Rhinology Research Addresses the Challenges of Olfactory Loss due to COVID-19

According to the Centers for Disease Control (CDC), more than 30.5 million people nationwide were diagnosed with COVID-19 as of April 2021. With “new loss of taste or smell” (or olfactory loss) named by the CDC as one of the most common symptoms of those infected by the COVID-19 virus, investigations into this aspect of the disease are of crucial importance for both patients and for those providing smell loss treatment.

COVID-19 Taste and Smell Loss

While COVID-19 is strongly associated with olfactory dysfunction and olfactory loss, the path to recovery varies widely among affected individuals.

Anosmia (or loss of smell) is a key symptom and one of the first and most widely-reported indicators among the many symptoms of COVID-19. Quality of life is substantially impacted by smell loss, which can lead to depression, loss of appetite, and safety concerns such as lack of awareness of gas leaks, smoke, or spoiled food.

“Smell is controlled by a cranial nerve with receptor neurons located in the superior aspect of the nasal cavity. Loss of smell is often caused by injury to the nerve from trauma or from inflammation from an infection or edema of the mucosa that impedes access to olfactory receptors.

“The loss of smell observed in COVID-19 infections is thought to be caused by direct viral injury to the chemosensory system, which is different than the mechanism seen in a typical ‘cold’ or upper respiratory infection,” said Assistant Professor Lauren T. Roland, MD.

According to Assistant Professor Patricia Loftus, MD: “There are many causes of olfactory loss, such as head trauma, aging, nasal and sinus disorders, smoking, and neurodegenerative diseases. One of the most common causes of temporary smell loss is viral upper respiratory infections (URI). We know that smell loss is common in URI, usually occurring because nasal congestion and nasal mucous block odorants from reaching the olfactory region of the nose located higher in the nasal cavity.

Continued on page 3

Also in This Issue

2 Message from the Chair
2 Dr. Anna Meyer Named Roger Boles, MD, Academy Chair
4 OHNS Team Members Recognized for Discoveries with Clinical Impact and Commercial Potential
5 Dr. Schreiner to Receive ARO Award of Merit
5 SENTAC and Aerodigestive Society Prize to OHNS Team
5 In the Media
6 Dr. Knott Contributes to AAO-HNS Bell’s Palsy Statement
7 Graduating Residents and Fellows
8 Upcoming Events
**Message from the Chair**

**Emerging from the Pandemic**

Here in San Francisco we seem to be climbing out of the depths of the SARS CoV-2 pandemic. The peak at UCSF for hospital admissions was the second week of January 2021. Between our vaccine rollout and the public health protections that our population takes quite seriously, we have enjoyed very low numbers of infection and have been able to ease into a more normalized daily life.

The department has enjoyed some recognition in the meantime. The most recent NIH funding rankings place us fourth in the U.S. among departments of otolaryngology-head and neck surgery. Our newer faculty scientists have been very successful, and congratulations are specifically due to Andrea Hasenstaub, PhD; Dylan Chan, MD, PhD; Aaron Tward, MD, PhD and Taha Jan, MD, who all secured significant new grant funding.

Of course, our established scientists have remained active and productive as well. It is noteworthy that Christoph Schreiner, MD, PhD, has been selected as the 2022 Association for Research in Otolaryngology (ARO) Award of Merit winner. This career achievement landmark was awarded “for his seminal studies of central sound processing and cortical plasticity. These findings have set the basis for our understanding of the effects of hearing impairments on cortical function…” Christoph will be formally recognized for the award at the ARO 45th Annual Conference February 5-9, 2022 in San Jose, California.

We are privileged to work in the community of UCSF, where the School of Medicine was ranked second in the nation for primary care and tied for fourth in research by U.S. News & World Report. New this year is a diversity ranking, and UCSF was tied with UCLA at ninth among medical schools in the U.S. for this metric.

This fall, the department will open its Redwood City office near the main headquarters of Oracle in Redwood Shores. This state-of-the-art office will provide high level allergy/rhinology care and other new services. It is conveniently located for improved access for our Peninsula patients. The office will be staffed by general otolaryngologist and rhinologist Lauren Roland, MD, and a general otolaryngologist who will join our faculty this summer, Michael Friduss, MD. Other departmental faculty members will have office hours there as well.

