# ASSOCIATION FOR RESEARCH IN OTOLARYNGOLOGY



# 2021 VIRTUAL MIDWINTER MEETING



# **2020 ARO COUNCIL**

## **Officers:**



President (2020-2021)Ruth Litovsky, Ph.D.



**Past- President** (2019 - 2020)Keiko Hirose, M.D.



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# **Council Members:**



**Nominations Committee Chair** (President: 2018-2019) Karen Steel, Ph.D.



**MidWinter Meeting Program Chair** (2020 - 2023)Matthew Kelley, Ph.D.



# **2020 ARO COUNCIL**

## **Council Members:**



Council Member (2019-2022) Lisa Cunningham, Ph.D.



Communications Officer (2018-2021) Donna M. Fekete, Ph.D.



Council Member (2020-2023) John Brigande, Ph.D.



Council Member (2018-2021) Mark Warchol, Ph.D.



Welcome to Virtual ARO 2021! I am thrilled that each and every one of you has chosen to join our meeting. The last time that we were together in San Jose in 2020 we had no idea of the challenges that the world was about to be facing. Most of us have been impacted by Covid-19 either personally or through people that we are connected to. Many other world events have also caused us to pause and reevaluate our roles and the urgency of shifting priorities and goals. An urgent goal is for ARO to be a society whose mission prioritizes diversity, equity and inclusion. One of our steps is to have ongoing programming in this space, beginning with the ARO 2021 program, and a number of other initiatives in the coming year.

A virtual ARO Meeting is not something I had envisioned during the 29 years that I have been attending ARO. I have always loved traveling to this meeting, where I knew that I would see old friends and create new connections, attend symposia and podium sessions in my field, and on broader topics, and gather closely around posters and discuss the intricacies of new and exciting discoveries. In response to world events, we had to quickly transition to an all-virtual meeting. I am proud of ARO for being nimble and forwardthinking, starting months ago with rapid pivoting to novel learning and engagement opportunities that have sustained our members this year. Building on those events we are excited to offer a rich set of experiences in our virtual space for ARO 2021. It is not surprising that this year we saw a reduction in our abstract submissions. However, I am delighted with our ~750 abstracts, offering exciting symposia, podiums and posters. I want to thank the Program Committee, and in particular Matt Kelley, Chair of the Program Committee, and Steve Lomber, Scientific Chair. They have organized a fantastic meeting! With this being our first attempt at a virtual meeting, there will be a lot to learn about how to interact, engage energetically and hold on to our scientific community in this new meeting environment.

The Presidential Symposium this year it titled: *Implantable Prostheses: Progress, Future Possibilities and Multi-Sensory Integration*. I am delighted to introduce several speakers from outside of the auditory field who have not previously attended ARO. The symposium will start with Rebecca Alexander, a compelling public speaker who has been living with Usher's Syndrome, a genetic disorder causing both deafness and blindness in humans. Ms. Alexander will be introduced by Jeff Holt. The symposium will then highlight the work of scientists working across these areas, integrating psychophysics, clinical research, and biological approaches, aiming to gain a coherent understanding of how we might ultimately improve outcomes in patients.



# LETTER FROM THE ARO PRESIDENT

I am excited to welcome Susana Martinez-Conde and Stephen Macknik, who are new to the ARO community and will discuss neurobiology of the visual system as it relates to visual prostheses. Jennifer Groh's work will then discuss multi-sensory processing and how it is that vision helps us hear. Having set the stage for thinking about the role of vision in a multisensory auditory world, we will hear from experts in the area of cochlear implants. René H Gifford will discuss recent work on electric-acoustic integration in children and adults, and Sharon Cushing will discuss her work as a clinician on 3-D auditory and vestibular effects. Matt Winn will talk about cognitive load and listening effort using pupillometry, and we will end with Rob Shepherd's discussion of current work and future possibilities involving biological treatments and neural prostheses. Together, these presentations are designed to provide a broad and interdisciplinary view of the impact of sensory restoration in hearing, vision and balance, and the potential for future approaches for improving the lives of patients.

On Monday February 22<sup>nd</sup> we have our annual ARO Awards Ceremonies. Tom Yin (University of Wisconsin-Madison) will receive the Award of Merit, the highest commendation in our society. We look forward to hearing about Tom's outstanding career and foundational experimental paradigms and studies of the physiology, behavior and anatomy of spatial hearing. We will also present the Geraldine Dietz Fox Young Investigator award to Donatella Contini (University of Illinois, Chicago) for her exceptional contributions to electrophysiology of the vestibular system. This year ARO will present two new awards. The ARO Clinical Innovator Award will go to Charley Della Santina (Johns Hopkins University) for his development of the vestibular prosthesis (MVITM multichannel vestibular implant), through a remarkable combination of basic, clinical and engineering research. The ARO Pioneer Award in Basic Science will be shared by Jeffrey Holt (Harvard University), Gwenaelle Geleoc (Harvard University) and Andrew Griffith (University of Tennessee Health Sciences Center). Their joint work leading to significant advance in hearing and vestibular science, namely the identification of the ion channel proteins (TMC proteins) that sense sound and head motions in the inner ear, and water displacement in lateral line organs. We look forward to celebrating the achievements of our remarkable colleagues and friends.

Over the past year, the ARO Council has implemented a number of changes and our bylaws have now been updated to reflect these changes. The ARO council has started to meet regularly throughout the year to accomplish our goals and build a strong working relationship with our new management company, Parthenon Management Group. We are developing a strategic plan in collaboration with our Long-Range Planning Committee and spARO. I especially want to thank Catherine Weisz, chair of the LRPC Committee, and Kirupa Suthakar, chair of the spARO Steering Committee, for their deep engagement in these initiatives. Please stay tuned for upcoming opportunities for input on ARO's future mission, vision and goals.



# LETTER FROM THE ARO PRESIDENT

At the ARO Business Meeting, Monday February 22<sup>nd</sup> we will hear updates from Debara Tucci, Director of the NIDCDs, Paul Manis, JARO Editor, and Barbara Shinn-Cunningham, ARO's Secretary Treasurer. At the conclusion of the business meeting, I will hand the gavel to our President-Elect, John Oghalai. I am deeply grateful to our ARO council (https://aro.org/about/leadership/), the ARO committees who over the past year have contributed their time and made ARO the superb research society that it is. Much of the year was shaped by the work of our fantastic spARO leadership (https://aro.org/about/sparo-students-postdocs/) and their faculty mentor, Lavinia Sheets. Finally, ever so importantly, I am very grateful to retiring Past-President Keiko Hirose, who has guided me tremendously in my role as president. See you soon on Zoom at our upcoming meeting.



Sincerely and with deep gratitude,

Ruth Litovsky, Ph.D. President ARO 2020-21



To the 2021 ARO Mid-Winter Meeting attendees:

As I'm sure you can appreciate, developing the schedule for this year's meeting has been challenging. Over the last decade, the MWM has evolved to include not only outstanding scientific presentations but also opportunities for training and mentorship, public outreach, and recognition of exceptional contributions to scientific research. The result has been a schedule that fills nearly every hour of the nearly 5-day long MWM. For 2021, the Program Committee and spARO faced a daunting challenge: to provide the same level of content while accounting for global time zones and the potential for "Zoom" fatigue. While a solution that satisfied everyone was not possible, I believe that we have developed a schedule that makes the best of a difficult situation. As part our effort to limit daily ARO activities to no more than six hours, spARO very kindly agreed to present all of the mentoring sessions during the 10 days prior to the start of the MWM. As you examine the Program, you will see that some other sessions, such as workshops, have also been scheduled either just before or after the formal dates of the meeting. For the scientific sessions, we have limited each day to six hours, starting at 3 pm Greenwich Mean Time (GMT) and ending at 10 pm GMT (including two 30-minute breaks). For some attendees this will mean some late evenings, and for others some early mornings, but I hope that the outstanding presentations and exceptional science will make the sacrifices worthwhile. Moreover, many of the podium presentations and symposia will be recorded and available for immediate viewing, meaning that the chances of missing a presentation are much less. I know this year's meeting will not feel the same as past years, and I, like many of you, suspect will really be missing the opportunity to talk with old friends outside the poster room or catch up in an informal setting. But I believe we can, and will, have a great meeting!



Cheers,

Matt Kelley, Ph.D. 2021 Mid-Winter Meeting Program Chair



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#### **Closed Captioning**

ARO is providing live captioning in all its sessions and recordings. Closed Captioning will be available at the bottom of your screen. Zoom also provides AI-powered live transcription that needs to be enabled by the viewer by clicking the CC button and enabling auto transcription.



#### **Recording Policy**

ARO does not permit audio or photographic recording of any research data presented at the meeting- *expect for individuals who may have difficulty understanding the speaker during their initial presentation*. Sessions that are being recorded by ARO will be available to registered attendees after the conclusion of the MidWinter Meeting for 14 days of additional viewing.



#### **Breaks**

Breaks have been added to the meeting agenda in hopes of limiting Zoom fatigue. Please take breaks as needed.



#### A Special Note for the Disabled

ARO wishes to take steps that are required to ensure that no individual with a disability is excluded, denied services, segregated, or otherwise treated differently than other individuals because of the absence of auxiliary aids and services.

If you need any auxiliary aids or services identified in the American with Disabilities Act, or any assistance in registering for this course please contact ARO Meetings Department at <u>headquarters@aro.org</u>; via telephone at 615-432-0100.



# **2021 ARO PROGRAM COMMITTEE**

Matthew W. Kelley, Ph.D. 2021 MidWinter Meeting Program Chair

**Steve Lomber, Ph.D.** Co-Chair

Zubair M. Ahmed, Ph.D. Member

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**Stéphane F. Maison, Ph.D.** Member

Manuel S. Malmierca, Prof. Dr. Member

**Teresa Nicolson, Ph.D.** Member

Sunil Puria, Ph.D. Member

Maria Eulalia Rubio, M.D., Ph.D. Member

**Shinichi Someya, Ph.D**. Member

Daniel Tollin, Ph.D. Member

Matthew Winn, Au.D., Ph.D. Member





### VIRTUAL CONFERENCE HALL

Login to the <u>Conference Hall</u> to browse through Exhibitors, the Poster Gallery, and Sessions being offered at this year's conference. You can also chat one on one with other attendees through the virtual chat feature or stop by the Meeting Networking room to chat face to face with other attendees.

### JOIN THE CONVERSATION

ARO has gone social and we invite you to join the online conversation. Please be sure to follow/like the following ARO social media accounts:



@AROMWM



@AROMWM

And do not forget to use the hashtag **#ARO2021** if you post pictures or comments about the 2021 Virtual Meeting.

### **CREATING AND USING ZOOM MEETING ROOMS**

**Creating a Zoom Personal Meeting Room Instructions:** 

- ✤ Go to <u>www.zoom.us</u>
- Click on the blue box in the top right side of the screen "Sign-Up. It's Free"
- Enter your email address
- Wait for the confirmation email and activate your account
- Login and view your profile to see your personal meeting room link.

### Accessing a Zoom Personal Meeting Room Instructions:

- ✤ Go to <u>www.zoom.us</u>
- Click "Join a Room"
- Enter the meeting ID or personal room name provided

### QUESTIONS

# If you have questions before or during the conference, we encourage you to:

- 1) Email <u>headquarters@aro.org</u> with additional questions or concerns.
- 2) Stop by the Help Desk, open daily.



## **2021 VIRTUAL MIDWINTER MEETING**

## PRESEDENTIAL SYMPOSIA SPEAKERS

### Presidential Symposium: Implantable Prostheses: Progress, Future Possibilities and Multi-Sensory Integration

SATURDAY FEBRUARY 20, 2021 10 AM - 2:30 PM

CHAIR: Ruth Litovsky, Ph.D. University of Wisconsin	SPEAKERS:
	Rebecca Alexander, M.P.H.,
	Self-Employed
	Stephen Macknik, Ph.D. and Susana Martinez-Conde, Ph.D.
	SUNY Downstate Health Sciences University
	Jennifer Groh, Ph.D.
	Duke University
	Rene Gifford, Ph.D.
	Vanderbilt University Medical Center
	Sharon Cushing, M.D.
	Hospital for Sick Children
	Matthew Winn, Au.D., Ph.D.
	University of Minnesota
	Robert Shepherd, Ph.D.
	Medical Bionics Department, University of Melbourne & Bionics Institute, St. Vincent's
	Hospital

OVERALL ABSTRACT: Hearing loss can significantly disrupt the ability of children to become mainstreamed in educational environments that emphasize spoken language as a primary means of communication. Similarly, adults who lose their hearing after communicating using spoken language have numerous challenges understanding speech and integrating into social situations. These challenges are particularly significant in noisy situations, where multiple sound sources often arrive at the ears from various directions. Intervention with hearing aids and/or cochlear implants (CIs) has proven to be highly successful for restoring some aspects of communication, including speech understanding and language acquisition. However, there is also typically a notable gap in outcomes relative to normal-hearing listeners. Importantly, auditory abilities operate in the context of how hearing integrates with other senses. Notably, the visual system is tightly couples to the auditory system. Vision is known to impact auditory perception and neural mechanisms in vision and audition are tightly coupled, thus, in order to understand how we hear and how CIs affect auditory perception we must consider the integrative effects across these senses.

We start with Rebecca Alexander, a compelling public speaker who has been living with Usher's Syndrome, a genetic disorder found in tens of thousands of people, causing both deafness and blindness in humans. Ms. Alexander will be introduced by Dr. Jeffrey Holt, who studies gene therapy strategies for hearing restoration. The symposium then highlights the work of scientists working across these areas. Here we integrate psychophysics, clinical research, and biological approaches, aiming to gain a coherent understanding of how we might ultimately improve outcomes in patients. Drs. Susana Martinez-Conde and Stephen Macknik are new to the ARO community and will discuss neurobiology of the visual system as it relates to visual prostheses. Dr. Jennifer Groh's work will then discuss multisensory processing and how it is that vision helps us hear. Having set the stage for thinking about the role of vision in a multisensory auditory world, we will hear from 1 44th Annual ARO MidWinter Virtual Meeting experts in the area of cochlear implants. Dr. René H Gifford will discuss recent work on electric-acoustic integration in children and adults, and Dr. Sharon Cushing will discuss her work as a clinician on 3-D auditory and vestibular effects. Dr. Matthew Winn will talk about cognitive load and listening effort using pupillometry, and we will end with Dr. Rob Shepherd's discussion of current work and future possibilities involving biological treatments and neural prostheses. Together, these presentations are designed to provide a broad and interdisciplinary view of the impact of sensory restoration in hearing, vision and balance, and the potential for future approaches for improving the lives of patients



# **2021 AWARD OF MERIT**

## **AWARD OF MERIT**



**Tom C.T. Yin, Ph.D.** Professor Emeritus, University of Wisconsin-Madison, Madison, WI

Tom Chi Tien Yin was born in Kunming, China where his parents had fled to escape the Japanese invasion of northern China before World War II. In 1948 the family emigrated to the US and settled in Denver, CO where his parents were graduate students. When the Communists defeated the Nationalists in China in 1949, the family decided not to return to China. Tom attended public schools in Denver and Aurora, CO and then went to Princeton University, graduating with a major in Electrical Engineering. He then went to graduate school in the same field at the University of Michigan.

After a semester or two in Ann Arbor, he discovered that practically all the research in the Electrical Engineering Department was war-related and sponsored by the Department of Defense during this time of the Vietnam War. Not wanting to support the war effort, he decided to complete the course requirements for a Master's degree and then join the Peace Corps. However, just before he was to go for Peace Corps training, by chance in the hallway he met Professor William J. Williams who told him that his lab was funded by NIH, not by DOD.

Tom queried, "That sounds nice. What do you do?"

"Bioengineering", Prof. Williams replied.

"Cool." Tom replied. Then, after a pause, "But, what's that?"

