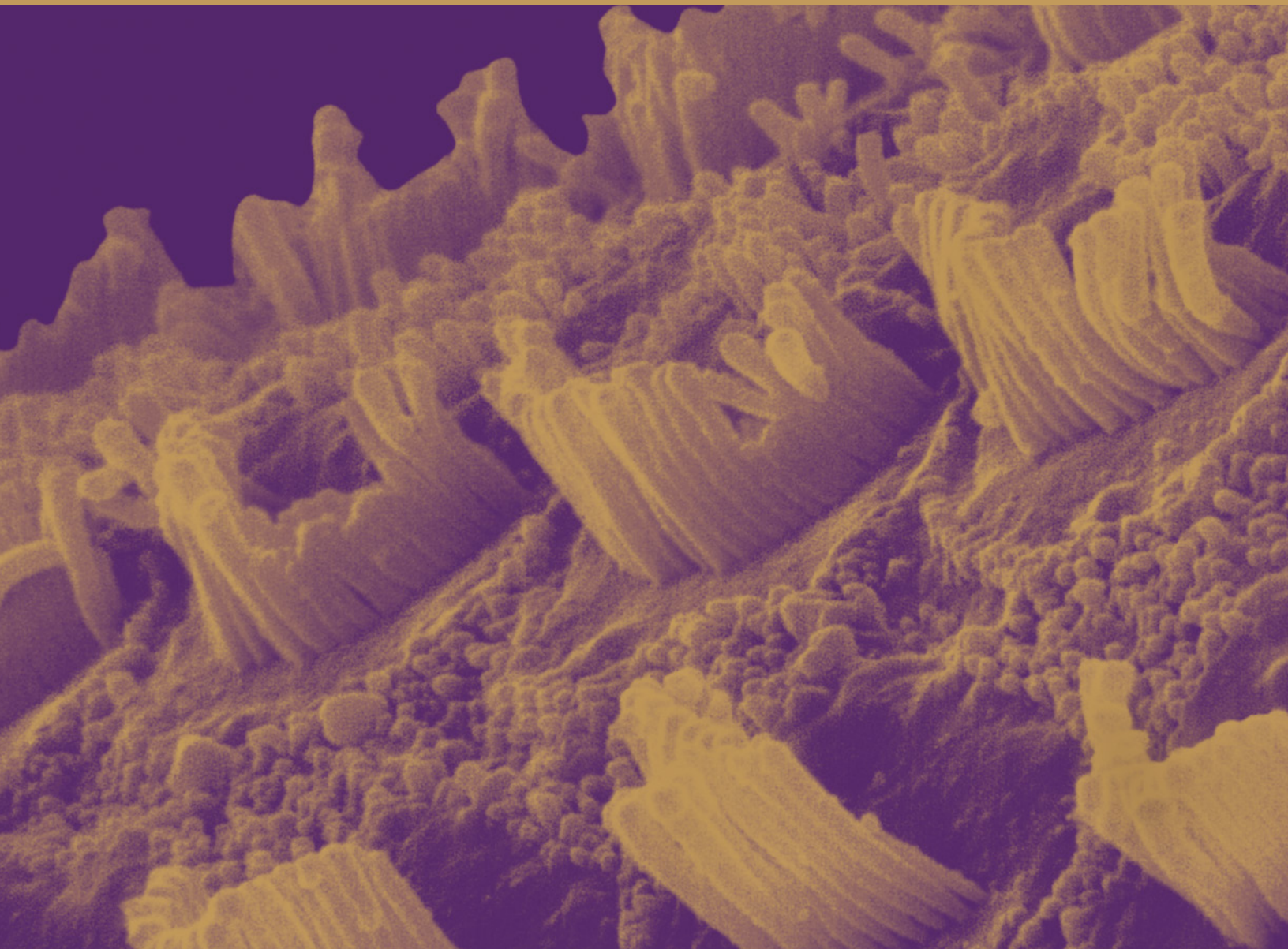




# Otolaryngology— Head and Neck Surgery

2017 YEAR IN REVIEW



**500+**

PROFESSIONAL  
VOCALISTS SEEN  
ANNUALLY

**Pioneering**

NEW IMMUNOTHERAPY  
TRIALS FOR HEAD AND  
NECK CANCER

**\$2.2M**

IN NEW SUBSPECIALTY  
FELLOWSHIP FUNDING

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## MESSAGE FROM THE CHAIR

# Dear Colleagues and Friends:

Over the past year, the Department of Otolaryngology—Head and Neck Surgery at NYU Langone Health has grown in both size and scope. Our broadening reach is fueled by a growing number of researchers, grants, and avenues of exploration, unearthing new understanding of disease and pathways to treatment. Through continued collaboration—within the specialty and with colleagues in other disciplines—we are taking our insights directly into care, enhancing quality and safety and expanding possibilities for our patients.

Our recent research pursuits have included clinical trials of immunotherapies—such as checkpoint inhibitors for patients with advanced nasopharyngeal cancer and squamous cell carcinoma—that could transform the treatment of head and neck cancers. Separately, innovations at our nationally recognized Cochlear Implant Center show promise in enhancing the placement and efficacy of cochlear implants and fine-tuning their performance for patients whose hearing depends on them.

Our preeminent reputation and continued growth have been consolidated with the addition of lauded faculty who are augmenting care and increasing patient volume across the department's specialty centers. This growth includes expanded expertise in neurofibromatosis type 2 (NF2), facial nerve conditions, and lateral and anterior skull base surgery, as well as in robotic surgery cases as our surgeons refine robotic applications. We continue to build our reputation as a top center for the treatment of dizziness—from both vestibular and neurological perspectives—with

discoveries in zebrafish shedding light on the mechanisms of human balance. In our Voice Center, new therapeutic targets are leading clinicians to novel treatment approaches for vocal cord injury and scarring and for recurrent respiratory papillomatosis.

The department's promising research and new frontiers in care are brought to life throughout this report by descriptions of uniquely complex cases, critical collaborations, and innovative approaches. In one case, surgeons successfully implanted a cochlear device in a patient with NF2 whose prior surgery and radiation treatments had left her profoundly deaf. In another, otolaryngologists, neurosurgeons, and plastic surgeons worked together to craft and carry out an endoscope-assisted skull base surgical plan for a patient with facial paralysis and hearing loss caused by a rare facial nerve tumor. Other notable cases include a complete endoscopic craniofacial resection in a patient diagnosed with a rare sinonasal cancer, and a simultaneous cochlear implantation and labyrinthectomy in a patient with hearing loss due to Ménière's disease.



J. THOMAS ROLAND JR., MD

A handwritten signature in black ink that reads "J. Roland MD".

Mendik Foundation Professor  
of Otolaryngology

Professor of Neurosurgery

Chair, Department of  
Otolaryngology—Head and  
Neck Surgery

This year, our ability to deliver the highest-quality care to our youngest patients will be greatly enhanced with the official opening of the 160,000-square-foot Hassenfeld Children's Hospital inpatient and perioperative facility. There, our department's expert pediatric care will include the Gastroesophageal, Upper Airway, and Respiratory Diseases Center, an international referral hub for congenital and acquired craniofacial malformations and one of only a few sites where pediatric vocal fold reanimations can be performed. This new facility will further support the excellence our talented faculty and staff strive for in caring for our patients and their families.

Across all of our centers and initiatives, those standards of excellence will continue to drive the multidisciplinary collaboration and quality improvement efforts that define our clinical care. In the pages that follow, you will find evidence of this excellence in the stories made possible by the unmatched talent of our scientists, clinicians, and trainees.



## FACTS & FIGURES

# Department of Otolaryngology— Head and Neck Surgery

### PATIENT CARE

**3,900+**

#### PATIENTS

have received cochlear implants and auditory brainstem implants at NYU Langone since 1984

**180+**

#### CHILDREN

under 1 year of age have received cochlear implants at NYU Langone in the last 15 years, over half of which were simultaneous bilateral

**2,900+**

pediatric otolaryngology surgeries performed in 2017

**200+**

#### COCHLEAR IMPLANT

procedures performed annually

**51**

#### ABIs PERFORMED

as of 2017, with

**13**

in children under 1 year of age

**500+**

#### PROFESSIONAL VOCALISTS

seen annually by Voice Center specialists

### RESEARCH & EDUCATION

**13 ongoing**

#### NIH-FUNDED PROJECTS

including 4 K and 5 R01 awards

**\$1.1M**

#### RESEARCH AND DEVELOPMENT CONTRACT

for translational cochlear implant research

**The Only**

#### ABI CENTER FOR NF2 IN THE REGION

and

**1 of 4**

#### ABI CENTERS

with FDA trials in pediatric ABIs

**\$100K**

#### RESEARCH VENTURE FUNDING

for broader application of patent pending noise reduction technology

**\$2.2M**

#### IN NEW SUBSPECIALTY FELLOWSHIP FUNDING

\$1M for Neurotology  
\$1.2M for Pediatrics

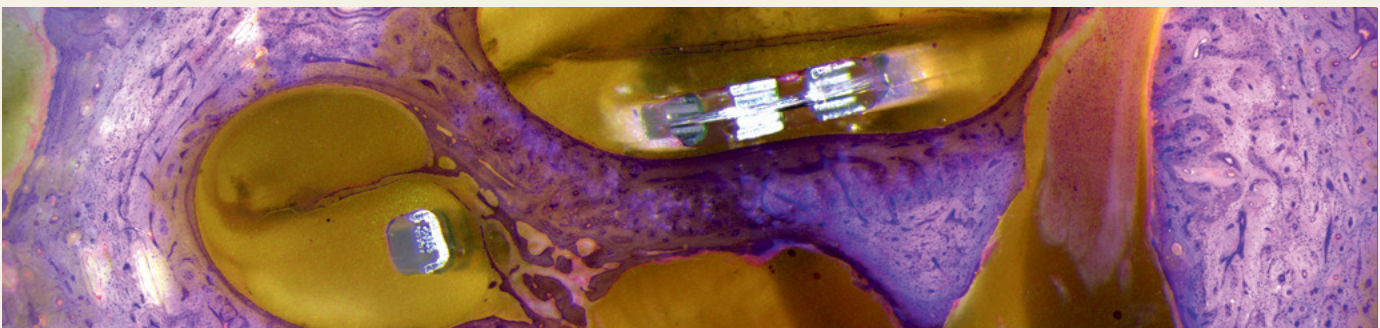
**12 ongoing**

#### CLINICAL TRIALS

with

**6**

added in 2017



↑ Perimodiolar electrode inside a human cochlea

# NYU Langone Health

View of NYU Langone Health's main Manhattan campus, including renderings of the new Science Building (left) and the Helen L. and Martin S. Kimmel Pavilion (right), both set to open in 2018.  
(Image credit: Ennead Architects)



## #19

### IN THE NATION

and nationally ranked in 12 specialties: Rehabilitation, Orthopedics, Rheumatology, Neurology & Neurosurgery, Geriatrics, Urology, Cardiology & Heart Surgery, Gastroenterology & GI Surgery, Diabetes & Endocrinology, Pulmonology, Cancer, and Nephrology



## #12

### IN THE NATION BEST MEDICAL SCHOOLS FOR RESEARCH

and a leader in innovation in medical education, including accelerated pathways to the MD degree



## Leader

### IN QUALITY CARE AND PATIENT SAFETY

For the past four years, NYU Langone has received top rankings for overall patient safety and quality of care from Vizient, Inc., formerly the University HealthSystem Consortium. In 2017, NYU Langone received two significant awards from Vizient—the Bernard A. Birnbaum, MD, Quality Leadership Award and the Ambulatory Care Quality and Accountability Award for demonstrated excellence in delivering high-quality, patient-centered outpatient care.

