THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

BEST HOSPITALS
U.S.News & WORLD REPORT
EAR, NOSE & THROAT
2021-22

THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

DEPARTMENT OF OTOLARYNGOLOGY – HEAD AND NECK SURGERY

Year in Review 2021

Our mission

The Ohio State Department of Otolaryngology – Head and Neck Surgery is guided by a mission to deliver exceptionally safe, high-quality, value-based care. Our team has been recognized by *U.S. News & World Report* as the **No. 8 ENT department in the nation** and the **best ENT program in Ohio**. It's our commitment to quality that's made this possible, as well as our focus on maintaining the highest standards in patient care and research.

The department has created a desirable patient care model that's enabled continued expansion of patient volume. We focus on providing the best patient care in an excellent teaching environment. Our large and diverse patient population also provides a rich environment for medical education and research.

The Department of Otolaryngology comprises 10 specialties:

- Allergy and Immunology
- Audiology
- Facial Plastic and Reconstructive Surgery
- General Adult and Pediatric Otolaryngology
- Head and Neck Oncology
- Laryngology
- Otology, Neurotology and Cranial Base Surgery
- Rhinology
- Skull Base Surgery
- Sleep Surgery

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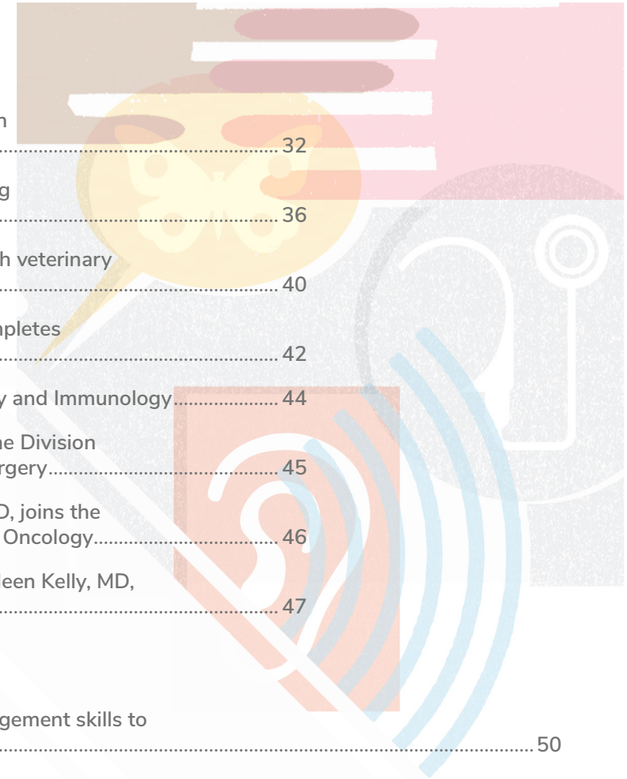
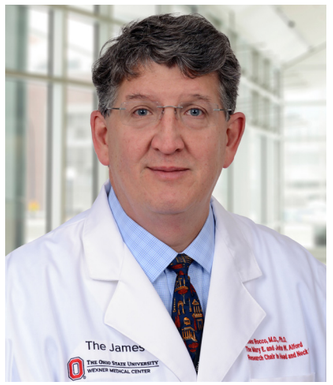
Content of these photos were shot prior to the COVID-19 outbreak.



Greetings from the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center.



As I reflect on our accomplishments over the past year, I'd be remiss not to acknowledge the hardships that many in our profession have — and continue — to face due to the ongoing pandemic. Although 2021 brought with it a glimmer of hope in the form of vaccinations, COVID-19 continues to test the limits of our health care systems, staff members and communities. Many days feel like an uphill battle and I hope more than anything that we'll be in a better, safer place soon.

I'd like to praise the adaptability, collaboration and service of our medical center, which has been a beacon for central Ohio since the earliest days of the pandemic. From our COVID-19 Testing Team and Call Center to our frontline services staff and volunteers, I'm in awe of the work that's been completed during the most trying of times. Despite barriers, our teams have maintained a sense of flexibility that continues to be a hallmark of our operations, and I'm thankful for their dedication and perseverance.

I'd also like to recognize my colleagues for the processes they've established to ensure the health and well-being of our own faculty and staff. From weekly huddles and monthly town halls, to COVID-19 education sessions and flexible work schedules, they've gone above and beyond to help each other while continuing to help others. It's this dedication that makes me proud to be a part of the Ohio State family and words cannot express my gratitude for their work.

In a year marked by adversity, I'm grateful to share that the Department of Otolaryngology experienced overall success, increasing our clinical volumes by nearly 10% in fiscal year 2021. This increase was due in part to our ENT expansion efforts throughout central Ohio, with additional locations to come in 2022. We were also recognized as the No. 8 ENT program in the nation and No. 1 program in the state by *U.S. News & World Report* — a testament to our team's commitment to research, education and patient care.

In addition to increased clinical volumes, our research funding portfolio grew in FY21 to include a $2.7 million NIH R01 grant earned by Aaron Moberly, MD, as well as a $3.6 million NIH R01 grant earned by Tendy Chiang, MD. These grants will lead projects aimed at investigating cochlear implantation outcomes and improving trachea regeneration, respectively.

We proudly welcomed four new faculty members to our clinical team. This included Yin Ren, MD, PhD, who joined our Division of Otology; Kathleen Kelly, MD, who joined our Division of Rhinology; Apoorva Ramaswamy, MD, who joined our divisions of Laryngology and Head and Neck Oncology; and Monica Kraft, MD, who joined our Division of Allergy and Immunology after completing a fellowship with our department last year.

To further shape our research footprint, we also recruited three new faculty members to our cancer research team. Thomas Cherpes, MD, DVM, and Rodolfo Vicetti Miguel, MD, will be working with us to propel an HPV-associated cancer vaccine from bench to bedside, while Andreas Wieland, PhD, will explore the role of B cells in HPV-positive cancer. These groundbreaking projects will lead to improvements in head and neck patient care and we're eager to see where this collaborative approach will take the future of otolaryngology.

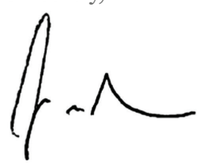
I also commend the members of the department for their continued focus on clinical advancement. Of note, I thank facial plastic surgeon Ryan Nesemeier, MD, and laryngologist Laura Matrka, MD, for their dedication to growing the practice of gender-affirming care. Together, these physicians have spearheaded efforts to offer robust medical care to the LGBTQ+ community, and I'm continually impressed by their commitment. I also applaud head and neck surgeon Kyle VanKoevering, MD, who has combined his engineering expertise with his love of medicine to find solutions to complex medical problems via 3D-printed models. His efforts have already had a positive impact on trainee education and head and neck cancer clinical care.

In addition to clinical responsibilities, our faculty members remain committed to our academic mission. Minka Schofield, MD, was recently named the vice chair of Diversity, Equity and Inclusion for our department, while Ricardo Carrau, MD, was selected to lead faculty development efforts for The Ohio State University College of Medicine. We thank them both for their contributions to our department and health care system.

Our residency program also continues to grow in size and reputation, now in its third year of transition from four to five residents per year. I thank program director Brad deSilva, MD, for his dedication and unwavering guidance as we expand to a total of 25 residents. I also commend Head and Neck Fellowship Program Director Stephen Kang, MD, who began his role last year and has helped the program transition from one to two fellows per year.

To say that 2021 was eventful is quite an understatement. I hope that 2022 will be another successful year for us all, and I wish everyone health and wellness as we move through this pandemic. On behalf of the Department of Otolaryngology – Head and Neck Surgery, please enjoy our annual report.

Sincerely,



James Rocco, MD, PhD
Professor and Chair, Department of Otolaryngology – Head and Neck Surgery
The Ohio State University College of Medicine
The Mary E. and John W. Alford Research Chair in Head and Neck Cancer
Director, Head and Neck Disease Specific Research Group

Research and Innovation

FY2021 by the Numbers

Total Awards: $5,787,930

NIH Awards $3,285,862

Non-NIH Federal Awards $2,063,065

Other Awards $439,003

Active Grants: 31

NIH Grants: 21
(including 11 R01, 3 R21, 2 R13, U01, UG1, R56, K08, K23)

Non-NIH Grants: 10

Active Clinical Trials: 20

New Publications: 167

NIH awards Aaron Moberly, MD, $2.7 million grant to investigate cochlear implantation outcomes

Acquired hearing loss is becoming increasingly common as our country's aging population continues to grow. Cochlear implantation can help these patients regain hearing, optimize their day-to-day function and improve their overall quality of life.

Unfortunately, the cochlear implant device doesn't work well for everyone. Otolaryngologists report unexplained variability in speech recognition and perceptual learning after cochlear implantation and are currently unable to predict how well someone will do with a cochlear implant prior to receiving the device.

This puzzling mystery is the subject of a new study funded by a National Institutes of Health (NIH) R01 grant.

The study's principal investigator is Aaron Moberly, MD, associate professor in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine and director of the Adult Cochlear Implant Program at The Ohio State University Wexner Medical Center. A multidisciplinary team of researchers will use the funding to understand why cochlear implants help certain patients hear and understand speech more clearly while the device fails to help others to the same extent.

The study will follow adult patients before surgery through two years after surgery.

Understanding cochlear implant outcomes

The objective of this new study is to fill the knowledge gap by further researching the variability in speech recognition outcomes and perceptual learning after cochlear implantation. The five-year study will unite multidisciplinary experts to:

- determine the degree to which preoperative sensory, language and cognitive processes predict cochlear implant outcomes
- understand if the interactions between other sensory processes and cognitive information processing affect a patient's speech recognition outcomes
- understand the trajectory of perceptual learning in speech recognition during the first two years of cognitive implant use

"Different teams across the world have tried to tackle bits of this problem," Moberly says, noting that most work has focused on sensory processing and behavioral or physiological measures of how the implant stimulates the hearing nerve and the brain. "This project is unique because it will tie together sensory, cognitive and language processes to develop a more comprehensive assessment of these functions."

> This project is unique because it will tie together sensory, cognitive and language processes to develop a more comprehensive assessment of functions."
>
> — Aaron Moberly, MD

The study will leverage the expertise of its co-investigators and collaborators from Ohio State, who include:

- **Aaron Moberly, MD**, a neurotologist who specializes in cochlear implant surgery
- **Terrin Tamati, PhD**, a research scientist, linguist and cognitive hearing scientist who has developed several novel language and cognitive assessments
- **Kara Vasil, AuD**, a clinical and research audiologist who will serve as project manager
- **Derek Houston, PhD**, and **Irina Castellanos, PhD**, research faculty who provide expertise in how cognitive functions contribute to cochlear implant outcomes
- **Shuman He, MD, PhD**, a research faculty member with expertise in electrophysiology who'll measure how well the auditory nerve responds to stimulation from the implant
- **Oliver Adunka, MD**, a neurotologist and expert in testing the health of the ear using intraoperative electrophysiological measures
- **Xia Ning, PhD**, a faculty member with background in computer science and bioinformatics who'll provide expertise in statistical modeling and apply artificial intelligence approaches to analyze data

"Using the team's diversity to advance knowledge in a real clinical population for a real clinical problem is exciting," Moberly says. "It demonstrates the value of team science, which will increasingly impact the future of medicine."

Moberly hopes the team will uncover the driving forces behind some of the problems that underlie less-than-ideal cochlear implant outcomes. Once defined, clinicians can use the deficits in targeted rehabilitation.

"Hearing loss affects people in many ways, from their interactions with family and friends to their ability to function at work," Moberly says.

That notion is what motivates this research team to keep pushing the boundaries of science.

Tendy Chiang, MD, leads $3.6 million NIH grant focused on trachea regeneration

Tendy Chiang, MD, principal investigator in the Center for Regenerative Medicine at Nationwide Children's Hospital and assistant professor in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine, has been awarded a $3.6 million R01 grant from the National Institutes of Health for his research in developing a tissue-engineered tracheal graft. This research is part of a larger movement to explore and expand regenerative medicine.

"Regenerative medicine is devoted to creating organ replacements with tissue that functions identically to the host," Chiang says. "With an aging population, there's a substantial need to develop solutions that do not rely on organ donors."

