

Sean R. Anderson
Curriculum Vitae

Cochlear Americas
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EDUCATION

- 2015 - 2022** *University of Wisconsin-Madison*
Communication Sciences and Disorders, Ph.D.
Biometry, M.S.
- 2011 - 2015** *Baldwin Wallace University*
Majors: Neuroscience, Mathematics, and Psychology, B.S.
Minor: Statistics

RESEARCH APPOINTMENTS

- Assistant Clinical Professor, University of Colorado Anschutz, Apr 2023 –*
Area: Statistics, binaural perception and physiology, aging, hearing loss
- Senior Auditory Research Scientist, Cochlear Americas, Oct 2022 –*
Area: Sound coding for cochlear implants
Supervisor: Christopher Long
- T32 Postdoctoral Fellow, University of Colorado Anschutz, Apr 2022 – Sep 2022*
Area: Non-invasive biomarkers of binaural hearing
Supervisor: Daniel Tollin
- F31 Doctoral Fellow, University of Wisconsin-Madison, Aug 2015 – Apr 2022*
Area: Spatial hearing in listeners with cochlear implants and normal hearing
Supervisor: Ruth Litovsky
- Research Intern, Cochlear Americas, June 2018 – Aug 2018*
Topic: Speech understanding and spectral resolution with cochlear implants
Supervisor: Sara Duran; Harish Krishnamoorthi; Christopher Long; Zachary Smith
- Visiting Research Assistant, Oregon Health and Science University, May 2015 – Jul 2015*
Topic: Binaural pitch fusion in listeners with normal hearing
Supervisor: Lina Reiss
- Visiting Research Assistant, University of Maryland, College Park, Jun 2013 – Aug 2014*
Topic: Temporal processing and aging; sound source localization; cochlear implants
Supervisor: Matthew Goupell
- Junior Research Assistant, Baldwin Wallace University, Dec 2011 – May 2014*
Topic: Effects of ketamine (anesthetic) on *in vitro* and *in vivo* cortical neurons
Supervisor: Christopher Turner, Jacqueline Morris

AUTHORSHIP (*denotes statistical consulting)

- 2024** Kalmanson, O., Takeda, H., **Anderson, S. R.***, Dondzillo, A., & Gubbels, S. Tracing the lineage of nestin-expressing cells in the mammalian inner ear. *Hear Res, Accepted.*

- 2024** **Anderson, S. R.**, Burg, E., Suveg, L., & Litovsky, R. Y. Review of binaural processing with asymmetrical hearing outcomes in patients with bilateral cochlear implants. *Trend Hear, In Press*.
- 2024** Ma, M., de Souza, F. S., Futia, G. L., **Anderson, S. R.**, Rigüero, J., Tollin, D., Platt, J. P., Steinke, K., Hiratani, N., Restrepo, D., Gibson, E. A. Odor valence is encoded by time-tiled neuronal activity in hippocampal CA1 in associative learning. *Curr Biol, In Press*.
- 2024** Warner-Czyz, A. D., **Anderson, S. R.***, Graham, S., & Uhler, K. Word categories in expressive vocabulary of children who are deaf and hard of hearing. *J Deaf Stud Deaf Educ, Online Ahead of Print*.
- 2023** Peng, Z. E., Burg, E., Thakkar, T., Godar, S., **Anderson, S. R.**, & Litovsky, R. Y. Web-based psychoacoustics of binaural hearing: Two validation experiments. *J Acoust Soc Am, 154(2)*, 751-762.
- 2023** **Anderson, S. R.**, Gallun, F. J., & Litovsky, R. Y. Interaural asymmetry of dynamic range: Abnormal fusion, bilateral interference, and shifts in attention. *Front Neurosci, 16*, 1018190.
- 2022** **Anderson, S. R.**, Kan, A., & Litovsky, R. Y. Asymmetric temporal envelope encoding: Within- and across-ear envelope comparisons in listeners with bilateral cochlear implants. *J Acoust Soc Am, 152(6)*, 3294-3312.
- 2022** Uhler, K., **Anderson, S. R.***, Walker, K., & Yoshinaga-Itano, C. Speech perception in infancy predicts language outcomes at 30 months for both children with normal hearing and those with hearing differences. *J Clin Med, 11(19)*, 5821.
- 2022** **Anderson, S. R.**, Jocewicz, R., Kan, A., Zhu, J., Tzeng, S., & Litovsky, R. Y. Sound source localization patterns with bilateral cochlear implants: Age at onset of deafness effects. *PLoS One, 17(2)*, e0263516.
- 2020** **Anderson, S. R.**, Glickman, B., Oh, Y., & Reiss, L. A. J. Binaural pitch fusion: Effects of sound level in normal-hearing listeners. *Hear Res, 396*, 108076.
- 2020** Thakkar, T., **Anderson, S. R.**, Kan, A., & Litovsky, R. Y. Evaluating the impact of age, acoustic exposure, and electrical stimulation on binaural sensitivity in bilateral cochlear implant patients. *Brain Sci, 10(6)*, 406.
- 2019** **Anderson, S. R.**, Easter, K., & Goupell, M. J. Binaural temporal processing in aging cochlear-implant and normal-hearing listeners. *J Acoust Soc Am, 146(5)*, 3232-3254.
- 2019** **Anderson, S. R.**, Kan, A., & Litovsky, R. Y. Asymmetric temporal envelope encoding: Implications for within- and across-ear envelope comparison. *J Acoust Soc Am, 146(2)*, 1189-1206.
- 2014** Brown, B. P., Kang, S., Gawelek, K., Zacharias, R., **Anderson, S. R.**, Turner, C., & Morris, J. K. In vivo and in vitro ketamine exposure exhibits a dose-dependent induction of activity-dependent neuroprotective protein in rat neurons. *Neuroscience, 290*, 31-40.