## 5 Star Rating

### FROM CMS HOSPITAL COMPARE

NYU Langone Health is the only full-service hospital in New York State and one of 9 percent of hospitals nationwide to receive a five-star rating from the Centers for Medicare and Medicaid Services (CMS). The rating reflects overall safety, quality, and patient experience.

# Leadership and Discovery Yield New Treatment Pathways

## DIZZINESS/BALANCE

### Comprehensive Surgical Approach Resolves Symptoms, Restores Hearing in Complex Ménière's Case

For some patients with Ménière's disease—a vestibular disorder marked by vertigo, tinnitus, and progressive hearing loss—NYU Langone clinicians have shown cochlear implantation to improve binaural hearing. In a recent case, surgeons successfully employed a rarely performed approach—a simultaneous cochlear implantation and labyrinthectomy—for a woman in her late 60s with Ménière's disease and right-ear deafness.

This patient initially presented with symptoms of episodic vertigo, tinnitus, aural fullness, and fluctuating hearing loss, which significantly impaired her quality of life. She had undergone endolymphatic sac surgery at another institution to treat her dizziness and vertigo, but the procedure was unsuccessful. In consultation with J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology and chair of the Department of Otolaryngology—Head and Neck Surgery, the patient tried several medical therapies, including antibiotics, diuretics, and suppressants, but the incapacitating symptoms persisted. She was therefore considered a candidate for a labyrinthectomy.

Removing the labyrinth would provide relief from the vertigo but would not address the hearing loss and tinnitus, noted Dr. Roland. However, he recognized that the patient was also a candidate for a cochlear implant, which had been proven efficacious for single-sided deafness (SSD) and could be inserted during the labyrinthectomy procedure. Although the combined surgery had been attempted only a handful of times in Ménière's patients across the country, Dr. Roland's expertise in using cochlear implants for SSD patients pointed to its potential for a positive outcome in this case.

"In a single surgery, we were able to resolve her vertigo and tinnitus as well as restore meaningful hearing," says Dr. Roland. "As a result, she no longer has dizziness or fullness in her ears and she can hear from her once-deaf ear—a combination of benefits that has significantly improved her stamina for daily activities and her enjoyment of life."

## HEAD AND NECK SURGERY

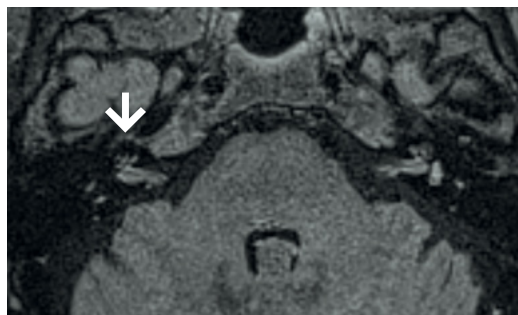
### New Treatment Frontiers and Surgical Approaches for Head and Neck Cancer Patients

New hope for patients with head and neck cancers—including those with advanced disease and lacking second-line treatment options—has emerged in the form of innovative immunotherapy trials encompassing both established and emerging approaches. The trials aim to uncover novel treatment targets for several head and neck cancer subtypes while elucidating the conditions' distinct pathologies, with the promise of improving prognoses for patients.

At the same time, NYU Langone researchers continue to pursue surgical innovation. The expansion of the head and neck robotic surgery program is fueled by data from a series of investigations linking robotic applications with those patients most likely to benefit through enhanced clinical outcomes.

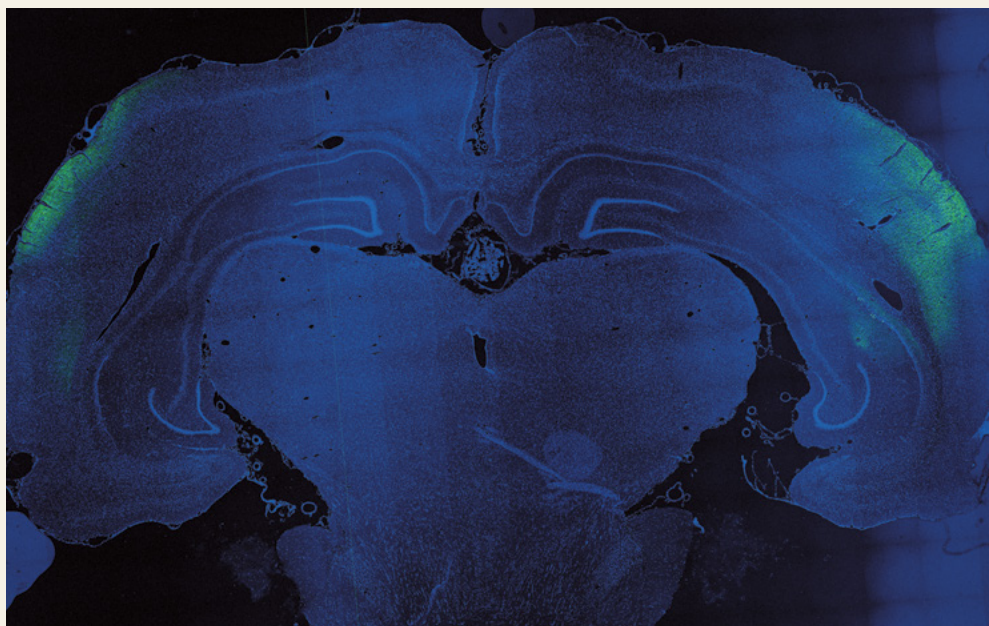
Separately, surgeons at NYU Langone have successfully performed the first fully vascularized long-segment tracheal transplant in animals; this could ultimately unlock the potential for complete tracheal transplantation as a treatment paradigm for humans.

[Read more on](#)  
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High-resolution imagery indicates dilated endolymphatic spaces in the cochlea, as seen in Ménière's disease.





Robert C. Froemke, PhD, and Ioana Carcea, PhD, used contemporary biotechnology methods to express a light-sensitive ion channel in neurons of the auditory cortex, shown in green. This allowed them to selectively control the activity of these neurons by shining blue light with a miniature fiber-optic implant placed in the brain.

## COCHLEAR IMPLANTS

### New Research Reveals Cellular Context behind Cochlear Implants

Understanding how sounds are processed is critical to researchers' ability to fine-tune cochlear implant performance. With two new studies, NYU Langone researchers have uncovered key insights into animals' response to sound that could lead to important cochlear implant enhancements.

In the first study, Robert C. Froemke, PhD, associate professor of otolaryngology—head and neck surgery and neuroscience and physiology, and his team used advanced recording and imaging technology to monitor nerve circuit activity. Mice were trained to switch between passively listening to sounds with no expectation of a reward and performing a task in response to sounds in order to get a reward.

Investigators discovered that specific sounds triggered distinct signaling patterns in the excitatory nerve cells in the auditory cortex. Most neurons had weaker signaling activity when the mice expected and received a reward, while a smaller number of neurons exhibited strong signaling under these circumstances.

These cellular changes were triggered by three interneurons controlled by the neurotransmitter acetylcholine. When researchers chemically shut down acetylcholine activity, the mice were much less likely to seek a reward.

The study—the first to record changes to inhibitory synaptic inputs in behaving animals—has implications for

cochlear implant performance in people, says Dr. Froemke, senior author of the study, published in January 2017 in *Nature Neuroscience*. “Knowing how individual neurons make these computations can shed light on what short circuits or bottlenecks occur as people adapt to cochlear implants,” he explains. “It may be possible to directly stimulate critical areas of the brain to increase engagement with stimuli and enhance interpretation of sounds in different contexts.”

In the second study, published in the February 2017 issue of *Nature Communications*, Dr. Froemke and colleagues trained rats to nose-poke for a food reward following one target tone and to refrain from nose-poking following another. They found that the neuronal mechanisms involved in attention activated when the rats self-initiated a performance task.

The study suggests that self-initiated engagement in behavioral tasks may activate mechanisms in the brain that are involved in the anticipation of sounds, says Dr. Froemke. Understanding how these processes translate to humans could help researchers improve cochlear implant functionality.

“The ability to pay attention to one thing over another is one of the brain’s most important functions,” says Dr. Froemke. “We now have the molecular tools to investigate how attention, motivation, and neuroplasticity impact cochlear implant response.”

## FACIAL PARALYSIS AND REANIMATION

### Complex Case: A Collaborative Treatment Approach to Facial Paralysis

Facial paralysis, accompanied by a range of symptoms including facial weakness, immobility, or drooping of the mouth, can impact people's appearance as well as their ability to speak, eat or drink, or convey emotion. Although Bell's palsy is a common diagnosis associated with facial paralysis, the condition can also result from trauma, stroke, or a head or neck tumor and can present suddenly or gradually over time.

When a patient recently presented with a complex combination of facial paralysis and hearing loss, an interdisciplinary team of NYU Langone otolaryngologists, neurosurgeons, and plastic surgeons followed his trail of symptoms to uncover a rare tumor, then crafted a multistep, collaborative surgical plan to restore the patient's facial movement and appearance.

 [Read more on](#)  
**PAGE 14**

## COCHLEAR IMPLANTS

### Advances and Applications Enhance Cochlear Implant Placement, Functionality

Innovations supporting optimal cochlear implant (CI) placement and use are poised to significantly enhance outcomes for patients across the whole spectrum of care whose hearing depends on them. Fueled by data demonstrating the efficacy of CI placement at the top of the cochlea, NYU Langone researchers have identified a novel approach to the length and placement of CI electrodes that could measurably improve CI effectiveness.

In another development, center researchers have designed a new smartphone app enabling the first real-time CI programming and adjustment with the use of electrical stimulation, an innovation that puts fine-tuning capabilities—beyond those provided by the standard frequency allocation table—directly in patients' hands. A third development—an update on an earlier NYU-developed algorithm—provides a smartphone-enabled solution to reduce the ambient noise often experienced by patients with cochlear implants.

 [Read more on](#)  
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## PEDIATRIC ENT

### Pediatric Fellowship Helps Next-Generation Specialists Navigate Complex Care

Now in its second year, NYU Langone's fellowship in pediatric otolaryngology builds on the department's long history of innovation in the specialty. One of only 25 pediatric fellowships nationally, The Millstone Family Fellowship offers advanced surgical training and clinical and research mentorship guided by a multidisciplinary team of experts. These include fellowship-trained pediatric otolaryngologists Robert F. Ward, MD, Max M. April, MD, Scott M. Rickert, MD, and Kim A. Baker, MD.

"To develop the next generation of leaders in pediatric otolaryngology, we strive to deliver a well-rounded educational experience for our fellows," says Dr. April, professor of otolaryngology and pediatrics. "We do this by guiding them through complex, multidisciplinary cases, building the skills they need to perform the most technically challenging procedures."

Exposure to a variety of cases comes from the expanding team of pediatric otolaryngologists—with an additional physician joining the current team in July 2018—who bring a vast array of expertise to the care of patients and training of residents and fellows.

"My experience at NYU Langone afforded me the opportunity to participate in and learn from complex cases, as well as explore innovative techniques for basic procedures," says Marisa Earley, MD, the fellowship program's first graduate.