At that pivotal moment, Tom put the Peace Corps on hold and decided to explore this new field. Essentially, Williams' lab applied engineering techniques and analysis to the study of the ultimate communication system, the brain. The next semester, as a third year graduate student, Tom found himself trying to shore up his meager 9th grade Biology background in a large introductory Biology course surrounded by hundreds of pre-medical freshmen students. Tom's thesis was a study of the transfer characteristics of neurons in the thalamus relaying information about joint angle. The classic work in this system was by Vernon Mountcastle of Johns Hopkins University so Tom arranged to do a post-doc in his lab following a conversation at the first meeting of the Society for Neuroscience. Before his funding for the post-doc at JHU could start, Tom had a six-month gap so he decided to fill that time with a short post-doc at the SUNY at Buffalo in the laboratory of Nobel laureate Sir John Eccles. Since Tom's parents had moved to Buffalo by this time, he could stay with them while working on an 'electroanatomy' experiment studying cerebral inputs to the cerebellum, which proved to be surprisingly fortuitous when he was looking for a faculty position. At JHU Tom studied the visuomotor properties of neurons in the posterior parietal cortex of an awake, behaving monkey, which underscored an interest in behavior for the rest of his career.



# **2021 AWARD OF MERIT**

In 1977 Tom was recruited to join the Department of Neurophysiology at the University of Wisconsin with the requirement to teach motor systems. With his background in cerebellar research, he qualified. During his first year in Madison while waiting for his NIH grant to be funded, he teamed up with Shigeyuki Kuwada who was a post-doc with Jerzy Rose to study the binaural response properties of cells in the inferior colliculus. Neither Shig nor Tom had previous experience in auditory physiology but there was excellent local expertise in the Department in Madison. This was the start of a career-changing interest in the auditory system and a life-long friendship and collaboration with Shig. While Tom continued his visuomotor experiments after Shig left, the lure of the fascinating cells sensitive to microsecond differences in timing of inputs to the two ears was irresistible and his research efforts eventually focused on the lower auditory brainstem from the auditory nerve, cochlear nucleus, inferior colliculus and superior colliculus. These experiments combined intra- and extracellular recordings along with injections of intracellular markers to study relevant physiological responses and important circuitry properties of the auditory brainstem pathways using state-of-the-art digital acoustic stimuli.

In addition to experiments addressing circuitry issues, Tom's lab also embarked on a systematic study of sound localization behavior of cats with the goal of linking neurophysiological responses to behavior. Cats were trained on a sound localization task to direct their gaze at sound sources using operant training. In addition to several studies quantifying the psychophysics of sound localization, Tom and his colleagues also correlated neurophysiological responses in the inferior colliculus while the cat was experiencing the precedence effect, one of the first studies in the auditory system to correlate physiology with behavior in a behaving animal..

An important factor in Tom's research success was the cohort of exceptional students, post-docs, sabbatical faculty, and technicians that he worked with in Madison over the years. He is indebted to the hard work and brilliance of Laurel Carney, Joseph Chan, Micheal Dent, Bertrand Delgutte, Yan Gai, Melissa Greenwood, Judith Hirsch, Dexter Irvine, Amy Jones, Philip Joris, Shig Kuwada, Ruth Litovsky, Liz McClaine, Jordan Moore, Luis Populin, Janet Ruhland, Phil Smith and Dan Tollin. In addition the faculty and staff of the Department provided invaluable advice, counsel and assistance on matters ranging from the details of earphone calibration, histological preparation of brain tissue, computer programming, construction of laboratory equipment, to the preparation of grant applications. Over his 39-year tenure, Tom's research was funded without interruption and on the first submission from NIH, usually with two grants. He also served as a permanent member on three different NIH study sections as well as chairing and participating in numerous NIH site visits. He was the inaugural awardee of the William and Christine Hartmann Prize in Auditory Neuroscience from the Acoustical Society of America in 2013.

Throughout Tom's professional stint as a professor at the University of Wisconsin, he has been deeply engaged in teaching, initially motor systems to first-year medical students and then transitioning to graduate and undergraduate students. After 20 years of teaching medical students, Tom teamed up with Professor Richard Keesey of the Department of Psychology in 1997 to start an introductory systems neuroscience course for undergraduates. It is unusual for faculty in the Medical School to be involved in undergraduate teaching and this was done on top of his normal teaching requirements. Over the years this course became quite popular with enrollments of almost 200 students and it became the backbone of a new undergraduate major in neurobiology. After Prof. Keesey retired in 2001, Tom taught the whole course with the assistance of a TA or two for whom the course provided a training forum for teaching. Tom believed that science education at all levels was important and led numerous community outreach visits to local elementary and junior high schools where cow eye dissections were always a hit. In 2003 he received the Chancellor's Distinguished Teaching Award in a campus-wide competition.



# **2021 AWARD OF MERIT**

In addition to research and teaching, Tom has also had major administrative roles. In 2006 he was elected to be Director of the campus-wide Neuroscience Training Program, which is the graduate program at the Univ. of Wisconsin, supporting about 70 graduate students working with 120 faculty members. He wrote two successful training grant renewal applications for the program. In 2004 he wrote a new T90 training grant for Clinical Neuroengineering and directed the program for the first 5 years. In 2011 the Medical School realigned the departments of Anatomy, Physiology and Pharmacology into a newly established Department of Neuroscience, for which Tom was the first chair and directed the successful promotion of 5 faculty members and the move of the departmental faculty to a new building.

To students just starting on a research path, it is noteworthy that the arc of Tom's career was quite untraditional, as he was fortunate to experience several serendipitous events. Changing to a completely different research area in the middle of graduate school after a chance encounter in the hallway, doing a short post-doc on the cerebellum to facilitate finding a faculty job teaching motor systems, and pairing up with Shig Kuwada to start research on the auditory system were all certainly unplanned. The important aspect is to be prepared to take advantage of good luck.

In retirement Tom has continued to teach graduate students, but he has much more time now to enjoy his marriage of 48 years to Lillian Tong, two marvelous children, Eric and Laura, and three wonderful grandkids. His major hobby is photography with particular interest in nature, wildlife, and travel. He enjoys visiting new places and hiking to areas to see wildlife in their natural setting. He has a travel/photo blog of trips on www.neurotraveler.com and a photo site on Flickr which can be seen at https://www.flickr.com/gp/tctyin/54BL24.

## **Congratulations Dr. Tom Yin!**

# **ARO Award of Merit Past Winners**

- 1978 Harold Schuknecht, MD \*
  1979 Merle Lawrence, PhD \*
  1980 Juergen Tonndorf, MD \*
- 1981 Catherine Smith, PhD \*
- 1982 Hallowell Davis, MD \*
- 1983 Ernest Glen Wever, PhD \*
- 1984 Teruzo Konishi, MD \*
- 1985 Joseph Hawkins, PhD \*
- 1986 Raphel Lorente de No, MD \*
- 1987 Jerzy E. Rose, MD \*
- 1988 Jozef Zwislocki, ScD\*
- 1989 Ake Flock, PhD\*
- **1990** Robert Kimura, PhD\*
- 1991 William D. Neff, PhD\*
- 1992 Jan Wersall, PhD\*
- 1993 David Lim, MD\*
- 1994 Peter Dallos, PhD
- 1995 Kirsten Osen, MD
- 1996 Drs. Ruediger Thalmann, MD\*
- & Isolde Thalmann, PhD
- 1997 Jay Goldberg, PhD\*
- 1998 Robert Galambos, MD, PhD\*
- 1999 Murray B. Sachs, PhD\*
- 2000 David M. Green, PhD

- 2001 William S. Rhode, PhD
- 2002 A. James Hudspeth, MD, PhD
- 2003 Dr. David Kemp
- 2004 Donata Oertel, PhD
- 2005 Edwin W Rubel, PhD
- 2006 Robert Fettiplace, PhD
- 2007 Eric D. Young, PhD
- 2008 Brian C.J. Moore, PhD
- 2009 M. Charles Liberman, PhD
- 2010 Ian J. Russell
- 2011 Robert V. Shannon, PhD
- 2012 David P. Corey, PhD
- 2013 Karen P. Steel, PhD
- 2014 H. Steven Colburn, PhD
- 2015 Thomas B. Friedman, PhD
- **2016** Geoffrey A. Manley, PhD
- 2017 Alan Palmer, PhD
- 2018 Christine Petit, PhD
- 2019 Peter M. Narins, PhD
- 2020 Lynne A. Werner, PhD \* Deceased



## YOUNG INVESTIGATOR AWARD



## Donatella Contini, Ph.D

I began studying the vestibular system during my dissertation research at the Università di Pavia with Professors Ivo Prigioni and GianCarlo Russo. I had two postdoctoral fellowships, first at the University of Rochester with Professor Christopher Holt and then at the University of Illinois at Chicago with Professors Jonathan Art and Jay Goldberg.

My research focuses on characterizing the biophysics of synaptic transmission between hair cells and primary afferents in the vestibular system. For many years an outstanding question in vestibular physiology was how the transduction current in the type I hair cell was sufficient, in the face of large conductances on at rest, to depolarize it to potentials necessary for conventional synaptic transmission with its unique afferent calyx.

In collaboration with Dr. Art, I overcame the technical challenges of simultaneously recording from type I hair cells and their enveloping calyx afferent to investigate this question. I was able to show that with depolarization of either hair cell or afferent, potassium ions accumulating in the cleft depolarize the synaptic partner. Conclusions from these studies are that due to the extended apposition between type I hair cell and its afferent, there are three modes of communication across the synapse. The slowest mode of transmission reflects the dynamic changes in potassium ion concentration in the cleft which follow the integral of the ongoing hair cell transduction current. The intermediate mode of transmission is indirectly a result of this potassium elevation which serves as the mechanism by which the hair cell potential is depolarized to levels necessary for calcium influx and the vesicle fusion typical of glutamatergic quanta. This increase in potassium concentration also depolarizes the afferent to potentials that allow the quantal EPSPs to trigger action potentials. The third and most rapid mode of transmission like the slow mode of transmission is bidirectional, and a current flowing out of either hair cell or afferent into the synaptic cleft will divide between a fraction flowing out into the bath, and a fraction flowing across the cleft into its synaptic partner.

The technical achievement of the dual electrode approach has enabled us to identify new facets of vestibular end organ synaptic physiology that in turn raise new questions and challenges for our field. I look forward with great excitement to the next chapter in my scientific story.



## **PIONEER AWARD IN BASIC SCIENCE**



## Jeff Holt , Ph.D.

Jeff Holt earned a doctorate from the Department of Physiology at the University of Rochester in 1995 for his studies of inward rectifier potassium channels in saccular hair cells. He went on to a post-doctoral position in the Neurobiology Department at Harvard Medical School and the Howard Hughes Medical Institute, where he characterized sensory transduction and adaptation in hair cells and developed a viral vector system to transfect cultured hair cells. Dr. Holt's first faculty position was in the Neuroscience Department at the University of Virginia. In 2011 the lab moved to Boston Children's Hospital / Harvard Medical School. Dr. Holt is currently a Professor in the Departments of Otolaryngology and Neurology in the F.M. Kirby Neurobiology Center. Dr. Holt and his team have been studying sensory transduction in auditory and vestibular hair cells over the past 20 years, with particular focus on TMC1 and TMC2 over the past 12 years. This work lead to the discovery that TMC1 forms the hair cell transduction channel. His work also focuses on development gene therapy strategies for genetic hearing loss.

### Andrew Griffith , M.D., Ph.D.



Andrew Griffith received his M.D. and Ph.D. in Molecular Biophysics and Biochemistry from Yale University in 1992. He completed his general surgery internship and a residency in Otolaryngology-Head and Neck Surgery at the University of Michigan in 1998. He also completed a postdoctoral research fellowship in the Department of Human Genetics as part of his training at the University of Michigan. In 1998, he joined the Division of Intramural Research (DIR) in the National Institute on Deafness and Other Communication Disorders (NIDCD). He served as a senior investigator, the chief of the Molecular Biology and Genetics Section, the chief of the Otolaryngology Branch, and the director of the DIR, as well as the deputy director for Intramural Clinical Research across the NIH Intramural Research Program. His research program identifies and characterizes molecular and cellular mechanisms of normal and disordered hearing and balance in humans and mouse models. Two primary interests of his program have been hearing loss associated with enlargement of the vestibular aqueduct, and the function of TMC genes and proteins. The latter work lead to the discovery that the deafness gene product TMC1 is a component of the hair cell sensory transduction channel. Since July of 2020, he has served as the Senior Associate Dean of Research and a Professor of Otolaryngology and Physiology in the College of Medicine at the University of Tennessee Health Science Center.





### Gwenaëlle S. G. Géléoc, Ph.D.

Gwenaëlle S. G. Géléoc obtained a Ph.D. in Sensory Neurobiology from the University of Sciences in Montpellier (France) in 1996. She performed part of her Ph.D. training at the University of Sussex, UK where she characterized sensory transduction in vestibular hair cells and a performed a comparative study between vestibular and cochlear hair cells. Gwenaelle continued her training as an electrophysiologist at University College London studying outer hair cell motility and at Harvard Medical School studying modulation of mechanotransduction in vestibular hair cells. As an independent investigator at the University of Virginia, she expanded this work and characterized the developmental acquisition of sensory transduction in mouse vestibular hair cells, the developmental acquisition of voltage-sensitive conductances in vestibular hair cells and the tonotopic gradient in the acquisition of sensory transduction in the mouse cochlea. This work along with quantitative spatiotemporal studies performed on several hair cell mechanotransduction candidates lead her to TMC1 and 2 and long-term collaborations with Andrew Griffith and Jeff Holt. Dr. Géléoc is currently Assistant Professor of Otolaryngology, at Boston Children's Hospital where she continues to study molecular players involved in the development and function of hair cells of the inner ear and develops new therapies for the treatment of deafness and balance, with a particular focus on Usher syndrome.

## **CLINICAL INNOVATOR AWARD**



Charles C. Della Santina, Ph.D., M.D.

Charles C. Della Santina, Ph.D. M.D. is a Professor of Otolaryngology – Head & Neck Surgery and Biomedical Engineering at the Johns Hopkins University School of Medicine, where he directs the Johns Hopkins Cochlear Implant Center and the Johns Hopkins Vestibular NeuroEngineering Laboratory. As a practicing neurotologic surgeon, Dr. Della Santina specializes in treatment of middle ear, inner ear and auditory/vestibular nerve disorders. His clinical interests include restoration of hearing via cochlear implantation and management of patients who suffer from vestibular disorders, with a particular focus on helping individuals disabled by chronic postural instability and unsteady vision after bilateral loss of vestibular sensation. His laboratory's research centers on basic and applied research supporting development of vestibular implants, which are medical devices intended to partially restore inner ear sensation of head movement. In addition to that work, his >90 publications include studies characterizing inner ear physiology and anatomy; describing novel clinical tests of vestibular function; and clarifying the effects of cochlear implantation, vestibular implantation, superior canal dehiscence syndrome and intratympanic gentamicin therapy on the inner ear and central nervous system. Dr. Della Santina is also the founder and CEO/Chief Scientific Officer of Labyrinth Devices LLC, a company dedicated to bringing novel vestibular testing and implant technology into routine clinical care.



