

**University of Pittsburgh**  
**School of Medicine**  
**CURRICULUM VITAE**

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**BIOGRAPHICAL**

Name: Aravindakshan Parthasarathy  
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**EDUCATION and TRAINING**

**UNDERGRADUATE**

08/2002 – 05/2007	Birla Institute of Technology and Science, Pilani India	B.E., 2007	Computer Science
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**GRADUATE**

08/2002 – 05/2007	Birla Institute of Technology and Science, Pilani, India	M.Sc., 2007	Biological Sciences
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08/2007- 02/2013	Purdue University, West Lafayette, IN, USA	Ph.D, 2013	Biological Sciences
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**POSTGRADUATE**

02/2013 – 08/2014	Purdue University, West Lafayette, IN, USA	Post-Doctoral Fellow	Biomedical Engineering
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09/2014 – 10/2018	Harvard Medical School, Boston, MA, USA	Senior Research Fellow	Dept. of Otolaryngology – Head and Neck Surgery,
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## APPOINTMENTS and POSITIONS

### ACADEMIC

09/2018 – 08/2020	Dept. of Otolaryngology, Head and Neck Surgery, Harvard Medical School, Boston, MA , USA	Instructor
09/2020 - <i>present</i>	Department of Communication Science and Disorders, University of Pittsburgh, Pittsburgh, PA, USA	Assistant Professor
01/2021 - <i>present</i>	Department of Otolaryngology, University of Pittsburgh, Pittsburgh, PA, USA	Assistant Professor
04/2022 - <i>present</i>	Department of BioEngineering, University of Pittsburgh, Pittsburgh, PA, USA	Assistant Professor

### NON-ACADEMIC

10/ 2018 – 08/2020	Eaton-Peabody Labs, Mass. Eye and Ear Infirmary, Boston MA, USA	Investigator
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## MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES

<i>Organization</i>	<i>Year</i>
Society for Neuroscience	2008 - present
Association for Research in Otolaryngology	2010- present

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## HONORS

<i>Title of Award</i>	<i>Year</i>
Institutional Scholarship, BITS Pilani	2004-2006
Second place, Conference Paper presentation, Biology, BITS Pilani	2005
David Ross Fellowship for outstanding incoming students, Purdue University	2008-2009
Travel Scholarship, Aging and Speech Communication Conference	2011
Bilsland Dissertation Fellowship, Purdue University	2012
Travel Scholarship, Aging and Speech Communication Conference	2013
NIH Early Career Reviewer	2022
Selected speaker, Senior Vice Chancellor's Research Seminar series	2023

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## PUBLICATIONS

### ORIGINAL PEER REVIEWED ARTICLES

1. **Parthasarathy A**, Cunningham PA, Bartlett EL. "Age-related differences in auditory processing as assessed by amplitude-modulation following responses in quiet and in