MANUSCRIPTS IN PREPARATION

- Anderson, S. R.**, Goupell, M. J., Kan, A., & Litovsky, R. Y. Asymmetric temporal envelope encoding: Lateralization and interactions with envelope shape and interaural place-of-stimulation mismatch. *J Acoust Soc Am, in prep*.
- Kalmanson, O. A., Drohosky, J., Greaver, L., Cass, N., Banakis-Hartl, R., Goryachok, M., **Anderson, S. R.***, & Chan, K. H. Congenital and postnatal unilateral sensorineural hearing loss in children: Natural history and clinical characteristics. *Otolaryngol Head Neck Surg, in prep*.

CONFERENCE PROCEEDINGS

- 2019** Anderson, S. R., Thakkar, T., Kan, A., & Litovsky, R. Y. Comparison of pitch-matching methods to predict interaural mismatch in cochlear-implant users. DAGA 2019 – 45. Jahrestagung für Akustik, Rostock, Germany.

INVITED TALKS

- 2023** Anderson, S. R. Bottlenecks to across-channel processing for patients with bilateral cochlear implants. Acoustical Society of America Psychological and Physiological Acoustics Journal Club, Online.
- 2023** Anderson, S. R. Factors that limit binaural outcomes for patients with hearing loss: Experience, aging, and asymmetry. Biophysics and Physiology Faculty seminar, University of Colorado Anschutz Medical Campus, Aurora, CO.
- 2021** Anderson, S. R. Interaural asymmetry and binaural hearing for patients with bilateral cochlear implants. Weekly Hearing and Donuts meeting, University of Wisconsin-Madison, Madison, WI.
- 2021** Anderson, S. R. Interaural asymmetry and binaural hearing for patients with bilateral cochlear implants. Weekly campus-wide auditory lab meeting, University of Colorado Anschutz Medical Campus, Aurora, CO.
- 2019** Anderson, S. R. & Litovsky, R. Y. Binaural hearing with asymmetrical abilities: How the poorer ear impacts perception. Weekly Department of Communication Sciences and Disorders Professional Seminar, University of Wisconsin-Madison, WI.
- 2018** Anderson, S. R. & Litovsky, R. Y. Phonological fusion in listeners with cochlear implants and simulations. Weekly Hearing and Donuts meeting, University of Wisconsin-Madison, Madison, WI.
- 2018** Anderson, S. R., Kan, A., & Litovsky, R. Y. Asymmetries in temporal encoding and their role in binaural hearing. Weekly campus-wide auditory lab meeting, University of Colorado Anschutz Medical Campus, Aurora, CO.
- 2018** Anderson, S. R., Kan, A., & Litovsky, R. Y. Relating temporal encoding in monaural and binaural hearing. Research and Development Team Meeting, Cochlear Americas, Centennial, CO.
- 2017** Anderson, S. R., Kan, A., & Litovsky, R. Y. A review of temporal aspects of binaural encoding in the brainstem: Implications for cochlear-implant users. Weekly Hearing and Donuts meeting, University of Wisconsin-Madison, Madison, WI.
- 2017** Anderson, S. R., Kan, A., & Litovsky, R. Y. Cochlear-implant users and the auditory periphery: Implications for listening in complex environments. Weekly Department of Communication Sciences and Disorders Professional Seminar, University of Wisconsin-Madison, WI.
- 2017** Anderson, S. R., Kan, A., & Litovsky, R. Y. Implications of poor encoding in the auditory periphery. Weekly Hearing and Donuts meeting, University of Wisconsin-Madison, Madison, WI.
- 2016** Anderson, S. R., Kan, A., & Litovsky, R. Y. Cochlear implants and the auditory periphery: Implications for understanding the auditory environment. National Center for Rehabilitative Auditory Research at Oregon Health and Science University, Portland, OR.