Equipped with the resources provided by Jennifer and David Millstone, the Division of Pediatric Otolaryngology is uniquely positioned to deliver this educational foundation for future pediatric otolaryngologists, continuing with the current fellow, who started in January 2018.



## QUALITY

### Continued Leadership in Quality Improvement

In its efforts to improve patient safety and care quality, the department has shifted its focus and resources and put a new lens on its daily protocols. Under the leadership of Babak Givi, MD, clinical assistant professor of otolaryngology—head and neck surgery, the centralized effort has raised the bar for the institution, implementing systemic changes that have resulted in measurable quality improvement.

“After reorganizing our workflow, we have seen our 30-day readmissions and length of stay decline steadily over the past three years, and we now discharge 75 percent of our patients before noon,” says Dr. Givi. “We are also spearheading a wide array of research initiatives designed to improve standards of care for our patients.”

#### QUALITY RESEARCH INITIATIVES

##### Complications of Free Fat Transfer

In a first-ever review of free fat transfer donor site complications in otolaryngology, it was determined that donor-site morbidity was extremely low. However, the lower abdominal wall donor site was associated with less morbidity than the periumbilical site, suggesting that the lower abdominal wall donor site may be safer in high-risk patients.

##### HPV Testing

Routine human papillomavirus (HPV) testing, including testing for p16, is indicated for squamous cell carcinomas of the oropharynx and occult primaries (ORO/OP) but not for lesions in other head and neck regions. A recent retrospective review showed no difference in HPV hybridization between

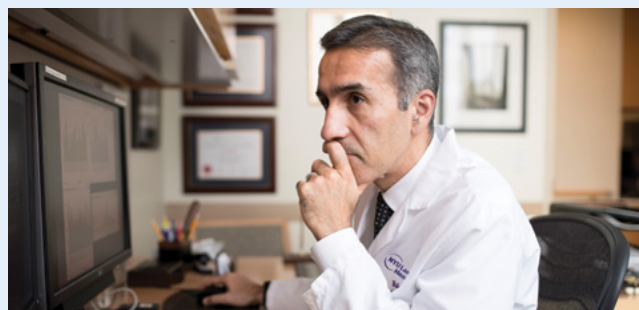
ORO/OP and other sites, while p16 positivity was much higher among ORO/OP patients. This suggests that better clinical and radiographic patient workups can lead to decreased use of HPV testing in non-ORO/OP cancers and improve patient outcomes.

##### Thyroid Function Monitoring

A retrospective review of 156 patients revealed that thyroid function is not routinely monitored after radiation for head and neck cancer. Of patients monitored, 25 percent were hypothyroid, suggesting that better guideline compliance could improve outcomes.

##### Multidisciplinary Tumor Boards

A review of newly diagnosed patients with head and neck cancer found that tumor board recommendations consistent with national guidelines were followed in 91 percent of cases, highlighting the effectiveness of the tumor board in providing evidence-based patient care.



↑ Babak Givi, MD

## NEUROFIBROMATOSIS

### Complex Case: Rare Cochlear Implantation Achieves Meaningful Hearing Restoration for NF2 Patient

Historically, it has been thought that neurofibromatosis type 2 (NF2) patients with bilateral deafness and previous tumor resection could not benefit from cochlear implants (CIs) because their cochlear nerves were no longer able to carry meaningful auditory information to the brain. An auditory brainstem implant (ABI) was considered the only viable treatment option but would not deliver the open-set speech recognition that CIs provide.

However, in a recent case, J. Thomas Roland Jr., MD, the Mendik Foundation Professor of

Otolaryngology, professor of neurosurgery, and chair of the Department of Otolaryngology—Head and Neck Surgery, and David R. Friedmann, MD, assistant professor of otolaryngology—head and neck surgery, successfully implanted a cochlear device in a woman whose surgery and radiation for NF2 tumors more than 15 years prior had left her profoundly deaf. Only about 30 cochlear implantations in such cases have been recorded in the United States.

➔ [Read more on](#)  
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## DIZZINESS/BALANCE

### Zebrafish Studies Reveal Principles of Balance

David E. Schoppik, PhD, assistant professor of otolaryngology—head and neck surgery and neuroscience and physiology, recently led two studies in zebrafish—ideal for research because of their humanlike genetic structure and transparent bodies—that shed light on the mechanisms underlying human balance.

In one article, published in the February 2017 issue of *Current Biology*, Dr. Schoppik and postdoctoral fellow David Ehrlich, PhD, highlight how zebrafish learn to make corrective movements to avoid instability. The researchers created a computer simulation of zebrafish larvae swimming and then tested how the fish responded when certain abilities were taken away. While more mature larvae used their pectoral fins to counteract destabilizing trunk rotations, the researchers noted that steering movements and righting reflexes remained independent. Knowing how fish coordinate steering and balancing can help researchers understand the neural mechanisms underlying certain vestibular problems, such as vertigo and dizziness.

“Previously, it was not clear how these two movements coordinated,” says Dr. Schoppik. “We were surprised to find that steering and balancing were actually sequential, independent movements, and this knowledge may lead to better diagnoses for patients with balance symptoms.”

In a second study, examining gaze stabilization, the researchers found that the central vestibular neurons in a genetically defined population of larval zebrafish preferentially signal to move the eyes downward rather than upward. When the entire population of neurons was stimulated, only downward eye rotations were observed; when the neurons were wiped out, the fish failed to rotate their eyes in response to nose-up or nose-down body tilts.

The findings, published in the November 2017 issue of *The Journal of Neuroscience*, have implications for a rare brain condition called progressive supranuclear palsy, which affects movement and balance, says Dr. Schoppik. “A better understanding of the cellular organization of these supranuclear neurons may help us target the loss of eye movement control that typifies this disorder,” he adds.

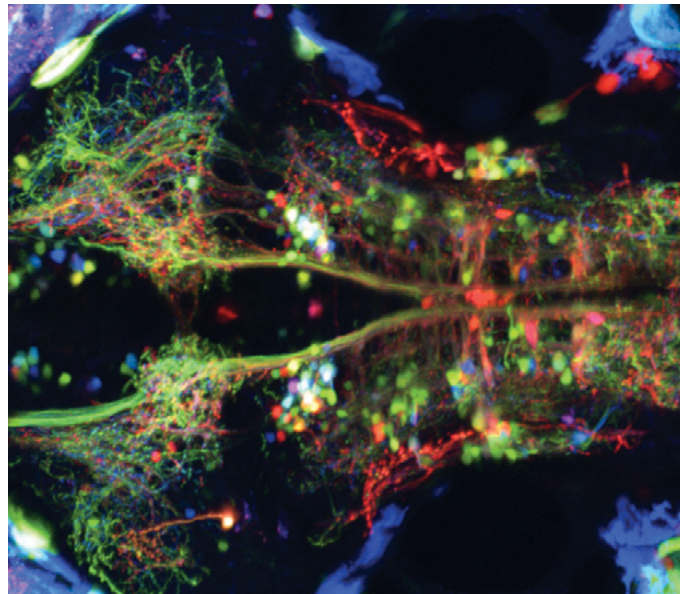
## VOICE CENTER

### Novel Insights Lead to New Therapies for Vocal Fold Injury

At the Voice Center at NYU Langone, research efforts have led investigators to an evolved understanding of the mechanisms behind voice, swallowing, and airway disorders. Three recent, groundbreaking studies could transform these insights into novel treatment options for patients.

These studies, co-led by Milan R. Amin, MD, associate professor of otolaryngology—head and neck surgery, chief of the Division of Laryngology, and director of the Voice Center, and Ryan C. Branski, PhD, associate professor of otolaryngology—head and neck surgery and associate director of the Voice Center, reveal promising new therapies that could transform treatment for vocal cord paralysis, scarring, and recurrent respiratory papillomatosis.

[➔ Read more on](#)  
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↑ A fluorescent image from a transgenic line of zebrafish shows a subset of individual neurons at the level of the statoacoustic and trigeminal ganglia. Neurons are visible as small spots of different colors, with matching thin lines corresponding to their projections.



## SKULL BASE SURGERY

### Complex Case: Surgical Team Provides Definitive Endoscopic Treatment for Sinonasal Adenocarcinoma

Cancers of the paranasal sinuses and the nasal cavity that involve the anterior skull base are challenging to treat because of the proximity of critical neurovascular structures and the need to preserve a barrier between the cerebrospinal fluid and the sinonasal cavity. Treatment outcomes have improved as multidisciplinary collaboration yields new surgical techniques and advances in neuroimaging allow earlier diagnosis.

At NYU Langone, teams of otolaryngologists and neurosurgeons use advanced endoscopic and surgical approaches to completely remove these tumors while minimizing patient trauma and recovery time. In a recent case, a multidisciplinary team pooled their knowledge and expertise to provide definitive treatment for a patient with a sinonasal malignancy.



Read more on  
**PAGE 22**

## IMAGING

### Study Sheds Light on Rare Genetic Disorder

NYU Langone otolaryngologists and radiologists have made imaging findings that could lead to major new diagnostic criteria for CHARGE syndrome, a rare hereditary disorder marked by congenital anomalies typically diagnosed on the basis of CT scans of the temporal bone.

The findings, published in July 2017 in the *American Journal of Neuroradiology*, make a case for adding MRI to CT scans in diagnosing and managing patients with this disorder. Researchers conducted a retrospective review of 10 CHARGE syndrome patients who underwent MRI prior to cochlear implantation to detect any head and neck abnormalities not evident from CT. They identified several characteristics previously unassociated with CHARGE syndrome, including dorsal angulation of the clivus, a J-shaped sella, and absent parotid glands.


Two of the most frequent MRI findings (skull base dysplasia and olfactory complex hypoplasia) are not part of CHARGE syndrome, the researchers noted. “Since both MRI and CT are used to surgically treat these patients, it’s critical for clinicians to be aware of these less associated, yet common, MRI abnormalities,” says study co-author J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology, professor of neurosurgery, and chair of the Department of Otolaryngology—Head and Neck Surgery. Previously described in other studies, these findings could potentially become diagnostic criteria.



2017 IN DEPTH

## Redefining Treatment Options with Transformative Discoveries



 Judy W. Lee, MD

## New Pathways Offer Promise for Patients with Head and Neck Cancer

For patients with head and neck cancers, a series of immunotherapy trials and robotic surgery investigations are shedding light on the conditions' mechanisms while revealing promising treatment pathways. Further surgical innovation is being pursued in a new vascularization approach that could enable complete tracheal transplant for those patients in need of replacement.

### TRIALS FOCUS ON IMMUNOTHERAPY FOR ADVANCED HEAD AND NECK CANCERS

For patients with advanced head and neck cancers, immunotherapy offers the best hope for effective treatment. Through several innovative clinical trials, NYU Langone Health investigators are testing experimental and established drugs, alone and in combination with surgery and radiation therapy, that could dramatically alter the treatment landscape for patients with advanced disease who lack effective second-line treatment options.

The trials are aimed at expanding therapeutic targets while mapping tumor-suppressing agents to the underlying mechanism behind each patient's tumor. "We're starting to see incredible responses to these therapies," says Mark S. Persky, MD, professor of otolaryngology—head and neck surgery and director of the Head and Neck Center. "Now we're focused on mixing and matching different agents to get a better idea of how to customize specific drugs and treatment regimens to individual patients."