- noise" *Front Aging Neurosci.* 2010 Dec 17;2:152. doi: 10.3389/fnagi.2010.00152. PMID: 21188162
2. **Parthasarathy A**, Bartlett EL. "Age-related auditory deficits in temporal processing in F-344 rats." *Neuroscience.* 2011 Sep 29; 192:619-30. PMID: 21723376
  3. **Parthasarathy A**, Bartlett EL. "Two-channel recording of auditory-evoked potentials to detect age-related deficits in temporal processing". *Hear Res.* 2012 Jul;289(1-2):52-62. PMID: 22560961
  4. Rabang CF\*, **Parthasarathy A\***, Venkataraman Y, Fisher ZL, Gardner SM, Bartlett EL. "A computational model of inferior colliculus responses to amplitude modulated sounds in young and aged rats". *Front Neural Circuits.* 2012 Nov 2;6:77. PMID: 23129994 (\*shared first author)
  5. **Parthasarathy A**, Datta J, Luna-Torres JA, Hopkins C, Bartlett EL. "Age-related changes in the relationship between auditory brainstem responses and envelope following responses". *J Assoc Res Otolaryngol.* 2014 Aug;15(4):649-61. PMID: 24845405
  6. Herrmann B, **Parthasarathy A**, Han E, Obleser J, Bartlett EL. "Sensitivity of rat inferior colliculus neurons to frequency distributions" *J Neurophysiol.* 2015 Nov;114(5):2941-54. PMID: 26354316
    - Contribution – Primary data collection, manuscript preparation
  7. **Parthasarathy A**, Lai J, Bartlett EL. "Age-related changes in processing simultaneous amplitude modulated sounds assessed using envelope following responses" *J Assoc Res Otolaryngol.* 2016 Apr;17(2):119-32. PMID: 26905273
  8. Coventry BS, **Parthasarathy A**, Sommer AL, Bartlett EL. "Hierarchical Winner-Take-All Particle Swarm Optimization social network for neural model fitting" *J Comput Neurosci.* 2017 Feb;42(1):71-85. PMID: 27726048
    - Contribution – Primary data collection
  9. Herrmann B, **Parthasarathy A**, Bartlett EL. "Aging affects dual encoding of periodicity and envelope shape in rat inferior colliculus neurons" *Eur J Neurosci.* 2017 Jan;45(2):299-311. PMID: 27813207
    - Contribution – Primary data collection, manuscript preparation
  10. **Parthasarathy A**, Kujawa SG. "Synaptopathy in the aging cochlea: Characterizing early-neural deficits in auditory temporal envelope processing" *J Neurosci.* 2018 Aug 8;38(32):7108-7119. PMID: 29976623
  11. **Parthasarathy A**, Herrmann B, Bartlett EL. "Aging alters envelope representations of speech-like sounds in the inferior colliculus." *Neurobiol Aging.* 2019 Jan;73:30-40. PMID: 30316050
  12. **Parthasarathy A**, Hancock KE, Bennett K, DeGruttola V, Polley DB. "Bottom-up and top-down neural signatures of disordered multi-talker speech perception in adults with normal hearing" *eLife.* 2020 Jan 21;9:e51419. PMID: 31961322
  13. Lewis RM, Jahn KN, **Parthasarathy A**, Goedicke WB, Polley DB. "Audiometric Predictors of Bothersome Tinnitus in a Large Clinical Cohort of Adults with Sensorineural Hearing Loss" *Otol Neurotol.* 2020 Apr;41(4):e414-e421. PMID: 32176119
    - Contributions – Data collection support, database management, manuscript preparation
  14. **Parthasarathy A**, Pinto SR, Lewis RM, Goedicke WB, Polley DB. "Data-driven segmentation of audiometric phenotypes across a large clinical cohort" *Sci Rep.* 2020 Apr 21;10(1):6704. PMID: 32317648
  15. Chen JX, Whitton JP, **Parthasarathy A**, Hancock KE, Polley DB. "Fluctuations in Subjective

- Tinnitus Ratings Over Time: Implications for Clinical Research” *Otol Neurotol*. 2020 Oct;41(9):e1167-e1173. PMID: 32925865
- Contributions – Data analysis, programming support
16. Okada M, **Parthasarathy A**, Welling BD, Liberman MC, Maison SF. “Idiopathic Sudden Sensorineural Hearing Loss: Speech Intelligibility Deficits Following Threshold Recovery” *Ear Hear*. 2020 Nov 30. PMID: 33259444
- Contributions – Data analysis, programming support, manuscript preparation
17. Grant KJ, **Parthasarathy A**, Vasilkov V, Caswell-Midwinter B, Freitas ME, de Gruttola V, Polley DB, Liberman MC. “Predicting neural deficits in sensorineural hearing loss from word recognition scores” *Sci Rep*. 2022 Jun 23. PMID: 35739134
- Contributions – Data analysis, programming support, manuscript preparation
18. McGill M, Hight AE, Watanabe YL, **Parthasarathy A**, Cai D, Clayton K, Hancock KE, Takesian A, Kujawa SG, Polley DB. “Neural signatures of auditory hypersensitivity following acoustic trauma” *eLife*. 2022 11:e80015. PMID: 36111669
- Contributions – Data collection and analysis, manuscript preparation