- 2015** Anderson, S. R., Oh, Y., & Reiss, L. A. J. Implications for hearing-impaired individuals: The effect of sensation level on pitch between the ears. Weekly Hearing and Donuts meeting, University of Wisconsin-Madison, Madison, WI.

MENTORED STUDENT PRESENTATIONS

- 2019** Doyle, S. Understanding of vocoded speech that is aimed to restore binaural hearing and segregation of speech from noise. AuD Capstone, University of Wisconsin-Stevens Point, Stevens Point, WI.
- 2019** Feierabend, I. Lateralization of competing interaural cues in the envelope. AuD Capstone, University of Wisconsin-Stevens Point, Stevens Point, WI.
- 2017** Swords, C. M., Anderson, S. R., Kan, A., & Litovsky, R. Y. What affects spatial hearing abilities in cochlear implant users? Investigating different factors with normal-hearing simulation. Lawrence Symposium, Lawrence University, Appleton, WI.

RESEARCH SUPPORT

R01 DC021068-01

Title: The impact of auditory access on the development of speech perception

Source: National Institute on Deafness and Other Communication Disorders

Total Award: \$1,914,129

Dates: 3/1/23 – 2/29/28

Role: Statistician; Kristin Uhler PI

F31 DC018483-01A1

Title: Mechanisms that underlie poorer binaural outcomes in patients with asymmetrical hearing and bilateral cochlear implants

Source: National Institute on Deafness and Other Communication Disorders

Total Award: \$68,488

Dates: 6/1/20 – 5/31/22

Role: Principal investigator

TEACHING EXPERIENCE

Guest Lecture, Behavioral Neuroscience (NRO320), Baldwin Wallace University, Jan 2022

Topics: Auditory psychophysics and clinical applications

Guest Lecture, Neuroscience of Speech, Language, & Hearing (CSD503), UW-Madison, Nov 2020

Topics: Transduction of acoustic signals to action potentials

Guest Lecture, Hearing Science I (CSD850), UW-Madison, Nov 2019

Topics: Neural correlates of pitch

Guest Lecture, Neuroscience of Speech, Language, & Hearing (CSD503), UW-Madison, Oct 2019

Topics: Transduction of acoustic signals to action potentials

Discussion Leader, Normal Aspects of Hearing (CSD202), UW-Madison, Aug – Dec 2018

Topics: Acoustics, anatomy and physiology of hearing, and psychoacoustics

Guest Lecture, Hearing Science I (CSD850), UW-Madison, Oct 2018

Topics: Periodicity coding through the auditory system

Guest Lecture, Normal Aspects of Hearing (CSD202), UW-Madison, Oct 2018

Topics: Cochlear anatomy and physiology

Guest Lecture, Normal Aspects of Hearing (CSD202), UW-Madison, Oct 2018

Topics: Outer and middle ear anatomy and physiology

Teaching Assistant, Normal Aspects of Hearing (CSD202), UW-Madison, Aug – Dec 2017

Topics: Acoustics, anatomy and physiology of hearing, and psychoacoustics

Guest Lecture, Normal Aspects of Hearing (CSD202), UW-Madison, Nov 2017

Topics: Relating frequency coding to pitch perception

Guest Lecture, Normal Aspects of Hearing (CSD202), UW-Madison, Nov 2017

Topics: Psychophysics of spatial hearing

Guest Lecture, Hearing Science I (CSD850), UW-Madison, Nov 2017

Topics: Psychophysics and neuroscience of pitch

Guest Lecture, Hearing Science I (CSD850), UW-Madison, Oct 2016

Topics: Neural encoding of pitch

STATISTICAL CONSULTING

Gleaning Donations Across Vermont, Dec 2023

Client: Violet Millartin, Community Harvest of Central Vermont

Approach: Data wrangling via R

Prevalence of Birds by Species and Landscape, Apr 2023 – Present

Client: Fendi Despres, Open Space and Natural Resources Division, City of Aurora, CO