From this field of immunotherapy options, immune checkpoint inhibitors have emerged as one of the most promising for head and neck cancers. Several drugs under investigation at NYU Langone involve agents that target

the programmed cell death protein-1 (PD-1) receptor, which targets T cells, and its ligand PD-L1, which targets tumor cells. Normally, these receptors work together to keep the immune system from attacking healthy cells. In the cancer setting, PD-1 and PD-L1 inhibitors block that interaction, allowing T cells to mount an antitumor attack.

"We have only begun to realize the potential of this research to establish new standards of care in head and neck cancer," says Zujun Li, MD, clinical associate professor of medicine and lead investigator. "Ultimately, our hope is to significantly improve the prognoses for these patients."

### OPTIONS EXPAND FOR TRACHEA REPAIR WITH THE FIRST FULLY VASCULARIZED ANIMAL TRANSPLANT

With the first fully vascularized long-segment tracheal transplant in animals, surgeons at NYU Langone may have solved the blood supply challenges that have prevented complete tracheal transplantation.

"The trachea's vascular anatomy, with its segmental blood supply, has always been considered unfavorable for vascularized transplantation," says Adam S. Jacobson, MD, associate professor of otolaryngology—head and neck surgery and associate director of the Head and Neck Center.



↑ Zujun Li, MD

“The belief was that it couldn’t be transplanted as a vascularized organ because no single pair of artery and vein supplies the trachea in an axial pattern.”

Historically, surgeons have also been challenged to identify a suitable material to replace long-segment circumferential defects (>4.5 cm). Foreign materials, such as silicone or stainless steel, do not incorporate into the host tissue and ultimately extrude, while meshes often cause progressive scar formation, leading to obstruction and stenosis. Although free cadaveric tracheal grafting experiments both with and without stem cell engineering techniques—inaccurately dubbed “tracheal transplantation”—have recently garnered attention, they have ultimately proved unsuccessful.

“A durable and reproducible method of tracheal replacement remains elusive,” says Dr. Jacobson. “Therefore, transplantation with a vascularized allograft is an important avenue of research.”

To circumvent the blood supply problem, Dr. Jacobson and colleagues expanded their focus from the trachea to the entire visceral compartment containing the thyroid, the esophagus, the pharynx, and the larynx. The team determined it could transplant the entire visceral compartment as one unit and then remove the unwanted components—the laryngeal framework and the pharyngoesophageal mucosa—while maintaining blood supply to the remaining trachea.

Dr. Jacobson harvested each donor animal’s visceral compartment and revascularized it using the recipient animal’s common carotid artery and internal jugular vein. In each transplant, the donor trachea remained viable and fully incorporated with the recipient trachea and surrounding tissues.

The new technique—although not yet tested in humans—is relatively fast and simple, notes Dr. Jacobson, who is preparing an application for human trials.

“This opens the door to transplanting any or all of the organs within the visceral compartment of the neck, where any organ perfused by the carotid arteries will be robustly vascularized,” adds Dr. Jacobson.

### ONGOING IMMUNOTHERAPY CLINICAL TRIALS

#### Treating Advanced Nasopharyngeal Cancer

In a phase II, open-label, randomized trial, Dr. Li and his team are exploring the effectiveness of Novartis’s experimental PD-1 inhibitor PDR001 in patients whose locally advanced recurrent or metastatic nasopharyngeal cancer has progressed following first-line platinum-based therapy. Investigators hypothesize that treatment with a PD-1 inhibitor may block immune system suppression in these patients, leading to more robust responses compared with chemotherapy, the current standard of care.

#### PD-L1 Inhibitor Therapy for Locally Advanced Squamous Cell Carcinoma of the Head and Neck (SCCHN)

Building on past studies suggesting the efficacy of avelumab, the team is examining the use of this PD-L1 inhibitor—already approved for Merkel cell and urothelial carcinomas—for SCCHN in concert with standard chemotherapy and radiation therapy (CRT). To determine whether the addition of immunotherapy to standard chemotherapy and radiation would improve outcomes,

the phase III randomized trial is comparing avelumab plus CRT with CRT alone in patients with locally advanced disease who test positive for the human papillomavirus type 16 infection, which is closely associated with SCCHN. In addition to assessing the effect on progression-free survival, researchers will examine any potential biomarkers in the blood or tumor tissue that may be associated with patients’ therapeutic responses.

#### Immunotherapy with Radiation as Definitive Treatment

In a first-of-its-kind human trial, Dr. Li and his team are testing a combination of radiation therapy with PD-1 inhibition in head and neck cancers. Currently FDA-approved for palliative treatment, the immunotherapy combination is being investigated through the phase II study as a definitive treatment with a curative intention. Patients with inoperable recurrent SCCHN will undergo radiation concurrently with the PD-L1 inhibitor pembrolizumab, followed by pembrolizumab alone for three months, with an assessment of effectiveness based on the primary endpoint of progression-free survival.





## AS THE HEAD AND NECK ROBOTIC SURGERY PROGRAM EXPANDS, SURGEONS ARE REFINING ITS APPLICATIONS

Tumors at the base of the tongue may be more likely than those in the tonsil to require chemotherapy or radiation after surgery, according to new research led by Michael J. Persky, MD, instructor of otolaryngology—head and neck surgery and coordinator of Head and Neck Robotic Surgery Development at NYU Langone.

In a retrospective study, Dr. Persky and colleagues compared outcomes from patients with tumors at the base of the tongue and tumors in the tonsil—the two most common subsites of transoral robotic oropharyngeal resection—and found that the positive margin rate was significantly higher for cancers at the base of the tongue than for tumors in the tonsil and that tumors at the base of the tongue were more likely to require adjuvant treatment.

“Our data also show that patients with positive margins were 10 times more likely to go on to receive chemoradiation compared with those with negative margins,” notes Dr. Persky.

“Armed with this knowledge, we are able to better identify appropriate surgical candidates in order to ensure that we achieve optimal clinical outcomes.”

The study, presented at the 2017 American Academy of Otolaryngology—Head and Neck Surgery annual meeting, is one of several investigations under way in the Robotic Surgery Program, where head and neck surgeons are working to hone in on the clinical targets most likely to respond to endoscopically guided procedures.

“As we better understand the clinical context that optimizes the benefits of minimally invasive robotic approaches, we can make more insightful recommendations for or against surgery and help patients avoid the morbidity of overtreatment,” says Dr. Persky.

## Complex Case: Symptom Set Leads to Rare Diagnosis

When a complex presentation of facial paralysis and hearing loss led physicians to uncover a patient's rare tumor, a multidisciplinary surgical team mobilized to coordinate its careful resection—and restore the patient's function and appearance.

A 49-year-old man previously diagnosed with Bell's palsy presented with persistent facial weakness and continued hearing loss with intermittent tinnitus. Judy W. Lee, MD, assistant professor of otolaryngology—head and neck surgery, performed the initial exam, which showed complete facial nerve paralysis on the patient's left side, with an ipsilateral middle ear lesion. Dr. Lee referred the patient for imaging tests and further evaluation, which led to a diagnosis of a large facial nerve schwannoma.

"Tumors of the facial nerve often cause facial paralysis, but they are fairly rare and often go undetected in the early stages," says Dr. Lee. "Imaging showed a tumor extending along the patient's facial nerve and filling his entire ear, causing significant hearing loss on his left side."

### INTRACRANIAL TUMOR EXCISION REQUIRES SKULL BASE EXPERTISE

With the diagnosis confirmed, Dr. Lee referred the patient to Daniel Jethanamest, MD, assistant professor of otolaryngology—head and neck surgery and director of the Division of Otology—Neurotology, and Donato R. Pacione, MD, assistant professor of neurosurgery, who worked together to excise the tumor. The surgeons used a lateral approach in combination with a traditional microscopic approach with endoscope-assisted dissection to follow the full course of the lesion, excising the extensive schwannoma, which extended from the skull base to the stylomastoid foramen of the temporal bone. The patient had experienced nearly complete conductive hearing loss as a result of the tumor's erosion of the ossicular chain and its extension into the middle ear, which the surgeons also reconstructed during the surgery.

"Most of the pathology was in the temporal bone, but the tumor extended intracranially,

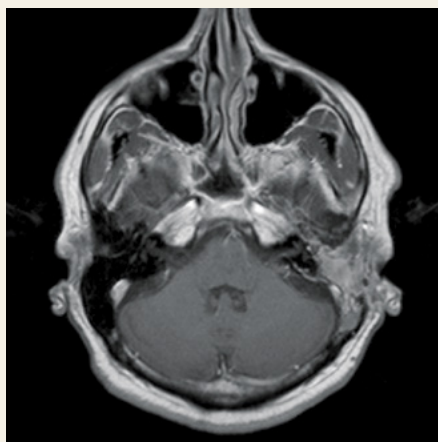
and our biggest challenge was in reaching that cranial component of the tumor," says Dr. Jethanamest. "This was a true team effort—an endoscopic-assisted approach allowed us to avoid the need for a larger craniotomy."

### THE TUMOR EXCISED, THE TEAM TURNS TO REANIMATION AND RESTORATION

After the resection, the patient was evaluated for facial reanimation surgery by Adam S. Jacobson, MD, associate professor of otolaryngology—head and neck surgery and associate director of the Head and Neck Center, and Jamie P. Levine, MD, associate professor of plastic surgery and chief of microsurgery. Dr. Levine and Dr. Jacobson created a plan to achieve reanimation with a left gracilis free flap innervated by the left masseteric nerve, as well as a cross-face nerve graft from the buccal division of the contralateral side to the gracilis flap via a sural nerve graft, supercharged with two superior labial sensory nerves.



↑ Preoperative MRI showing the tumor on the facial nerve



↑ Postoperative MRI after tumor removal

"During this surgery, we located the contralateral buccal branch of the facial nerve, which innervates many of the muscles of facial expression, including the levator anguli oris, levator labii superioris, and orbicularis oris," says Dr. Jacobson. "We then connected the contralateral buccal branch of the facial nerve to the gracilis flap using the sural nerve graft,

which was intended to give the patient more spontaneous movement and control over time."

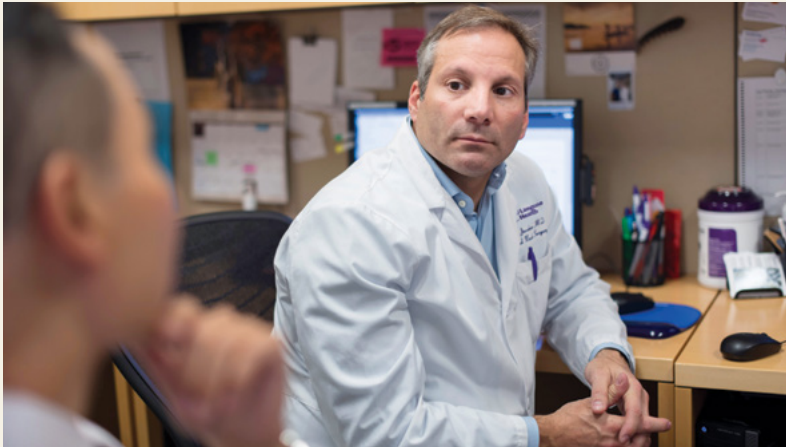
Dr. Levine performed a facelift to tighten the skin and a static sling of the left face to restore symmetry. Dr. Lee then implanted a 1.6-gram platinum weight so that the patient could close his left eye.

### IMPROVED HEARING—AND QUALITY OF LIFE

Since the procedure, the patient's hearing has improved significantly across low to midrange frequencies and he has recovered excellent speech discrimination. His eye has regained full closure, and his facial swelling has been reduced. He does not yet exhibit facial movement, but on the basis of a very similar, successful reanimation case, physicians expect some movement will return within six months of the procedure, with continued improvement over time.