Specifically, Chiang's grant will be used to assess the three-dimensional scaffolds that are most effective in regenerating cells to create a new trachea.

Building on past work

This is not Chiang's first grant related to trachea regeneration. He and his mentor, Christopher Breuer, MD, director of the Center for Regenerative Medicine at Nationwide Children's Hospital, were previously awarded an NIH K08 grant to study the use of a synthetic graft in trachea tissue regeneration. Those studies led Chiang to focus on a partially decellularized tracheal allograft.

The R01 grant will allow Chiang and his team to explore this approach to tracheal replacement.

"Despite excellent outcomes in tracheal regeneration, we're now developing methods to modulate the mechanical properties of these grafts *in vivo*. We're modifying these grafts by combining them with resorbable biomaterials to stabilize the graft as it regenerates," Chiang says. "We hope to find a solution for patients who may otherwise need autologous donor tissue for airway reconstruction."

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>
> — Tendy Chiang, MD

Collaboration to drive advances

Chiang will work with researchers across fields to advance this project from bench to the bedside. One of those partners is Kai Zhao, PhD, associate professor in the Department of Otolaryngology – Head and Neck Surgery. Zhao's area of research is in computational fluid dynamics, which will help Chiang's research team evaluate how airflow through grafts influences how grafts regenerate.

"There isn't a precise, evidence-based method for measuring airflow in the trachea or how obstructions may be impacting that airflow," Zhao says. "We've developed a method that involves taking a CT scan from the patient and overlaying the airway model. Then, we can construct a computational model that captures the geometry exactly based on that imaging."

These models show the same information that would be provided via scope. The key difference is that a simulation can be added to see how air flows through the trachea.

"This allows us to visualize and quantify a more precise airflow from lack of resistance to how much stress is flowing through the blockage area. This method may potentially improve our assessment of correlation with outcome," Zhao says.

"Mechanobiologic cues from airflow can influence the stem cell populations of the trachea," Chiang says. "We anticipate that our collaboration with Dr. Zhao will inform us of strategies to modify graft dimensions to accelerate epithelial regeneration."

Chiang's research team also includes stem cell expert Susan Reynolds, PhD, principal investigator in the Center for Perinatal Research at Nationwide Children's Hospital, and material scientist Jed Johnson, PhD, co-founder and chief technology officer at Nanofiber Solutions.

"Multidisciplinary collaboration is our strength," Chiang says. "Regenerative medicine is a team sport and is critical to our progress toward new medical frontiers."

Research team rolls out a sweet strategy to screen for taste and smell loss associated with COVID-19

Could hard candy help detect probable cases of COVID-19 in otherwise asymptomatic people? Researchers at The Ohio State University and The Ohio State University Wexner Medical Center are determined to find out as part of a new study sponsored by the National Institutes of Health.

Study participants are asked to smell and eat a piece of hard candy of the same shape and color, once a day for 90 days, and log into an app to record what they smell and taste — not only by identifying the flavor but also by rating its intensity. If participants report a sudden drop in either sense, they'll receive a message that they should quarantine and get a COVID-19 test.

Ohio State researchers came up with the idea last year when the sudden loss of sense of smell gained notoriety as a hallmark symptom of COVID-19.

"An estimated 86% of people who test positive for COVID-19 have a loss of smell," says project co-leader Kai Zhao, PhD, associate professor in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine.

"Epidemiological studies reveal that smell loss is the most predictive symptom of COVID-19. It is more reliable than cough, fever or headache."

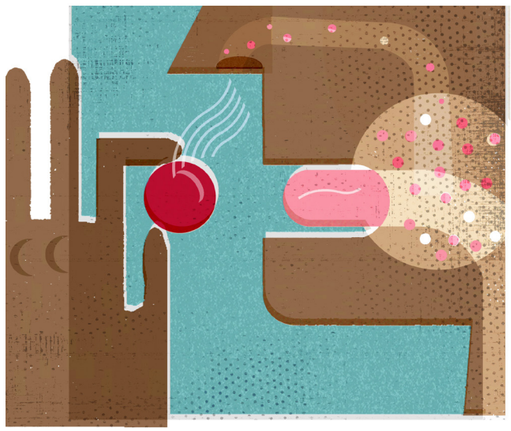
The interdisciplinary research team also includes Christopher Simons, PhD, assistant professor of Food Science and Technology in the Ohio State College of Food, Agricultural, and Environmental Sciences, and taste biologist Susan Travers, PhD, professor of Biosciences in the Ohio State College of Dentistry. The team hopes to enroll about 3,000 people, with Ohio State students the primary recruitment target.

The first phase of the project is to validate the use of candy against two established screening strategy methods: a scratch-and-sniff card for smell and a one-time evaluation of the bitter medication quinine for taste. Both are more expensive than candy (less than 5 cents for a piece of candy versus more than 50 cents per scratch-and-sniff card) and more difficult to self-administer. During the project's second phase, researchers will follow about 2,800 people for 90 days to track the screening tool's long-term sensitivity.

> Epidemiological studies reveal that smell loss is the most predictive symptom of COVID-19. It is more reliable than cough, fever or headache."
>
> — Kai Zhao, PhD

The study will investigate several aspects of COVID-19-related chemosensory loss, including:

- whether chemosensory loss is a reliable early indicator of COVID-19
- whether COVID-19 is associated with both orthonasal and retronasal olfactory loss or if taste qualities (such as sweet and sour) are differentially affected
- the screening tool's potential use as a monitor for chemosensory recovery



An estimated 86% of people who test positive for COVID-19 have a loss of smell

The candy is not intended to replace the current antigen or polymerase chain reaction (PCR) tests. Rather, it could serve as an easily distributed and self-administered community screening and monitoring tool, similar to temperature measurement.

Zhao hopes that as the pandemic subsides, researchers will turn their attention to understanding why COVID-19 often causes sudden loss of smell, known as anosmia.

"With other viruses that cause anosmia, people tend to lose and regain their sense of smell gradually, and they are less frequently bothered by it," he says. "That may be the reason treating smell loss has not been a priority in medicine. With the global pandemic of COVID-19, more people may lose their sense of smell abruptly, and recovery may be delayed weeks, months or indefinitely. I hope this heightens interest in developing treatments for anosmia. Right now, we don't have any."

As an olfaction expert, Zhao empathizes with patients who experience enduring multisensory loss due to long-haul COVID.

"COVID-19 wrecks a lot of systems in the body, and we cannot predict who will unfortunately develop symptoms associated with anosmia, taste loss and hearing issues, such as tinnitus," he says. "At Ohio State, we are exploring opportunities to study these symptoms in hopes of understanding them better and developing novel treatments."

Shuman He, MD, PhD, appointed vice chair of Research for Department of Otolaryngology

Professor and senior researcher Shuman He, MD, PhD, has been named vice chair of Research for the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine.

He's leadership acumen and scientific experience make her an ideal fit for this role. She's been in charge of the department's Human Electrophysiology Laboratories since joining Ohio State in 2017. And she's an accomplished researcher: Her studies related to hearing, cochlear implantation, auditory electrophysiology and speech perception are funded by several NIH R01 and R21 grants.

As vice chair of Research, He provides strategic direction and operational oversight for Ohio State's comprehensive otolaryngology research program. She also focuses on growing the department's research portfolio, while ensuring her colleagues have the support and resources they need to be successful in their scientific endeavors.

Bolstering a broad research program

Now more than ever, the vice chair of Research plays an integral role within the Department of Otolaryngology.

"Over the last several years, research has become a much bigger part of our mission," department chair James Rocco, MD, PhD, says. "We're continuing to hire scientists and we're receiving more NIH funding than ever before. As vice chair of Research, Dr. He oversees numerous activities that help make our research program more successful. These include coordinating our grant review committee and securing biostatistical support for researchers who are writing grants or papers."

Whoever holds the vice chair of Research position has specific responsibilities. These include maximizing research productivity, improving opportunities to conduct high-quality clinical and translational research and ensuring the availability of strong research education programs.

During her tenure, He also wants to accomplish several goals of her own.

"Our research program is large and successful in terms of the number of applications we submit, our volume of active studies and the size of federal grants many of our researchers receive," she says. "But we have an opportunity to become even stronger by enhancing collaboration among researchers and other stakeholders within and outside our department. I aim to improve and expand our program's infrastructure, which may take us one step closer to becoming a national leader in otolaryngology research."

> It's important for us to grow the department's federally funded research program. I'd like to see us recruit more federally funded scientists and obtain a P50 Specialized Center grant, which is given to organizations that can demonstrate multidisciplinary research collaborations. I also want to improve the quality of our grant applications across the board."
>
> — Shuman He, MD, PhD

He has assigned herself several key tasks to help with this mission. In addition to increasing recruitment of talented graduate students and postdoctoral trainees, she intends to provide more mentorship opportunities for early-career faculty. She also plans to establish and improve processes for submitting grants and obtaining intramural funding.

A researcher and a role model

As a senior researcher, He will also maintain her own research activities. Among her current efforts is a novel study that aims to better understand how children with small or absent cochlear nerves encode and process electrical signals generated by cochlear implants. Through this $2.02 million, R01-funded initiative, He and her team hope to develop the first set of evidence-based guidelines for programming cochlear implant processors in children with cochlear nerve deficiency.

"Dr. He is a great fit as our vice chair of Research because she's an incredibly successful scientist who leads by example," Rocco says. "Not only does she have the ability to run her own lab while helping other researchers solve problems and overcome challenges, but she's a really logical and concise thinker, with strong organizational and multi-tasking skills. Dr. He is the right choice to represent the interests of our research group."

He appreciates the department's confidence in her abilities and the opportunity to serve in a leadership capacity.

"One of my long-term career goals is to become a successful academic leader," she says. "I want to be able to enhance professional and personal development among faculty members, cultivate leadership in others and guide decision making on a large scale. Becoming the vice chair of Research is a very important step."

Synergy between scientists, clinicians to help propel HPV-associated cancer vaccine from bench to bedside

Otolaryngology researchers Thomas Cherpes, MD, DVM, and Rodolfo Vicetti Miguel, MD, recently joined The Ohio State University College of Medicine — again.

From 2013 to 2016, the pair worked together in the Ohio State Department of Microbial Infection and Immunity, where they developed a cellular-based vaccine for HPV-associated cancers. Together they left for Stanford University School of Medicine to further their vaccine research.

Cherpes and Miguel recently returned to Ohio State and The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute as an associate professor and research assistant professor, respectively, within the Department of Otolaryngology – Head and Neck Surgery.

“We came back because of the established relationship between the department, The James and the Drug Development Institute (DDI),” Cherpes says.

“It’s a good fit because it allows immediate opportunities for collaboration with our colleagues.”

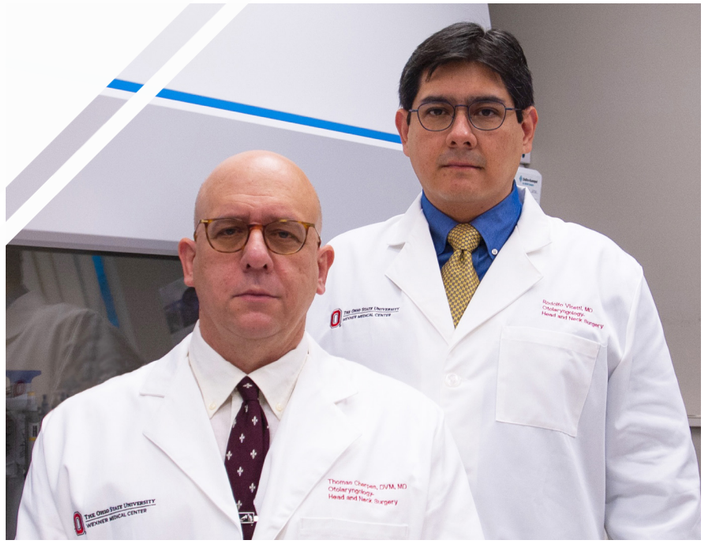
Cherpes and Vicetti Miguel’s vaccine elicits a large CD8+ T cell response that targets tumor cells anywhere in the body, including the mucosa, where many head and neck tumors begin.

“We show that a single dose of our vaccine, if it’s able to induce a large enough CD8+ T cell response, is able to destroy the tumor — either in a mucosal location or in another site in the body,” Vicetti Miguel says.