# **POSTER BLITZ FINALISTS**

#### **Kelsey Anbuhl**

Transient Developmental Hearing Loss After the Critical Period Impairs Cortical Encoding

#### Meisam Arjmandi

The Relationship Between Focused Threshold Profiles and Vowel Identification in Individuals With Cochlear Implants

**Daniel Bronson** HCN Channels Are Modulated by Muscarinic Acetylcholine Receptors in Vestibular Ganglion Neurons

#### Rebecca Voglewede

Heterogeneity of Medial Superior Olivary Dendrites Impacts Binaural Coincidence Detection

#### Mario Milazzo

Non-Invasive Measures of the Efficiency of Middle-Ear Prosthesis Placement and Length

#### Tatiana Correa

*Comparison of Inner Ear Gene Therapy Delivery Routes in Rodent Models Using Helper-Dependent Adenovirus* 

#### Nihaad Paraouty

Auditory Cortex Responses Are Enhanced during Social Learning

#### Nicholas Andresen

Age-Related Changes to the Size and Pigment Content of the Stria Vascularis in Mouse and Human Temporal Bones

#### Aysha Motala

Assessing the effects of masked speech in narrative listening using neuroimaging

#### **Ben Seicol**

Cochlear Inflammation in CBA/CaJ Mice Increases During Age-Related Hearing Loss

#### Ben-Zheng Li

The Role of Contralateral Spike Timing in Determining Sound Localization Precision in a Spiking Neural Network Model of the Auditory Brainstem



# **POSTER BLITZ FINALISTS**

#### Anatasiya Staroyt

Applications of a Novel Contrast-Enhanced MicroCT Method for Insertion Trauma Studies

#### Jared Panario

The Summating Potential From Intracochlear Electrocochlegraphy is Predictive of Postoperative Hearing Outcomes in Cochlear Implant Recipients

#### Kendra Stansak

Cdkn2a Deletion and Ototoxic Insults Independently and Synergistically Promote Glial Cell Proliferation in the Inner Ear

#### **Paige Brooks**

Pou3f4-Expressing Otic Mesenchyme Cells Promote Spiral Ganglion Neuron Survival

#### **Graham Casey**

Mild, Closed-Head Impacts Cause Hair Cell Loss and Deficits in Hearing Function

#### Karli Nave

Sustained beat perception develops through adolescence, and is predictive of phonology

#### Jonathan Regev

Relation Between Supra-Threshold Processing Limits and Comodulation Masking Release in Older Listeners With Normal and Impaired Hearing

#### Wouterusvander Valk

Clinical Relevance of Human Pluripotent Stem Cell-Derived Inner Ear Organoids

#### Ilkem Sevgili

Spiral Ganglion-On-A-Chip

#### **Chauhan Neha**

Non-Invasive Delivery to the Inner Ear: Investigating Blood-Labyrinth Barrier Opening Using MRI-Guided Focused Ultrasound Combined with Microbubbles

#### **Kenneth Morse**

Onset-offset cortical auditory evoked potential indices of tinnitus-related excitatory-inhibitory neural plasticity

#### **Drayson Campbell**

A Prairie Vole Model of Acoustic Communication: Developmental Changes in Ultrasonic Vocalizations



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# **ARO 2021 MIDWINTER MEETING VIRTUAL** TRAVEL AWARD RECIPIENTS

#### DON HENDERSON TRAVEL AWARD RECIPIENTS



#### Dana Bsharat, M.Sc.

I work as an audiologist and speech pathologist. I completed my BA and MA studies in the Department of Communication Sciences and Disorders at the University of Haifa. Currently, I am a Ph.D. student under the supervision of Dr. Hanin Karawani and Dr. Tamar Degani. I am interested in behavioral and neural plasticity in bilingual populations across the lifespan. My master's thesis entitled "Learning and Bilingualism in Challenging Listening Conditions: How Challenging Can It Be?" under the supervision of Dr. Hanin Karawani examined factors that affect bilinguals in challenging listening conditions. Specifically, the study compared native Hebrew monolingual speakers' performance to Arabic-Hebrew bilinguals and bilinguals' performance in first and second languages. Our findings provided insight into the bilingual mechanisms that play a role during speech performance in adverse listening conditions. In my Ph.D. research, I aim to study the complex construct of listening effort and the neural mechanisms that underlie speech processing. Specifically, examine subcortical and cortical physiological aspects of bilingualism using electrophysiological measures and pupillometry to examine listening effort.



#### Valeria Castagna, B.Sc.

I got a degree on Biological Science from the Universidad de Buenos Aires. Now I am doing my PhD in Buenos Aires, on the Physiology and Genetics of Hearing Lab. My topic of research is hearing system, specifically the consequences of acoustic trauma during the critical period of development of the auditory system.



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#### Ariadna Cobo-Cuan, Ph.D.



The overall goal of my research is to better understand the link between neural circuits and behavior, with a primary focus on the peripheral sensory functions. I believe that the pursuit of this goal will not only provide theoretical insights into the sensory coding but will lead to improvements in the detection, prevention, and treatment of anomalies in sensory-guided behaviors. I completed my BA and MA studies in the Research Group in Bioacoustics and Neuroethology at the University of Havana, Cuba. As a postdoc, I worked under the supervision of Dr. Peter Narins at the University of California Los Angeles investigating the neurophysiological mechanisms underlying high-frequency/ultrasonic communication in the amphibians. Currently, I am a Postdoctoral Research Associate working under the guidance of Dr. John Oghalai at the University of Southern California. The research on the neural basis of visual attention in human and non-human primates during the first stage of my career, and the study of the biophysics of the hearing organs in vertebrates and invertebrates as part of my doctoral and postdoctoral training, have provided me with a strong background in sensory physiology and the inner ear mechanics. As a biophysics lecturer at the University of Havana, I developed an essential understanding of the molecular synaptic machinery as well as the techniques that have paved the way for our understanding of synaptic transmission. I have gained expertise in an extensive variety of neuroethological models using behavioral and neurophysiological measures that include in vivo single and multi-unit recordings, event-related potentials, otoacoustic emissions recordings, laser Doppler vibrometry and optical coherence tomography. My expertise puts me in an excellent position to address both basic science and clinically-motivated questions regarding how a sensory system works.



#### Amandine Jarysta, Ph.D.

Amandine Jarysta is a post-doctoral associate at The Jackson Laboratory. Her work focuses on investigating the molecular mechanisms involved in the development of hair cells in the inner ear, notably on dissecting the Gprotein signaling pathway and its role in cytoskeleton architecture.



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#### Daria Lukasz, B.A.

Daria Lukasz is a predoctoral fellow at the National Institutes of Health in a joint graduate partnerships program with Johns Hopkins University. She is studying hair-cell function in zebrafish under the mentorship of Dr. Katie Kindt at the NIDCD. Daria completed her undergraduate work in neuroscience at the University of Pennsylvania.



#### Gabe Sobczak, B.S.

Gabe Sobczak is currently a medical student at the University of Wisconsin – Madison. He is a member of the Binaural Hearing and Speech Lab, directed by Dr. Ruth Litovsky. His research primarily encompasses cochlear implants, an interest that first began while learning about neural prostheses as part of his undergraduate biomedical engineering training. His current work focuses on understanding how cochlear implants affect cortical-level integration of binaural stimuli, using functional near-infrared spectroscopy (fNIRS).

#### **ARO 2021 VIRTUAL TRAVEL AWARDEES**



#### Aykut Aksit, M.S.

Aykut Aksit is a 5th year Mechanical Engineering Ph.D. student at Columbia University in the Small Scale Mechanics and Electrochemical Engineering Labs. His research involves polymeric and metallic microscale devices for inner ear applications. He develops novel manufacturing techniques, which require an understanding of microtechnology, small scale mechanics and chemical engineering. With these techniques, it becomes possible to design and create new tools with unprecedented capabilities that can be used to solve inner ear problems. He is co-advised by Professors Jeffrey W. Kysar, Anil K. Lalwani, and Alan C. West.



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#### Nina Aldag, M.Sc.

Nina Aldag was born in Minden, Germany, in 1996. She received her Bachelor of Science (B.Sc.) degree in physical engineering from the University of Applied Science Muenster, Germany in 2017 and her Master of Science (M.Sc.) degree in biomedical engineering from the Leibniz University Hanover, Germany in 2020. She started her doctoral research in September 2020 at Hannover Medical School, Hanover, Germany. Her research interests include brain-computer interfaces especially for cochlear implant recipients.



#### Nicholas Andresen, M.D.

Dr. Nicholas Andresen is a third-year resident in the Department of Otolaryngology – Head and Neck Surgery at Johns Hopkins Hospital, currently in the first year of a two-year dedicated research block. He studied Biology and Philosophy at Luther College before completing his Medical Degree from the University of Iowa Carver College of Medicine, where he spent one year as a Howard Hughes Medical Research Fellow. He currently works in the lab of Dr. Amanda Lauer and his research interests include age-related hearing loss and sickle cell disease.

#### Meisam Arjmandi, Ph.D.



Meisam Arjmandi is currently a postdoctoral research associate in the EAR lab, working with Dr. Julie Arenberg. He received his Ph.D. in Communication Sciences and Disorders with a specialization in Cognitive Science at Michigan State University. He obtained his M.Sc. in Biomedical Engineering and his B.Sc. in Electrical Engineering. In his Ph.D. dissertation, he studied the impact of environmental noise and reverberation on the quality of early language input and language outcomes in children with cochlear implants (CIs). His research interests include the comprehension and production of speech and language in children and adults with CIs, auditory psychophysics, computational models of speech perception, and voice quality assessment. Meisam's overarching career goal is to better understand factors influencing speech and language development in children and adults with CIs and translate the findings into clinical practice.



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#### Selina Baeza-Loya, B.A.

Selina Baeza-Loya is a 5<sup>th</sup> year PhD Candidate in the Neurobiology graduate program at the University of Chicago. She completed her BA in Cognitive Science at Rice University with an emphasis on studies in Neurosciences and Philosophy of Mind. Simultaneously she worked with Dr. Ramiro Salas in the Department of Psychiatry at Baylor College of Medicine, studying the impact of substance abuse disorders on neural connectivity. Currently she works with Dr. Ruth Anne Eatock to investigate the functional impact of diverse sodium currents on spike timing regularity in vestibular afferent neurons using patch clamp electrophysiology and computational modeling. She is an HHMI Gilliam Fellow, a doting cat mom, and a bacon cheeseburger enthusiast.



#### Joel Berger, Ph.D.

I have a fascination with understanding how sound is represented within the brain, both in the presence of external stimuli and in the absence of an objective stimulus, as is the case with subjective tinnitus. I utilize the latest tools in intracranial ECoG, behavioral neuroscience, PET and source-space EEG to further our understanding of basic neuroscience and translate this into benefits for patients. I currently work in the Department of Neurosurgery at The University of Iowa, in the Human Brain Research Laboratory of Dr Matt Howard, collaborating closely with Phillip Gander and Tim Griffiths. I obtained my BSc in Psychology from the University of Lincoln, followed by a PhD from the University of Nottingham, under the supervision of Alan Palmer and Mark Wallace, focusing on the behavioural and neural correlates of tinnitus. My first postdoctoral position was at the MRC Institute of Hearing Research, also under the supervision of Alan Palmer.



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#### Vikrant Borse, Ph.D.

I have been working in the field of inner ear research for a decade. My research has always been focused on understanding the inner ear biology and the causes of inner ear dysfunction for therapeutic intervention. During my doctorate, I studied the mechanism of cisplatin-induced inner ear damage and hearing loss. I developed possible treatment option against cisplatin-mediated hearing loss without affecting cisplatin's anti-cancer ability. Currently, I am working as a post-doctoral research associate in Dr. Mark Warchol lab, at Washington University in Saint Louis. In my earlier research project, I studied Hippo-Yap1 signaling pathway in inner ear development, damage, and regeneration. My findings showed that the removal of the mouse utricle from the mechanical constrains of its in vivo environment can promote transient YAP1 nuclear translocation in SCs. Further, data from this study indicated that differences in injuryevoked translocation of YAP1 in mouse vs chick utricle accounts for their differing regenerative abilities. This work has been accepted in Scientific Reports journal for publication.

My current research is mainly focused on the role of the immune cells such as macrophages in the cochlear development and hearing function. It seems there is limited work done in the area of immune cells and its influence on the inner ear development and function. My current research is aimed to provide better understanding of macrophage function in the cochlear development, hearing function and disorder. Simultaneously, I am also investigating the role of *Pou4f3 gene* in inner ear development, function and hair cell regeneration. In addition, I am actively serving as a reviewer for multiple scientific journals such as Medicinal Research Reviews (IF-9.79), The International Journal of Molecular Sciences, Scientific Reports, Frontiers in Cellular Neuroscience, International Journal of Pediatric Otorhinolaryngology etc., and I have recently accepted the invite to serve as a guest editor for the journal of Frontiers in Neuroscience.



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#### Paige Brooks, B.A.

I am a PhD candidate in the Department of Biology at Georgetown University where I am studying the role otic mesenchyme cells play in supporting cochlear spiral ganglion neurons (SGNs). SGNs are the firstorder auditory afferents, and while they are necessary for most therapeutic hearing options, they are also sensitive to even moderate noise damage. My work focuses on the potential for otic mesenchyme cells - a poorly understood but abundant cochlear cell - to support SGN survival through the transcription factor Pou3f4. Prior to beginning my graduate work, I earned a B.A. in Neuroscience from Colgate University where I studied supporting cell development in the zebrafish lateral line under Dr. Jason Meyers. I am dedicated to continuing to develop my expertise in neuroscience and sensory biology, and I hope to use this

#### Carmen Alicia Carabali Carabali, M.Sc.



Carmen received her Bachelor of Engineering in Electronics and Control in Ecuador and her Masters Degree in Biomedical Engineering at Flinders University in Adelaide. As a student, she was awarded for her performance and collaborated with different research groups focusing her research on advanced computing for EEG interpretation, and brain signal analysis. Alicia worked as a full-time lecturer at an Ecuadorian University and has conducted research in areas such as medical devices, artificial intelligence, multi-agent systems, and signal processing. In February 2018 Alicia commenced her PhD studies at the Bionics Institute where her research is focused on assessing listening effort using fNIRS technology. Her goal is to explore how fNIRS technology can help to improve the quality of life of patients using hearing devices such as Bone-Anchored Hearing Systems and Cochlear Implants.



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#### Luis Cassinotti, Ph.D.

I obtained a PhD in cardiovascular physiology and pathophysiology field in April 2018. I then decided to learn about other research areas and I joined the laboratory of Dr. Gabriel Corfas at the Kresge Hearing Research Institute (University of Michigan Medical School) as a postdoctoral fellow. My current research focuses on the molecular and cellular mechanisms of the hidden heating loss and on the importance of myelination in the peripheral auditory nerve. Since starting my postdoc in July 2018, I have learned several techniques to assess auditory function including, among others, ABR and DPOAE. Also, learned confocal and electron microscopy to study the inner ear at the cellular levels. Together with the knowledge I acquired during my PhD in the handling of laboratory animals and molecular biology techniques, I am preparing myself for a career as an inner ear neuroscientist. During last two years at Kresge, I contributed to the writing of one paper and two reviews. The paper was on the development of an injectable PEG hydrogel controlling neurotrophin-3 release by affinity peptides, published in Journal of Controlled Release. The reviews were focused on 'hidden hearing loss', published in Cold Spring Harbor (CSH) Perspectives in Medicine series, and on 'axon-glia interactions in the ascending auditory system', recently accepted in Developmental Neurobiology. This is my third participation in the Annual MidWinter Meeting of the Association for Research in Otolaryngology in which I am going to present my fourth poster. In this occasion, I will talk about the consequences of the disruption of Schwann cell ErbB receptor signaling in the auditory nerve and how this results in hypomyelination and hidden hearing loss.



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#### Tais Castagnola, B.Sc.

From a very young age I have been passionate about nature and science. Following my interests, I decided to move out from my home town to study Biological Sciences in the University of Buenos Aires. There, I found what really meant investigating guided by some of the best scientists of Argentina. Inspired by their commitment, I decided to pursue a scientific career, so on April of 2018 I started my PhD in neuroscience. Now I am studying the GABAergic modulation of the efferent auditory pathway in the mammalian choclea, combining both optogenetics and calcium imaging techniques.



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#### Melissa Castillo Bustamante, M.D.

Melissa Castillo Bustamante is graduated from Universidad Pontificia Bolivariana Medical School in 2011. In 2014, she started her Otolaryngology training at Hospital Británico of Buenos Aires, Argentina associated to the Pontificia Universidad Católica Argentina. During her residency, she received training in Tinnitus therapies and Neuro-otology. Between 2017-2018, she served as a member of the research committee of Buenos Aires British Hospital.

In 2018, Melissa became a Neuro-otology physician in Hospital de Clínicas Jose de San Martin associated to the Universidad de Buenos Aires. Currently, she is a *post-doctoral fellow* at Massachusetts Eye and Ear- Eaton Peabody Laboratories at Aaron Remenschneider's group. Her work is focused in Otopathology and biomechanics of the middle ear, centered on rheumatologic diseases as Rheumatoid Arthritis, Scleroderma, Lupus and Osteoarthrtis. Also, she studies the effects of landmines to the ear in Colombian citizens. To date, Melissa has 30 indexed and non indexed publications.