Lastly, I believe we will soon be able to return to in-person CME courses, with hybrid options for those choosing to meet remotely. This year’s UCSF Otolaryngology Update will be at the Westin St. Francis Hotel in San Francisco from November 11-13. We also are planning our UCSF Pacific Rim Otolaryngology Update in Waikiki over Presidents Day weekend in February 2022. That meeting will feature Eric Wirtz, MD, and other Tripler Army Medical Center faculty. It will be great to see you all in person!

Warmly,
Andrew H. Murr, MD, FACS
Professor and Chair
UCSF Department of Otolaryngology – Head and Neck Surgery

---

**Congratulations**

**Dr. Anna K. Meyer Named Roger Boles, MD, Academy Chair**

In May, Anna K. Meyer, MD, FAAP, FACS, was appointed as the next Roger Boles, MD, Academy Chair in Otolaryngology Education. She will assume the position in July, following years of successful leadership in this role by Andrew N. Goldberg, MD, MS.

“Dr. Meyer has a long history of service in the advancement of education at UCSF. She is a talented educator who contributes to the medical school curriculum as a Bridges Coach and is the fellowship director of our ACGME approved fellowship in Pediatric Otolaryngology,” said Department Chair Andrew Murr, MD.

He added that Dr. Meyer “is a champion of diversity, equity and inclusion, and she has a valuable role as a facilitator within the Academy of Communication in Healthcare.”

A Bay Area native, Dr. Meyer is a magna cum laude graduate of Amherst College and attended medical school at UCSF. She completed a residency in Otolaryngology – Head and Neck Surgery at the University of Michigan and completed a fellowship in pediatric otolaryngology at Children’s Memorial Hospital Chicago/ Northwestern. She is a 2009 graduate of the UCSF Teaching Scholars Program.

After Kris Rosbe, MD, was named the inaugural pediatric otolaryngologist, Dr. Meyer became the second pediatric otolaryngologist at UCSF. Dr. Meyer has clinical responsibility at both the Oakland and San Francisco locations of UCSF Benioff Children’s Hospital. Her clinical interests and expertise are focused on tongue-tie and cochlear implantation (see page 5).

Dr. Meyer “is a champion of diversity, equity and inclusion, and she has a valuable role as a facilitator within the Academy of Communication in Healthcare.” –Andrew H. Murr, MD, FACS
A team of researchers in the rhinology division has extensively studied and treated COVID-19 olfactory loss, performing detailed analysis of changes to olfaction in those with COVID-19. They recently published these papers associated with COVID-19:

- **Short-term Chemosensory Distortions and Phantoms in COVID-19**
  
  **Jose Gurrola II, Jolie Chang, Lauren Roland, Patricia A. Loftus, Steven Cheung**
  
  The objective of this study is to identify differentiation features of chemosensory dysfunction in COVID-19 infection and their primary drivers.
  

- **Temporal Profile of Olfactory Dysfunction in COVID-19**
  
  **Patricia A. Loftus, Lauren T. Roland, Jose G. Gurrola II, Steven W. Cheung, Jolie L. Chang**
  
  This study examines changes in smell sensitivity in COVID-19-positive (COVID+) and COVID-19-negative (COVID–) viral illness during the initial weeks after infection.
  

- **Smell and Taste Symptom-Based Predictive Model for COVID-19 Diagnosis**
  
  **Lauren T. Roland, Jose G. Gurrola II, Patricia A. Loftus, Steven W. Cheung, Jolie L. Chang**
  
  Smell or taste change is a strong predictor for a COVID-19-positive test result. Using the presence of smell or taste change with fever, this parsimonious classifier correctly predicts 75% of COVID-19 test results.
  

---

**Olfactory Loss**

*Continued from page 1*

“Interestingly, in contrast to the typical temporary loss of smell that we see with URI, many people with COVID-19 smell loss report a sudden loss without associated nasal obstruction and congestion or even cough – a change in their sense of smell is their only symptom of the infection.

“Currently, the mechanism for smell and taste loss in COVID-19 is being investigated. Histologic studies have shown that SARS-CoV-2 attacks cells that support the olfactory nerves in the nose (these are called sustentacular cells). SARS-CoV-2 targets a receptor called ACE2 that is found on the surface of sustentacular cells but is not found on olfactory neurons. If the supporting cells are compromised, the olfactory nerves will be unable to function correctly.