Getting this groundbreaking work to patients quickly, safely and efficiently relies on close collaboration with clinicians to develop a phase I clinical trial for HPV-associated head and neck cancers.

“We like to move from the bench to bedside,” Cherpes says. “The best and easiest way to do that is to be housed in a clinical department. That allows us to go faster than if we were in a basic science department and always needing to identify collaborators.”

“The chance to translate a therapeutic vaccine into a clinical trial within a department is rare, but we see the synergy between clinicians and basic research being important for learning from each other and being able to accomplish our goals,” Vicetti Miguel says.



The future: Translating research to results

In addition to their focus on HPV-associated cancers, Cherpes and Vicetti Miguel are exploring the development of small peptides that boost epithelial barrier function and prevent infections in the genital tract. They see a direct translation from that work to the work in head and neck surgery.

“When we presented our peptide work, there was an immediate interest among the surgeons to test it in wound healing,” says Vicetti Miguel. “There’s also a chance we can take our peptides to other areas to help repair tissue after surgery or revitalize other tissues affected from disease or therapies.”

“Being exposed to our clinical colleagues’ day-to-day work keeps us thinking about how we can apply what we do into meaningful clinical therapies. We’re excited about what the future holds,” Cherpes says.

> We came back to Ohio State because of the established relationship between the department, The James and the Drug Development Institute. It’s a good fit because it allows immediate opportunities for collaboration with our colleagues.”
>
> — Thomas Cherpes, MD, DVM

New research aims to discover how real-world factors influence cochlear implant user outcomes

Terrin Tamati, PhD, a research scientist in the laboratory of Aaron Moberly, MD, at The Ohio State University Wexner Medical Center, was recently awarded an R21 grant funded by the NIH to evaluate how real-world factors, such as social network makeup and communication practices, may impact a cochlear implant (CI) user's early and long-term communication outcomes. These findings could shape therapies and tools to improve outcomes among individuals with cochlear implants.

Tamati theorizes that how new CI users learn from everyday, real-world experiences may influence how well they adapt to a cochlear implant short term. This may, in turn, impact their long-term speech recognition ability.

"If we can identify aspects of the environment that promote good communication skills, these could potentially be used in counseling to inform cochlear implant users what they should be doing in their everyday lives to obtain positive outcomes," she says. "We can also use this research to develop specific rehabilitation tools that will help them improve communication skills at home and in the clinic."

Tamati's educational background is in linguistics and psychology. Her research has focused on the perception of talker and regional dialect information — aspects of speech that are largely social but very important in understanding speech and how we communicate.

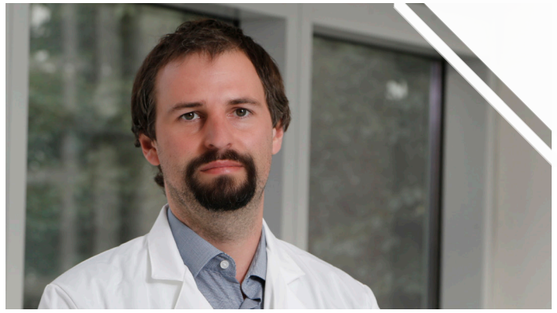
She says that this information is not always well-conveyed when using a cochlear implant.

"I'd like to understand the impact caused by the lack of talker and regional dialect cues on speech processing," Tamati says. "Maybe then we can improve a CI patient's use of non-linguistic information to better connect with others."

In the Adult Cochlear Implant Outcomes Laboratory, Tamati plans to capture aspects of patients' real-world experiences outside of the clinic. Her research team (which includes clinicians and scientists) will meet with patients before and after they receive cochlear implants to assess their speech recognition abilities and investigate the impact of their social networks, specifically the number of people and the diversity of individuals in that network.

"Working directly with clinicians provides a new perspective for my research and this R21 grant," she says. "This work has clear implications for our scientific knowledge and practical applications for the clinical population."

Andreas Wieland, PhD, explores role of B cells in HPV-positive cancer



Immuno-oncology researcher and human papillomavirus/head and neck cancer expert Andreas Wieland, PhD, has joined the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine as an assistant professor.

Research in his new lab, housed within the Pelotonia Institute for Immuno-Oncology at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute, will focus on understanding the role B cells play in the tumor microenvironment in HPV-positive head and neck cancers. He began this work in his previous role at Emory University.

"We've shown that HPV-specific B cells are found within HPV-positive head and neck cancers," Wieland says. "Research in other malignancies suggests that the more B cells you have in a tumor, especially if they're forming lymphoid structures, the better your overall survival rate and response to immunotherapeutic therapies. However, the role of B cells and how they contribute to the success or failure of immune checkpoint blockade therapies that mainly target cytotoxic CD8 T cells is not well understood.

"I want to learn what's happening in this microenvironment by analyzing clinical samples and using pre-clinical mouse models to perform mechanistic studies," he says.

Wieland sees HPV-positive cancers as the perfect system in which to study and explore these unknown variables and eventually apply them to other cancer types. His groundbreaking work in this area has been featured in the world's leading multidisciplinary science journal, *Nature*.

"HPV-associated cancers are a model system when it comes to studying tumor-specific immune responses," he says. "We already know the HPV antigens and the sequence of these antigens. Other cancers contain a private set of mutated neoantigens differing from patient to patient."

Wieland hopes his research will inform the design of therapeutic vaccines and other interventions for HPV cancers and lead to a better understanding of all HPV-associated cancers.

"The 'book' on HPV cancer was written based on cervical cancer, but research has shown that HPV-positive head and neck cancer behaves very differently," Wieland says. "There are many more antigens in head and neck cancers and no one has looked at what the major targets of the immune response are in the tumor. I hope my research will shed light in this area."

Active Clinical Trials FY21

The Department of Otolaryngology continues to be a national leader in the exploration of ear, nose and throat, head and neck cancers, and human communication disorders through its active clinical trials.

Allergy and Immunology

Casey Curtis, MD – Multicentre, Randomised, Double-blind, Parallel-group, Placebo-controlled, 24-week Phase 3 Study with an Open-label Extension to Evaluate the Efficacy and Safety of Benralizumab in Patients with Hypereosinophilic Syndrome (HES)

Facial Plastic and Reconstructive Surgery

Leslie Kim, MD – Prospective Randomized Double Blind Trial to Assess the Effect of a Single Preoperative Dose of Gabapentin on Postoperative Opioid Consumption in Patients Undergoing Rhinoplasty

General ENT

Eugene Chio, MD – Multicenter Study to Assess the Safety and Effectiveness of the Genio™ Dual-sided Hypoglossal Nerve Stimulation System for the Treatment of Obstructive Sleep Apnea in Adult Subjects

Eugene Chio, MD – Adherence and Outcome of Upper Airway Stimulation (UAS) for Obstructive Sleep Apnea (OSA) International Registry

Head and Neck Oncology

Amit Agrawal, MD – Randomized Phase II/III Trial of Sentinel Lymph Node Biopsy versus Elective Neck Dissection for Early-Stage Oral Cavity Cancer

Stephen Kang, MD — Detection of Occult Nodal Metastases Using Intraoperative Lymphatic Mapping in Head and Neck Oral Cavity Squamous Cell Carcinoma

Matthew Old, MD – Window-of-Opportunity Trial of Nivolumab and BMS986205 in Patients with Squamous Cell Carcinoma of the Head and Neck

Matthew Old, MD – Study of Molecular Events in Primary, Recurrent and Metastatic Squamous Cell Carcinoma of the Head and Neck

Enver Ozer, MD – Pilot Study Assessing Transoral Robotic Surgery (TORS) for Oral and Laryngopharyngeal Benign and Malignant Lesions Using the Da Vinci Robotic Surgical System

James Rocco, MD, PhD – Phase II Randomized Trial of Adjuvant Radiotherapy with or Without Cisplatin for p53 Mutated, Surgically Resected Squamous Cell Carcinoma of the Head and Neck

James Rocco, MD, PhD – Bcl-2 as a Biomarker for Prognosis and Therapy of Head and Neck Cancer: MEE

Kyle VanKoevering, MD – Compassionate Use of a Custom Laryngectomy Tube in a Patient with Chronic Tracheal Stenosis

Laryngology

Brad deSilva, MD – Voice Outcomes Following Transcutaneous Steroid Injection for Vocal Fold Nodules Combined With Voice Therapy Compared to Voice Therapy Alone

Otology, Neurotology and Cranial Base Surgery

Oliver Adunka, MD – Clinical Utility of Residual Hearing in the Cochlear Implant Ear

Oliver Adunka, MD – Cochlear Implantation During Vestibular Schwannoma Removal or During Labyrinthectomy Surgery for Treatment of Meniere's Disease

Edward Dodson, MD – Regional Anesthesia for Otologic Surgery

Aaron Moberly, MD – A Pivotal, Prospective, Multi-centre, Randomized Control, Blinded Study Evaluating the Efficacy of a Dexamethasone Eluting Slim Modiolar Electrode (CI632D) in the Reduction of Fibrosis as Compared to a Standard Slim Modiolar Electrode (CI632) in a Newly Implanted Adult Population with Bilateral, Post-linguistic, Moderate to Profound Sensorineural Hearing Loss

Rhinology

Kai Zhao, MD – 3D Printing to Improve Nasal Irrigation Outcomes

Kai Zhao, MD – Olfactory Training for Patients With Olfactory Losses

Kai Zhao, MD – Sinonasal Visualization and Quantification of the Effect of Oxymetazoline Nasal Spray

Active Research Funding FY21

The Department of Otolaryngology – Head and Neck Surgery continues to produce ground-breaking research funded by a number of national sources.

NIH-Funded Research

Oliver Adunka, MD, PI 08/01/2020 – 07/31/2025 NIH/NIDCD U01DC018920
Clinical Utility of Residual Hearing in the Cochlear Implant Ear

Lauren Bakaletz, PhD, PI 06/04/2018 – 05/31/2023 NIH/NIDCD R13DC017389
International Symposia on Recent Advances in Otitis Media

Lauren Bakaletz, PhD, PI 08/01/2016 – 07/31/2021 NIH/NIDCD R01DC015688
Otitis Media: Role of Epigenetic Regulation on NTHI Pathogenesis and Optimal Vaccine Design

Lauren Bakaletz, PhD, PI 07/20/2011 – 08/31/2021 NIH/NIDCD R01DC011818
Novel Immunotherapeutics for the Management of Otitis Media Due to H. Influenzae

Lauren Bakaletz, PhD, PI 09/30/1999 – 03/31/2026 NIH/NIDCD R01DC003915
Determinants of H. influenzae Virulence in Otitis Media

Irina Castellanos, PhD, PI 03/01/2017 – 06/30/2021 NIH/NIDCD R21DC016134
COVID-19 Pandemic Extension to R21 Early Career Research Award

Tendy Chiang, MD, PI 07/14/2017 – 06/30/2022 NIH/NHLBI K08HL138460
Mechanisms of Regeneration in Tissue-Engineered Tracheal Grafts

Shuman He, MD, PhD, PI 04/01/2021 – 03/31/2023 NIH/NIDCD R01 DC019458
Auditory Neural Function in Implanted Patients with Usher Syndrome

Shuman He, MD, PhD, PI 04/01/2019 – 03/31/2024 NIH/NIDCD R01DC017846
Neural Encoding and Auditory Processing of Electrical Stimulation in Pediatric Cochlear Implant Users

Shuman He, MD, PhD, PI 01/15/2018 – 06/30/2022 NIH/NIDCD R01DC016038
Neural Encoding and Auditory Perception in Cochlear Implant Users

Derek Houston, PhD, PI 01/01/2020 – 12/31/2024 NIH/NIDCD R01DC017925
Parent-Child Interactions and Word Learning in Young Deaf Children with Cochlear Implants

Derek Houston, PhD, PI 09/01/2019 – 11/31/2021 NIH/NIDCD R56DC017458
Improving Early Literacy Outcomes for Children with Hearing Loss

Derek Houston, PhD, PI 12/01/2006 – 06/30/2022 NIH/NIDCD R01DC008581
Infant-Directed Speech and Language Development in Infants with Hearing Loss