"Not only did our multidisciplinary team approach lead us to identify and remove this rare tumor that had eluded diagnosis for nearly a year," says Dr. Lee, "but with a carefully coordinated, multispecialty surgical plan, we also recovered much of the function the tumor had impaired—and restored this patient's quality of life."

Adam S. Jacobson, MD



### NEW CENTER STREAMLINES CARE FOR FACIAL PARALYSIS

For patients with facial paralysis from trauma or illness such as Bell's palsy, neurofibromatosis, a skull base or head and neck tumor, or a stroke, the newly established Facial Paralysis and Reanimation Center offers a consolidated, multidisciplinary point of care.

The center's team of experts—including otolaryngologists, head and neck surgeons, neurotologists, and facial plastic and reconstructive surgeons—is led by Jeffrey D. Markey, MD, instructor of otolaryngology—head and neck surgery, who joined the department in autumn 2017. "Many patients come to us already exhausted from visits to specialists, some having lived with facial palsy for months or even years," says Dr. Markey. "Each patient presents with a unique set of symptoms and challenges, and our centralized approach enables us to provide comprehensive, individualized care from treatment through rehabilitation."

As the center's director, Dr. Markey leads research aimed at developing innovative treatment approaches, expanding on the center's expertise in treating patients with complex facial

nerve disorders. "He's taking advantage of our world class resources to determine how best to improve the lives of these patients," says J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology and chair of the Department of Otolaryngology—Head and Neck Surgery.



Jeffrey D. Markey, MD



## With New Applications and Approaches, Cochlear Implants Become More Effective

Fueled by research, new developments in cochlear implant placement and programming are helping to improve the devices' effectiveness for patients who turn to them to restore their hearing.

### COCHLEAR IMPLANT TECHNIQUE MAY OPTIMIZE PLACEMENT WITH VIRTUAL FREQUENCY CHANNELS

An innovative approach developed by NYU Langone Health researchers may optimize the length and placement of cochlear implant (CI) electrodes, improving patient outcomes while minimizing the risk of inner ear damage, which occurs when the electrodes are inserted too deeply.

"Our findings suggest that it's possible to stimulate lower-frequency auditory nerve fibers without deeper insertion of electrode arrays," says David M. Landsberger, PhD, assistant

professor of otolaryngology—head and neck surgery and director of the Electric Auditory Research Laboratory at NYU Langone.

Although the appropriate placement of CI electrodes remains controversial, implantation typically involves placement in the first turn of the cochlea, where frequencies are encoded above approximately 1,000 Hertz. Extensive data suggest that stimulating the top of the cochlea can significantly improve outcomes for CI users, explains Dr. Landsberger.

A cadaver experiment led by Dr. Landsberger in collaboration with

J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology, chair of the Department of Otolaryngology—Head and Neck Surgery, and co-director of the Cochlear Implant Center, confirmed the research team's hypothesis: a return electrode inserted at the apex of the cochlea led to more even distribution of electrical current across high- and low-frequency areas.

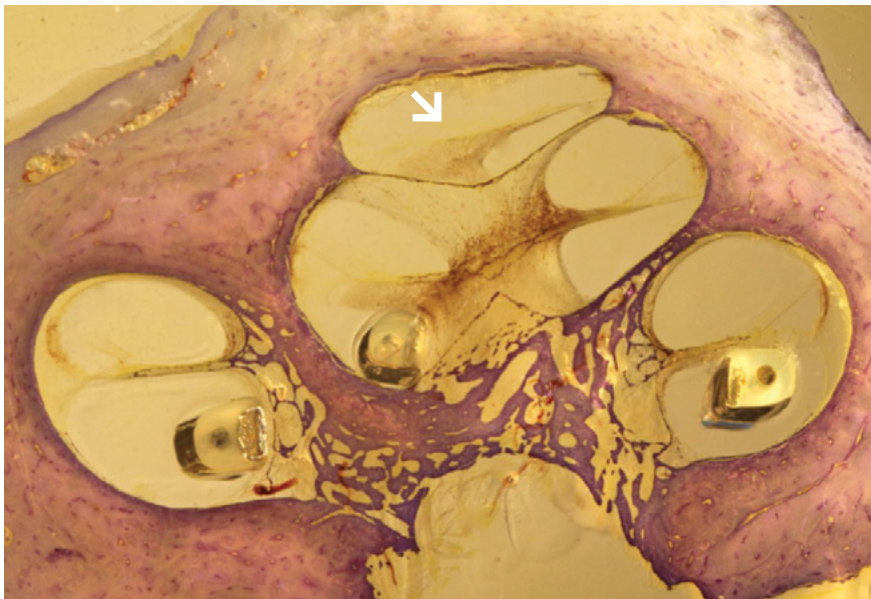
"We were able to stimulate parts of the cochlea that are designed to encode for low frequencies, which in most implant systems are ignored," says Dr. Roland. Dr. Landsberger's team is now designing live human trials for the procedure.

### UPDATED ALGORITHM AND NEW APP OFFER REAL-TIME NOISE REDUCTION

An updated algorithm created by researchers at NYU Langone and the NYU Tandon School of Engineering now offers noise-reduction benefits to CI users via smartphones.

The technology, dubbed Speech Enhancement using Decomposition Approach (SEDA) and first designed for desktop computers, addresses CI users' challenges with filtering out ambient noise in loud environments. SEDA2 builds on the original algorithm by enabling a smartphone's microphone to act as a preprocessor, filtering out background noise in real time before sound is sent to the CI processor. "SEDA2 can analyze very short audio frames, using a wavelet transform, in just milliseconds, creating a near-seamless experience for the CI user," explains Dr. Landsberger.

↓ A return electrode can be inserted into the apex of the cochlea with a cochleostomy.



## EARLY COCHLEAR IMPLANTATION MAY REDUCE EFFECTS OF CHILDHOOD LEARNING DISABILITIES

Early implantation of cochlear implants can help narrow the developmental gap between children born deaf and their normal-hearing peers, suggests new research led by Susan B. Waltzman, PhD, the Marica F. Vilcek Professor of Otolaryngology and co-director of the Cochlear Implant Center.

Although about half of children born deaf are eventually diagnosed with cognitive or learning disabilities that could impact CI performance, recent studies have shown that early

implantation can help children adapt and acquire hearing on par with that of their peers. To measure the incidence of these conditions and their impact on patients' progress, Dr. Waltzman and her team followed almost 100 children who received implants when they were under one year of age, between 2000 and 2013.

Investigators found that about 10 percent of the children were later diagnosed with cognitive or learning issues, including ADHD, Asperger's syndrome, and problems with executive functioning. Yet these children, who were diagnosed with additional issues at a mean age of seven, performed as well with their cochlear implants as those without disabilities.

"Our findings suggest that early implantation provides substantial developmental benefits, even in children who are diagnosed with other issues later on," says Dr. Waltzman. "It enables them to reach their potential by reducing the amount of 'catching up' they have to do later."

Despite the benefits of early implantation, Dr. Waltzman emphasizes the importance of setting realistic expectations for parents, since each child's performance can be affected by a host of developmental factors.

"Preoperative counseling for families is critical since we don't know what confounding issues might emerge as children get older," says Dr. Waltzman. "Ultimately, we have to wait and see."

↓ Susan B. Waltzman, PhD



Once installed on a smartphone, the SEDA2 application analyzes and categorizes sound frames as dominated by noise or speech, then filters out background noise using an "adaptive group thresholding method" in a wavelet domain. In initial testing in CI users, the algorithm enabled significant improvements in speech quality and understanding.

The algorithm was developed by a team that included Dr. Landsberger, Ivan Selesnick, PhD, professor of electrical and computer engineering, and electrical

engineering doctoral student Roozbeh Soleymani. Their research has been accepted for publication in the journal *Speech Communication*.

The researchers are now working on installing SEDA2 directly into the CI processor, to streamline its function and eliminate its reliance on an external device. In addition, investigators will continue to develop and refine the versatile algorithm to enable its potential use in a wide range of applications beyond CI enhancement—in any situation where hearing is impaired by ambient noise.

# 250+

**COCHLEAR IMPLANTS**

in children under  
1 year of age



↑ Daniel Jethanamest, MD, and Mario A. Svirsky, PhD

### **NEW SMARTPHONE APP AIDS COCHLEAR IMPLANT FITTING**

A novel smartphone application developed at NYU Langone aims to streamline the complex cochlear implant programming process by rapidly exposing the device to frequency settings outside the audiology office.

“Patients can use the app to explore potential frequency allocation settings in real time and then bring that information to their audiologist,” says Daniel Jethanamest, MD, assistant professor of otolaryngology—head and neck surgery and director of the Division of Otolaryngology–Neurotology. “The audiologist can use the data as a starting point to program the device.”

The app provides the first real-time method for electrical stimulation and adjustment of a patient’s CI. Traditional

CI fitting methods rely on a standard frequency allocation table (FAT) for all patients, regardless of differences in cochlea size or placement of electrodes, says the app’s co-creator Mario A. Svirsky, PhD, the Noel L. Cohen Professor of Hearing Science and professor of neuroscience and physiology. However, patients often report distorted sound after implantation due to mismatches between the frequency function they experienced with normal hearing and that of the standard FAT.

“Most patients adapt to frequency mismatch over time, but some take quite a while and others never fully adjust,” says Dr. Svirsky. “For those patients, an alternative FAT can enhance the quality of sound and, in some cases, improve speech perception.”

In a small pilot study, all six subjects with CIs successfully used the app to experience different FATs while listening to running speech. Notably, all patients reported that an alternative to the standard FAT provided the best sound quality. Dr. Svirsky has filed a patent application for the frequency-to-electrode mapping technology underlying the app.

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“Patients can use the app to explore potential frequency allocation settings in real time and then bring that information to their audiologist.”

— Daniel Jethanamest, MD



## Complex Case: Rare Cochlear Implantation after Previous NF2 Tumor Removal

A recent cochlear implantation restored hearing in a patient left profoundly deaf by prior surgery and radiation treatment for neurofibromatosis type 2 (NF2) tumors. The successful cochlear implant (CI) application—rarely performed in such situations—challenges the long-held belief that the device is not a viable option for previously treated NF2 patients.

A promising candidate for a rare CI approach, the patient, a woman in her mid-40s, had been diagnosed with NF2 and had undergone surgery and radiation therapy more than 15 years earlier to remove acoustic neuromas on her right and left auditory nerves. Although this treatment was successful, she was left profoundly deaf in both ears. She was referred to NYU Langone Health for a consultation with J. Thomas Roland Jr., MD, the Mendik Foundation Professor of Otolaryngology, professor of Neurosurgery, and Chair of the Department of Otolaryngology—Head and Neck Surgery, who recognized the potential for restoring her hearing despite the considerable time that had elapsed since the precipitating treatment.

“With radiation, the cochlear nerve is preserved, but many patients still lose their hearing because of degeneration of the hair cells,” says Dr. Roland. “As a result, they may still have a functioning cochlear nerve despite their profound deafness. So, we first need to determine that the cochlear nerve is, in fact, still viable.”

### SPECIALIZED TESTING GUIDES THE TEAM'S APPROACH

To make this determination, Dr. Roland and David R. Friedmann, MD, assistant professor of otolaryngology—head and neck surgery, performed a promontory stimulation test, directly stimulating the cochlea with a fine needle electrode inserted through the eardrum. During this procedure, patients report whether they can perceive auditory sensations in response to the electrical stimulation, and physicians measure patients' brainwaves to assess whether the

auditory signals are reaching the cortex.