Melissa received the Medellin Mayor Award for outstanding undergrad researchers in 2010, Autor Bolivariano award in 2011, Universidad Pontificia Bolivariana Honorable Mention for researcher students, the scholarship of the Pan-american Otolaryngology Association and the Pontificia Universidad Catolica Argentina Mention for Otolaryngology students due to her thesis on Vestibular Migraine and the Travel Award of the Association for Research in Otolaryngology.



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#### Neha Chauhan, B.S., M.S.

I am currently a Master of Science candidate at the University of Toronto in Dr. Alain Dabdoub's Lab at Sunnybrook Research Institute, Toronto, Canada. My research focuses on investigating and developing non-invasive therapeutic delivery strategies to the inner ear using focused ultrasound and microbubbles. My work highlights the feasibility of using focused ultrasound as a safe method to deliver various therapeutic substances, including genes, stem cells and large molecules, to treat inner ear disorders.

#### Sima Chokr, B.S.



I am a Ph. D. candidate in the laboratory of Dr. Karina S. Cramer at the University of California, Irvine. I received my B. S. in Molecular Cell Biology and Physiology at California State University, Long Beach. During my undergraduate research, I studied an estrogen-dependent behavioral circuit. I then became interested in how circuits develop, and specifically how central sensory systems form. The development of the auditory system uniquely interested me due to its peerless accuracy and rapid signaling processes. I currently study the role of microglia in auditory brainstem development. Microglia are the brain's primary immune cells, and regulate synapse sculpting and plasticity during development. Our lab recently showed that microglia are required for synaptic refinement of the calyx of Held, just after hearing onset. Further, we found that microglial depletion early in postnatal development reduced astrocyte maturation. We are currently interested in identifying the microglial signaling mechanisms that regulate circuit maturation and we are investigating the functional implications after deletion of the microglial fractalkine receptor. Our findings currently highlight the system- and region-specific heterogeneity of microglia, and implicate novel roles of microglia in the developing auditory brainstem. My dissertation work aims to characterize microglial roles in functional auditory system development, as measured by the ABR, and to identify the role of microglia during a critical period of circuit plasticity.



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#### Stephen Dennison, B.S, M.S.

Stephen Dennison is a Ph.D. candidate in Electrical Engineering at the University of Wisconsin-Madison. His research interests include audio signal processing and binaural psychoacoustics. His work in Dr. Ruth Litovsky's Binaural Speech and Hearing Lab focuses on restoring binaural hearing to bilateral cochlear implant users using new processing strategies and synchronized research devices. He received the M.S. and B.S. degrees in Electrical Engineering from Tufts University.



#### Mishaela DiNino, Ph.D.

Mishaela DiNino received her Bachelor's and Master's degrees in Psychology from San Diego State University and her Ph.D. in Neuroscience from the University of Washington. She is currently a postdoctoral fellow in the labs of Barbara Shinn-Cunningham and Lori Holt at Carnegie Mellon University. Her research focuses on identifying neural and perceptual contributors to challenges understanding speech in noise in adults with normal hearing thresholds.



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#### Luong Do Anh Quam, M.S.

I graduated from Ho Chi Minh University of Technology with major in Electronics-Telecommunications Engineering. I am currently M.S student at University of Ulsan under the supervision of Dr. Jihwan Woo. My research is about investigating differences in speech perception mechanism between native and non-native speakers as well as decoding speech from neural signal. Recently, the study compared brain responses to continuous speech stimuli between native Americans and non-native Americans group. The findings indicate how sentence components affect the speech perception of non-native speakers during passive listening task. The results also present the potential of employing cross-correlation method to analyze the continuous speech-evoker potential. Our goal is to search for the neural mechanism than underpin speech perception and speech production. From there, we will be able to reconstruct or decode the speech by using neural signals, especially electroencephalography (EEG).

#### Fotios Drakopoulos, M.Sc.



I am currently a PhD student in my 3<sup>rd</sup> year, as part of the Hearing Technology Lab of Ghent University (Belgium) and under the supervision of Prof. Dr. Sarah Verhulst. My research focuses on diverse auditory-related aspects, including audio signal processing, computational modelling and machine-learning. I am working on the design of biophysically-inspired as well as machine-learning based signal-processing algorithms, designed to compensate for various combinations of hearing deficits, including outer hair cell loss and cochlear synaptopathy. I completed my BSc and MSc studies in the Audio and Acoustic Technology Group of the University of Patras (Greece), under the supervision of Prof. John Mourjopoulos. My master thesis focused on the Time-Frequency Analysis and Processing of Audio Signals for Audible Distortion Suppression. After my studies I did an intership at Phonak, Sonova AG (Switzerland), where I worked on Realtime Systems for Auditory Scene Analysis under the supervision of Dr. Eleftheria Georganti.



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#### Celia D. Escabi, M.S., Au.D.

Dr. Celia D. Escabi earned her bachelor's and Au.D. from the University of South Florida. She is a certified and licensed audiologist for the state of Texas and recently earned a master's in Applied Cognition and Neuroscience while concurrently pursuing a Ph.D. in Hearing Science at the University of Texas at Dallas. Currently, Celia is working on her dissertation under her research mentors Drs. Colleen Le Prell and Edward Lobariñas. Her current research goals include advancing her basic science skills and bridging that together with her clinical experiences. Her primary research interests include noise- and agerelated hearing losses, tinnitus, auditory cognitive neuroscience and future pharmacological interventions for acquired auditory disorders.



#### Charlotte Garcia, B.S.

Charlotte Garcia is a Ph.D. student at the MRC Cognition & Brain Sciences Unit at the University of Cambridge, funded by the W. D. Armstrong Trust for projects focused on the application of engineering in medicine. She is primarily supervised by Dr. Bob Carlyon and co-supervised by Professor Manohar Bance and Dr. Richard Turner. In her Ph.D. she is primarily focused on improving objective measures for improving speech perception in poorperforming cochlear implant users. Her research interests also include pitch and music perception in hearing impaired listeners using various auditory technology platforms. She holds a B.S. in Biomedical Engineering and a B.A. in Music Theory & Cognition from Northwestern University (Chicago, USA), and prior to joining the MRC-CBU she worked as a Biomedical Engineer in the healthcare industry developing and implementing multivariate process control systems for radio-frequency welding processes.



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#### Raymond Haggerty, Ph.D.

Raymond Haggerty is a queer and transgender post-doctoral researcher. He graduated from the University of North Carolina in 2019 with a PhD in Bioinformatics and Computational Biology after being the first one in his family to attend college. His scientific interests involve machine learning and mathematical/biophysical models. He has worked on a variety of biological problems and is now working on detecting cochlear synaptopathy using electrocochleography.



#### Adam Hockley, Ph.D.

Adam Hockley is a third-year post-doc using in vivo recordings to study the physiology of the cochlear nucleus. His current interests lie in investigating how neural circuits in the auditory brainstem, including olivocochlear projections, contribute to hearing in normal and pathological systems. These circuits within the cochlear nucleus are altered after cochlear synaptopathy. Further understanding of these circuits may explain how signals are extracted from background noise and how this ability is degraded after cochlear synaptopathy or 'hidden hearing loss'.


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#### Baher A. Ibrahim, Ph.D.

Baher A. Ibrahim received his Bachelor's degree in pharmacy from Mansoura University, Egypt in 2003, and Master's degree in Pharmacognosy from Mansoura University, Egypt in 2007. In 2014, he received his Ph.D. in Pharmacology from the University of Louisiana at Monroe, Monroe, USA. He also got his postdoc training from the University of South Carolina, Columbia, USA studying the molecular mechanism of phosphodiesterase A11 in the hippocampus, and from the University of Illinois, Urbana-Champaign, USA studying the rule of the corticofugal system in the gating of acoustic sensory information. He is currently a postdoc fellow in Interdisciplinary Environmental Toxicology Program (IETP). His research interests lie in studying the physiology of the central auditory system and how different toxicants could interfere with its function.

#### Weitao Jiang, Ph.D.



I received my Ph.D. in the Department of Biomedical Engineering at University of Miami. Currently, I am a postdoc in Southern University of Science and Technology. My research focus on the vestibular system. In my Ph.D. stage, under the supervision of Dr Suhrud M. Rajguru, I developed an Infrared Radiation (IR) system which can selectively stimulate individual vestibular end-organ in rat and evoke compensatory eye movement. As a practical and spatial selective tool, I believe this IR stimulation method would give momentum to the peripheral and central vestibular system research. Currently, I am using IR to investigate the role of MET channel related genes such as TMC1 and TMHS in vestibular system. Meanwhile, as projection from peripheral vestibular system to cortex is comprehensive and diverse, the central vestibular pathway is understudied. I am developing a reliable IR based method to investigate the ascending pathway of individual end-organ, especially the otolith organs, and reveal the role of vestibular input in higher cognitive functions.



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#### Neha Joshi, M.S.

Neha Joshi is currently a graduate student in Electrical and Computer Engineering at the University of Maryland. Her research interests lie in representation of human speech in the auditory cortices, specifically in a multi-talker setting. She is investigating the neural correlates of stream segregation in the ferret primary and higher auditory cortices. She is also interested in differential processing of streams for varying stream types, such as math and language, in humans. In her spare time, she loves reading, exploring food and rock climbing.



#### Sarineh Keshishzadeh, M.Sc.

Sarineh Keshishzadeh is a final-year PhD student of biomedical engineering at Ghent University in Belgium. She is a member of the Hearing Technology group in Information Technology department, where she does research on developing personalized models of the auditory periphery using human auditory electrophysiological/physiological recordings. Her research interests are in auditory neuroscience, biological signal processing and pattern recognition.



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#### Subong Kim, Ph.D.

I received my Ph.D. degree in Speech and Hearing Science from the University of Iowa in 2020. I am currently working as a post-doctoral research assistant at Purdue University in Dr. Hari M. Bharadwaj's laboratory. I have been studying the neural mechanisms of speech-innoise perception in human listeners using high-density electroencephalography. My research aims to explore a systematic, biology-guided approach to personalizing hearing intervention, including hearing aids and cochlear implants. One line of my work involves investigating objective neural markers of hearing interventions' benefits and identifying what drives the individual difference in those benefits. Another line of my research is relevant to training listeners to selectively attend to the target speech while suppressing background noise to improve their speech-in-noise perception.



#### Renata M. Knoll, M.D.

Renata M. Knoll, MD, is a fully trained Otolaryngologist from Brazil, and currently a Research Fellow at Massachusetts Eye and Ear Infirmary (MEEI) /Harvard Medical School. She is currently studying auditory and vestibular dysfunction in patients following traumatic brain injury through a series of histopathological, experimental, and clinical projects.



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#### Elouise Koops, M.Sc.

Elouise Koops is a neuroscientist who graduated with an MSc in Cognitive Neuropsychology and in Cognitive and Behavioral Neuroscience from the University of Groningen, the Netherlands. Her PhD-research at the University Medical Center of Groningen focused on structural and functional correlates of tinnitus and hearing loss. With Magnetic Resonance Imaging, the effects on the human brain of tinnitus, hearing loss, hyperacusis, and age were teased apart. She has also worked on subtypes of tinnitus and somatic tinnitus. In addition to her research projects, she is the program manager of the TIN-ACT consortium. This Horizon2020 EU project aims to unravel tinnitus by combining molecular methods with genetic and behavioral research to ultimately aid the patient. She will continue to work in the field of hearing research and will start her Post-Doc in the Polley lab at Eaton-Peabody Laboratories in Boston, USA, as soon as COVID-19 permits.



#### Jamie Lee, B. Sc.

I am a final year PhD Student based at the MRC Harwell Institute, under the supervision of Dr. Mike Bowl in the Sensorineural Hearing Loss Group. My doctoral studies involve elucidating the functional requirement of a recently identified, novel candidate deafness-causing gene, Nedd4I, to determine its role in mammalian hearing. Using a I am characterizing a Nedd4I knockout mouse model using a range of in vivo phenotyping tests, ex vivo and in vitro experiments. I obtained my undergraduate degree in Biochemistry at the University of Manchester, with a specific interest in the role of genetics in developmental biology and the underlying molecular mechanisms. During my undergraduate studies, I took a year-long research placement at the University of California, San Francisco at the Cardiovascular Research Institute.



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#### Onn Wah Lee, M.Sc.

Onn Wah Lee (Steven) received his BSc. (Hon) Audiology from Universiti Kebangsaan Malaysia (UKM) and MSc. Audiological Science with Clinical Practice from University College of London (UCL). He was an audiologist trainee at Royal National Throat Nose and Ear Hospital, London for one year. He also served as a lecturer/audiologist at UKM for three years. Steven enrolled as a PhD student in 2019, under the supervision of Prof Colette McKay and Dr Julia Wunderlich. His study funded by the Graduate Research Scholarship from University of Melbourne. Currently, Steven is exploring the use of fNIRS in measuring the functional cortical change in population with hearing loss.



#### Shannon Lefler, Au.D.

Shannon Lefler earned an AuD in 2019 from Missouri State University and is currently completing the second year of a postdoctoral research fellowship in the Lichtenhan Lab at Washington University School of Medicine in St. Louis. Her research has focused on (1) understanding the origin of objective measurements from the ear that can be used in the clinic, and (2) making electrocochleography measurements during human cochlear implantation surgeries to ultimately predict the outcomes of post-surgical hearing performance.



#### Xiaojun Li, Ph.D.

My name is Xiaojun Li, and I am a postdoc in JHU. I am working on hair cell regeneration for three years. Besides research, I also like swimming and listening to music. I can play several instruments. I choose working on hearing as I like music so much. I want to know the mechanism of hearing in cochlea, especially some clinical hearing loss disease.



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#### Nantian Lin, M.D.

Nantian Lin is a second-year medical student at University of Texas Medical Branch at Galveston. She obtained her bachelor's degree in Nutrition from University of Missouri-Columbia and practiced as a Clinical Dietitian several years before switching career paths to medicine. She is passionate about research in otology and plans on pursuing Otolaryngology residency upon graduation.



#### Steven Losorelli, Ph.D.

Steven Losorelli is a fourth-year medical student at Stanford whose current research interests are to identify more objective measures of auditory discrimination from an individual's brain response. His longterm aim is to contribute to our better understanding of the relationship between signals delivered via neuroprosthetics such as cochlear implants and auditory perception. His interest in auditory neuroscience originates from his own experiences with right-sided microtia and associated unilateral hearing loss. Steven has been an advocate for those who identify as having a disability to pursue careers in medicine, including co-founding an initiative called Medical Students with Disability and Chronic Illness while a student at Stanford Med. He hopes to match into otolaryngology this year.



#### Elias Lunsford, B.S.

Elias Lunsford (he/him/his) is a PhD candidate at the University of Florida, Whitney Laboratory for Marine Bioscience where he works in Jimmy Liao's lab studying the neurophysiological mechanisms of lateral line hair cell sensitivity.



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#### Kelsey Mankel, B.S.

Kelsey Mankel graduated with a Bachelor of Science in music, neuroscience, and psychology from Central Michigan University in 2016. There, she developed a passion for auditory cognitive neuroscience, particularly how the brain changes with experiences such as music training and auditory learning. Kelsey is currently pursuing a PhD in Communication Sciences and Disorders with a Neuroscience concentration at the University of Memphis under the guidance of Dr. Gavin Bidelman. She was recently awarded an F31 NRSA Fellowship from the NIH/NIDCD to fund her work investigating the neural correlates of successful auditory category learning.



#### Yusra Mansour

Yusra Mansour is a 26-year-old medical and PhD student at the Lake Erie College of Osteopathic Medicine in Erie, PA. She is co-matriculated as a fourth-year medical student in the College of Medicine and a doctoral student in the Anatomy Education program. She has also worked as a research assistant in the Auditory Research Center under Dr. Randy Kulesza for three years. The focus of her research is alterations in auditory and vestibular pathways in human and animal models of Autism Spectrum Disorder.