Daniel Merfeld, PhD, PI 09/30/2021 – 05/31/2026 NIH/NIDCD R01AG073113
Towards Healthy Aging: Quantifying Vestibular Contributors to Age-Related Changes in Balance and Fall Risk

Daniel Merfeld, PhD, PI 03/15/2019 – 02/28/2022 NIH/NIDCD R13DC017921
Vestibular-Oriented Research Meetings

Daniel Merfeld, PhD, PI 07/01/2015 – 06/30/2021 NIH/NIDCD R01DC014924
Employing Vestibular Thresholds to Improve Patient Diagnosis

Aaron Moberly, MD, Co-PI 09/21/2018 – 08/31/2021 NIH/NIDCD R21DC016972
Auto-Scope Software-Automated Otoscopy to Diagnose Ear Pathology

Aaron Moberly, MD, PI 04/01/2017 – 03/31/2022 NIH/NIDCD K23DC015539
Variability in Speech Recognition for Adults with Cochlear Implants: Bottom-Up and Top-Down Factors

James Rocco, MD, PhD, PI 03/28/2019 – 02/28/2025 NCI UG1CA233331
Scientific Leadership: OSU as a Network Lead Academic Participating Site for the NCI NCTN

Ruili Xie, PhD, PI 09/19/2017 – 06/30/2022 NIH/NIDCD R01DC016037
Cellular Mechanisms of Age-Related Hearing Loss

Kai Zhao, PhD, PI 03/05/2019 – 02/28/2021 NIH/NIDCD R21DC017530
Endoscopic Nasal Sinus Surgery Simulator to Optimize Treatment Outcome

Non-NIH Funded Research

Oliver Adunka, MD, PI 08/15/2019 – 08/14/2022 DOD
Clinical Utility of Residual Hearing in the Cochlear Implant Ear

Eugene Chio, MD, PI 06/22/2018 – 06/21/2021 Inspire
Adherence and Outcome of Upper Airway Stimulation (UAS) for Obstructive Sleep Apnea (OSA) International Registry

Casey Curtis, MD, PI 02/08/2020 – 02/17/2024 AstraZeneca
A Multicentre, Randomised, Double-Blind, Parallel-Group, Placebo-Controlled, 24-Week Phase 3 Study with an Open-Label Extension to Evaluate the Efficacy and Safety of Benralizumab in Patients with Hypereosinophilic Syndrome (HES)

Daniel Merfeld, PhD, PI 02/05/2021 – 02/04/2022 NAMRU-D
NAMRU-D Vestibular Research (IPA)

Daniel Merfeld, PhD, PI 05/01/2020 – 04/30/2023 Office of Naval Research
Employing Vestibular Thresholds to Improve Patient Diagnosis

Daniel Merfeld, PhD, PI 04/15/2019 – 04/14/2023 DOD
Evaluating a Portable Virtual-Reality (VR) Balance Test as a Vestibular Assessment Screen

Daniel Merfeld, PhD, PI 10/01/2017 – 12/31/2021 Environmental Tectonics Corporation
Mathematical Model of Spatial Orientation

Terrin Tamati, PhD, PI 01/01/2021 – 06/30/2022 American Hearing Research Foundation
Investigating the Impact of Social Networks on Speech Recognition Outcomes and Quality of Life in Adults with Cochlear Implants – A Study Using an Online Testing Protocol

Kai Zhao, PhD, PI 07/01/2020 – 06/10/2021 Ohio Development Services Agency
Non-Invasive Nasal Aid to Relieve Nasal Obstruction Sensation

Kai Zhao, PhD, PI 11/01/2020 – 10/30/2021 Bayer
Sinonasal Visualization and Quantification of the Effect of Oxymetazoline Nasal Spray

> Working in an academic medical center surrounded by incredible talent and colleagues invested in collaboration, teaching and learning really enhances your passion for research. Our department is moving the needle for deaf and hard-of-hearing children and I'm glad to be a part of it."
>
> — Derek Houston, PhD

Highlighted Publications

In FY21, the Department of Otolaryngology published more than 160 articles in industry-leading peer-review journals. Below are highlights of those publications.

Rygalski CJ, Zhao S, Eskander A, Zhan KY, **Mroz EA**, Brock G, Silverman DA, Blakaj D, Bonomi MR, **Carrau RL**, **Old MO**, **Rocco JW**, **Seim NB**, Puram SV, **Kang SY**. Time to Surgery and Survival in Head and Neck Cancer. *Ann Surg Oncol*. 2021 Feb;28(2):877-885. doi: 10.1245/s10434-020-09326-4. Epub 2020 Nov 13.

Skidmore J, He S. The Effect of Increasing Interphase Gap on N1 Latency of the Electrically Evoked Compound Action Potential and the Stimulation Level Offset in Human Cochlear Implant Users. *Ear Hear*. 2020 Jul 16;42(1):244-247. doi: 10.1097/AUD.0000000000000919. PMID: 32701729; PMCID: PMC7885894.

London NR Jr, Mohyeldin A, Daoud G, Gamez ME, Blakaj D, Bonomi M, Prevedello DM, **Carrau RL**. Sinonasal Undifferentiated Carcinoma: Institutional Trend Toward Induction Chemotherapy Followed by Definitive Chemoradiation. *Head Neck*. 2020 Nov;42(11):3197-3205. doi: 10.1002/hed.26357. Epub 2020 Jul 18.PMID: 32681692.

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Parikh AS, **Kang SY**. Variation in Elective Treatment of the Contralateral Neck in Oropharyngeal Cancer. *Oral Oncol*. 2021 Jun;117:105186. doi: 10.1016/j.oraloncology.2021.105186. Epub 2021 Feb 2. PMID: 33541777.

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Patel KB, **Mroz EA**, Faquin WC, **Rocco JW**. A Combination of Intra-tumor Genetic Heterogeneity, Estrogen Receptor Alpha and Human Papillomavirus Status Predicts Outcomes in Head and Neck Squamous Cell Carcinoma Following Chemoradiotherapy. *Oral Oncol*. 2021 Sep;120:105421. doi: 10.1016/j.oraloncology.2021.105421. Epub 2021 Jun 29.PMID: 34198234

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For a complete list of our FY21 publications, visit medicine.osu.edu/departments/otolaryngology/research/publications.

Li L, London NR Jr, Prevedello DM, **Carrau RL**. Endoscopic Endonasal Approaches to the Medial Intraconal Space: Comparison of Transethmoidal and Prelacrimal Corridors. *Am J Rhinol Allergy*. 2020 Nov;34(6):792-799. doi: 10.1177/1945892420930938. Epub 2020 Jun 17.PMID: 32551852.

Skidmore JA, **Vasil KJ**, **He S**, **Moberly AC**. Explaining Speech Recognition and Quality of Life Outcomes in Adult Cochlear Implant Users: Complementary Contributions of Demographic, Sensory, and Cognitive Factors. *Otol Neurotol*. 2020 Aug;41(7):e795-e803. doi: 10.1097/MAO.0000000000002682. PMID: 32558759; PMCID: PMC7875311.

Malik J, Spector BM, Wu Z, Markley J, Zhao S, **Otto BA**, Farag AA, **Zhao K**. Evidence of Nasal Cooling and Sensory Impairments Driving Patient Symptoms With Septal Deviation. *Laryngoscope*. 2021 Jun 14. doi: 10.1002/lary.29673. Epub ahead of print. PMID: 34125439.

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Niermeyer WL, Allen DZ, Kern C, **Elmaraghy C**. Iatrogenic Orbital Cerebrospinal Fluid Leak in a Young Pediatric Patient: Factors to Consider. *Int J Pediatr Otorhinolaryngol*. 2021 Jan;140:110500. doi: 10.1016/j.ijporl.2020.110500. Epub 2020 Nov 17. PMID: 33218688.

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Patel KB, Martin D, Zhao S, Kumar B, **Carrau R**, **Ozer E**, **Agrawal A**, **Kang S**, **Rocco JW**, Schuller D, Teknos T, Brock G, Old M. Impact of Age and Comorbidity on Survival Among Patients With Oral Cavity Squamous Cell Carcinoma. *Head Neck*. 2021 Jan;43(1):268-277. doi: 10.1002/hed.26487. Epub 2020 Sep 30.PMID: 32996249.

Banks L, Worobetz N, Hamersley E, Onwuka A, Shepherd E, **Wiet G**. Evaluation of Short-Term Outcomes of Tracheostomy Procedures in a NICU Population With High Ventilator Settings. *Otolaryngol Head Neck Surg*. 2021 Mar 9:194599821996226. doi: 10.1177/0194599821996226. Epub ahead of print. PMID: 33687280.

Heilingoetter A, Smith S, **Malhotra P**, Johnson J, **Chiang T**. Applications of Electrospinning for Tissue Engineering in Otolaryngology. *Ann Otol Rhinol Laryngol*. 2021 Apr;130(4):395-404. doi: 10.1177/0003489420959692. Epub 2020 Sep 25. PMID: 32975429; PMCID: PMC8162744.

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Tamaki A, **Heilingoetter A**, **Kang SY**. Enhancing Skull Base Structure Along the Carotid Sheath in a Patient With Oropharyngeal Squamous Cell Carcinoma. *JAMA Otolaryngol Head Neck Surg*. 2020 Oct 1;146(10):960-961. doi: 10.1001/jamaoto.2020.2260. PMID: 32816000.

Clinical Practice

FY2021
by the Numbers

Providers:
28 (Ohio State)
13 (Nationwide Children's Hospital)

APPs: **12***

Audiologists: **32***

Total Encounters: **106,834***

Total Surgeries: **10,591***

Total wRVUs: **280,059***

Cochlear Implants: **198***

Sleep Apnea Surgical Implants: **103**

**Combined for Ohio State and Nationwide Children's Hospital*

First impressions drive more holistic approach to gender-affirming care

Clinical programs for gender-variant and transgender patients strengthened by staff education, community partnerships

Facial features and voice are among the first things we notice when meeting someone. We're accustomed to assuming a person's gender based on these identifying characteristics. However, the way someone looks or sounds may not align with how they identify themselves.

This is especially true for gender-variant and transgender patients.

"When someone's looks or voice are not congruent with how they feel inside, this can have far-reaching impacts," says Ryan Nesemeier, MD, a facial plastic and reconstructive surgeon in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center.

Nesemeier and department colleague and otolaryngologist Laura Matrka, MD, are part of a team at the Ohio State Wexner Medical Center offering therapeutic and surgical services to help unify a person's internal sense of self with how they want to present themselves to others.

But clinical care is just one part of their department's holistic approach to gender-affirming care, the doctors say.

They have extended their "first impression" work to every aspect of the patient experience — from scheduling and front-desk interactions to the walk back from the waiting room. Their goal is to make sure every person knows where to go for care and understands it's a place where they'll be safe and treated fairly.

> Gender-affirming care is about more than using someone's pronouns. It's about instilling trust in an already marginalized patient population."
>
> — Ryan Nesemeier, MD

"Gender-affirming care is about more than using someone's pronouns," says Nesemeier. "It's about instilling trust in an already marginalized patient population."

Advanced otolaryngology care for gender-variant patients

Increased visibility of transgender people and the issues surrounding transgender rights have exposed disparities in health care delivery for this population.

"As physicians, when we are able to clearly see disparities in care, it's up to us to try to address them," Nesemeier says.

Building more robust secondary and post-hormone treatment programs for gender-variant and transgender people is one way to improve care access. The otolaryngology team at the Ohio State Wexner Medical

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> Caring for gender-variant and transgender people isn't just about doing what feels right or kind or thoughtful. It's about educating yourself on language that's more welcoming. It's about understanding that safety is a concern and changing the way you interact with others to make sure they feel safe."
>
> — Laura Matrka, MD

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Center offers the latest options in gender-affirming facial augmentation and vocal therapeutics.

Nesemeier and team work with patients who desire facial feminization or masculinization surgery.

"I'm especially interested in helping patients' outward expression match their inner identity," Nesemeier says. "I am not alone in this, as we are currently in the middle of tremendous growth in gender-affirming facial augmentation within our specialty. What sets us apart is that we are actually putting ideas to action."

Matrka performs voice-focused head and neck exams and works alongside the department's speech-language pathology team to develop treatment plans designed not just to lower or elevate pitch, but to capture the entirety of factors contributing to voice-related identity. While vocal cord surgery is an option for those who need it, most people find benefit from voice therapy alone.