“We found that the patient could hear sounds, perceive differences in frequency presentation, and respond to other tests of cochlear fine-tuning,” says Dr. Roland. After consulting with the patient, the surgeons decided to move forward with a left multichannel CI.

The patient was placed under general anesthesia, and electrodes were attached to her face to allow continuous facial nerve monitoring and testing. After performing the preliminary parts of the operation, the surgeons opened the back wall of the ear canal to create a path from the mastoid to the cochlea, taking care not to injure the facial and chorda tympani nerves.

Dr. Roland then opened a small hole into the cochlea, inserted the electrode array into the scala tympani, and placed the receiver stimulator behind the ear. An X-ray

confirmed correct positioning of the device, and electronic monitoring showed that the patient's cochlear nerve was responding to stimulation.

### HEARING RESTORED, FUNCTION RECOVERED

The patient made a full recovery and is now able to understand sounds and communicate with others, including a son whose voice she had not heard in many years, says Dr. Roland.

“This patient is now getting meaningful use of her CI, which exceeds what she would have had with an ABI,” Dr. Roland notes. “Centers like ours, with sophisticated testing capabilities and advanced surgical expertise, are making CIs a realistic option for some NF2 patients otherwise faced with the prospect of lifelong deafness.”

↓ J. Thomas Roland Jr., MD



## Groundbreaking Vocal Fold Insights Inform New Treatment Approaches

The Voice Center's ongoing research is expanding our understanding of the mechanisms behind vocal fold disorders and injury—yielding new insights with the potential to transform treatment options.

### VOCAL FOLD AUGMENTATION IMPROVES AIRFLOW, REDUCES PNEUMONIA RISK

One of the most significant issues confronting patients with vocal cord paralysis is aspiration that can lead to pneumonia. A recent Voice Center study revealed that vocal fold augmentation can improve cough strength and peak airflow in patients with glottic insufficiency, potentially preventing aspiration and pneumonia in high-risk patients with Parkinson's and other neuromuscular diseases. In the study, published in the November 2017 issue of *JAMA Otolaryngology—Head and Neck Surgery*, 14 patients underwent vocal fold augmentation. Of the 14 patients,

11 showed improved cough strength at follow-up and 12 met established peak airway thresholds (160–180 L/min) required for effective clearance.

“Our investigation suggests that improving glottic closure improves cough strength,” notes Milan R. Amin, MD, associate professor of otolaryngology—head and neck surgery, chief of the Division of Laryngology, director of the Voice Center, and senior author of the study. “This finding is critical considering the significant morbidity and mortality associated with pneumonia, particularly in the elderly and the neurologically impaired.”

### NEW TREATMENT TARGET UNCOVERED FOR VOCAL FOLD SCARRING

The nuclear receptor NR4A1 is implicated in multiple disease processes, including vocal fold scarring. NR4A1 is known to inhibit transforming growth factor beta (TGF- $\beta$ )—which plays a key role in wound healing and tissue repair but which can cause fibrosis when overexpressed—yet the receptor's specific role in preventing or treating vocal fold disease was unclear. In new in vitro and in vivo studies, Ryan C. Branski, PhD, associate professor of otolaryngology—head and neck surgery and associate director of the Voice Center, showed that NR4A1 expression increased following vocal fold injury and that



↑ Ryan C. Branski, PhD, and Milan R. Amin, MD

knocking down the expression of NR4A1 enhanced production of TGF- $\beta$ . These findings, published in the September 2017 issue of *The Laryngoscope*, suggest that therapies targeting NR4A1 could effectively treat vocal fold fibrosis.

“NR4A1 could be an easily accessible target for intervention,” says Dr. Branski, senior author of the study. “We’re now looking at whether local injection of cytosporone B, an NR4A1 agonist, could treat scarring without systemic side effects.”

### **INJECTABLE TREATMENT MAY OFFER ALTERNATIVE FOR RRP-ASSOCIATED LESIONS**

For patients with recurrent respiratory papillomatosis (RRP), repeated surgeries are often the only course of action to

manage the wart-like lesions on the vocal folds spurred by the human papillomavirus (HPV). Recent research conducted by Dr. Amin and Dr. Branski may offer an alternative treatment option: an injectable formulation of imiquimod, a nucleoside analogue currently used in topical form to treat other HPV-mediated diseases. Using an animal model, the investigators sought to establish the safety of imiquimod, which has been shown to cause local inflammatory reactions in other tissues. Injections were well tolerated in all animals, without any acute airway morbidity. These findings, published in the April 2017 issue of *Otolaryngology–Head and Neck Surgery*, provide a foundation for future investigation of imiquimod as an injectable therapy for RRP, says Dr. Branski,

senior author of the study. “We now have the preclinical safety data needed to begin planning early-phase trials in humans as well as further mechanistic studies,” he notes.

Taken together, these three studies hold great promise for improving outcomes for patients with vocal fold disease and dysfunction, adds Dr. Amin. “For the past decade we have focused on gathering data and understanding the underlying causes of voice, swallowing, and airway disorders,” he says. “Now we’re transitioning from discovery to intervention.”

## **CHORAL SINGING MAY IMPROVE VOICE, SWALLOWING, AND QUALITY OF LIFE FOR PATIENTS WITH PARKINSON'S DISEASE**

A pilot study funded by the Clinical and Translational Science Institute at NYU Langone will examine the benefits of choral singing for people with Parkinson's disease.

“Voice and swallowing problems are common in Parkinson's disease, and the leading cause of death in these patients is aspiration related to difficulty swallowing,” says co-investigator Aaron M. Johnson, PhD, MM, assistant professor of otolaryngology—head and neck surgery and speech-language pathologist. “Through vocal training, we may be able to strengthen the muscles involved with voice and swallowing, improving communication and possibly decreasing the risk of aspiration.”

The innovative project, a collaboration between the Voice Center, the Marlene and Paolo Fresco Institute for Parkinson's and Movement Disorders, and the NYU Steinhardt School of Culture, Education, and Human Development, will enroll 20 patients with Parkinson's disease. In the two eight-week sessions, study subjects, 10 per session, participate in weekly group singing sessions and perform vocal exercises at home.

Certain exercises—such as making sustained high or loud sounds—may strengthen the muscles that lift the larynx and help protect the airway during swallowing, Dr. Johnson explains. Researchers will use endoscopy and three-dimensional high-resolution MRI techniques to measure improvements following

each eight-week session. “These tools allow us to look directly at the structure and the dynamics of the larynx,” he says. “We’re able to see how the larynx moves, how it functions during speech, and how the airway is protected during swallowing.”

In addition to potential clinical benefits, the study may have complementary social benefits, notes Dr. Johnson, a former professional singer. “We’re using traditional voice training methods in a way that is more enjoyable and less time and resource intensive than one-on-one instruction,” he says. “In addition to exercising the voice, singing together is an enjoyable social activity and may improve overall quality of life.”



 Aaron M. Johnson, PhD, MM



## Complex Case: Early-Stage Tumor a Candidate for Endoscopic Craniofacial Resection

New surgical techniques and neuroimaging advances are expanding treatment options for complex sinonasal cancers. A recent resection case demonstrates the efficacy of a multidisciplinary endoscopic approach in safely removing these tumors with minimal trauma.

An advanced approach was required for a 69-year-old patient, referred by an outside physician for consultation at NYU Langone Health following a complaint of left-sided epistaxis. Evaluation by Seth M. Lieberman, MD, assistant professor of otolaryngology—head and neck surgery, and Donato R. Pacione, MD, assistant professor of neurosurgery, revealed a necrotic mass centered in the olfactory cleft without intracranial or intraorbital extension, and a subsequent endoscopic biopsy revealed a

sinonasal adenocarcinoma, intestinal type. “This is a rare tumor that makes up less than 25 percent of all sinonasal malignancies, usually arising in the upper nasal cavity or in the ethmoid sinuses,” says Dr. Lieberman. Malignancies of the sinonasal tract account for less than 1 percent of all malignancies and only 3 percent to 5 percent of all head and neck tumors but include a heterogeneous variety of histological subtypes. Although traditional craniofacial resection is

associated with high morbidity and mortality, in some cases an endoscopic approach can achieve comparable or superior oncological outcomes with improved aesthetic and functional recovery.

“After reviewing the patient’s imaging and pathology, we felt he was a good candidate for endoscopic craniofacial resection,” notes Dr. Lieberman.

### STUDY CHALLENGES USE OF ANTIBIOTICS AFTER SINUS SURGERY

Although the use of antibiotics following surgery for chronic rhinosinusitis has long been routine, a recent study of surgical patients treated at NYU Langone joins a body of research suggesting that their use does not necessarily improve outcomes.

“The prescription of these antibiotics is not evidence based,” says Seth M. Lieberman, MD, assistant professor of otolaryngology—head and neck surgery. “We could prevent unnecessary short- and long-term side effects and microbial resistance by identifying the patients who may actually benefit from them.”

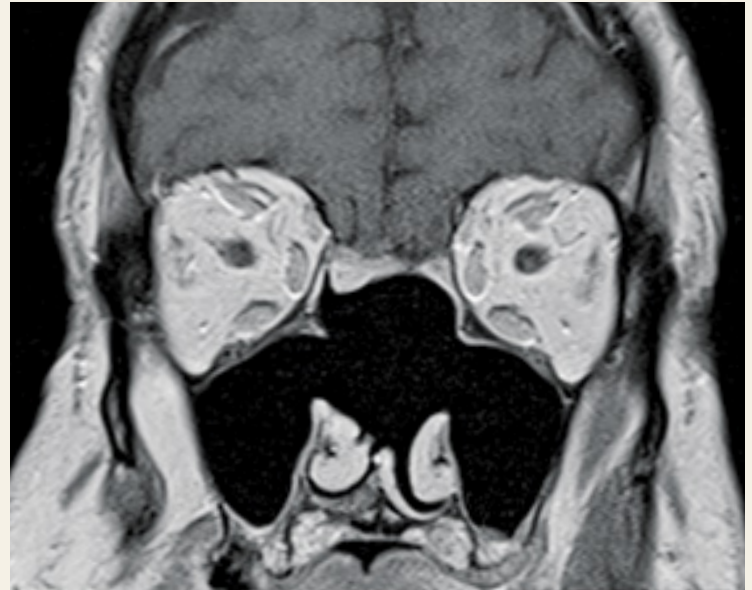
Dr. Lieberman and Richard A. Lebowitz, MD, professor of otolaryngology—head and neck surgery and chief of the Division of Rhinology, conducted a three-year retrospective

review of 34 patients who underwent endoscopic sinus surgery for unilateral purulent sinusitis. Antibiotics were initiated only for symptoms of nasal endoscopy that did not demonstrate improvement during postoperative visits. Factors associated with a need for postoperative antibiotic treatment included asthma, smoking, immunocompromised status, and preoperative endoscopic score severity.

Sixty-six percent of the patients fully recovered without taking antibiotics after an average of 32 days, according to findings presented at the 2017 American Academy of Otolaryngology—Head and Neck Surgery annual meeting. This is the first study to look specifically at postoperative antibiotics in patients with purulent unilateral sinus infections, which tend to be the most severe, says Dr. Lebowitz.