“In terms of taste, very little is known about this mechanism. Since taste relies on olfaction, taste loss may be present because of smell loss, but further research is needed to determine how COVID-19 affects taste receptors on the tongue and sensory nerves,” Dr. Loftus said.

**Patient Outcomes**

The Rhinology team maintains a focus on patient care related research for those with olfactory loss.

“We currently have a lot of work underway to investigate options for improving smell in patients with loss related to COVID-19,” said Dr. Roland. “The options with the best data are nasal steroid irrigation treatments and retraining methods, to ‘re-learn’ commonly encountered scents.”

Associate professor Jose Gurrola, II, MD, has acquired an advanced research olfactometer, a device for precise measurement of the sense of smell, to better understand the nature and time course of the chemosensory loss. “This unit will expand our team’s ability to characterize the nature and magnitude of olfactory loss in ways that commercially available testing does not,” he said.

Research is also key to providing an understanding of the recovery trajectory for patients who have lost their sense of smell or taste.

“Our group followed patients with COVID-19 smell loss over time and determined the timeline to recovery based on the severity of their initial smell loss,” explained Dr. Loftus. “Our studies as well as others’ work show that approximately 90% of patients who contract COVID-19 report a change in their sense of smell. Around 80% of these patients will recover their sense of smell within one to four weeks, and 95% will recover their smell by six months. The prognosis for the approximately 5% of patients who have not recovered their smell by 6 months is actively being studied. This knowledge has been extremely helpful when counseling patients about what they can expect in terms of their recovery.”
OHNS Team Members Recognized for Discoveries with Clinical Impact and Commercial Potential

David Conrad, MD; Andrew N. Goldberg, MD, MS; Adrian House, MD; Nicole Jiam, MD; MS; Aaron Tward, MD, PhD; and Vicente Planells-Palop, PhD, were granted Catalyst Awards in March 2021.

Catalyst Awards, which are funded by UCSF’s Clinical and Translational Science Institute (CTSI), provide both industry advisor mentorship and seed funding to UCSF principal investigators with promising projects. The Catalyst Awards are focused on the development of therapeutics, diagnostics, medical devices, and digital health.

PolyBarb Nasal Implant System
Dr. Conrad, an assistant professor in the pediatric otolaryngology division in OHNS, Dr. Jiam, an OHNS resident, Dr. Goldberg, vice chair and director of the OHNS Rhinology Division, and Drs. House and Jiam, OHNS residents, were awarded $50,000 for their project, “The PolyBarb Nasal Implant System: A Novel Steroid-eluting Absorbable Drug Delivery Platform for Inflammatory Diseases of the Nose.” (Figure 1)

“We are honored to receive the Catalyst Award for the PolyBarb Nasal Implant. We are committed to building a minimally-invasive office-based solution for nasal inflammatory diseases and developing an innovative platform for sustained intranasal drug delivery across all disciplines of medicine,” said Dr. Jiam.

Human Squamous Cell Cancer Modeling
Dr. Tward, an associate professor, and Dr. Planells-Palop, a postdoctoral scholar in OHNS, were awarded $50,000 for their project, “Next-Generation Human Squamous Cell Cancer Modeling for Drug Discovery.” (Figure 2)

“We believe that these next-generation models resemble the initiation and progression of squamous cell carcinoma tumors in vitro. For this reason, their use in drug-screening platforms has enormous potential and may help us find novel drugs to tackle this disease. We are very thankful for the trust the program has placed in our project,” said Dr. Planells-Palop.

The Catalyst Awards
Catalyst Awards are the centerpiece of the Catalyst Program, UCSF’s translational accelerator focused on advancing UCSF discoveries with clinical impact and commercial potential. The program aims to foster academic and industry collaborations as well as enhance education in early translational research and entrepreneurship.

The 2021 Catalyst Award cycle was very competitive. More than 80 project applications were submitted, and 27 finalists were selected to present their projects to the Catalyst Industry Advisor Selection Committee. The committee then selected 13 projects as Catalyst Awardees.
Dr. Anna K. Meyer in the American Academy of Pediatrics Magazine

Anna K. Meyer, MD, FACS, FAAP’s research on ankyloglossia, or tongue-tie, was featured in a January 1, 2021 story in AAP News, a publication of the American Academy of Pediatrics (AAP). The issue reported on the previous month’s AAP virtual national conference.