"There are so many things that go into voice and its perception," Matrka says. "Addressing a person's voice concerns not only improves their emotional health, it could save them from actual physical harm in transphobic environments."

Educating to align experience with outcomes

Matrka credits part of their department's success to an early partnership with community-based speech-language pathologist Anna Lichtenstein, CCC-SLP. Lichtenstein is now a voice therapist at the Ohio State Wexner Medical Center who devotes her entire practice to the transgender and gender-variant community.

The initial referral relationship between Matrka and Lichtenstein led to growth in the number of people seeking gender-affirming care at Ohio State.

But Matrka, Nesemeier and others on the team knew there was work to be done to ensure each patient's experience — at every touchpoint — aligned with the clinical care they were receiving.

"I realized that intuition wasn't enough," Matrka says. "Caring for gender-variant and transgender people isn't just about doing what feels right or kind or thoughtful. It's about educating yourself on language that's more welcoming. It's about understanding that safety is a concern and changing the way you interact with others to make sure they feel safe."

A team training session for all office staff became a turning point, Matrka says.

"I'm confident after our training that no patient will come here and have a bad interaction because of their gender identity," Matrka says. "Our team knows that every touchpoint for the patient matters."

The otolaryngology team is not alone in its gender-affirming care work at the Ohio State Wexner Medical Center.

"We work in a very multidisciplinary fashion," Nesemeier says. "We're in close contact with primary care, mental health and surgical subspecialties for a holistic approach to any patient who comes in."

Advocating for patients

Another area of focus for Matrka and Nesemeier is patient advocacy. They do this through interactions with employers and insurers as well as through research to demonstrate the positive impact on quality of life these services have.

"There are huge gaps in coverage for gender-affirming facial and voice treatment," Matrka says, "even in plans considered pretty progressive."

The pair believe they can make a difference in moving employers and insurers toward more transgender-inclusive benefits. And they know that work takes partnership.

"Community partnerships are everything," Matrka says. "Not just to build your referral base and make sure patients know where to go, but also in the effort to lobby for better coverage."

The Ohio State University's M4 Lab is defining the future of medicine

Otolaryngologist Kyle VanKoevering, MD, always had a passion for combining his engineering expertise with his love of medicine. In 2013, the engineer-turned-physician stumbled upon a relatively new technology — three-dimensional (3D) printing. Immediately, he knew that the emerging tech tool had enormous potential to change the future of medicine.

"Manufacturing medical devices involves a highly regulated process that was only possible in a handful of big facilities across the country," says VanKoevering, a head and neck surgeon in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute and director of the Medical Modeling, Materials and Manufacturing (M4) Lab at The Ohio State University. With the launch of his new M4 Lab, that was all about to change.

By making models of a patient's anatomy, surgeons can now use a replica to guide and expedite reconstruction after complicated tumor surgery.

As personalized medicine evolves and changes the way we deliver care, large-scale manufacturing of such devices will become less relevant. The M4 Lab's interdisciplinary team of researchers is discovering new diagnostics, developing a better understanding of how diseases function at the molecular and genetic levels and finding new solutions to complex medical problems. With these breakthroughs constantly on the horizon, doctors and engineers can customize their treatments to fit their patients' anatomical or biological needs.

VanKoevering started his M4 Lab with dreams of finding new solutions to surgical roadblocks that he encountered in his head and neck surgeries. By making models of a patient's anatomy, surgeons can now use a replica to guide and expedite reconstruction after complicated tumor surgery.

"Once we've removed a tumor, we try to rebuild the facial structure in a way that the patient can still chew, talk and function in daily life," VanKoevering says. "We used to have to eyeball it, but the M4 Lab has changed that."

A roadmap to the future of medicine

3D printing is already revolutionizing the practice of medicine. At Ohio State's M4 Lab, researchers can digitally build a replica of the patient's organ or tumor from imaging, such as a CT scan or MRI. Lab engineers collaborate with physicians to design a device or perform a procedure tailored perfectly to their patients. And, since the lab sits nearby on the university's West Campus, technicians can manufacture solutions faster and cheaper at the point of care.

As a collaborative initiative that aims to accelerate and improve patient care, the M4 Lab:

- **Teaches future generations of ear, nose and throat (ENT) providers**
  With access to 3D printing, ENT surgeons can hand medical students a replica of patient anatomy to hold and examine before heading into the operating room. The ability to study these models has revolutionized the way trainees learn. They can better understand the three-dimensional geometry of procedures, the complexity of tumor biology and the surgical approaches used in the operating room.
- **Enhances patient communication**
  Calming a patient's fears is never easy, especially in complex cases. 3D-printed models are invaluable communication tools that help doctors contextualize a procedure for a patient and loved ones before surgery.
- **Improves surgical outcomes**
  Surgeons use 3D printing to customize cutting guides they can refer to in the operating room during complicated procedures. This groundbreaking tool is leading to reduced complications, side

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effects and morbidity. For example, viewing tumors from different angles provides new perspectives that can give surgeons a better grasp of the location of major nerves and arteries.

- **Pushes the medical frontier**
3D printing has ushered in a new era of customization. The M4 Lab allows physicians to personalize devices in days rather than months or years. "We can individualize on the device side like we already do on the treatment side with chemotherapies and other medications," VanKoevering says. "And I love that I can come up with an idea today, design it tomorrow and use it in a patient the next day."

The M4 Lab's Director of Additive Manufacturing Ed Herderick, PhD, has his sights set on scaling the lab's work in the near future.

"It would be a big task, but I envision that we will make 3D printing the standard of care for any surgeon or patient who could benefit," he says. Also, as a teaching hospital that trains scores of medical students and residents, the ability to print 3D models for an entire class of students is a game changer.

Real-world applications

Recently, VanKoevering and his team designed airway stents for laryngectomy patients experiencing life-threatening airway obstruction. The ENT specialists developed customized silicone tracheal stents that could keep the airways open.

> We've discovered ways to use well-tolerated materials to build biological scaffolds shaped to the right size, dimensions and geometry for a patient. The end goal is to print with living cells so what we print and put into the body will evolve, grow and develop into a fully functional replacement organ."
>
> — Kyle VanKoevering, MD

"It's important that we can manufacture solutions on an urgent basis at the hospital for these critically ill patients," VanKoevering says of the airway obstruction surgeries. "These people couldn't breathe. We have helped them return to a relatively normal life. It's super gratifying."

The M4 Lab is conducting medical device research trials that will pioneer airway management even further. With digital design and 3D printing, the lab is investigating custom prosthetics and molds for medical-grade silicone.

"We've discovered ways to use well-tolerated materials to build biological scaffolds shaped to the right size, dimensions and geometry for a patient," VanKoevering says. "The end goal is to print with living cells so what we print and put into the body will evolve, grow and develop into a fully functional replacement organ."

The ENT specialists have also turned to the M4 Lab for complex jaw reconstructions for patients with cancer. They used 3D-printed models to strategize how to take a patient's leg bone, reshape it and transplant it into the exact location in the jaw. The team has performed this procedure on more than 40 patients.

The sky's the limit

Looking to the future, Ohio State's M4 Lab members believe that the applications for otolaryngology are endless. As the technology advances, they hope to make organ replacement, instead of transplants, the standard of care.

"I don't think we can overstate the ambition of printing organs to match a patient's physiology, so they don't have to take anti-rejection drugs," Herderick says.

While the notion of printing an ear, heart valve or aorta seems like science fiction, it's a goal toward which 3D medical printing experts at Ohio State are striving. According to VanKoevering, bioprinting cells and tissue from a digital file is only years, not decades, away.

"We have the opportunity to do this work at a level we haven't seen before," he says. "Using engineering tools and 3D printing, we will change lives in ways we can only imagine."

Ohio State head and neck surgeon works with veterinary oncologist to give beloved dog its bark back

Stephen Kang, MD, is used to working on complex cases in his role as a head and neck oncologic surgeon in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute. But in October 2021, he experienced a career first: he was asked to help operate on a White Shepherd-mix dog named Blondi.

A lifelong dog owner, Kang immediately agreed to the request — working to remove a rare, cancerous tumor from the dog's trachea and reconstruct her airway. He partnered with thoracic surgeon Desmond D'Souza, MD, head and neck oncologic surgery fellow Bryan Swendseid, MD, and veterinary oncologist Laura Selmic, BVetMed (Hons), to perform the surgery at The Ohio State University Veterinary Medical Center.

The rescue dog who rescued her owners

This unique case was the culmination of a long journey for Blondi and her family. After she began coughing and having trouble breathing and swallowing, her owners — a married couple who both served in the U.S. armed forces — spent nearly a year and a half searching for answers.

After several unsuccessful treatments and a battery of tests, their local veterinarian referred them to Selmic at the Ohio State Veterinary Medical Center.

"Dr. Selmic confirmed that Blondi had a tumor on her windpipe, which was obstructing her airway and pressing on the nerves responsible for voice and swallowing," Kang says. "Because it's a difficult tumor to remove, requiring extensive surgery that comes with several risks, Dr. Selmic said that many dog owners decide not to pursue treatment. This means even the most experienced veterinary surgeons have very few opportunities to perform this type of operation."

For Blondi's owners, though, their dog is more than just a pet. She's a cherished companion that's helped them manage anxiety, depression and post-traumatic stress disorder for 10 years. Because of the immeasurable support Blondi has provided the couple since they found her abandoned in 2011, they were willing to go to any length to save her.

A surprisingly seamless surgery

Knowing she'd need help removing such a large, involved tumor, Selmic reached out to the team that regularly performs this type of surgery on humans.

"Dr. D'Souza and I work together to treat patients who have tracheal tumors or thyroid cancer that involves the trachea," Kang says. "It made sense for us to team up again. This was also an incredible learning opportunity for the two of us and our fellow that joined us, Dr. Swendseid."

The trio relied on Selmic's expertise in canine anesthesiology, fluid management, pain management and postoperative care. And they did what they do best: after placing a breathing tube and exposing the cancerous mass, they immobilized the laryngeal nerves and removed the tumor. Finally, they removed the trachea and stitched it back together.

After the delicate, two-hour operation, Blondi's ability to breathe — and bark — was fully restored.

"What I found remarkable is that the operation was identical to how we do it in humans," Kang says. "If anything, it was a bit easier operating on Blondi because her cervical trachea was longer than a human's, and both the recurrent laryngeal nerves were robust. I went into this experience thinking there would be significant differences in the embryology and anatomy of a dog's head and neck compared to that of a person. But they're quite similar."

An appreciation for collaboration

Kang says this operation reminded him how much he values working with teams.

"Because we come from different training backgrounds, I learn something whenever I work with thoracic surgeons or neurosurgeons," Kang says. "This case was no different. Working with a veterinary surgeon for the first time, I realized that even though we approach our respective surgeries in different ways and may use different dissection techniques, the end result is the same."

Following her surgery, Blondi's recovery has gone smoothly. She was up and walking the next day and has gained back all of the weight she lost due to her swallowing issues.

"I know how much our own family's dog means to us, so it's incredibly rewarding to know Blondi is breathing freely again," Kang says. "I'm grateful to Dr. Selmic and Dr. D'Souza, and to Blondi's owners for trusting us with this opportunity. It's an experience I'll never forget."

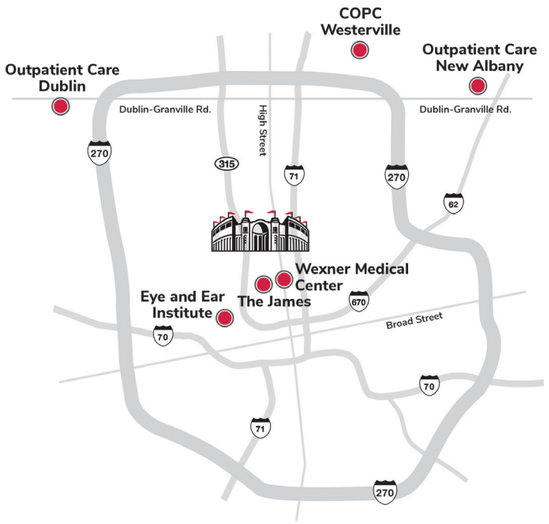
Ohio State's Otolaryngology department completes first wave of robust expansion

To meet the growing need for general and subspecialty otolaryngology care in central Ohio, the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center expanded to two new locations in 2021 — and further growth is already underway.