#### Kenneth Morse, Au.D., Ph.D.

Kenneth Morse completed his Doctorate of Audiology in 2019. He is currently enrolled in the Ph.D. program at Syracuse University and works as a clinical audiologist. His research interests include studying peripheral and central auditory nervous system function and dysfunction, primarily that related to the presence of tinnitus.



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#### Youngmin Na, M.A.

I received the B.S. degree in 2015, the M.S. degree in 2017 from biomedical engineering from University of Ulsan, Ulsan, Korea. I am currently a Ph.D. student at the Department of Biomedical Engineering, University of Ulsan, Ulsan, Korea. My research interest includes the development of objective interpreting tools by using biosignals such as developing a mobile application to predict the hearing ability in noisy environment, decoding the heard words from electrocorticography, investigating listening effort using electrocardiography and speech intelligibility using electroencephalography. In my Ph.D. research, I aim to predict the speech intelligibility from electroencephalography using a deep neural network model. My awards and honors include the 2019 ARO travel awards (2019 Association for Research in Otolaryngology conference), the Excellence awards (2018 Korean Engineering Safety Health Art Society conference), the Global Ph.D. Fellowship Program (National Research Foundation of Korea).



#### Karli Nave, M.A.

Karli Nave is a PhD student at the University of Nevada, Las Vegas, pursuing her degree in Psychological and Brain Sciences with an emphasis on Development. Co-mentored by Dr. Erin Hannon and Dr. Joel Snyder, Karli asks interdisciplinary questions within the fields of auditory neuroscience and developmental psychology. Specifically, Karli's current focus is on the underlying neural mechanisms to children's auditory rhythm perception. Karli hopes to graduate in 2021 and is on the market for a post-doctoral position.



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#### Jennifer Pineros, M.S.

Jennifer Pineros is a Ph.D. student in Biomedical Engineering at the University of South Florida (USF). She earned her bachelor's degree in Biomedical Engineering at the University of Miami (UM) in 2017. During her undergraduate career, Jennifer held leadership positions in the UM's chapter of the Society of Hispanic Professional Engineers while working in a Sensory & Electrophysiology lab researching the effects of localized therapeutic hypothermia to preserve neurons against electrode-induced trauma. She decided to continue her education and dive further into research in the auditory field; thus, obtaining a Masters in Biomedical Engineering at the USF and working on her Ph.D. Currently, her research at the Global Center for Hearing & Speech Research involves interdisciplinary investigations of the aging auditory system aimed at drug or therapeutic discovery, to prevent or retard the progression of age-related hearing loss (ARHL).

#### Emmanuel Ponsot, Ph.D.



Emmanuel Ponsot is a postdoctoral research fellow from the Fondation pour l'Audition working at Ghent University in Belgium since 2019. Emmanuel Ponsot was initially trained in Engineering at Ecole Centrale (Lyon, FR), and received a Master degree in Acoustics in 2012. He then turned to Psychoacoustics and Cognitive Sciences and obtained a Ph.D. from Sorbonne Université in 2015 on loudness processing and coding in humans. During his first postdoc at IRCAM (Paris, FR), he developed new psychophysical methods to explore the computational bases of social and emotional cognition in speech prosody. He then combined, in a second postdoc at ENS (Paris, FR), psychophysical and modeling approaches to characterize the perceptual mechanisms used to extract complex spectro-temporal modulation patterns from noise, in both normal-hearing individuals and individuals with hearing loss. Overall, his research attempts to provide a clear mechanistic account of how the human auditory system and the brain process complex acoustical signals such as speech, at both peripheral and central levels, and why this processing differs among normal as well as pathological individuals.



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#### Ronald Pouyo, M.Sc.

Ronald Pouyo is born in Lomé, Togo. In 2012 He moves to Liège in Belgium at the age of 18 to study biomedical science and graduated in 2017 in Master Biomedical sciences – with a specialization in neuroscience. He started his PhD in the laboratory of Neurodevelopmental biology under the supervision of Professor Brigitte Malgrange. The topic of his thesis is to decipher the role of Nedd4-2 in the mouse inner ear.



#### Caitlin Price, Ph.D.

Caitlin Price is a clinician-scientist and postdoctoral fellow in the Auditory Cognitive Neuroscience lab at the University of Memphis. She received a Doctor of Audiology and Doctor of Philosophy in Hearing Sciences and Disorders from the University of Memphis. Caitlin's research interests include aging and the neural correlates of speech-in-noise perception.



#### Prithwijit Roychowdhury, B.S.

Prithwijit Roychowdhury is a medical student at the University of Massachusetts Medical School (Class of 2023), completing a year of scholarly research in the lab of Dr. Aaron Remenschneider at the Massachusetts Eye & Ear Infirmary. His primary research focus is on the otopathology of presbycusis.



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#### Merlin Schaer, MMed

I am an MD-PhD student in the field of hearing biomechanics. I graduated from medical school at the University of Zurich in Switzerland, where I also joined the MD-PhD program and the graduate school of the Neuroscience Center Zurich (ZNZ). I am a member of the group of Otology & Biomechanics of Hearing at the University Hospital of Zurich, where my thesis project is supervised by PD Dr. Jae Hoon Sim and Prof. Alex Huber. On a general level, my research is related to protective and adaptive functions of the human middle ear. In this context, I have studied the interplay between structure and mechanics of the human stapedial annular ligament, which entailed the development of a nondestructive morphometry technique via multiphoton microscopy and experimental studies on the ligament's multidirectional stiffness properties. Furthermore, I have a strong interest in mechanical modeling and computational science.



#### Tong Shan, Ph.D.

I am Tong Shan from the University of Rochester. I completed my BS degree in Medical Imaging in Sichuan University (China) and then MS degree in Biostatistics in Northwestern University. I am currently a PhD student in the Department of Biomedical Engineering under the supervision of Dr. Ross Maddox. I am interested in studying how the human brain processes natural stimuli such as speech and music in both cortical and subcortical levels. I am also interested in how visual stimuli integrate with the auditory system to enhance people's hearing, and how we can improve people's hearing with our knowledge and new technology. In our recent work with our collaborators, we found the deep-neural-network system that generates talking faces from pure audio signals could significantly benefit speech comprehension especially in noisy environments, which suggests a potential for use as a "visual hearing aid" when true face is not available to listeners.



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#### Lea Sollmann, M.Sc.

Lea Sollmann is a PhD student in the 'Auditory Sciences' program that is integrated in the cluster of excellence 'Hearing4all'. She is a scientific research associate at the Institute of AudioNeuroTechnology (VIANNA) and the Department of Experimental Otology at Hannover Medical School. Her doctoral research investigates the structural micro- and macroscopic neuronal changes as well as functional alterations in primary and secondary auditory brain regions. Especially the impact of auditory deprivation regarding neuromorphology and layering in the cortex are of interest. Through her research, she aims to gain further insight into the complexity of deafness effects within the brain to provide long-term results for rehabilitation. The topic of her doctoral dissertation is entitled 'Functional computational anatomy of the role of experience in the primary and higher-order auditory cortices' and is supervised by Prof. Andrej Kral, MD, PhD. She holds a master's degree in Neural Engineering from the University of Applied Sciences in Saarbrücken, Germany. During her studies she took the chance to work as Visiting Research Scholar at the Department of Speech, Language and Hearing Sciences at Purdue University, West Lafayette, IN, USA. There she participated in the design, conduction, and analysis of a psychophysiological study regarding auditory distraction in the laboratory of Prof. Alexander L. Francis, PhD. Previously, she received her bachelor's degree in medical engineering at the University of Applied Sciences in Jena.



#### Torin Thielhelm, B.S.

Torin Thielhelm is a rising fourth year medical student at the University of Miami Miller School of Medicine. He is interested in pursuing a career as a physician-scientist in the field of otolaryngology. He graduated from Duke University in 2016 with a B.S. in Biology. His current research interests include the radiobiology of vestibular schwannoma, hearing loss interventions, and 3D printing in otolaryngology.



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#### Anna Vavakou, M.Sc.

I am a biologist by training, with a MSc in Neuroscience. I am currently finishing my PhD under the supervision of Dr. van der Heijden, studying the function of the cochlea. Now I work on the mechanics of the cochlea. The question I am trying to answer is which are the mechanisms underlying sharp tuning and sensitivity control in the mammalian cochlea. Using OCT-vibrometry I record sound induced vibrations in intact cochleae in vivo, working with rodents. My goal is that my work contributes in the understanding of the cochlear function. In the future, I want to apply my skills and knowledge in the development of hearing devices and regenerative therapies for hearing loss.



#### Megan Beers Wood, Ph.D.

Megan Beers Wood is a graduate of the University of Georgia (Cellular Biology, 2010) and Emory University (PhD, Immunology and Molecular Pathogenesis, 2016). Her first postdoctoral fellowship at St. Jude Children's Research Hospital under the supervision of Dr. Jian Zuo combined her background in immunology and epithelial development with noise induced pathology in the inner ear. She is currently a postdoctoral research fellow in the laboratory of Dr. Paul A. Fuchs at Johns Hopkins University School of Medicine where her current work focuses on the function of type II afferents in the cochlea after acoustic trauma.



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#### Xiaoyan Yu, M.S.

Xiaoyan Yu is a fourth-year graduate student in Yuan Wang Lab in the Department of Biomedical Sciences at Florida State University College of Medicine. Her research interest is in the neuronal mechanism of brain development and plasticity, and how their deficits are associated with neurological diseases. Her current work focuses on the role of fragile X mental retardation protein (FMRP) in regulating protein synthesis, synaptic development, and plasticity in the auditory system with integrating different approaches in genetics, cell biology, proteomics, and bioinformatics, and aims to explore potential molecular targets for the therapy of fragile X syndrome (FXS), which results from functional deficits of FMRP.



#### Yi Yuan, M.A.

I am a Ph.D. candidate under the supervision of Dr. Yonghee Oh in the Department of Speech, Language, and Hearing sciences at the University of Florida. I completed my BA and MA studies in the major of Linguistics and Applied Linguistics in China. My main research focus during that time was speech perception in prosody and its relationship with syntactic structures. Currently, I am interested in multisensory integration in speech perception with normal hearing- and hearing-impaired listeners. My doctoral dissertation entitled "Audiovisual integration in speech perception in noise." Specifically, the study is to establish which visual characteristics can facilitate speech perception and to explore the nature of the speech information that is available in the visual input. The audiovisual benefit has a strong application in technological enhancements, for instance, hearing aids and cochlear implants, to speech perception in adverse hearing environment. What's more, the implication will be more effective and compatible with variety of equipment including smart phones and other appliances, offering a giant leap in life quality for hearing impairments population and aging population. In my future research, I aim to describe the neural biomarkers associated with the multisensory (audiovisual) benefits in speech perception and to study the underlying neural mechanisms.



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#### Celia Zhang, Au.D.

Celia Zhang, Au.D., CCC-A is a PhD Candidate at the Center for Hearing and Deafness, University at Buffalo. Her research interests include the role of the cochlear immune response in age-related and noiseinduced hearing loss in mouse models of different genetic mutations.



#### Yuanyuan Zhang, Ph.D.

I received my Medical B.S. from the North Sichuan Medical college in Sichuan, China (2005). Then I completed the M.S. in Otolaryngology from the Chongqing Medical University in Chongqing, China (2009). I worked as a surgeon in otolaryngology department at Wuhan Central Hospital in Wuhan, China (2012). After I received the Ph.D. from the Tongji Medical College, Huazhong University of Science and Technology in Wuhan, China (2015), I started to work at Renmin hospital of Wuhan university as a physician in Otolaryngology-Head and Neck Surgery department until 2017. Then I joined Paul Fuchs lab to continue my postdoctoral fellowships in the Department of Otolaryngology-Head and Neck Surgery at Johns Hopkins University, America. My current research is focused on understanding the physiology and pathology of the Inner ear including: Understand the cholinergic synapse innervation to hair cell from the olivocochlear efferent neurons before and after the hearing maturation. Explore the function of the medial olivocochlear (MOC) system in acoustic trauma effects, the role of  $\alpha$ 9 nAChR in cochlear synaptopathy. The current training laid the foundation of my ongoing research on auditory physiology and pathology.



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#### Nathaniel Zuk, Ph.D.

Nathaniel Zuk – I am a research fellow at Trinity College Dublin in the Lalor Lab for Computational Cognitive Neurophysiology. I use electroencephalography (EEG) to study how the brain tracks speech and music in time. My focus has been on developing analytical techniques to quantify the neural encoding of features in naturalistic stimuli and to decode those features from EEG. Recently, I have been interested in the following questions: How do we determine where beats are in a piece of music? Are there differences in the timing of neural activity when we listen to speech and music? EEG provides temporal acuity sufficient to address these questions. By using machine learning techniques, we can identify the neural processes involved when people listen to long, continuous sounds, like audiobooks or music. I received a PhD from the Harvard Program in Speech and Hearing Bioscience and Technology through the Harvard-MIT Program in Health Sciences and Technology. I did my doctoral work in the EPL Neural Coding Group with Bertrand Delgutte at the Massachusetts Eye and Ear Infirmary, where I studied how the inferior colliculus in the midbrain encodes time-varying interaural time differences (ITD), one of the cues we use to localize sounds.



Special Issue: Annual Reviews 2018 Guest Editor: Barbara Canlon

# Hearing Research Volume 362, May 2018





# Join us virtually at ARO 2021! February 20 – 24 2:30pm – 5:00pm EST

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Victor Rush, PhD Staff Scientist & Director of Technical Sales

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Chris Walters Applications Engineer