Dr. Meyer’s conference presentation, “Ankyloglossia and Other Ties: What is the Evidence?” focused on what pediatricians should look for when assessing mothers with breastfeeding challenges and infants with possible ankyloglossia.

Tongue-tie is a condition that restricts the tongue’s range of motion and is present at birth. It is a common condition occurring in up to 4% of newborns. According to the AAP Textbook of Pediatric Care, the condition results from the presence of a short or tight lingual frenulum. Cutting or clipping the frenulum (frenotomy) is indicated if an infant’s ability to breastfeed is compromised.

According to Dr. Meyer, not all infants with tongue ties require frenotomy. Her presentation outlined solutions, both for breastfeeding mothers and infants.

“Research does support performing frenotomy for classic ankyloglossia for breastfeeding problems,” said Dr. Meyer, an otolaryngologist and head and neck surgeon in OHNS practicing at UCSF Benioff Children’s Hospital Oakland. However, she also advised increased support for breastfeeding mothers.

“We need to advocate that mothers get more lactation support rather than more frenotomies,” she said.

KCRW’s Greater LA Podcast Interviews Dr. Dylan Chan

Dylan Chan, MD, PhD, was featured in a national public radio program that was initially broadcast February 2 on station KCRW in Southern California.

The segment, part of the Greater LA podcast, discussed the Risk Calculator for Asymptomatic SARS-CoV-2 Infection in Children that can estimate, for any county in the US, the likelihood that a group of asymptomatic children will contain at least one child with COVID-19. Dr. Chan and Ana Marija Sola, a UCSF medical student, created the calculator.

 “[The calculator] uses publicly available data on COVID rates in the general population,” said Dr. Chan, an associate professor in pediatric otolaryngology and the Director of the Children’s Communication Center (CCG) in OHNS at UCSF.

“We wanted to use that data, which is readily available, to help provide an estimate for asymptomatic pediatric infection rates,” he said.

Dr. Chan emphasized the importance of data-driven decisions surrounding class size and social distancing.

The episode can be heard at tinyurl.com/interactivecalculator.

Awards

Dr. Schreiner to Receive ARO Award of Merit

The Association for Research in Otolaryngology (ARO) has announced that Christoph Schreiner, PhD, MD, will receive the 2022 ARO Award of Merit.

The award recognizes an individual who has made substantial scientific achievements in and contributions to the fields encompassed by otolaryngology.

Dr. Schreiner, a professor in the Departments of Otolaryngology – Head and Neck Surgery and Bioengineering & Therapeutic Sciences, is being awarded for his “seminal studies of central sound processing and cortical plasticity. These findings have set the basis for our understanding of the effects of hearing impairments on cortical function,” according to the award announcement.

Dr. Schreiner’s research focuses on understanding the functional organization of central auditory stations of the mammalian brain. He is mainly interested in the role of the auditory forebrain (medial geniculate body and auditory cortex) in the encoding of complex auditory signals – such as speech and communication signals – in normal and hearing-impaired models.

SENTAC and Aerodigestive Society Award Top Prize to OHNS Team

Kristina Rosbe, MD, FAAP, FACS, and team members Lia Jacobson, MD; Yvette Wild, MD; Margaret Cafferkey, MS, CCC-SLP, CLC; and clinic coordinator, Vanessa L. Arrazate, received first prize at the December 2020 joint meeting of the Society of Ear, Nose, and Throat Advances in Children (SENTAC) and the Aerodigestive Society.

Dr. Rosbe and her team received the prize for their abstract “Provider Experience of a Virtual Aerodigestive Clinic.”

“I am so proud of this recognition for our team’s innovation and leveraging of the telehealth platform to be able to continue to provide outstanding multidisciplinary care to our patients with complex airway and swallowing conditions during the pandemic,” Dr. Rosbe said.

In the Media

Ankyloglossia, or tongue-tie, is a common condition in newborns.

Dr. Schreiner to Receive ARO Award of Merit

The Association for Research in Otolaryngology (ARO) has announced that Christoph Schreiner, PhD, MD, will receive the 2022 ARO Award of Merit.