Finding new ways to deliver care

The first new facility to open is located in the Columbus suburb of New Albany. In addition to offering diagnostic procedures, clinical consultations and office-based treatments, the new five-story, 250,000-square-foot medical office building, called Ohio State Outpatient Care New Albany, is also home to a standalone surgery center.

"Our patients can now receive great care in a more cost-effective manner because standalone surgery centers don't have to follow hospital-based pricing," says department chair James Rocco, MD, PhD. "The New Albany facility is also a good fit for our ear, nose and throat services because, aside from head and neck cancer surgery, most of the surgeries we perform are outpatient procedures."



The department's second new facility, located in the Columbus suburb of Westerville, was made possible through a partnership with Central Ohio Primary Care (COPC), the largest physician-owned primary care group in the United States.

In 2020, COPC approached the department about offering ENT and allergy services in a new COPC-owned facility; the group opened this 100,000-square-foot location in October 2021 and is projected to provide primary care and other medical services to more than 50,000 adult and pediatric patients a year. Ohio State's Otolaryngology team offers the only practice in the building that's not part of the official COPC network.

"Through this unique partnership, we're helping COPC providers make sure their patients have prompt access to ENT care," Rocco says. "Together, we're jointly managing individuals who need specialty care for asthma, allergies, sinus issues, sleep apnea and other common or chronic conditions."

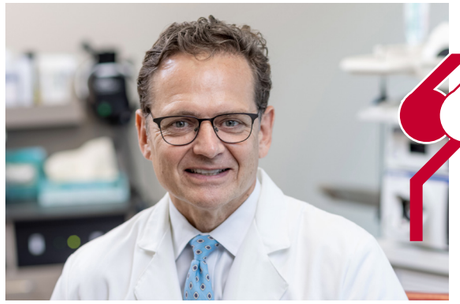
Responding to community needs and building for the future

Several factors have driven recent demand for the medical and surgical otolaryngology services offered by the Ohio State Wexner Medical Center. The greater Columbus region has seen significant population growth, and experts predict this trend may continue for at least the next decade. Plus, the Ohio State Department of Otolaryngology is home to comprehensive subspecialty services that are hard to find outside of major academic health centers — meaning patients travel from all parts of Ohio and neighboring states to receive care.

"As we've continued to see an increase in patient volume across the department, we've been outgrowing our facilities," says laryngologist L. Arick Forrest, MD, MBA, medical director of Ambulatory Services and vice dean of Clinical Affairs at the Ohio State Wexner Medical Center. "By expanding our footprint, we've not only made it easier for people to get timely otolaryngology care, but we've also brought that care closer to where our patients live and work."

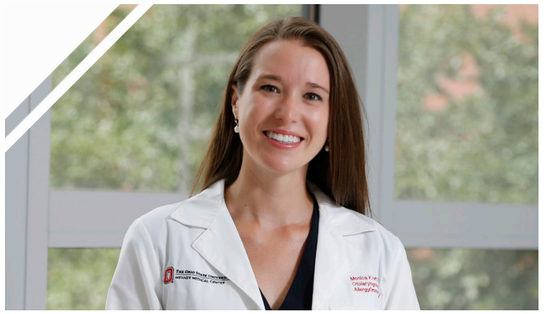
In fall 2022, the department will expand to another large, multispecialty clinic — with a second standalone surgery center — in the city of Dublin, Ohio. This will be followed by additional multispecialty clinics located on Ohio State's West Campus and in the city of Powell.

"By expanding our services beyond Columbus, we're reaching smaller, suburban areas that previously didn't have an ENT presence," Forrest says. "Now it's easier for those individuals to get the high-quality care they need, in or near their own community."



> By expanding our footprint, we've not only made it easier for people to get timely otolaryngology care, but we've also brought that care closer to where our patients live and work."
>
> — L. Arick Forrest, MD, MBA

Monica Kraft, MD, joins the Division of Allergy and Immunology



Monica Kraft, MD, joined the Division of Allergy and Immunology in the Department of Otolaryngology – Head and Neck Surgery as an assistant professor.

Her appointment comes after she completed her categorical pediatric residency at Nationwide Children's Hospital and a two-year fellowship at The Ohio State University Wexner Medical Center, where she developed her keen interest in allergy and immunology.

Kraft's fellowship took place during the COVID-19 pandemic. Because education is a predominant component of caring for pediatric patients, Kraft called on her communication skills as a board-certified pediatrician to educate her patients with immune disorders.

"The COVID-19 pandemic has been a confusing time for patients. Part of my role as a physician has been to help patients navigate through that confusion and make an informed decision once immunizations became available," she says.

Patients with immune disorders can be reticent about vaccine compliance, often worrying that vaccines might negatively trigger their immune systems. Kraft found that explaining the true dangers of vaccine non-compliance has been crucial during the pandemic.

"There are many patients whose immune or inflammatory conditions can cause an even greater risk of severe complications from the COVID-19 virus," Kraft says. "But many patients fear that the COVID-19 vaccine will make them feel worse. It's been more important than ever to dispel these misconceptions, provide accurate research and answer any and all questions to help keep our patients safe."

In her new role at Ohio State, Kraft is looking forward to further investigating allergic triggers of the immune system. She explains that patients' assumptions about their immune response triggers may no longer be accurate.

"A 50-year-old patient might be hesitant to be given penicillin because they were told they had a penicillin allergy when they were 6 years old," she says. "But that might not be the case anymore and their body may have outgrown the intolerance."

In addition, Kraft is finding that misperceptions about allergies are also often linked to food.

"A patient's assumptions about their food allergies are sometimes based on false-positive testing, or allergy tests that were completed a long time ago," she says. "I plan to help these patients by pursuing appropriate testing and customizing food intake based on accurate data."

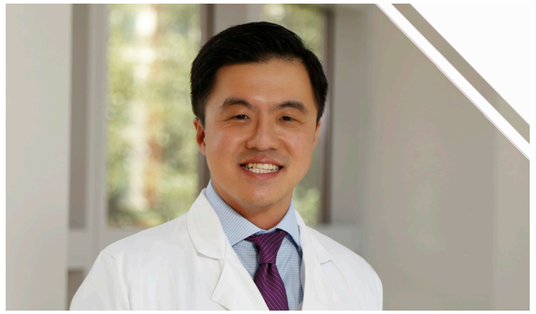
Physician-scientist Yin Ren, MD, PhD, joins the Division of Otology, Neurotology and Cranial Base Surgery

Yin Ren, MD, PhD, combines his lifelong interest in engineering with his passion for neurotology patient care and research in his new role in the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center and College of Medicine.

Ren joined Ohio State in August 2021 as an assistant professor and head and neck surgeon in the Division of Otology, Neurotology and Cranial Base Surgery.

Born in China and raised in Windsor, Ontario, Canada, Ren attended the Massachusetts Institute of Technology (MIT), earning a bachelor's degree in electrical and biomedical engineering. Ren completed a dual MD/PhD program in the Boston area, earning his medical degree from Harvard Medical School's Health Sciences and Technology Program and PhD in medical engineering and medical physics from MIT.

The decision to specialize in otolaryngology came in medical school when he realized the extent to which he could apply his interest in engineering to his work, especially in neurotology. "I enjoyed my ear, nose and throat rotations because they offered a great deal of variety in the types of cases we see and technology we use to treat patients with hearing loss, such as cochlear implants," he says. "After working as a lab assistant with a surgeon-scientist who had an interest in sensorineural hearing loss and skull-base tumors, I knew I wanted research to be part of my work as well."



Ren completed a one-year internship in general surgery at Massachusetts General Hospital and his residency in otolaryngology – head and neck surgery at the Harvard Combined Training Program at Massachusetts Eye and Ear. He joined Ohio State's faculty soon after completing a clinical fellowship in otology, neurotology and skull-base surgery at the University of California, San Diego.

Ren's clinical practice includes caring for all conditions related to hearing loss and balance. His primary research interest is identifying and developing better biomarkers and targeted treatments for skull-base tumors.

> My lab will use a variety of biology and nanotechnology approaches to help us understand tumor behavior, develop more personalized treatments, reduce morbidity and improve clinical outcomes."
>
> — Yin Ren, MD, PhD

Swallowing expert Apoorva Ramaswamy, MD, joins the divisions of Laryngology and Head and Neck Oncology

Apoorva Ramaswamy, MD, has joined the Department of Otolaryngology - Head and Neck Surgery as an assistant professor in the divisions of Laryngology and Head and Neck Oncology. She treats patients in the Head and Neck Clinic at The Ohio State University Comprehensive Cancer Center - Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC - James).

Joining Ohio State stemmed from Ramaswamy's commitment to improving a cancer patient's ability to swallow.

"Head and neck cancer is unique in affecting the things that make us most human. Our voice and ability to communicate, our ability to enjoy a meal with our family — these are essential to our quality of life," she says.

Ramaswamy completed medical school at Yale University School of Medicine, followed by a residency at NewYork-Presbyterian/ Columbia and Cornell University Medical Center and a fellowship at University of California, Davis. During her fellowship, she began using more aggressive swallow treatment models for patients with head and neck cancer.

"I was lucky to spend my fellowship year with Dr. Peter Belafsky, who invented many of the procedures and treatments for better swallow outcomes," she says.

Ramaswamy maintains that the current standard of care for head and neck cancer survivors needs to change. She utilizes her research and clinical practice to pursue positive patient outcomes by customizing treatment to their needs and lifestyle. "An aggressive swallow plan starts with following up with patients, rather than waiting for them to seek help when swallowing becomes problematic," she says.

At the OSUCCC – James, patients are identified and sent to the Head and Neck Clinic for evaluation. There, Ramaswamy and her team develop a customized swallow plan and appropriate treatment parameters for each patient, which may include surgical procedures, swallowing therapy and physical therapy.

"As a surgeon, I can modify the structures that are causing swallowing problems, while our swallow therapy team teaches patients compensatory and strengthening exercises to re-learn how to swallow in the safest and most comfortable manner," Ramaswamy says. "Our goal is for these patients to not only survive, but thrive."

Fellowship-trained endoscopic surgeon Kathleen Kelly, MD, joins the Division of Rhinology

Fellowship-trained rhinologist and endoscopic skull-base surgeon Kathleen Kelly, MD, joined the faculty of the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center in November 2021. And while she can care for patients with complex otolaryngology conditions, she's excited about the opportunity to collaborate with other experts at Ohio State.

"At Ohio State, skull-base surgeons serve on multidisciplinary teams with neurosurgeons, internal medicine physicians and radiologists when patients present with complex concerns such as pituitary tumors or meningoencephaloceles," Kelly says. "It's exciting to be at Ohio State, where so many subspecialists work with otolaryngologists to ensure optimal outcomes."

Kelly is an assistant professor and otolaryngology – head and neck surgeon in the department's Division of Rhinology. She approaches nearly all of her surgeries endoscopically, using techniques that can lead to faster recovery times, less bleeding and an optimal cosmetic result. In addition to her clinical role, she participates in clinical research and teaches residents and medical students at The Ohio State University College of Medicine.

Kelly's interest in becoming a physician began when she was a high school student in Texas. After graduating from Harvard University with a degree in neurobiology, she attended Columbia College of Physicians and Surgeons in New York City. Kelly completed a surgery internship and otolaryngology – head and neck surgery residency at the University of Texas Southwestern Medical Center in Dallas and a fellowship in rhinology and endoscopic skull-base surgery at Johns Hopkins University School of Medicine before joining the faculty at Ohio State.

It's exciting to be at Ohio State, where so many subspecialists work with otolaryngologists to ensure optimal outcomes."

— Kathleen Kelly, MD

In addition to treating common otolaryngology conditions, Kelly specializes in complex diseases, including cerebrospinal fluid leaks and benign skull-base tumors.