Approach: Visualization and descriptive statistics

Effects of Age and Hearing Loss on Binaural Processing, Dec 2022 – Present

Client: Dan Tollin, Achim Klug, Carol Sammeth, Kerry Walker, Rebecca Welles

Approach: Principal components analysis, multivariate regression

Longitudinal Unilateral Hearing Loss Outcomes, Dec 2022 – Present

Client: Olivia Kalmanson, Kenny Chan

Approach: Multivariate regression

Speech and Language Outcomes in Children who are Hard of Hearing, June 2022 – Present

Client: Kristin Uhler

Approach: Multivariate, mixed- or fixed-effects generalized and linear regression and ANOVA

Sound Source Localization with Cochlear Implants, June 2022

Client: Stephen Dennison

Approach: Least-squares distance; non-parametric ANOVA

Gene Expression in Audition and Balance, May 2022 – September 2022

Client: Olivia Kalmanson, Anna Dondzillo, Samuel Gubbels

Approach: Mixed-effects ANOVA

Longitudinal Outcomes in Education, September 2017 – May 2019

Client: Andrew Garbacz, Drew Brandel

Approach: Mixed-effects regression and ANOVA

Polar Bear Biomarkers and Climate Change, June 2017 – September 2017

Client: Tricia Fry; doctoral dissertation data

Approach: Principal components analysis, broken stick regression, linear mixed model

Lead Bioavailability in Soil, June 2017 – September 2017

Client: Shannon Plunkett; doctoral dissertation data

Approach: Linear mixed model, least-squares distance

Mass Communications and Outcomes in Sobriety, September 2016

Client: Yan Liu, Rachel Kornfield; doctoral dissertation data

Approach: Generalized linear mixed model

SERVICE

- 2023** Discussion Leader, Jobs in Industry, Conference on Implantable Auditory Prosthesis, Lake Tahoe, CA
- 2023** Speaker, Transition from Academia to Industry, BIPOC CSD Network, Online
- 2022-present** Ad-hoc reviewer for Frontiers in Neuroscience
- 2022-present** Ad-hoc reviewer for Ear and Hearing
- 2022** Special initiative task force leader for Association for Research in Otolaryngology
- 2020-present** Ad-hoc reviewer for Journal of the Acoustical Society of America
- 2020** Young Investigator Symposium Co-organizer Association for Research in Otolaryngology, San Jose, CA
- 2017-2019** Journal club leader for undergraduate Communication Sciences & Disorders

PROFESSIONAL MEMBERSHIP

Association for Research in Otolaryngology
Acoustical Society of America

HONORS AND AWARDS

- 2022** T32 Postdoctoral Fellowship, Dept of Otolaryngology, CU Anschutz
- 2020** Emma Allen Conference Travel Award, UW-Madison
- 2019** Communication Sciences & Disorders Conference Travel Award, UW-Madison
- 2019** Conference on Implantable Auditory Prostheses Student Travel Award
- 2019** Student Research Grant Competition Winner, UW-Madison
- 2018** Emma Allen Conference Travel Award, UW-Madison
- 2018** Communication Sciences & Disorders Travel Award, UW-Madison
- 2018** Association for Research in Otolaryngology Student Travel Award
- 2017** Conference on Implantable Auditory Prostheses Student Travel Award
- 2016** Binaural Bash Student Registration Award
- 2016** Auditory System Gordon Research Conference Travel Award
- 2016** Acoustical Society of America School training for young scientists
- 2016** Association for Research in Otolaryngology Student Travel Award
- 2015** Conference on Implantable Auditory Prostheses Student Travel Award
- 2014** Nu Rho Psi Honor Society in Neuroscience
- 2014** Kappa Mu Epsilon Honor Society in Mathematics
- 2013** Kenneth and Lucy McCauliff first-generation student scholarship in Neuroscience, Baldwin Wallace University
- 2013** American Speech-Language-Hearing Association Research Mentoring-Pair Travel Award