The award recognizes an individual who has made substantial scientific achievements in and contributions to the fields encompassed by otolaryngology.

Dr. Schreiner, a professor in the Departments of Otolaryngology – Head and Neck Surgery and Bioengineering & Therapeutic Sciences, is being awarded for his “seminal studies of central sound processing and cortical plasticity. These findings have set the basis for our understanding of the effects of hearing impairments on cortical function,” according to the award announcement.

Dr. Schreiner’s research focuses on understanding the functional organization of central auditory stations of the mammalian brain. He is mainly interested in the role of the auditory forebrain (medial geniculate body and auditory cortex) in the encoding of complex auditory signals – such as speech and communication signals – in normal and hearing-impaired models.

SENTAC and Aerodigestive Society Award Top Prize to OHNS Team

Kristina Rosbe, MD, FAAP, FACS, and team members Lia Jacobson, MD; Yvette Wild, MD; Margaret Cafferkey, MS, CCC-SLP, CLC; and clinic coordinator, Vanessa L. Arrazate, received first prize at the December 2020 joint meeting of the Society of Ear, Nose, and Throat Advances in Children (SENTAC) and the Aerodigestive Society.

Dr. Rosbe and her team received the prize for their abstract “Provider Experience of a Virtual Aerodigestive Clinic.”

“I am so proud of this recognition for our team’s innovation and leveraging of the telehealth platform to be able to continue to provide outstanding multidisciplinary care to our patients with complex airway and swallowing conditions during the pandemic,” Dr. Rosbe said.
Daniel Knott, MD, chief of facial plastic and reconstructive surgery, was among the authors of a consensus statement synthesizing the best available evidence and expert opinion on the management of idiopathic facial paralysis (commonly known as Bell’s palsy) during the COVID-19 pandemic.


Dr. Knott has extensive clinical experience treating Bell’s Palsy, a condition that manifests with a rapid onset of weakness or paralysis of the facial muscles, causing a droop on one side of the face that is in most cases temporary.

“Viral infection is among the known causes of Bell’s Palsy,” noted Dr. Knott.

“In 2020-21 Bell’s palsy was experienced by some people infected with the SARS-CoV-2 virus, as well as in a very small subset of those receiving the COVID-19 vaccination,” he added.

Dr. Knott has extensive experience on the full spectrum of facial anesthetic operations and treatments, with great focus of the reconstruction of traumatic, malignant, and congenital defects of the head and neck. He also has experience in creating solutions for the two common issues that affect the face over time – treating the descent of the soft tissues and facial soft tissue atrophy.

The AAO-HNS statement provides guidance to physicians on the treatment of patients who develop Bell’s palsy shortly after a COVID-19 vaccination, as well as providing guidance on the treatment of unvaccinated patients who develop Bell’s palsy following infection with the SARS virus.

The statement indicates that vaccination against the SARS-CoV-2 virus is key to curbing the COVID-19 pandemic, and recommends corticosteroid therapy with or without anti-herpes viral therapy for both patients who develop Bell’s palsy after vaccination, and unvaccinated patients who develop the condition.

Recommended guidance for management of Bell’s palsy during the COVID pandemic follows:

- Vaccination against SARS-CoV-2 is vital to curbing the COVID-19 pandemic. Timely access to and administration of the vaccines should remain as over-arching guidance.

- In patients who develop Bell’s palsy shortly after vaccination: Corticosteroid therapy +/- anti-herpes viral therapy (acyclovir, valacyclovir) is recommended, according to previously established guidelines. Patients should be counselled that the effect of corticosteroids on the safety and efficacy of Pfizer-BioNTech or Moderna vaccines is currently unknown. However, immunocompromising conditions and the use of immunocompromising medications are not contraindications to vaccination with either of these vaccines.

- In unvaccinated patients who develop Bell’s palsy: Corticosteroid therapy +/- anti-herpes viral therapy (acyclovir, valacyclovir) is recommended, according to previously established guidelines. Patients may proceed with vaccination while being treated for Bell’s palsy with corticosteroids versus delaying vaccination until after completion of corticosteroid course, in discussion with their health care provider.

- As in all cases of facial paralysis, the broad underlying differential diagnosis should be considered, as per clinical practice guideline recommendations.