Education

FY2021
by the Numbers

Number of residents: **23**
65% male; 35% female

Number of Fellows: **9**

Number of Specialty Fellowships: **6**

Including

Allergy and Immunology
Head and Neck Oncology
Laryngology
Neurotology
Pediatric Otolaryngology
Skull Base Surgery

Novel course teaches lifesaving airway management skills to medical students

An innovative, hands-on class developed by otolaryngologists at The Ohio State University Wexner Medical Center is filling a gap in medical student education — and providing future physicians the skills they need to manage potentially life-threatening issues in patients with altered airways.

In early 2021, the new Altered Airway Anatomy course was added to the otolaryngology rotation for all third-year medical students from The Ohio State University College of Medicine. Participants learn how tracheostomy stomas and total laryngectomy surgeries alter normal airway anatomy. And, using innovative 3D-printed airway models created at Ohio State, they learn how to place, remove and troubleshoot tracheostomy tubes.

Addressing a lack of education and exposure

The Altered Airway Anatomy course was the brainchild of fourth-year otolaryngology resident and former Ohio State medical student Rishi Sethia, MD. During his on-call experiences, Sethia noticed many hospital providers who paged him for help felt uncomfortable caring for patients with altered airways.

"As airway experts, otolaryngologists are always happy to troubleshoot a problem or help stabilize a patient. But in certain situations, waiting for help to arrive can lead to poor outcomes," Sethia says. "If a tracheostomy tube falls out or isn't properly connected to a ventilator, a patient can suffer permanent neurological injury within minutes."

Only a handful of specialties, like otolaryngology and emergency medicine, provide comprehensive airway management training. But patients with altered airways may come into contact with providers from many disciplines, especially in the inpatient setting.

"All medical students, regardless of their intended specialty, should be exposed to the fundamentals of airway management, especially in patients with altered anatomy," Sethia says. "There's a misconception that it's difficult to manage tracheostomy tubes, which makes people nervous. I thought, if we can show students how simple it is to secure an airway when complications arise, they can someday save lives."

A pioneering use of 3D printing

Sethia shared his idea with his faculty mentor, head and neck oncologic surgeon Nolan Seim, MD, FACS. And as the director of Medical Student Education for Ohio State's Department of Otolaryngology – Head and Neck Surgery, Seim recognized how valuable a hands-on educational experience could be for students.

Together the pair approached their colleague, skull-base surgeon Kyle VanKoevering, MD, about creating anatomical models of the neck. Not only does VanKoevering have a degree in biomedical engineering, but he also runs a translational research lab at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute.

"Our new Altered Airway Anatomy course is a great example of how we can enhance

medical education with 3D printing," VanKoevering says. "There are some airway simulators available for purchase, but they're expensive and not the best representations of altered anatomy. Over the course of a few weeks, we created 10 of our own airway models using 3D printing and silicone molding. They're durable and reusable, and contain multiple, realistic anatomical parts."

A high-quality, hands-on experience

These 3D models help students recognize the anatomical differences in patients who have a tracheostomy tube or had a total laryngectomy. They also allow students to practice inserting and removing a tracheostomy tube.

"We're able to teach students the key items that matter in just 30 minutes," Seim says, who, along with Sethia and VanKoevering, is one of the course instructors. "These items include the differences between a tracheostomy tube and an endotracheal tube, how to place the tube in the trachea and how to connect the tube to a ventilator. We also run through basic airway algorithms that should be applied during a code situation."

In addition to creating the curriculum, Sethia secured IRB approval to gather data on the program's efficacy. Participant surveys show students feel more confident, comfortable and knowledgeable about altered airway management after completing the course.

"Having the ability to practice with a simulated neck and receive feedback from instructors is invaluable," VanKoevering says. "This is the next best thing to working with a live patient who has a tracheostomy."

Reaching out to more providers across more disciplines

Less than a year into their launch, the team received requests to provide the Altered Airway Anatomy course to other medical center providers, including residents, nurses and physician faculty. And their efforts may soon expand beyond Ohio State.

"We recently offered this course to clinicians in the Department of Physical Medicine and Rehabilitation," Sethia says. "In fact, the course has been so well received we've started discussions with other organizations to develop a multi-institutional course. I'm excited to see just how many professionals we can train by collaborating with others."

Ohio State otolaryngologist creates unique financial literacy course for physicians

A new resource available to physicians at The Ohio State University Wexner Medical Center offers practical tips and strategic advice for managing their personal finances.

This novel education program was developed by Nolan Seim, MD, FACS, a head and neck oncologic and microvascular reconstructive surgeon. It's run through the James Physician Wellness Program, an initiative created by leaders at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute to promote wellness in the workplace.

Seim, who serves as director of Medical Student Education in the Department of Otolaryngology - Head and Neck Surgery at The Ohio State University College of Medicine, is passionate about professional education and mentorship. He also has a personal interest in financial literacy education for physicians.

In 2020, he combined these interests to create a virtual lecture series for faculty, fellows and residents. The lectures, which cover topics ranging from investments to student loan repayment, have already been viewed by hundreds of physicians (and physicians-in-training) across the medical center and university.

Providing access to useful, non-biased financial information

The impetus for this course goes back several years, when Seim was in the midst of his otolaryngology residency training.

"We're taught many things during medical school and our later training, but financial management isn't one of them," he says. "Because many physicians begin their careers with a significant student loan burden, I started working with a financial advisor during my residency. Before long, I realized my advisor was making poor decisions and had placed me in high-cost, poor-performing investments. And that situation isn't unique to me; physicians tend to be targets for unscrupulous professionals in the financial industry."

> We're taught many things during medical school and our later training, but financial management isn't one of them."
>
> — Nolan Seim, MD, FACS

Following that experience, Seim began educating himself on ways to manage his personal finances through books, podcasts and blogs. Now, thanks to a partnership with the Fisher College of Business, he's making sure his physician colleagues are equally empowered. Seim helps recruit financial experts who work for Ohio State to deliver non-biased information on various topics that are relevant to physicians.

"Finding the right people to present is key," Seim says. "We want to provide purely educational information that's easy to understand. And it should be delivered by professionals who aren't trying to sell their services."

Material that's as digestible as it is accessible

The inaugural, three-part lecture series launched in fall 2020. It focused on the psychology of money, financial coaching for physicians and the basics of personal finance. That effort was so successful, it's expanded to include more topics.

The most recent series comprised 90-minute lectures that took place monthly, from September through December 2021. Topics included:

- Cash flow management
- Insuring your home and other assets
- Investing 101
- Student loan repayment
- Understanding credit and purchasing power

"We send out a survey after every lecture, and feedback has been enormously positive," Seim says. "Not only are physicians asking for more content, but they submit insightful questions that show they're interested in the information and want to apply it to their own lives. These are very important topics, and it's rewarding to know so many of my colleagues have found these lectures helpful."

Department of Otolaryngology launches scholarship program for visiting URiM medical students

A new scholarship program offered by the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine aims to help medical students who are underrepresented in medicine (URiM) participate in the department's visiting sub-internship rotation.

Through the new initiative, three $1,500 scholarships are available annually for visiting URiM medical students. These scholarships help cover associated away-rotation costs, including transportation and housing, providing equal opportunities to all students who want to pursue otolaryngology training at Ohio State.

Providing equal access to high-quality education

For fourth-year medical students considering careers in otolaryngology, Ohio State's away rotation offers valuable insights and experiences.

"Every summer and fall, we host around 15 to 20 students from other medical schools who spend four weeks rotating through our department," says head and neck oncology surgeon Nolan Seim, MD, FACS, director of Medical Student Education for the Department of Otolaryngology. "It's an important experience because it gives participants an idea of what it's like to be a resident at Ohio State. That being said, we realized this experience may not be within reach for every student; we thought that a scholarship would at least help relieve some financial pressures."

Seim and his colleague, Brad deSilva, MD, director of the Otolaryngology Residency Program and the department's vice chair of Education, worked to establish the new scholarship program. They want to ensure applicants (and subsequent participants) from underrepresented backgrounds have increased access to the department's sub-internship training. This includes all students from underrepresented racial and ethnic backgrounds, as well as from socioeconomically disadvantaged communities.

Attracting diverse talent

A key step in improving diversity among visiting medical students is making sure those who consider applying for an away rotation are aware of these new scholarships. Minka Schofield, MD, MPH, FACS, director of the Division of General Otolaryngology and the department's vice chair of Diversity, Equity and Inclusion, is helping with this effort.

> We know diversity in medicine is linked to better patient outcomes. By improving inclusivity within the field, we'll be better equipped to care for the diverse patient populations who turn to us for ENT care."
>
> — Minka Schofield, MD, MPH, FACS

"We're advertising on websites and social media platforms for various professional societies, including the American Academy of Otolaryngology – Head and Neck Surgery," Schofield says. "We're also running an advertising campaign that's connected us with groups such as the Harry Barnes Medical Society, the Association of American Medical Colleges and the Latino Medical Student Association."

The team ultimately hopes that promising medical student careers will be kick-started by the scholarships, benefiting the field of otolaryngology in the long run.

"We're not just attracting students who are interested in Ohio State; we're also attracting students with a genuine interest in otolaryngology," Schofield says. "We know diversity in medicine is linked to better patient outcomes. By improving inclusivity within the field, we'll be better equipped to care for the diverse patient populations who turn to us for ENT care."

Our new fellows

Allergy and Immunology

Christian Coletta, MD
Hometown: Cleveland, Ohio
Undergraduate: The Ohio State University
Medical School: The University of Toledo College of Medicine and Life Sciences
Residency: Nationwide Children's Hospital/The Ohio State University Wexner Medical Center

Kasey Lanier, MD
Hometown: Atlanta, Georgia
Undergraduate: Wake Forest University Winston
Graduate: University of Pennsylvania
Medical School: Mercer University School of Medicine
Residency: Emory University

Head and Neck Oncologic Surgery

Catherine Haring, MD
Hometown: Santa Barbara, California
Undergraduate: Wesleyan University
Medical School: George Washington University
Residency: University of Michigan

Brian Swendseid, MD
Hometown: Coeur d'Alene, Idaho
Undergraduate: Pomona College
Medical School: Case Western Reserve University School of Medicine
Residency: Thomas Jefferson University Hospitals

Laryngology

Liuba Soldatova, MD
Hometown: Astrakhan, Russia
Undergraduate: University of California, Davis
Medical School: The Ohio State University College of Medicine
Residency: Hospital of the University of Pennsylvania

Neurotology

Vivian Kaul, MD
Hometown: Buffalo, New York
Undergraduate: College of William & Mary
Medical School: University of Texas Southwestern Medical School
Residency: Mount Sinai Hospital

Pediatric Otolaryngology

Abdulrahman Althubaiti, MBBS
Hometown: Jeddah, Saudi Arabia
Undergraduate: King Abdulaziz University
Medical School: King Abdulaziz University
Residency: McGill University Health Centre

Our new residents

Taylor Freeman, MD
Hometown: Cresson, Pennsylvania
Undergraduate: Washington & Jefferson College
Medical School: The Ohio State University College of Medicine

Ryan Judd, MD
Hometown: Loveland, Ohio
Undergraduate: The Ohio State University
Medical School: University of Chicago Pritzker School of Medicine

Priyanka Reddy, MD
Hometown: Daytona Beach, Florida
Undergraduate: University of Miami
Medical School: University of Miami College of Medicine

Logan McColl, MD, MBA
Hometown: Victoria, British Columbia, Canada
Undergraduate: University of Washington
Graduate: University of Virginia Darden School of Business
Medical School: University of Virginia School of Medicine

Lisa Zhang, MD
Hometown: Cupertino, California
Undergraduate: University of California, Berkley
Medical School: Johns Hopkins University School of Medicine

Leadership and Recognition

Select awards and distinguished achievements

- **Leslie Kim, MD**, was named vice chair and chair-elect for the Women in Facial Plastic Surgery Committee for the American Academy of Facial Plastic and Reconstructive Surgery.
- **Dan Merfeld, PhD**, was named a member of the advisory council for the National Institutes of Health.
- **Matthew Old, MD**, was selected to join the 2021 class of the Mazzaferri-Ellison Society of Master Clinicians at The Ohio State University College of Medicine.
- **Apoorva Ramaswamy, MD**, was named a medical advisory board member for the National Foundation of Swallowing Disorders. She was also named a member of the Diversity, Equity and Inclusion Task Force for the Dysphagia Research Society.
- These faculty members of the Department of Otolaryngology – Head and Neck Surgery received promotions in fiscal year 2021: **Jonathan Grischkan, MD**, was promoted to associate professor-clinical; **Shuman He, MD, PhD**, was promoted to professor; **Derek Houston, PhD**, was promoted to professor; **Prashant Malhotra, MD**, was promoted to associate professor-clinical; **Matthew Old, MD**, was promoted to professor; and **Patrick Walz, MD**, was promoted to associate professor – clinical.
- These physicians from the Department of Otolaryngology – Head and Neck Surgery were named Castle Connolly Top Doctors for 2021: **Oliver Adunka, MD; Amit Agrawal, MD; Ricardo Carrau, MD; Brad deSilva, MD; Edward Dodson, MD; Charles Elmaraghy, MD; L. Arick Forrest, MD; Jonathan Grischkan, MD; Meredith Lind, MD; Laura Matrka, MD; Matthew Old, MD; Bradley Otto, MD; Enver Ozer, MD; James Rocco, MD, PhD; James Ruda, MD; and Gregory Wiet, MD**.