in

Jessica Falcone, PhD Technical Sales Engineer

🏹 sales@tdt.com

Wednesday, February 10, 2021							
10:30 AM	5:30 PM	Speaker Ready Room & Help Desk					
11:00 AM	1:00 PM spARO Presents Kathy Buckley						
1:30 PM 3:30 PM Mentoring Session 1: Job Search and Independence in Academia (Interview and Negotiation Skill Development)							
4:00 PM	4:00 PM 6:00 PM Mentoring Session 2: Research and Teaching with Undergraduates						
		Friday, February 12, 2021					
8:30 AM	3:30 PM	Speaker Ready Room & Help Desk					
9:00 AM	11:00 AM	Diversity and Minority Affairs Roundtable Discussion					
11:30 AM	1:30 PM	Mentoring Session 3: Clinician Scientist					
2:00 PM	4:00 PM	Mentoring Session 4: Careers in Industry: Interview and Negotiation Skill Development					
		Tuesday, February 16, 2021					
10:00 AM	5:30 PM	Speaker Ready Room & Help Desk					
10:30 AM	1:00 PM	Women and Allies Roundtable Discussion					
1:30 PM	3:30 PM	Mentoring Session 5: Publishing					
4:00 PM	6:00 PM	Mentoring Session 6: Careers in Academia					
		Wednesday, February 17, 2021					
11:30 AM	1:00 PM	Speaker Ready Room & Help Desk					
12:00 PM	1:00 PM	Funding your Scientific Genius!					
Thursday, February 18, 2021							
	1	Thursday, February 18, 2021					
8:30 AM	4:00 PM	Speaker Ready Room & Help Desk					
8:30 AM 9:00 AM	4:00 PM 11:00 AM	Speaker Ready Room & Help Desk Science Communication Workshop- Designing and delivering effective conference presentations					
8:30 AM 9:00 AM 11:30 AM	4:00 PM 11:00 AM 1:30 PM	Speaker Ready Room & Help Desk Science Communication Workshop- Designing and delivering effective conference presentations Mentoring Session 7: Mentor-Mentee Communication					
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8:30 AM 9:00 AM 11:30 AM 1:00 PM 1:00 PM 2:00 PM 10:00 AM	4:00 PM 11:00 AM 1:30 PM 2:00 PM 3:00 PM 4:00 PM 6:30 PM	Speaker Ready Room & Help Desk     Science Communication Workshop- Designing and delivering effective conference presentations     Mentoring Session 7: Mentor-Mentee Communication     Behind the Scenes with Publication     Graduate Program Open House     Mentoring Session 8: Navigating the Grant Landscape     Friday, February 19, 2021     Speaker Ready Room & Help Desk					
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8:30 AM 9:00 AM 11:30 AM 1:00 PM 1:00 PM 2:00 PM 10:00 AM 9:00 AM 10:30 AM	4:00 PM 11:00 AM 1:30 PM 2:00 PM 3:00 PM 4:00 PM 6:30 PM 10:30 AM 12:30 PM	Speaker Ready Room & Help Desk Science Communication Workshop- Designing and delivering effective conference presentations Mentoring Session 7: Mentor-Mentee Communication Behind the Scenes with Publication Graduate Program Open House Mentoring Session 8: Navigating the Grant Landscape Friday, February 19, 2021 Speaker Ready Room & Help Desk Planning for the Implementation of Novel Hearing Therapeutics Into Healthcare Systems Research and Development Workshop: Translating Pre-Clinical Findings Into Successful Clinical Trials					
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8:30 AM 9:00 AM 11:30 AM 1:00 PM 1:00 PM 2:00 PM 10:00 AM 9:00 AM 10:30 AM 11:00 AM 11:00 PM 1:30 PM 3:30 PM	4:00 PM 11:00 AM 1:30 PM 2:00 PM 3:00 PM 4:00 PM 6:30 PM 10:30 AM 12:30 PM 1:00 PM 3:00 PM 2:30 PM 5:00 PM	Speaker Ready Room & Help Desk Science Communication Workshop- Designing and delivering effective conference presentations Mentoring Session 7: Mentor-Mentee Communication Behind the Scenes with Publication Graduate Program Open House Mentoring Session 8: Navigating the Grant Landscape Friday, February 19, 2021 Speaker Ready Room & Help Desk Planning for the Implementation of Novel Hearing Therapeutics Into Healthcare Systems Research and Development Workshop: Translating Pre-Clinical Findings Into Successful Clinical Trials Poster Blitz Travel Awards Recognition Hands-On With CCi-MOBILE: A Cochlear Implant and Hearing-Aid Research Platform gEAR Workshop					
8:30 AM 9:00 AM 11:30 AM 1:00 PM 2:00 PM 2:00 PM 10:00 AM 9:00 AM 10:30 AM 11:00 AM 11:00 PM 1:30 PM 3:30 PM 5:30 PM	4:00 PM 11:00 AM 1:30 PM 2:00 PM 3:00 PM 4:00 PM 6:30 PM 10:30 AM 12:30 PM 1:00 PM 3:00 PM 2:30 PM 5:00 PM 7:00 PM	Thursday, February 18, 2021     Speaker Ready Room & Help Desk     Science Communication Workshop- Designing and delivering effective conference presentations     Mentoring Session 7: Mentor-Mentee Communication     Behind the Scenes with Publication     Graduate Program Open House     Mentoring Session 8: Navigating the Grant Landscape     Friday, February 19, 2021     Speaker Ready Room & Help Desk     Planning for the Implementation of Novel Hearing Therapeutics Into Healthcare Systems     Research and Development Workshop: Translating Pre-Clinical Findings Into Successful Clinical Trials     Poster Blitz     Travel Awards Recognition     Hands-On With CCi-MOBILE: A Cochlear Implant and Hearing-Aid Research Platform     gEAR Workshop     NIDCD Workshop #1: Applying for NIDCD Training and Career Development Awards					
8:30 AM 9:00 AM 11:30 AM 1:00 PM 1:00 PM 2:00 PM 10:00 AM 9:00 AM 10:30 AM 11:00 AM 11:00 PM 1:30 PM 3:30 PM 5:30 PM	4:00 PM 11:00 AM 1:30 PM 2:00 PM 3:00 PM 4:00 PM 6:30 PM 10:30 AM 10:30 AM 12:30 PM 3:00 PM 2:30 PM 5:00 PM 7:00 PM	Speaker Ready Room & Help Desk Science Communication Workshop- Designing and delivering effective conference presentations Mentoring Session 7: Mentor-Mentee Communication Behind the Scenes with Publication Graduate Program Open House Mentoring Session 8: Navigating the Grant Landscape Friday, February 19, 2021 Speaker Ready Room & Help Desk Planning for the Implementation of Novel Hearing Therapeutics Into Healthcare Systems Research and Development Workshop: Translating Pre-Clinical Findings Into Successful Clinical Trials Poster Blitz Travel Awards Recognition Hands-On With CCi-MOBILE: A Cochlear Implant and Hearing-Aid Research Platform gEAR Workshop NIDCD Workshop #1: Applying for NIDCD Training and Career Development Awards NIDCD Workshop #2: Early-Stage Investigators (ESI) and New Investigators (NI)					

	Saturday, February 20, 2021					
9:00 AM	5:00 PM	Speaker Ready Room & Help Desk				
10:00 AM	2:30 PM	2:30 PM Presidential Symposium: "Implantable Prostheses: Progress, Future Possibilities and Multi-Sensory Integration"				
12:00 PM	12:30 PM	Break				
2:30 PM	3:00 PM	Exhibitor Break				
3:00 PM	5:00 PM	Symposium 1: "Close to Translation: Future Directions in Auditory Implants"				
3:00 PM	3:00 PM 5:00 PM Symposium 2: "Advancements in Human Brain Measurements to Continuous Speech and Music Stimuli"					
3:00 PM	5:00 PM	Symposium 3: "The Remarkable Outer Hair Cell: Symposium in Honor of Bill Brownell"				
3:00 PM	5:00 PM	Poster Session 1 Aging Auditory Cortex: Anatomy, Physiology & Function Auditory Cortex: Human Studies Auditory Nerve Auditory Pathways: Brainstem Auditory Pathways: Midbrain Auditory Prostheses Binaural Hearing & Sound Localization Cellular/Systems Development Clinical Otolaryngology & Pathology Genetics A: Genomics and Gene Regulation Genetics B: General Hair Cells: Anatomy & Physiology Human Development Inner Ear: Anatomy & Physiology Inner Ear: Cochlear Mechanics Inner Ear: Damage & Protection Inner Ear: Drug Delivery				
		Middle & External Ear Other Otoacoustic Emissions Plasticity, Learning, & Adaptation to Hearing Impairment Psychoacoustics Regeneration Tinnitus Vestibular: Basic Research & Clinical				

	Sunday, February 21, 2021				
9:00 AM	5:00 PM	Speaker Ready Room & Help Desk			
10:00 AM	12:00 PM	Podium 4: "Ions, Tip Links, and Stereocilia" Moderators: Dr. Lisa Cunningham and Dr. Joseph Santos-Sacchi			
10:00 AM	12:00 PM	Podium 5: "Complex Sound Processing and Imaging" Moderators: Dr. Shihab Shamma and Dr. Pim van Dijk			
10:00 AM	12:00 PM	Podium 6: "Hearing Damage and Listening Difficulties " Moderators: Dr. Erika Skoe and Dr. Bharath Chandrasekaran			
12:00 PM	12:30 PM	Break			
12:30 PM	2:30 PM	Symposium 7: "Hearing and Donut: Cells and Circuits of the Auditory System - In Memory of Donata Oertel"			
12:30 PM	2:30 PM	Symposium 8: "3D Printing in Otolaryngology"			
12:30 PM	2:30 PM	Symposium 9: "The Next Challenges of Vestibular Implantation in Humans"			
2:30 PM	3:00 PM	Break			
3:00 PM	5:00 PM	Podium 10: "Anatomy and Physiology of the Inner Ear" Moderators: Dr. Jung-Bum Shin and Dr. Catherine Weisz			
3:00 PM	5:00 PM	Podium 11: "Factors and Mechanisms Shaping Outcomes" Moderators: Dr. Matthew Fitzgerald and Dr. Melissa Polonenko			
3:00 PM	5:00 PM	Podium 12: "Auditory Development - From the Periphery to the Brain" Moderators: Dr. Justine Renauld and Dr. Sunita Singh			
3:00 PM	5:00 PM	Poster Session 2			
		Aging Auditory Cortex: Anatomy, Physiology & Function Auditory Cortex: Human Studies Auditory Nerve Auditory Pathways: Brainstem Auditory Pathways: Midbrain Auditory Prostheses Binaural Hearing & Sound Localization Cellular/Systems Development Clinical Otolaryngology & Pathology Genetics A: Genomics and Gene Regulation Genetics B: General Hair Cells: Anatomy & Physiology Human Development Inner Ear: Anatomy & Physiology Inner Ear: Cochlear Mechanics Inner Ear: Damage & Protection Inner Ear: Drug Delivery Middle & External Ear Other Otoacoustic Emissions Plasticity, Learning, & Adaptation to Hearing Impairment			
		Regeneration 57 Tinnitus Vestibular: Basic Research & Clinical			

Monday, February 22, 2021					
8:30 AM	8:30 AM 5:00 PM Speaker Ready Room & Help Desk				
9:15 AM	9:45 AM	15 AM ARO Business Meeting			
10:00 AM	12:00 PM Symposium 13: "Emerging Capabilities for Evaluating Human Hearing"				
10:00 AM	AM 12:00 PM Symposium 14: "Memorial Linthicum Temporal Bone Histopathology Symposium: Influences on Hearing Loss Research Past, Present and Future"				
10:00 AM	12:00 PM	Symposium 15: "Non-Sensory Influences on Auditory Learning and Plasticity"			
12:00 PM	1:45 PM	Award of Merit			
1:45 PM	3:00 PM	Pioneer and Innovator Awards			
3:00 PM	5:00 PM	Podium 16: "Organ of Corti Mechanics: Studies Using Light and Mathematical Mode Moderators: Dr. Heidi Nakajima, Dr. Karolina Charaziak, and Dr. Wei Dong	ls"		
3:00 PM 5:00 PM Podium 17: "Speech Communication: Realistic Factors and Measurements" Moderators: Dr. Kaylah Lalonde and Dr. Christian Stilp					
3:00 PM	5:00 PM	Podium 18: "Regeneration of Hair Cells & Synapses" Moderators: Dr. Brad Walters a Dr. Vikrant Borse	and		
3:00 PM	5:00 PM	Poster Session 3			
		Aging Auditory Cortex: Anatomy, Physiology & Function Auditory Cortex: Human Studies Auditory Nerve Auditory Pathways: Brainstem Auditory Pathways: Midbrain Auditory Prostheses Binaural Hearing & Sound Localization Cellular/Systems Development Clinical Otolaryngology & Pathology Genetics A: Genomics and Gene Regulation Genetics B: General Hair Cells: Anatomy & Physiology Human Development Inner Ear: Anatomy & Physiology Inner Ear: Cochlear Mechanics Inner Ear: Damage & Protection Inner Ear: Drug Delivery Middle & External Ear Other Otoacoustic Emissions Plasticity, Learning, & Adaptation to Hearing Impairment Psychoacoustics			
		Regeneration 58 Tinnitus 58			

	Tuesday, February 23, 2021				
9:00 AM	5:00 PM	Speaker Ready Room & Help Desk			
10:00 AM	12:00 PM	Podium 19: "Theraputics Bonanza" Moderators: Dr. Tejbeer Kaur and Dr. William Slattery			
10:00 AM	12:00 PM	Podium 20: "Outcome Assessment" Moderators: Dr. Ellen Peng and Dr. Viral Tejani			
10:00 AM	12:00 PM	Podium 21: "Inhibition, Neuromodulation and Stimulus Encoding in Brainstem and Midbrain" Moderators: Dr. Heather Read and Dr. Daniel Llano			
12.00 PM	12·30 PM	Break			
12:30 PM	2:30 PM	Symposium 22: "Hear Here! The Importance of Spatial Hearing Across the Lifespan"			
12:30 PM	2:30 PM	Symposium 23: "Role of Immune Cells in the Auditory System Development, Pathology and Regeneration"			
12:30 PM	2:30 PM	Symposium 24: "Putting the Pieces Together: The Hair Cell Transduction Complex"			
2:30 PM	3:00 PM	Break			
3:00 PM	5:00 PM	Podium 25: "Inner Ear Therapeutics" Moderators: Dr. Zubair Ahmed and Dr. Jing Zheng			
3:00 PM 5:00 PM 5:00 PM Podium 26: "Psychoacoustics and Related Topics " Moderators: Ihlefeld and Dr. Mounya Elhilali		Podium 26: "Psychoacoustics and Related Topics " Moderators: Dr. Antje Ihlefeld and Dr. Mounya Elhilali			
3:00 PM	5:00 PM	Podium 27: "Vestibular System" Moderators: Dr. Anna Lysakowski and Dr. Suhrud Rajguru			
3:00 PM	Poster Session 4				
		Auditory Cortex: Anatomy, Physiology & Function Auditory Cortex: Human Studies Auditory Nerve Auditory Pathways: Brainstem Auditory Pathways: Midbrain Auditory Prostheses Binaural Hearing & Sound Localization Cellular/Systems Development Clinical Otolaryngology & Pathology Genetics A: Genomics and Gene Regulation Genetics B: General Hair Cells: Anatomy & Physiology Human Development Inner Ear: Anatomy & Physiology Inner Ear: Cochlear Mechanics Inner Ear: Damage & Protection Inner Ear: Drug Delivery Middle & External Ear Other Otoacoustic Emissions Plasticity, Learning, & Adaptation to Hearing Impairment Psychoacoustics			
		Regeneration Tinnitus 59 Vestibular: Basic Research & Clinical			
5:00 PM	6:00 PM	ARO Trivia Night			

Wednesday, February 24, 2021			
9:00 AM 5:00 PM		Speaker Ready Room & Help Desk	
10:00 AM	12:00 PM	Podium 28: "Gene Expression, Regulation and Inner Ear Therapeutics" Moderators: Dr. Ronna Hertzano and Dr. Zubair M. Ahmed	
10:00 AM	12:00 PM	12:00 PM Podium 29: "Binaural and Spatial Hearing - Psychophysics, Neurophysiolog and Models" Moderators: Dr. Yi Zhou and Dr. Jonas Klug	
10:00 AM	12:00 PM	Podium 30: "Recent Advances in Age-Related Hearing Loss" Moderators: Dr. Frank Lin and Dr. Richard Salvi	
12:00 PM	12:30 PM	Break	
12:30 PM	2:30 PM	Symposium 31: "Integrating Biology to Innovate Hearing Restoration: How Young Investigators Can Shape the Future"	
12:30 PM	2:30 PM	Symposium 32: "From Bench to Bedside – Translational Oto-Therapeutic Approaches"	
12:30 PM	2:30 PM	Symposium 33: "Age-Related Plasticity Changes in the Central Auditory System"	
2:30 PM	3:00 PM	Break	
3:00 PM	5:00 PM	Podium 34: "Ototoxicity, Noise Damage and Protection" Moderators: Dr. Lavinia Sheets and Dr. Sharon Kujawa	
3:00 PM	5:00 PM	Podium 35: "Auditory Cortex and Auditory Perception" Moderators: Dr. Ariel Hight and Dr. Kath Wood	
3:00 PM	3:00 PM   5:00 PM     Podium 36: "Cochlear Synaptopathy & Auditory Nerve Function, New Insights" Moderators: Dr. Sarah Verhulst and Dr. Kenneth Henry		
3:00 PM	5:00 PM	Poster Session 5	
		Aging Auditory Cortex: Anatomy, Physiology & Function Auditory Cortex: Human Studies Auditory Nerve Auditory Pathways: Brainstem Auditory Pathways: Midbrain Auditory Prostheses Binaural Hearing & Sound Localization Cellular/Systems Development Clinical Otolaryngology & Pathology Genetics A: Genomics and Gene Regulation Genetics B: General Hair Cells: Anatomy & Physiology Human Development Inner Ear: Anatomy & Physiology Inner Ear: Cochlear Mechanics Inner Ear: Damage & Protection Inner Ear: Damage & Protection Inner Ear: Drug Delivery Middle & External Ear Other Otoacoustic Emissions Plasticity, Learning, & Adaptation to Hearing Impairment	
		Psychoacoustics Regeneration 60 Tinnitus Vestibular: Basic Research & Clinical	

Thursday, February 25, 2021				
8:30 AM	12:30 PM	Speaker Ready Room & Help Desk		
9:00 AM 11:00 AN		Workshop: Beyond the Brain's Noise: Why neuroscientists ought to be interested in tinnitus.		
11:00 AM	12:30 PM	gEAR Workshop		

SCHEDULE AT A GLANCE

# To join sessions log into the conference hall and click on the enter sessions icon or agenda icon.

We recommend using Google Chrome as your search engine.