The statement was coordinated by C. W. David Chang, MD, co-chair of the AAO-HNS Patient Quality and Safety Improvement Committee. Members of six AAO-HNS committees and two infectious disease specialists participated.

The full statement is available at tinyurl.com/AAO-HNS.
Looking to the Future

Graduating Residents and Fellows

**RESIDENTS**

Adrian House, MD
In July 2021, Dr. House will begin a facial plastic and reconstructive surgery fellowship at the Center for Advanced Facial Plastic Surgery in Beverly Hills, California, where he will be trained by Drs. Babak Azizzadeh and Paul Nassif. “I’m so thankful for the excellent surgical and clinical training I received at UCSF and honored to have been part of such a great team,” shared Dr. House. “I’m looking forward to bringing the skills I gained to my fellowship training.”

Madeleine Strohl, MD
Dr. Strohl will enter a head and neck surgery fellowship at the University of Miami in July 2021. “I feel well prepared for my University of Miami head and neck surgery fellowship,” said Dr. Strohl. “I received excellent training and mentorship from UCSF OHNS faculty, and I look forward to continuing to build on the expertise I gained at UCSF,” she said.

Mary Jue Xu, MD
In July 2021, Dr. Xu will begin a head and neck surgery fellowship at the University of Pennsylvania’s Perelman School of Medicine. “I am grateful for everyone at UCSF OHNS,” said Dr. Xu. “This includes residents, faculty, and staff – who have all shaped me over the past five years.”

Nancy Wang, MD
After completing her residency, Dr. Wang is joining Nevada ENT, a private practice group of otolaryngologists in Reno, Nevada. “I have had the privilege to train at a world-class institution with an incredibly skilled and compassionate group of surgeons,” noted Dr. Wang. “I hope to bring the lessons and knowledge that I’ve drawn from the attendings, my co-residents, and my patients to my future practice.”

**FELLOWS**

Patrick Carpenter, MD
In August 2021, Dr. Carpenter will join Virginia Tech Carilion Clinic in Roanoke, Virginia as a head and neck surgeon. “My fellowship year at UCSF was an incredible year of growth and learning with such a great group of mentors and residents. I had the opportunity to really learn world class ablations (WCAs) and world class reconstructions (WCRs),” shared Dr. Carpenter. “I am excited to bring WCAs and WCRs to Virginia Tech this summer.”

Jacqueline Wulu, MD
In September 2021, Dr. Wulu will join the Kaiser Permanente Mid-Atlantic Permanente Medical Group practice in Washington, D.C. as a facial plastic and reconstructive surgeon. “I have learned so much from my facial plastic and reconstructive surgery fellowship training at UCSF. It has been a very comprehensive learning experience with significant opportunities for autonomy and the chance to witness my own growth,” said Dr. Wulu. “Everyone has been very supportive and invested in my development. I look forward to bringing the skills I gained as a fellow to my new position on the east coast at Kaiser Permanente Mid-Atlantic.”
Upcoming Events

The Roger Boles, MD Lectureship  
October 2021

UCSF Otolaryngology Update  
November 11–13, 2021  
Westin St. Francis Hotel, San Francisco

The Robert A. Schindler, MD Lectureship  
December 9, 2021

27th Annual Advances in Diagnosis and Treatment of Sleep Apnea and Snoring  
February 18–19, 2022  
Grand Hyatt, San Francisco

Pacific Rim Otolaryngology – Head and Neck Surgery Update Conference  
February 19–22, 2022  
Speaker: Eric Wirtz, MD, Tripler Army Medical Center  
Waikiki Beach, Honolulu, HI

For further information about CME courses, please go to https://cme.ucsf.edu  
For information on Grand Rounds and departmental events, please visit https://ohns.ucsf.edu or contact Ofeibia Laud-Darku at ofeibia.laud-darku@ucsf.edu.

NOTE: The COVID-19 outbreak has caused significant travel disruptions to national and international conferences. The health and safety of our meeting attendees is of utmost importance to the UCSF Department of Otolaryngology – Head and Neck Surgery. Decisions on whether to hold a meeting or CME conference are based on information from UCSF and national health officials.

To support the Department of Otolaryngology – Head and Neck Surgery, please contact Assistant Director of Development Ian Shore at 415/502-3482 or ian.shore@ucsf.edu.