↑ Preoperative coronal MRI, showing the mass in the left olfactory cleft



↑ Post-endoscopic craniofacial resection

### COMPLETE RESECTION IS CRITICAL TO AVOID SINONASAL NEOPLASM RECURRENCE

Since most relapses associated with sinonasal tumor histology are local, a complete resection is critical, says Dr. Lieberman. “Initially asymptomatic, many of these tumors present after intracranial or intraorbital extension, requiring adjuvant therapy.”

This patient was fortunate to present at an earlier stage that was amenable to endoscopic en bloc resection with negative histological margins. “Our goal was to achieve gross total resection with histologically negative margins, which would allow the patient to avoid adjuvant radiotherapy or chemoradiotherapy,” says Dr. Lieberman.

Although hemi-resection of the cribriform plate would preserve the contralateral olfactory mucosa and the olfactory bulb—potentially preserving olfactory function—it would decrease the likelihood of obtaining an adequate margin on the tumor. After discussion with the patient, complete resection of the cribriform plate was planned.

### WITH EN BLOC RESECTION, ADEQUATE SURGICAL MARGINS ARE ACHIEVED

The endoscopic endonasal approach offered a panoramic visualization of the extracranial anterior fossa. Craniofacial resection of the tumor requires isolation of the cribriform plate, achieved with a large septectomy, a total ethmoidectomy, an extended sphenoid sinusotomy, and an extended frontal sinusotomy. Following skeletonization of the skull base around the cribriform plate, the surgeons drilled the bone circumferentially down to the dura, to mobilize the cribriform plate. After circumferentially incising the dura, the falx cerebri and the olfactory tracts were incised to release the specimen.

Throughout the procedure, the margins were assessed to ensure that they were free of tumor. Cuts to the olfactory tract allowed en bloc dissection of the cribriform plate, followed by examination of margins from the dura, the falx cerebri, and the olfactory tract. Although en bloc resection of skull base tumors has not been proven to improve outcomes, it allows for reliable determination of negative surgical margins. Reconstruction of the skull base defect was achieved in two layers, with AlloDerm™ followed by an extended nasoseptal flap.

### ADVANCED ENDOSCOPIC TECHNIQUES AND MULTIDISCIPLINARY COORDINATION ENABLE DEFINITIVE TREATMENT

This patient presented with an early-stage tumor, enabling a multidisciplinary team of surgeons to provide definitive treatment through endoscopic en bloc craniofacial resection. The patient was discharged on postoperative day three without adjuvant radiotherapy. Twenty months after surgical resection of his sinonasal malignancy, the patient has no evidence of disease.

“Confirmed achievement of negative margins is critical to the prevention of relapse and is thus a key advantage of en bloc resection of skull base tumors,” says Dr. Lieberman.

# Academic Activities

## SELECT PUBLICATIONS

Agrawal N, Abbott CE, Liu C, Kang S, Tipton L, Patel K, Persky MS, King L, Deng F-M, Bannan M, Ogilvie JB, Heller K, Hodak SP. Noninvasive follicular tumor with papillary-like nuclear features: not a tempest in a teapot. *Endocrine Practice*. April 2017; 23(4): 452–457.

Ahmed OH, Marcus S, Lebowitz RA, Jacobs JB. Evolution in visualization for sinus and skull base surgery: from headlight to endoscope (historical and looking forward). *Otolaryngology Clinics of North America*. June 2017; 50(3): 505–519.

Ahmed O, Marcus S, Tauber JR, Lebowitz RA. Efficacy of perioperative lumbar drainage following endoscopic cerebrospinal fluid leak repair: a meta-analysis. *Otolaryngology—Head and Neck Surgery*. January 2017; 156(1): 52–60.

Anwar A, Singleton A, Fang Y, Wang B, Shapiro W, Roland JT Jr, Waltzman SB. The value of intraoperative EABRs in auditory brainstem implantation. *International Journal of Pediatric Otorhinolaryngology*. October 2017; 101: 158–163.

Barker DJ, Johnson AM. Automated acoustic analysis of 50-kHz ultrasonic vocalizations using template matching and contour analysis. *Journal of the Acoustic Society of America*. March 2017; 141(3): EL281.

Benedict PA, Abdou RM, Dion GR, Woo P, Branski RC, Amin MR. Association of alirocumab therapy with inflammatory lesions of the vocal folds: a case report. *The Laryngoscope*. July 2017; 127(7): 1652–1654.

Benedict PA, Ruiz R, Yoo M, Verma A, Ahmed OH, Wang B, Dion GR, Voigt A, Merati AL, Rosen CA, Amin MR, Branski RC. Laryngeal distribution of recurrent respiratory papillomatosis in a previously untreated cohort. *The Laryngoscope*. January 2018; 128(1):138–143.

Carcea I, Insanally MN, Froemke RC. Dynamics of cortical activity during behavioral engagement and auditory perception. *Nature Communications*. February 8, 2017; 8: 14412; epub ahead of print.

Cheung SW, Atencio CA, Levy ER, Froemke RC, Schreiner CE. Cortical anisomorphism in asymmetric sensorineural hearing loss. *Journal of Neurophysiology*. August 1, 2017; 118(2): 932–948.

Cusumano C, Friedmann DR, Fang Y, Wang B, Roland JT Jr, Waltzman SB. Performance plateau in prelingually and postlingually deafened adult cochlear implant recipients. *Otology & Neurotology*. March 2017; 38(3): 334–338.

Daugherty W, Givi B, Jameson MJ. AHNS Series - Lip cancer: Do you know your guidelines? *Head & Neck*. August 2017; 39(8): 1505–1509.

Dion GR, Achlatis S, Teng S, Fang Y, Persky M, Branski RC, Amin MR. A prospective study of changes in cough strength following vocal fold augmentation. *Journal of the American Medical Association Otolaryngology—Head and Neck Surgery*; in press.

Dion GR, Achlatis S, Teng S, Fang Y, Persky M, Branski RC, Amin MR. Changes in peak airflow measurement during maximal cough after vocal fold augmentation in patients with glottic insufficiency. *Journal of the American Medical Association Otolaryngology—Head and Neck Surgery*. November 1, 2017; 143(11): 1141–1145.

Dion GR, Benedict PA, Amin MR, Branski RC. Morbidity and mortality associated with preclinical tracheostomy models. *The Laryngoscope*. February 2018; 128(2): E68–E71.

Dion GR, Benedict PA, Coelho PG, Amin MR, Branski RC. Impact of medialization laryngoplasty on dynamic nanomechanical vocal fold structure properties. *The Laryngoscope*. October 9, 2017; epub ahead of print.

Dion GR, Coelho PG, Teng S, Janal ML, Amin MR, Branski RC. Dynamic nanomechanical analysis of the vocal fold structure in excised larynges. *The Laryngoscope*. July 2017; 127(7): E225–E230.

Dion GR, Fritz MA, Teng SE, Marcus S, Fang Y, Branski RC, Amin MR. Impact of vocal fold augmentation and laryngoplasty on dyspnea in patients with glottal incompetence. *The Laryngoscope*. February 2018; 128(2):427–429.

Dion GR, Teng SE, Achlatis E, Fang Y, Amin MR. Treatment of neurogenic cough with tramadol: a pilot study. *Otolaryngology—Head and Neck Surgery*. July 2017; 157(1): 77–79.

Dion GR, Teng S, Bing R, Hiwatashi N, Amin MR, Branski RC. Development of an *in-vivo* model of laryngeal burn injury. *The Laryngoscope*. January 2017; 127(1): 186–190.

Dion GR, Teng S, Boyd LR, Northam A, Mason-Apps C, Vieira D, Amin MR, Branski RC. Adjuvant human papillomavirus vaccination for secondary prevention: a systematic review. *Journal of the American Medical Association Otolaryngology—Head and Neck Surgery*. June 1, 2017; 143(6): 614–622.

Earley MA, Pham LT, April MM. Scoping review: awareness of neurotoxicity from anesthesia in children in otolaryngology literature. *Laryngoscope*. August 2017; 127(8): 1930–1937.

Froemke RC, Carcea I. Oxytocin and brain plasticity. *The Principles of Gender-Specific Medicine, 3rd Edition: Gender in the Genomic Area*. Marianne Legato, Editor. Elsevier Academic Press; May 15, 2017.

Golfinos JG, Hill TC, Rokosh R, Choudhry O, Shinseki M, Mansouri A, Friedmann DR, Roland JT Jr, Kondziolka D. A matched cohort comparison of clinical outcomes following microsurgical resection or stereotactic radiosurgery for patients with small- and medium-sized vestibular schwannomas. *Journal of Neurosurgery*. December 2016; 125(6): 1472–1482.

Golinko MS, Harter DH, Rickert SM, Staffenberg DA. Cerebrospinal fluid fistula for the craniofacial surgeon: a review and management paradigm. *Journal of Craniofacial Surgery*. February 23, 2017; epub ahead of print.

Grant N, Wong RP, Kraus DH, Schoder H, Branski RC. Positron Emission Tomography (PET) enhancement after vocal fold injection medicalization. *ENT Journal*. June 20, 2017; 96(6): 218–224.

Hattori R, Kuchibhotla K, Froemke RC, Komiyama T. Modulation and plasticity of inhibition. *Natural Neuroscience*; in press.

Hiwatashi N, Benedict PA, Dion GR, Bing R, Kraja I, Amin MR, Branski RC. SMAD3 expression and regulation of fibroplasia in vocal fold injury. *The Laryngoscope*. September 2017; 127(9): E308–316.

Hiwatashi N, Bing R, Kraja I, Branski RC. Mesenchymal stem cells have anti-fibrotic effects on transforming growth factor- $\beta$ 1-stimulated vocal fold fibroblasts. *The Laryngoscope*. January 2017; 127(1): E35–E41.

Hiwatashi N, Bing R, Kraja I, Branski RC. NR4A1 is an endogenous inhibitor of vocal fold fibrosis. *The Laryngoscope*. September 2017; 127(9): E317–E323.

Hiwatashi N, Bing R, Kraja I, Branski RC. Stem cell-mediated paracrine signaling alters fibroplasia in human vocal fold fibroblasts in vitro. *Annals of Otology, Rhinology, and Laryngology*. August 2017; 126(8): 581–588.

Hoch MJ, Patel S, Jethanamest D, Win W, Fatterpekar GM, Roland JT, Hagiwara M. Head and neck MRI findings in CHARGE syndrome. *American Journal of Neuroradiology*. July 13, 2017; epub ahead of print.

Hu KS, Mourad WF, Gamez ME, Lin W, Jacobson AS, Persky MS, Urken ML, Culliney BE, Li Z, Tran TN, Schantz SP, Chadha J, Harrison LB. Five-year outcomes of an oropharynx-directed treatment approach for unknown primary of the head and neck. *Oral Oncology*. July 2017; 70: 14–22.

Hu K, Mourad W, Gamez M, Safdieh J, Lin W, Jacobson A, Persky MS, Urken M, Culliney B, Li Z, Tran T, Schantz SP, Chadha J, Harrison LB. Low rates of contralateral neck failure in unilaterally treated oropharyngeal squamous cell carcinoma with prospectively defined criteria of lateralization. *Head & Neck*. August 2017; 39(8): 1647–1654.

Jethanamest D, Azadpour M, Zeman AM, Sagi E, Svirsky MA. A smartphone application for customized frequency table selection in cochlear implants. *Otology and Neurotology*. September 2017; 38(8): e253–e261.

Johnson AM. Exercising the aging voice. *Perspectives of the ASHA Special Interest Groups*; in press.