From time-to-time we have to make updates in the conference hall and by so doing it may generate an error message on your end that could read, "Link unavailable," "Unable to access meeting" or something similar. If you are experiencing this issue, you can do a few things which we have noted below. You can also always pop into our Virtual Help Desk and we are more than happy to walk you through the process.

#### STEPS TO TAKE IF YOU RECEIVE AN ERROR MESSAGE

- 1. **Refresh your browser**—If you do a refresh in the top of your browser, it should update the platform and make sure everything is working properly.
- Close out the conference hall—If you have refreshed and you still receive the error, close out of the hall and reopen it. This should force the necessary updates. As a reminder, you need to be logged in to access the conference hall.
  a. Conference Hall: https://aro.societyconference.com/conference\_hall/
- 3. Allow Pop Ups on Your Computer—Your computer may be blocking the system from working properly. If you allow pop-ups for the meeting, it should provide a smoother experience for you. We discourage the use of internet explorer (IE) as the system doesn't run as smoothly in IE.

# **EXHIBITORS**



The Exhibit Zoom Sessions will be located in each of the exhibitor's private zoom rooms.

Please visit the exhibits during the following exhibit hours:

Saturday, February 20th: 12pm - 12:30pm ET and 2:30pm -5pm ET

Sunday, February 21st: 12pm - 12:30pm ET and 2:30pm -5pm ET

Monday, February 22nd: 3pm -5pm ET

Tuesday, February 23rd: 12pm – 12:30pm ET and 2:30pm –5pm ET

Wednesday, February 24th: 12pm - 12:30pm ET and 2:30pm -5pm ET

Company	Contact Name	Contact E-mail Address	Meeting Room Link	Website
American Hearing Research Foundation	Joan Wincentsen	joan@american- hearing.org	Not hosting a meeting room but <u>CLICK HERE</u> for additional resources	www.American-hearing.org
Charles River	Kerri Keane	Kerri.Keane@crl.com	Not hosting a meeting room but <u>CLICK HERE</u> for additional resources	https://www.criver.com/
Julius Clinical	Sanne-Lotte van Barneveld	sannelotte.vanbarneveld @juliusclinical.com	TEAMS LINK	https://www.juliusclinical.co m/
Lenire	Ciara Magee	<u>Ciara.magee@neuromod</u> <u>devices.com</u>	ZOOM LINK	https://www.lenire.com/
Shenzhen Ju'An Technologies	Fangyi Chen	<u>386972067@qq.com</u>	Not hosting a meeting room but <u>CLICK HERE</u> for to send an e-mail	http://www.gianttek.cn/
NIDCD	Phalla Messina	Phalla.Messina@nih.gov	ZOOM LINK	<u>https://www.nidcd.nih.gov/t</u> <u>raining</u>
Tucker-Davis Technologies	Jessica Falcone Victor Rush Chris Walters	jfalcone@tdt.com vrush@tdt.com cwalters@tdt.com	ZOOM LINK	https://www.tdt.com/
Turner Scientific LLC	David Hicks	<u>dhicks@turnerscientific.c</u> <u>om</u>	ZOOM LINK	https://www.turnerscientific .com/ 62

# ARO VIRTUAL BINGO



# Looking for a little fun while learning virtually?

ARO has created a BINGO game for all attendees to enjoy over the next few days. The BINGO Card is found on the next page!

# <u>Rules:</u>

- BINGO Card only wins with a Bingo Blackout. "Blackout Bingo" dictates that you must cover every spot on your card to win (instead of the customary vertical, horizontal, or diagonal line).
- A selfie with your bingo card must be submitted to the ARO <u>headquarters@aro.org</u> e-mail address no later than February 25<sup>th</sup>.

## Prize:

3 winners will be announced on social media. Each winner will receive a \$25 Amazon Gift Card. The ARO Executive Office will contact the winners via e-mail to organize the receipt of their prize.

# ARO VIRTUAL BINGO CARD

STOPPED BY TURNER SCIENTIFIC'S EXHIBITOR ROOM	SHARED A PICTURE OF MY VIRTUAL CONFERENCE SETUP ON SOCIAL MEDIA	WATCHED A SESSION RECORDING	STOPPED BY SHENZHEN JU'AN TECHNOLOGIES EXHIBITOR ROOM	SPEAKER ASKS IF YOU CAN SEE THEIR SCREEN
USED THE CHAT FEATURE TO CONNECT WITH OTHER ATTENDEES	STOPPED BY JULIUS CLINICAL'S EXHIBITOR ROOM	ASKED A QUESTION DURING A PRESENTATION Q&A	ATTENDED AN AWARDS PRESENTATION SESSION	STOPPED BY THE MEETING NETWORKING ROOM
STOPPED BY LENIRE'S EXHIBITOR ROOM	ATTENDED ONE OF THE spARO MENTORING SESSIONS	FREE SPACE	TWEETED USING THE <b>#ARO2021</b> HASHTAG	STOPPED BY NIDCD's EXHIBITOR ROOM
CHECKED OUT THE JOB FORUM PAGE ON THE CONFERENCE HALL HOME PAGE	ATTENDED THE ARO BUSINESS MEETING	SAW A PRESENTER'S CAT OR DOG ON SCREEN	STOPPED BY CHARLES RIVERS'S EXHIBITOR ROOM	EXCEEDED "NORMAL" DAILY CAFFEINE INTAKE
SPOKE WITH A POSTER PRESENTER DURING THE POSTER SESSIONS	WAIVED AT THE CAMERA AFTER A SESSION CONCLUDED	ATTENDED ONE OF THE gEAR WORKSHOPS	STOPPED BY TUCKER-DAVIS TECHNOLOGIES' EXHIBITOR ROOM	STOPPED BY AMERICAN HEARING RESEARCH FOUNDATION'S EXHIBITOR ROOM





# **2021 VIRTUAL MIDWINTER MEETING**

# **OPEN G**raduate & Training Programs

ARO is excited to partner with Educational Training Programs who are focused on the broad field of Otolaryngology and related areas.

If your program wishes to host a Zoom gathering, it will be the responsibility of the program to create a virtual meeting space, determine the time of the event, and market the event. ARO will share this informational opportunity with membership via our monthly newsletter.

ARO has always had a large student audience. We want to help your program reach students in the U.S. and abroad! Get in front of the ARO student membership and showcase your program.

The ARO Executive Office will give members and meeting attendees access to your desired marketing materials via the ARO website. The information will be housed on the ARO website prior to, during, and after the ARO 2021 Virtual MidWinter Meeting.

If you are interested in highlighting your program with us, please email the Executive Office at <u>headquarters@aro.org</u> and include any materials you wish to have highlighted.



# **2021 VIRTUAL MIDWINTER MEETING**

# VIRTUAL MEETING

The 2021 MidWinter Meeting has transitioned to a VIRTUAL experience. All the sessions will be hosted on a Zoom platform and will run February 20- 24, 2021. All session links will be shared with presenters and attendees before the conference launches. Please note that some scientific sessions will be recorded and remain live in a conference library for **14 days**.

#### If you have questions before or during the conference, we encourage you to:

- 1) Use the Q&A feature to ask a question of the presenter or to contact AV support staff
- 2) Email <u>headquarters@aro.org</u> with additional questions or concerns. Calling the ARO Executive Office is not advised as the response time may be delayed during the conference.
- 3) Stop by the Help Desk or Speaker Ready Room, open daily.

## **POSTER SESSION**

There will be five formal poster presentation sessions. Poster presenters are encouraged to be available during the scheduled sessions on the day they have been assigned. Attendees will be able to view these e-posters online before, during and after the meeting. You may see which posters are being presented during each session via the agenda planner.

Poster Session I Saturday, February 20, 2021 3:00 PM - 5:00 PM US EDT

Poster Session II Sunday, February 21, 2021 3:00 PM - 5:00 PM US EDT

Poster Session III Monday, February 22, 2021 3:00 PM - 5:00 PM US EDT

Poster Session IIII Tuesday, February 23, 2021 3:00 PM - 5:00 PM US EDT

Poster Session V Wednesday, February 24, 2021 3:00 PM - 5:00 PM US EDT

## **NETWORKING**

Networking opportunities are available in the Networking Session featured on the virtual platform. Join the session and see who else is eager to network. You are also able to chat fellow attendees at any time and connect.



**spARO Presents Kathy Buckley** WEDNESDAY, FEBRUARY 10, 2021 11-1 PM

She is America's Favorite Hearing Impaired Comedienne! An award-winning actress, speaker, and hearing impaired comedian, Kathy Buckley inspires audiences to overcome adversity by listening to the mind and heart together. For more information, visit the Kathy Buckley website at: www.kathybuckley.com



#### **Diversity and Minority Affairs Roundtable Discussion**

FRIDAY, FEBRUARY 12, 2021 9 AM - 11 AM

ARO is committed to learning ways to contribute to more inclusive and equitable experiences for our colleagues, scholars, patients and in our profession. In this reflective and interactive session, we will examine ways that systemic inequities, as well as our own identities and biases, can negatively affect our learning and workplace environments. Workshop participants will explore science-based research frameworks for interrupting and mitigating harm when they notice it and explore various options for effectively intervening during a negative situation. We will also discuss how to appropriately accept feedback when we receive it. This session is open to ALL attendees, no matter the career stage.

Speaker: Deborah Willis, Ph.D.



SPECIAL EVENTS & MEETINGS

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SPECIAL EVENTS & MEETINGS

Women and Allies Roundtable Discussion TUESDAY, FEBRUARY 16, 2021 10:30 AM - 1 PM



This year's Women, Women-Identified, and Allies in Science event will feature an interactive keynote workshop entitled Authority, Voice, and Influence for Women in Science led by Rena Seltzer, ACSW. Following the workshop, we will break off into discussion groups that will be facilitated by 12 phenomenal women PIs. Women, women-identified, and allies at all career stages are highly encouraged to attend!

Rena Seltzer is a dynamic leadership coach and trainer with over eighteen years of experience coaching academics across the span of their careers. Her workshops combine well-researched information with interactive experiences and practical tools that attendees remember and continue to employ throughout their careers. She is the author of The Coach's Guide for Women Professors: Who Want a Successful Career and a Well-Balanced Life, a book that gives robust attention not only to gender, but to a full range of issues pertaining to diversity, equity, and inclusion of faculty of color and from a range of historically underrepresented groups. For more information about Rena's work, please visit https://www.leaderacademic.com/rena-seltzer/.

Keynote Speaker: Rena Seltzer, ACSW

\*This session will not be recorded\*

Funding your Scientific Genius! WEDNESDAY, FEBRUARY 17, 2021 12 PM - 1 PM

Facilitator: Larry Hoffman, Ph.D.



#### Funding your Scientific Genius!

Wednesday, February 17, 2021 12:00-1:00 PM Eastern Time #AR02021





# Science Communication Workshop- Designing and delivering effective conference presentations

THURSDAY, FEBRUARY 18, 2021 9 AM- 11 AM

This workshop is designed to raise awareness of good strategies for communicating science to other scientists, especially for conference presentations (both oral and poster format). Through instructor-led content and hands-on activities, the workshop will focus on building your narrative, designing figures, and determining goals specific to your presentation format. We will discuss how to guide the audience's attention, how to field questions, and etiquette for poster interactions. Your experience and input is welcome during this session. The workshop is open to scientists at all career stages, from trainees to senior scientists.

#### Facilitators: Matthew B. Winn, Au.D., Ph.D. and Kelsey L. Anbuhl, B.S., Ph.D.



#### **Behind the Scenes with Publication** THURSDAY, FEBRUARY 18, 2021

1 PM - 2 PM

Facilitator: Larry Hoffman, Ph.D.





**Graduate Program Open House** THURSDAY, FEBRUARY 18, 2021 1 PM - 3 PM



Graduate & Training Programs



**Poster Blitz** FRIDAY, FEBRUARY 19, 2021 11 AM - 1 PM

**Travel Awards Recognition** FRIDAY, FEBRUARY 19, 2021 1 PM - 3 PM



Speaker: Lisa Cunningham, Ph.D.

### gEAR Workshop

FRIDAY, FEBRUARY 19, 2021 and Thursday, February 25, 2021 3:30 PM - 5 PM

The gEAR, gene Expression Analysis Resource (umgear.org), is a cloud-based 'one-stop-shop' where inner ear-related multi-omic data can be viewed and analyzed by biologists, without requiring programming skills. With numerous multi-omic datasests organized in thematic profiles, it's easier than ever to learn about inner ear-related gene expression. Whether you are a long-term gEAR user or completely new to the gEAR - this workshop will go from the gEAR basics to the newest features. Optional practice sessions for the different gEAR modules will follow the live demo.

**Speakers**: Ronna Hertzano, M.D., Ph.D., Joshua Orvis, M.S, and Beatrice Milon, Ph.D.



NIDCD Workshop 1: Applying for NIDCD Training and Career Development Awards FRIDAY, FEBRUARY 19, 2021 5:30 PM - 7 PM

Presenters: Alberto Rivera- Rentas, Ph.D. and Eliane Lazar-Wesley, Ph.D.

NIDCD Workshop 2: Early Stage Investigators (ESI) and New Investigators (NI) FRIDAY, FEBRUARY 19, 2021 5:30 PM - 7 PM

**Presenters:** Nancy Freeman, Ph.D. and Katherine Shim, Ph.D.

NIDCD Workshop 3: SBIR and STTR Grant Programs from NIH / NIDCD FRIDAY, FEBRUARY 19, 2021 5:30 PM - 7 PM

Presenters: Roger Miller, Ph.D. and Shiguang Yang, DVM, Ph.D.

ARO Business Meeting MONDAY, FEBRUARY 22 9:15 AM - 9:45 AM

Young Investigator Award MONDAY, FEBRUARY 22 12 PM - 12:15 PM

Award of Merit MONDAY, FEBRUARY 22 12:15 PM - 1:30 PM

**Pioneer and Innovator Awards** MONDAY, FEBRUARY 22 1:30 PM - 3 PM





# **2021 VIRTUAL MIDWINTER MEETING**

# **ARO COMMITTEES**

# LONG RANGE PLANNING

#### CHAIR:

Catherine Weisz, Ph.D. (3/20 - 2/23)

#### **MEMBERS:**

Peter Barr-Gillespie, Ph.D. (3/18 - 3/21)Alan Cheng, M.D. (3/18 - 2/21)Brandon Cox, Ph.D. (3/8 - 2/21)Ruben Stepanyan, Ph.D. (3/20 - 3/23)Matthew McGinley,Prof. (3/19 - 2/22)Chris Plack, Ph.D. (3/18 - 2/21)Yilai Shu, M.D., Ph.D. (3/18 - 2/21)Aleta Steevens, Ph.D. (3/18 - 2/21)Aaron Tward, M.D., Ph.D. (3/19 - 3/22)Janet Cyr, Ph.D., *NIDCD Rep.* (3/20 - 2/23)*Past Chair :* Lisa Goodrich, Ph.D. (3/17 - 2/20)*Council Liaison : President-Elect :* Ruth Litovsky, Ph.D. (3/19-2/20)*Chair, International Committee:* Isabel Varela-Nieto, Ph.D. (3/18-2/21)*spARO Representative:* Kirupa Suthakar, Ph.D.