Minka Schofield, MD, named Otolaryngology department's vice chair of Diversity, Equity and Inclusion

Minka Schofield, MD, MPH, FACS, has been appointed vice chair of Diversity, Equity and Inclusion (DEI) for the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine.

Her new role is part of a broader initiative that launched in 2020 and spans the Ohio State College of Medicine and The Ohio State University Wexner Medical Center. Each department within the college now has a vice chair of DEI who reports to the Ohio State Wexner Medical Center's chief diversity officer. Together, this group is identifying and implementing best practices for boosting diversity and promoting inclusion across all clinical and academic programs.

Increasing diversity in medicine

As vice chair of DEI, Schofield will lead efforts to improve recruitment and retention of diverse clinicians, researchers, staff and trainees within the department. She aims to bring more people who are underrepresented in medicine (URiM) into the field of otolaryngology — and into the Ohio State family.

"One of my goals is to see more women and URiM trainees represented in our otolaryngology residency program," says Schofield, who's also director of the Division of General Otolaryngology. "We're reaching out to various groups that provide a voice for underrepresented medical students to help build awareness of our program. These groups include The Latino Medical Student Association, the Student National Medical Association and the medical student division of the American Medical Women's Association."

Schofield and her colleague neurotologist Aaron Moberly, MD, are also in the early stages of developing a summer research internship. This new training program will be offered to underrepresented medical students who are interested in careers in otolaryngology research.

Improving the patient experience

As part of her new role, Schofield also wants to ensure that every patient, regardless of racial, ethnic or socioeconomic background, feels welcome and has equal access to care at Ohio State.

As the medical school and medical center work to reduce health disparities at the system level, there's an ongoing effort within the Otolaryngology department to make sure anyone seeking ENT care has a positive experience. This includes helping all team members recognize and understand the different medical, social and cultural needs that exist among diverse patient populations.

> No matter who turns to us for care, there should be someone on staff who can identify with them, communicate with them and ensure we're meeting their unique needs."
>
> — Minka Schofield, MD, MPH, FACS

"We have a cultural calendar where we highlight the significance of various cultural traditions such as religious holidays, and ways to get involved," Schofield says. "We also have huddles with staff. These provide an opportunity to discuss topics like preferred gender pronouns and to share ways we can help our patients who are hearing impaired or have other disabilities."

Influencing clinical outcomes

As Schofield and her fellow vice chairs continue to champion diversity, equity and inclusion, their collective efforts may lead to better health care for all; studies have shown that having a diverse health care workforce is linked to better patient outcomes.

"No matter who turns to us for care, there should be someone on staff who can identify with them, communicate with them and ensure we're meeting their unique needs," Schofield says. "This position gives me the opportunity to help make this possible within the Department of Otolaryngology. I'd like to create a model that other departments can follow, so together we can drive institutional change."

Ricardo Carrau, MD, to help lead faculty development efforts for The Ohio State University College of Medicine

In July 2021, otolaryngologist Ricardo Carrau, MD, MBA, was named associate dean for Faculty Advancement, Mentoring and Engagement (FAME) at The Ohio State University College of Medicine.

Thanks in part to the guidance and mentorship he received from more seasoned physician-scientists early in his career, Carrau became an internationally renowned pioneer in endoscopic endonasal skull-base surgery. And like his former mentors, he also became a trusted advisor to junior colleagues and physicians-in-training.

Now, Carrau — who also serves as director of the Division of Skull Base Surgery at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute — makes sure other faculty members have the support they need to flourish in their own careers. In his new role as associate dean for FAME, he helps oversee — and intends to strengthen — programs that provide meaningful opportunities to enhance career progression and job satisfaction.

Building on a strong foundation

Although the associate dean position is new, the FAME program is not. For years, it's allowed Ohio State College of Medicine faculty to take advantage of classes, certificate programs and other resources that help foster professional advancement and engagement. These resources fall under four pillars: education, leadership, mentorship and Women in Medicine and Science.

One of the FAME program's most sought-after professional opportunities is the Faculty Leadership Institute, which is part of the leadership pillar. This program is a partnership between Ohio State's College of Medicine and Fisher College of Business. Participants learn team building, communication and other leadership skills they can immediately apply to their careers.

Using the Faculty Leadership Institute as a model, Carrau and his colleagues aim to enhance the other three pillars.

"I know first-hand how important these programs can be," Carrau says. "I took part in the Faculty Leadership Institute after I joined Ohio State about 10 years ago, and I loved it. It inspired me to pursue and complete my MBA. However, the other three FAME pillars are less mature. We want to build upon them and optimize their value to participants."

A personalized approach to professional growth

As part of his new role, Carrau also wants to increase awareness of FAME's professional development resources and match faculty to opportunities best suited to their skills or interests.

> Having mentors and being able to take advantage of professional development opportunities throughout my career helped me advance in my chosen profession. Now I can pay that forward and help our faculty reach their own professional or personal milestones."
>
> — Ricardo Carrau, MD, MBA

"I'm sure many professors, researchers and other faculty aren't aware that these services are available to them," he says. "When you're busy and already inundated with email, it's easy to overlook messages about a new class or program or simply assume they're not relevant. We want to change that."

One of Carrau's ideas is to create an ambassador program, where key department personnel meet with individual faculty members to learn about their experience and ambitions. Just as university counselors work with students, these ambassadors would help connect faculty to FAME services tailored to their career goals. So, a young professional who wants to become a better classroom instructor might be advised to take certain classes within the education pillar.

The right role at the right time

At this point in his prolific career, Carrau's experience and strengths made him an easy choice for the new associate dean position.

"His own success in academic medicine makes Dr. Carrau an ideal fit for this role," says Carol R. Bradford, MD, MS, FACS, dean of the Ohio State College of Medicine and vice president for Health Sciences at the Ohio State Wexner Medical Center. "An outstanding physician, educator and researcher who has published more than 500 peer-reviewed articles, he is an incredible role model, mentor and leader in the academic space. He will also help nurture an environment of collaboration, diversity and inclusiveness at the College of Medicine. Together, these efforts will help ensure our faculty succeed and thrive."

Carrau says he looks forward to helping his colleagues invest in their careers.

"Having mentors and being able to take advantage of professional development opportunities throughout my career helped me advance in my chosen profession," he says. "Now I can pay that forward and help our faculty reach their own professional or personal milestones."

Ohio State researcher Daniel Merfeld, PhD, named a founding member of new Bárány Society committee

Daniel Merfeld, PhD, a renowned vestibular scientist from The Ohio State University Wexner Medical Center's Department of Otolaryngology – Head and Neck Surgery, has been appointed to the Bárány Society's new education committee.

Established in Sweden in 1960, the Bárány Society is the world's only multidisciplinary professional group devoted to neuro-otology and vestibular research. The society recently made vestibular education one of its top priorities.

"Over a decade ago, the Bárány Society began establishing evidence- and consensus-based guidelines for defining vestibular diseases, syndromes, diagnostic procedures and treatments," says Merfeld, who has been a Bárány Society member for 30 years. "As a natural extension of these efforts, the society decided to create a formal education committee comprising 12 vestibular experts representing most continents."

Interdisciplinary group will focus on international vestibular education

Merfeld and his fellow committee members began their five-year terms in October 2021. Because high-quality vestibular education is equally hard to come by across the globe, the committee aims to enhance learning opportunities for anyone who conducts vestibular research or helps care for people with vestibular disorders.

"I'd like to see the committee create a standard nomenclature that helps enhance communication among all members, regardless of where they're from. This is important because, in an international society like ours, English is not the first language of most of our members," Merfeld says. "For many of us, 'balance' refers to the complex sensorimotor integration processes that allow us to remain upright. But others use balance to refer to vestibular function. This is particularly confusing because vestibular function is not only a major contributor to balance, but the vestibular system also contributes to important behaviors other than balance."

Improving understanding and outcomes

Efforts to standardize clinical diagnostic criteria and other nomenclature may help ensure that anyone with vertigo, dizziness, imbalance or other debilitating vestibular symptoms receives effective, evidence-based care.

"Through my work with this committee, I'm looking forward to making professional vestibular education more accessible and understandable," Merfeld says. "By helping clinicians and scientists communicate better with each other — and with their patients — we may be able to make a measurable difference in outcomes."

Oliver Adunka, MD, named chair of American Cochlear Implant Alliance board of directors

Oliver Adunka, MD, director of the Division of Otology, Neurotology and Cranial Base Surgery at The Ohio State University Wexner Medical Center, has been named chair of the board of directors for the American Cochlear Implant (ACI) Alliance. Adunka was appointed to the role in April 2021 and will serve as chair for the next two years.

The ACI Alliance is a not-for-profit membership organization that sponsors research, works to increase awareness of cochlear implants and advocates for improved access to implants for patients of all ages. Adunka takes this mission very seriously. He's been involved in the organization since its inception in 2010 and a member of the board since 2017.

"There are many individuals with substantial levels of hearing loss who are not aware that they might qualify for a cochlear implant," he says. "It's imperative we spread the word about cochlear implants and help connect individuals with the support and resources they need to access these life-changing devices."

Eligibility criteria have recently been expanded to allow more people to receive a cochlear implant. However, it's estimated that only 2-3% of individuals eligible ultimately receive their device. This is often because they don't know that they now meet the updated requirements.

As a neurotologist in the Ohio State Department of Otolaryngology – Head and Neck Surgery, Adunka sees this phenomenon all too often. In his new role as chair of the board, he plans to use his experience and insight, with the support of the entire board, to shape the national landscape and ultimately increase the utilization of cochlear implants.

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— Oliver Adunka, MD

Meredith Lind, MD, named surgical director for NCH Ambulatory Centers

Meredith Lind, MD, FAAP, FACS, associate professor at The Ohio State University College of Medicine and otolaryngologist at Nationwide Children's Hospital (NCH) in Columbus, has been named surgical director of the Ambulatory Centers of NCH.

In her role, Lind will tap into her collaborative approach honed as president of the medical staff at NCH, as well as her years of experience as a physician.

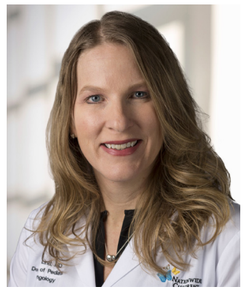
"Ambulatory surgery centers are growing in popularity because of their efficiency and patient-centered approach," Lind says. "We want to be sure we're using the space and staff we have at Nationwide Children's as efficiently as possible to best serve our patients. This will allow us to keep urgent inpatient cases in the main operating room and utilize the same-day surgical centers for those patients with less complex procedures and health needs."

This effort will require work among leadership and across all disciplines within the hospital. Lind is committed to working closely with fellow medical directors and nursing directors to make it happen. She explains that communicating with surgeons is also essential.

"It's important that I'm the voice and advocate for our surgeons so we can schedule the right surgery for the right patient, in the right setting," Lind says.

NCH has two ambulatory centers: one on the hospital's main campus and one in Westerville, Ohio. A new ambulatory center will open on the main campus in 2024, with same-day surgical procedures moving there from the current site.

"Having a location for some of these less complicated surgical procedures makes things a little easier for our patients and their families," Lind says. "And that convenience allows for a more favorable experience."



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