Kraja I, Bing R, Hiwatashi N, Rousseau B, Nalband D, Kirshenbaum K, Branski RC. Preliminary study of a novel transfection modality for *in vivo* siRNA delivery to vocal fold fibroblasts. *The Laryngoscope*. July 2017; 127(7): E231–E237.

Krane N, Markey JD, Moneta L, Kim M. Aesthetics of the nasal dorsum: proportions, light and shadow. *Facial Plastic Surgery*. April 2017; 33(2): 120–124.

Kripkee B, Froemke RC. Organization and plasticity of cortical inhibition. *The Oxford Handbook of Developmental Neural Plasticity*. Moses V. Chao, Editor. May 2017.

Kuchibhotla KV, Gill JV, Lindsay GW, Papadoyannis ES, Field RE, Hindmarsh Sten TA, Miller KD, Froemke RC. Parallel processing by cortical inhibition enables context-dependent behavior. *Nature Neuroscience*. January 2017; 20(1): 62–71.

Landsberger DM, Padilla M, Martinez AS, Eisenberg, LS. Spectral-temporal modulated ripple discrimination by children with cochlear implants. *Ear and Hearing*. January/February 2018; 39(1): 60–68.

Lee A, Givi B, Osborn VW, Schwartz D, Schreiber D. Patterns of care and survival of adjuvant radiation for major salivary adenoid cystic carcinoma. *The Laryngoscope*. September 2017; 127(9): 2057–2062.

Lee A, Givi B, Wu SP, Tam MM, Gerber NK, Hu KS, Han P, Schreiber D. Patterns of care and impact of brachytherapy boost utilization for squamous cell carcinoma of the base of tongue in a large, national cohort. *Brachytherapy*. September 21, 2017; 6(16): 1205–1212.

Lenell C, Johnson AM. Sexual dimorphism in laryngeal muscle fibers and ultrasonic vocalizations in the adult rat. *The Laryngoscope*. August 2017; 127(8): E270–E276.

Liao KS, Kwak PE, Hewitt H, Hollas S, Ongkasuwan J. Measuring quality of life in pediatric paradoxical vocal fold motion using the SF-36v2. *Journal of Voice*. July 2017; 31(4): 518.e1–518.e5.

Loyo M, Markey JD, Gerecci D, Rassi E, Li R, Sullivan B, Wang T. Technical refinements and outcomes of the modified anterior septal transplant. *Journal of the American Medical Association—Facial Plastic Surgery*. January/February 2018; 20(1): 31–36.

Markey JD, Alemi S, Naunheim M, Faden D, Heaton C, Seth R. Spontaneous iliopsoas hematoma following microvascular free tissue transfer. *Case Reports in Otolaryngology*. March 26, 2017; 2017: 1–3.

Markey JD, Loyo M. Latest advancements in the management of synkinesis. *Current Opinion in Otolaryngology—Head and Neck Surgery*. August 2017; 25(4): 265–272.

Markey JD, Mace J, Anderson Y, Wang TW. Hybrid cartilage-modifying otoplasty technique and outcomes. *Journal of the American Medical Association—Facial Plastic Surgery*. January/February 2018; 20(1): 57–62.

Markey JD, Morrel W, Wang SJ, Ryan W. The effect of submandibular gland preservation during level IB neck dissection on postoperative xerostomia. *Auris Nasus Larynx*. April 24, 2017; in press.

Marlin BJ, Froemke RC. Oxytocin modulation of neural circuits for social behavior. *Developmental Neurobiology*. February 2017; 77(2): 169–189.

Mitre M, Minder J, Morina EX, Chao MV, Froemke RC. Oxytocin receptor expression and function in the mouse brain. *Behavioral Pharmacology of Neuropeptides: Oxytocin*; in press.

Neuman AC, Waltzman SB, Shapiro WH, Neukam JD, Zeman AM, Svirsky MA. Self-reported usage, functional benefit, and audiologic characteristics of cochlear implant patients who use a contralateral hearing aid. *Trends in Hearing*. December 2017; 21; epub ahead of print.

Nogueira W, Litvak L, Landsberger DM, Büchner A. Loudness and pitch perception using dynamically compensated virtual channels. *Hearing Research*. February 2017; 344: 223–234.



## SELECT CONFERENCE HIGHLIGHTS

**Max M. April, MD**, was a keynote lecturer on nasal obstruction and facial growth at the International Federation of Oto-Rhino-Laryngological Societies' ENT World Congress 2017 in Paris, France.

**Babak Givi, MD**, chaired the Education Committee of the American Head & Neck Society at the 2017 Combined Otolaryngology Spring Meetings in San Diego, California.

**Mark S. Persky, MD**, was the 2017 Roy Sessions Keynote Lecturer at Georgetown

University's Department of Otolaryngology resident graduation in Washington, DC.

**J. Thomas Roland Jr., MD**, was the invited keynote speaker at the 2017 National Deafness Prevention Conference in Beijing, China.

**Mario A. Svirsky, PhD, and Robert C. Froemke, PhD**, co-chaired a symposium on relating animal models to human cochlear implant use at the 2017 Association for Research in Otolaryngology Midwinter Meeting in Baltimore, Maryland.

**Erich P. Voigt, MD**, was an invited keynote speaker at the 4th Congress of European Otorhinolaryngology—Head and Neck Surgery held in 2017 in Barcelona, Spain.

**Susan B. Waltzman, PhD**, was a keynote speaker at the 2nd World Congress on Cochlear Implants in Emerging Countries held in 2017 in Dubai, United Arab Emirates.

## AWARDS & RECOGNITION

**Milan R. Amin, MD**, has been elected president of the American Broncho-Esophagological Association (ABEA).

**Ryan C. Branski, PhD**, was named a fellow of the American Speech-Language-Hearing Association (ASHA).

**David R. Friedmann, MD**, was inducted as a member of the American Neurotology Society at the Combined Otolaryngology Spring Meetings.

**Robert C. Froemke, PhD**, was appointed as a permanent member of the Auditory System Study Section of the National Institutes of Health Communication Disorders Review Committee.

**Babak Givi, MD**, was appointed to the American Head & Neck Society's Head & Neck Reconstruction, Constitution & Bylaws, and 2018 National Meeting Organizing committees.

**Aaron M. Johnson, PhD, MM**, is president-elect of the Pan-American Vocology Association, and was elected to a two-year term on ASHA's Coordinating Committee of Special Interest Group #3, Voice and Voice Disorders.

**Scott M. Rickert, MD**, was elected to the American Broncho-Esophagological Association's Development Committee.

**Mark S. Persky, MD**, is the current president of the American Triological Society.

Osborn V, Givi B, Lee A, Sheth N, Roden D, Schwartz D, Schreiber D. Characterization, treatment and outcomes of salivary ductal carcinoma using the National Cancer Database. *Oral Oncology*. August 2017; 71: 41–46.

Ouyang J, Carcea I, Schiavo JK, Rabinowitsch A, Kolaric R, Cabeza de Vaca S, Froemke RC, Carr KD. Food restriction induces synaptic incorporation of calcium-permeable AMPA receptors in nucleus accumbens. *European Journal of Neuroscience*. March 19, 2017; 45(6): 826–836.

Padilla M, Stupak N, Landsberger DM. Pitch ranking with different virtual channel configurations in electrical hearing. *Hearing Research*. May 2017; 348: 54–62.

Persky M, Sanders B, Rosen CA, Kahane J, Fang Y, Amin MR, Branski RC. False vocal fold characteristics in presbylarynges and recurrent laryngeal neuropathy. *Annals of Otolaryngology, Rhinology, and Laryngology*. January 2017; 126(1): 42–46.

Persky M, Tran T. Acquired vascular tumors of the head and neck. *Otolaryngologic Clinics of North America*. February 2018; 51(1): 255–274.

Roden DF, Schreiber D, Givi B. Multimodality treatment of early stage tonsil cancer. *Otolaryngology—Head and Neck Surgery*. July 1, 2017; 157(1): 62–68.

Roden DF, Schreiber D, Givi B. Triple-modality treatment in patients with advanced stage tonsil cancer. *Cancer*. September 1, 2017; 123(17): 3269–3276.

Safdieh J, Givi B, Osborn V, Lederman A, Schwartz D, Schreiber D. Impact of adjuvant radiotherapy for malignant salivary gland tumors. *Otolaryngology—Head and Neck Surgery*. December 1, 2017; 157(6): 988–994.

Shabashev S, Fouad Y, Huncke TK, Roland JT Jr. Cochlear implantation under conscious sedation with local anesthesia; safety, efficacy, costs, and satisfaction. *Cochlear Implants International*. November 2017; 18(6): 297–303.

Stelmach J, Landsberger DM, Padilla M, Aronoff JM. Determining the minimum number of electrodes that need to be pitch matched to accurately estimate pitch matches across the array. *International Journal of Audiology*. July 12, 2017; 56(11): 894–899.

Svrakic M, Roland JT Jr., McMenomey SO, Svirsky MA. Initial operative experience and short-term hearing preservation results with a mid-scala cochlear implant electrode array. *Otology & Neurotology*. December 2016; 37(10): 1549–1554.

Taliercio S, Sanders B, Achlatis S, Fang Y, Branski RC, Amin MR. Factors associated with the use of postoperative analgesics in patients undergoing direct microlaryngoscopy. *Annals of Otolaryngology, Rhinology, and Laryngology*. May 2017; 126(5): 375–381.

Taufique Z, Dion GR, Amin MR. Asystole during direct laryngoscopy for vocal fold injection in a healthy patient. *Journal of Voice*. July 2017; 31(4): 517.e19–517.e21.

Teng SE, Dion GR, Sin DN, Hiwatashi N, Benedict PA, Amin MR, Branski RC. Imiquimod injection to rabbit vocal folds: a preliminary, preclinical investigation. *Otolaryngology—Head and Neck Surgery*. April 2017; 156(4): 702–705.

Troob S, Givi B, Hodgson M, Mowery A, Gross ND, Andersen PE, Clayburgh D. Transoral robotic retropharyngeal node dissection in oropharyngeal squamous cell carcinoma: patterns of metastasis and functional outcomes. *Head & Neck*. October 2017; 39(10): 1969–1975.

Trumpis M, Insanally M, Zou J, Elsharif A, Ghomashchi A, Artan NS, Froemke RC, Viventi J. A low-cost, scalable, current-sensing digital headstage for high channel count  $\mu$ ECOG. *Journal of Neural Engineering*. April 2017; 14(2): 026009.

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*Business Manager*

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*Executive Assistant to Dr. Roland*

Kristin Montella, MPA  
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David Zanazanian, MBA  
*Division Clinical Administrator*

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## NYU LANGONE BY THE NUMBERS\*

<b>1,519</b> Beds	<b>98</b> Operating Rooms	<b>172,072</b> Emergency Room Visits	<b>68,884</b> Patient Discharges	<b>4,500,000</b> Outpatient Faculty Practice Visits	<b>9,654</b> Births	
<b>3,633</b> Physicians	<b>5,104</b> Nurses	<b>516</b> MD Candidates	<b>85</b> MD/PhD Candidates	<b>263</b> PhD Candidates	<b>418</b> Postdoctoral Fellows	<b>1,327</b> Residents and Fellows
<b>5,087</b> Original Research Papers	<b>549,707</b> Square Feet of Research Space	<b>\$359M</b> NIH Funding	<b>\$364M</b> Total Grant Revenue			

\*Numbers represent FY17 (Sept 2016–Aug 2017) and include  
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