# NOMINATING

#### **CO-CHAIR:**

Keiko Hirose, M.D. (3/20-2/21) Karen Steel, Ph.D. (3/20-2/21)

#### **MEMBERS:**

Gary Housley, Ph.D. (3/20-2/21) Brandon Cox, Ph.D. (3/20-2/21) Dan Sanes, Ph.D. (3/20-2/21) Elizabeth Glowatzski, Ph.D. (3/20-2/21)


## **AWARDS COMMITTEE**

### **CO-CHAIRS:**

Mark Warchol, Ph.D. (3/20-3/23) Julie Arenberg, Ph.D. (3/20-2/23)

### **MEMBERS:**

Jutta Engel, Ph.D. (3/18 - 2/21)Konstantina Stankovic, M.D. (3/20-3/23)Karl Kandler, Ph.D. (3/20-3-23)Elisabeth Glowatzki, Ph.D., (3/19 - 2/22)Phil Joris, M.B.A (3/18 - 2/21)Matt Kelley, Ph.D. (3/18 - 2/21)Mario Svirsky, Ph.D. (2/30-2/23)Katie Kindt, Ph.D. (3-20 - 3/23)Yuri Agrawal, M.D. (3/20-3/23)Richard Rabbitt, Ph.D., (3/19 - 2/22)Jenny Stone, Ph.D. (3/18 - 2/21)Sarah Woolley, Ph.D. (3/18 - 2/21)*Council Liaison:* Past-President Keiko Hirose, M.D. (3/20-2/21)

## **ACCOMMODATIONS COMMITTEE**

#### **CO-CHAIRS:**

Ray Goldsworthy, Ph.D. (11/20-3/23) Lina Reiss, Ph.D. (11/20-3/23)

### **MEMBERS:**

Shaum Bhagat, Ph.D. (11/20-3/23) Brad Buran , Ph.D. (11/20-3/23) Julia Huyck, Ph.D. (11/20-3/23) Samson Jamesdaniel , Ph.D. (11/20-3/23) Erin O'Neill , Ph.D. (11/20-3/23) Brandon Paul , Ph.D. (11/20-3/23) Moaz Sinan, B.S (11/20-3/23) Viral Tejani, Au.D.,Ph.D. (11/20-3/23) Jun Yang, Ph.D. (11/20-3/23) Marisa Zallocchi, Ph.D. (11/20-3/23) John Brigande, Ph.D. (11/20-3/23) Ruth Litovsky, Ph.D. (11/20-3/23)



## **EXTERNAL RELATIONS**

#### CHAIR:

Keith Duncan, Ph.D. (3/18-2/21) Allison Coffin, Ph.D. (3/18-2/21)

#### **MEMBERS:**

Dylan Chan, M.D., Ph.D. (3/18 - 2/21)J. Chris Holt, Ph.D. (3/19-2/22)Judith Kempfle, M.D. (3/19 - 2/22)Becky Lewis, Ph.D. (3/19 - 2/22)Ross Maddox, Ph.D. (3/18 - 2/21)Dave Raible, Ph.D. (3/19 - 2/22)Tilak Ratnanather, Ph.D. (3/20 - 2/23)Katie Rennie, Ph.D. (3/20 - 2/23)Lavinia Sheets, Ph.D. (3/18 - 2/21)*Council Liaison :* Mark Worchol, Ph.D. (3/18 - 2/21)*spARO Representative:* Benjamin Shuster, B.S.

## FINANCE AND INVESTMENT

#### CHAIR:

Michael Roberts, Ph.D. (3/20 - 2/23)

#### **MEMBERS:**

Steve Eliades, M.D., Ph.D. (3/19 – 2/22) Gabriel Corfas, Ph.D. (3/20-2/23) Erick Gallun, Ph.D. (3/17-2/20) Judy Dubno, Ph.D. (3/20-3/23) Anna Lysakowski, Ph.D. (3/18 – 2/21) Lisa Olson, Ph.D. (3/17 – 2/20) *Ex-officio Secretary-Treasurer*: Barbara Shinn-Cunningham, Prof (3/20 – 2/23)

## **DIVERISTY & MINORITY AFFAIRS COMMITTEE**

#### CHAIR:

Ivan Lopez, Ph.D. (3/18 – 2/21)

#### **MEMBERS:**

Kelsey Anbuhl, Ph.D. (3/18 - 2/21)Alain Dabdoub, Ph.D. (3/18 - 2/21)Avril Holt, Ph.D., (3/19 - 2/22)Diana Peterson, Ph.D. (3/20-2/23)Tejbeer Kaur, Ph.D. (3/19 - 2/22)Anil Lalwani, M.D. (3/19 - 2/22)Yi Zhou, Ph.D. (3/18 - 2/21)*Council Liaison:* Lisa Cunningham, Ph.D. (3/19-2/22)*spARO Representative:* Karen Barrett, Ph.D. (3/19 - 3/21)



## **INTERNATIONAL COMMITTEE**

#### CHAIR:

Isabel Varela-Nieto, Ph.D. (3/18 – 2/21)

#### **MEMBERS:**

Barbara Canlon, Ph.D.: Sweden (3/19 - 2/22)Yun-Hoon Choung, M.D., Ph.D.: Korea (3/18 - 2/21)Lukas Landegger, M.D., Ph.D.: Austria (3/19 - 2/22)Yong Lu, Ph.D.: USA (3/19 - 2/22)Takayuki Nakagawa, M.D., Ph.D.: Japan (3/18 - 2/21)Sonya Pyott, Ph.D.: Netherlands (3/18 - 3/21)Saima Riazuddin, Ph.D.: USA (3/19 - 2/22)*Council Liaison:* John Brigande, Ph.D. (3/20 - 2/23)*spARO Representative:* Patrick Atkinson, Ph.D. (3/19 - 3/20)

## **TRAVEL AWARDS COMMITTEE**

#### CHAIR:

Jonathan Bird, Ph.D. (3/20 – 2/23)

#### **MEMBERS:**

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> JARO JOURNAL OF THE ASSOCIATION FOR RESEARCH IN OTOLARYNGOLOGY



# spARO EVENTS

\*ALL TIMES ARE IN US EASTERN STANDARD TIME

## WEDNESDAY, FEBRUARY 10, 2021



spARO Presents Kathy Buckley 11:00 -1:00 PM

She is America's Favorite Hearing Impaired Comedienne! An awardwinning actress, speaker, and hearing impaired comedian, Kathy Buckley inspires audiences to overcome adversity by listening to the mind and heart together. For more information, visit the Kathy Buckley website at: www.kathybuckley.com

#### Mentoring Session 1: Job Search and Independence in Academia (Interview and Negotiation Skill Development) 1:30 - 3:30 PM



Becoming an independent scientist largely depends on acquired competencies and achievements from your postdoctoral training. With so few openings for tenure-track faculty positions, competition is fierce. How do you become a competitive candidate? In this session, the panelists will discuss key aspects of building a competitive postdoctoral portfolio and preparing an effective academic job application. The mentors will discuss the academic job search timeline, resources for finding academic jobs, effectively compiling your application package, and the interview process. In addition, evaluating a job offer's benefits, salary, tenure track, and other deliberations are challenging, and important aspects of the job search process considered in this session, which will consist of a short presentation from a panel of leading scientists in an interactive forum for questions and discussion.



**Mentoring Session 2:** *Research and Teaching with Undergraduates* 4:00 – 6:00 PM

Teaching and researching with undergraduates provide unique and rewarding opportunities and challenges when working towards impactful research. In this session, two leading scientists will share and discuss their experiences working and publishing with undergraduates. Group participation is welcome and encouraged.



# spARO EVENTS

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## FRIDAY, FEBRUARY 12, 2021

**Diversity and Minority Affairs Roundtable Discussion** 9 AM - 11 AM



ARO is committed to learning ways to contribute to more inclusive and equitable experiences for our colleagues, scholars, patients and in our profession. In this reflective and interactive session, we will examine ways that systemic inequities, as well as our own identities and biases, can negatively affect our learning and workplace environments. Workshop participants will explore science-based research frameworks for interrupting and mitigating harm when they notice it and explore various options for effectively intervening during a negative situation. We will also discuss how to appropriately accept feedback when we receive it. This session is open to ALL attendees, no matter the career stage.

Speaker: Deborah Willis, Ph.D.



#### Mentoring Session 3: Clinician Scientist 11:30 AM - 1:30 PM

Balancing demanding research and clinical responsibilities is challenging, but also provides unique research avenues and experiences. In this session, two leading clinician-researchers will share their experiences and lead a discussion about how clinicians can successfully integrate scientific investigation into their work.



Careers in Industry: nterview & Negotiation **Skill Development** 

Friday, February 12, 2021 2:00-4:00 PM Eastern Time

#### Mentoring Session 4: Careers in Industry: Interview and Negotiation Skill Development 2 PM - 4 PM

While there are similarities between working in academia and industry, pursuing a successful career in industry often requires a change in approach for former academics. Leaders from companies investigating phenomena related to ARO research will lead a discussion about how to successfully pivot from academic research into developing a career in industry.



# spARO EVENTS

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## TUESDAY, FEBRUARY 16, 2021

#### Women and Allies Roundtable Discussion 10:30 AM - 1 PM



This year's Women, Women-Identified, and Allies in Science event will feature an interactive keynote workshop entitled Authority, Voice, and Influence for Women in Science led by Rena Seltzer, ACSW. Following the workshop, we will break off into discussion groups that will be facilitated by 12 phenomenal women PIs. Women, women-identified, and allies at all career stages are highly encouraged to attend!

Rena Seltzer is a dynamic leadership coach and trainer with over eighteen years of experience coaching academics across the span of their careers. Her workshops combine well-researched information with interactive experiences and practical tools that attendees remember and continue to employ throughout their careers. She is the author of The Coach's Guide for Women Professors: Who Want a Successful Career and a Well-Balanced Life, a book that gives robust attention not only to gender, but to a full range of issues pertaining to diversity, equity, and inclusion of faculty of color and from a range of historically underrepresented groups. For more information about Rena's work, please visit https://www.leaderacademic.com/renaseltzer/.



Mentoring Session 5: Publishing 1:30 PM - 3:30 PM

Sharing work in a peer-reviewed publication is an exciting and rewarding conclusion to a body of work, however the journey can be daunting when deciding when data collection is complete, choosing an appropriate journal, considering impact factor, sharing elucidating negative data, and deliberating other factors. On the other end of the manuscript, peer-reviewing submissions is a gratifying way to help the field while getting a sneak peek at bleeding-edge research yet presents challenges when balancing praise and critiques while considering your own biases. In this session, two editors at top journals will share good approaches in publishing and reviewing research and lead an open discussion where questions and discussion are encouraged.



# spARO EVENTS

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## TUESDAY, FEBRUARY 16, 2021



Mentoring Session 6: Careers in Academia 4 PM - 6 PM

Establishing yourself as a principal investigator with a new lab in an academic environment can be an exciting yet bumpy road to navigate. The panelists in this session will share their observations and experiences in establishing and funding independent research laboratories, discuss the keys for successfully applying for research support, and suggest avenues available to new or mid-career faculty members to facilitate the success of their lab. This session will consist of short presentations from a panel of leading scientists in an interactive forum for questions and discussion.

## **THURSDAY, FEBRUARY 18, 2021**



# Science Communication Workshop- Designing and delivering effective conference presentations

9 AM - 11 AM

This workshop is designed to raise awareness of good strategies for communicating science to other scientists, especially for conference presentations (both oral and poster format). Through instructor-led content and hands-on activities, the workshop will focus on building your narrative, designing figures, and determining goals specific to your presentation format. We will discuss how to guide the audience's attention, how to field questions, and etiquette for poster interactions. Your experience and input is welcome during this session. The workshop is open to scientists at all career stages, from trainees to senior scientists.



# spARO EVENTS

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## THURSDAY, FEBRUARY 18, 2021

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Mentoring Session 7: Mentor-Mentee Communication 1 PM - 3 PM

Good scientific mentorship is key for the personal and professional growth of trainees in academia. An effective way to maintain a good mentor-mentee relationship is good communication between both parties. In this session, trainees will discuss effective communication techniques, strategies to manage their relationships with their mentors, and techniques to resolve communication challenges to maximize the benefit from mentoring relationships. This session will consist of a presentation from a panel of leading scientists in an interactive forum for questions and discussion.



## Mentoring Session 8: Navigating the Grant Landscape 2 PM - 4 PM

This session will feature short presentations from a panel of leading scientists to introduce various grants and fellowships for graduate students and postdoctoral fellows in the U.S. and Europe. The session will focus on federal and private research funding sources, eligibility considerations for selected grants, the application process, and the peer review process. This session be an interactive forum with questions and discussion.

# **ARO Past Presidents**

1974	David Hilding, M.D.	2004	Edwin M. Monsell, M.D., Ph.
1975	Jack Vernon, Ph.D.	2005	William E. Brownell, Ph.D.
1976	Robert Butler, Ph.D.	2006	Llovd B. Minor, M.D.
1977	David Lim, M.D.*	2007	Robert V. Shannon, Ph.D.
1978	Vincente Honrubia, M.D.	2008	P. Ashley Wackym, M.D.
L <b>979</b>	F. Owen Black, M.D.	2009	Paul A. Fuchs, Ph.D.
L980	F. Owen Black, M.D.	2010	Steven D. Rauch M.D.
1981	Barbara Bohne, Ph.D.*	2011	Karen B. Avraham Ph.D.
L <b>982</b>	Robert Mathog, M.D.	2011	Dobara I. Tucci M.D.
L983	Josef Miller, Ph.D.*	2012	John C. Middlebrooks. Ph.D.
1984	Maxwell Abramson, M.D. *	2013	Journ C. Middlebrooks, Ph.D.
1985	William Stebbins, Ph.D.	2014	Buth Anna Estack Dh D
1986	Robert Ruben, M.D.	2015	kuth Anne Eatock, Ph.D.
1987	Donald Nielsen, Ph.D.	2010	Lawrence R. Lustig, M.D.
988	George Gates, M.D.	2017	Wattnew W. Kelley, Ph.D.
1989	William Yost, Ph.D.	2018	John Carey, M.D.
1990	Joseph Nadol. Jr., M.D.	2019	Karen Steel, Ph.D.
1991	Ilsa Schwartz. Ph.D.	2020	Keiko Hirose, M.D.
992	leffrey Harris, M.D., Ph.D.	* Dece	eased
993	Peter Dallos, Ph.D.		
994	Robert Dobie M D *		
995	Allen Rvan Ph D		and the second second
005	Bruco Contz M D		
1990	Diuce Galitz, Wi.D.		

- 1997 Charlie Liberman, Ph.D.
- 1998 Leonard Rybak, M.D.
- Edwin W Rubel, Ph.D. 1999
- Richard A. Chole, M.D., Ph.D. 2000
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- 2002 Richard T. Miyamoto, M.D.
- 2003 Donata Oertel, Ph.D.\*

Ph.D.



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# Join These AHRF Grant Recipients - 2021 Funding Opportunities -

Because sometimes, the biggest ideas start small...Enabling the next breakthrough in hearing and balance research

## The Grants

Funding is for basic or clinical studies

- For research related to hearing, or hearing and balance disorders of the inner ear:
  - Birtman Grant \$75,000 (one award)
  - Regular Grants up to \$50,000 (3-5 awards)
- Causes of Sudden Hearing Loss Grant \$40,000 (one award)
- Meniere's Disease Grant \$25,000 (one award)
- Resident Grants \$1,000 (up to 5 awards) for otolaryngology residents at certain universities\*

\*The Chicago Universities; or Washington University, St. Louis; University of Miami; Baylor College of Medicine, Houston

## How to Apply

Submit proposals to: www.american-hearing.org Deadline: Friday, August 13, 2021 Notification: December 2021 Grants paid: January 2022 Resident grants apply to a July to June period For more information, visit https://www. american-hearing.org/research-grants/grants-weoffer/ or contact us at info@american-hearing.org

Pictured above: Recipients of American Hearing Research Foundation research grants from 2018 - 2021.



# **CORPORATE SUPPORT**

The Association for Research in Otolaryngology would like to thank the following sponsors for their generous donations to the society.



# **GOVERNMENT SUPPORT**



National Institute on **Deafness and Other** ommunication Disorders

NIDCD: R13 Grant **Conference Support for the** Association for Research in Otolaryngology 85

# Thank You!

The Association for Research in Otolaryngology would like to thank all who contributed to ARO in 2020.

With your help we will continue to grow and move our research community forward!

# SAVE THE DATE



# FEBRUARY 5<sup>th</sup> – FEBRUARY 9<sup>th</sup>, 2022 SAN JOSE MCENERY CONVENTION CENTER

