s secure website at givetoiowa.org/OTO
Faculty profile: Rodrigo Bayon, MD

NAME
Rodrigo Bayon, MD
Assistant Professor of Otolaryngology

TRAINING
MD: University of South Florida Morsani College of Medicine
Residency: McGaw Medical Center of Northwestern University
Fellowship in Head and Neck and Microvascular Surgery, Mayo Clinic, Arizona

HOMETOWN
Born in Bogota, Colombia but grew up in Miami, Fla.

What attracted you to medicine and the field of otolaryngology?
“I have been interested in science since a very early age and I became interested in medicine at age 6, after my father had a medical emergency and I was able to witness paramedics and doctors caring for him. My interest in otolaryngology started during medical school in anatomy class. I was fascinated by the complexity of the head and neck anatomy and how so many important structures could be located in such small real estate. I decided to become a head and neck specialist, in large part, because of my father who was diagnosed and treated for a vocal cord cancer.”

How or why did you choose the University of Iowa?
“I chose the University of Iowa in 2010 for its long-standing excellence in Otolaryngology - Head & Neck Surgery, and because of the department’s incredible collegiality and teamwork.”

What kinds of professional opportunities or advantages does being a faculty member at an academic medical center provide?
“I get to work with some of the best and brightest minds on a daily basis, whether it’s within our own department or collaborating with colleagues in other departments. Working at an institution like the University of Iowa allows me to offer cancer patients the state of the art in treatment and a multi-disciplinary approach to their cancer.”

Please describe your professional interests.
“I am interested in the surgical management of head and neck cancers, including trans-oral robotic assisted approaches to the pharynx and larynx. I am also interested in complex reconstruction of the head and neck.”

What is the biggest change you’ve experienced in your field and what do you see as “the future” of medicine/science?
“The biggest change seems to be technologic advancements including PET/CT and surgical robotics. I see the fields of surgical robotics and telemedicine becoming a much larger presence in the management of patients.”

Do you have an insight or philosophy that guides you in your professional work?
“I try to treat my patients as I would my family. I think about how I would want a member of my family treated and ultimately cared for.”

Faculty updates

Dean P. Lyons, MD joined the department as an adjunct clinical associate professor. Lyons was an ear, nose and throat specialist in West Burlington, Iowa. He now sees patients and oversees resident education at the Iowa City VA Health Care System.

Nitin A. Pagedar, MD was promoted to associate professor of otolaryngology - head and neck surgery. Pagedar specializes in head and neck oncology, parathyroid surgery, reconstructive microsurgery, and thyroid surgery.
Alumni gather in the heart of Texas
Alumni, faculty, and friends of the Department of Otolaryngology – Head and Neck Surgery gathered in Dallas for the 2015 AAO-HNSF Annual Meeting last fall.

Neurotology fellow alumni also gathered for their annual dinner where they shared stories from their training and careers.

Watch for details and plan to join us in San Diego at the 2016 AAO-HNSF Annual Meeting & OTO Expo!

Sharing musical talents for the kids
Professor of otolaryngology and longtime guitar player Henry Hoffman, MD (second from left), joined other physicians and professors from the University of Iowa at a music concert to benefit the University of Iowa Children’s Hospital. The Doctors in Concert 2016 performance showcased musical talents with solos and ensembles featuring pianists, vocalists, and various instrumentalists.
## LOUD&CLEAR EVENTS

**Mark your calendars**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 3-4</td>
<td>Functional Endoscopic Sinus Course, Iowa City</td>
<td>Iowa City</td>
</tr>
<tr>
<td>June 6-10</td>
<td>49th Head and Neck Cancer Reconstructive Surgery Course, Iowa City</td>
<td>Iowa City</td>
</tr>
<tr>
<td>June 16-17</td>
<td>24th Annual Management of the Tinnitus Patient Conference, Iowa City</td>
<td>Iowa City</td>
</tr>
<tr>
<td>June 27</td>
<td>Research Day and Resident/Fellow Graduation, Iowa City</td>
<td>Iowa City</td>
</tr>
<tr>
<td>July 5 (start) and July 18 (start)</td>
<td>Basic Science Course, Iowa City</td>
<td>Iowa City</td>
</tr>
<tr>
<td>Sept.</td>
<td>Iowa Alumni Reception, date and location pending</td>
<td>Iowa City</td>
</tr>
</tbody>
</table>

**Continuing education opportunity**

The University of Iowa Carver College of Medicine has again partnered with Alaska Professional Seminars for an outstanding CME conference in Alaska. Join colleagues and friends from August 13-19, 2016 for a CME event in a location like no other.

Information at [alaskaprofessionalseminars.com](http://alaskaprofessionalseminars.com)

**Educational meeting information with dates and details can be found at** [medicine.uiowa.edu/oto/courses](http://medicine.uiowa.edu/oto/courses)