#### OTHER PEER REVIEWED PUBLICATIONS

1. **Parthasarathy A**, Bartlett EL, Kujawa SG. “Age-related changes in neural coding of envelope cues: peripheral declines and central compensation”. *Neuroscience*. 2019 May 21;407:21-31. **(Review article)**

#### CONFERENCE ABSTRACTS AND POSTERS

1. **Parthasarathy A**, Cunningham P.A, Bartlett E.L, "Auditory processing in normal versus aged animals assessed at the population level under challenging listening conditions " *Society for Neuroscience* annual meeting, San Diego 2010
2. **Parthasarathy A**, Cunningham P.A, Bartlett E.L, "Age-related changes in auditory processing of modulation waveforms assessed at the population level " Midwinter meeting, *Association of Research in Otolaryngology (ARO)*, Baltimore 2011
3. Evenson C, **Parthasarathy A**, Bartlett E.L, "Effects of the volatile anesthetic isoflurane compared to the sedative Domitor on envelope following responses in young and aged animals" *Aging and Speech communication conference*, Bloomington 2011
4. **Parthasarathy A**, Bartlett E.L, "Age related changes in auditory processing of speech- like stimuli assessed at the population level" *Aging and Speech communication conference*, Bloomington 2011
5. Gardner S, Fisher Z, **Parthasarathy A**, Bartlett E.L, "Markers of inhibitory and excitatory synaptic function and their relationship to auditory evoked responses in young and aged animals" *Aging and Speech communication conference*, Bloomington 2011
6. **Parthasarathy A**, Gardner S.M, Bartlett E.L, "Multi-level analysis of age-related declines in auditory temporal processing", Mid-winter meeting of *The Association of Research in Otolaryngology (ARO)*, San Diego, 2012
7. **Parthasarathy A**, Bartlett E.L, "Age-related changes in auditory processing of speech- like stimuli assessed at population and cellular levels", Annual meeting of the *Society for Neuroscience*, and *Advancements and perspectives in auditory neurophysiology (APAN)*, New Orleans, 2012
8. **Parthasarathy A**, Lai J, Bartlett E.L, “Age-related changes in the neural population

- representation of amplitude modulation in the presence of overlapping maskers", Mid-winter meeting of *The Association of Research in Otolaryngology (ARO)*, Baltimore, 2013
9. Coventry B, Han E, **Parthasarathy A**, Bartlett E.L, "A Study of Age Related Changes in Frequency Tuning and Synaptic Noise in the Inferior Colliculus: Recreating In Vivo Responses Using a Computational Model", *Aging and Speech Communication conference*, IU Bloomington, 2013
  10. Coventry B, Han E, **Parthasarathy A**, Bartlett E.L, "In Vivo and Modeling Study of Age Related Changes in Frequency Tuning and Spontaneous Activity in the Inferior Colliculus, Mid-winter meeting of the *Association of Research in Otolaryngology (ARO)*, Baltimore, 2014
  11. **Parthasarathy A**, Bartlett E.L, "Age-related changes in the transformation of responses to amplitude modulated sounds in the inferior colliculus", Annual meeting of the *Society for Neuroscience*, Washington D.C, 2014.
  12. Coventry B.S, **Parthasarathy A**, Bartlett E.L, "Swarm intelligence meets the brain: Estimating cellular parameters related to auditory processing in young and aged rats using particle swarm optimization", Annual meeting of the *Society for Neuroscience*, Chicago, 2015
  13. Soverns C.S, **Parthasarathy A**, Bartlett E.L "Representations of voice onset timing cues in the inferior colliculus of young and aged rats", Annual meeting of the *Society for Neuroscience*, Chicago, 2015
  14. **Parthasarathy A**, Whitton J.P, Hancock K.E, Polley D.B "Psychophysical and electrophysiological measures of temporal fine structure processing in normal-hearing listeners", *Gordon Research Conference on Plastic and Dynamic Auditory Systems*, Lewiston, 2016
  15. Han E.X, **Parthasarathy A**, Bartlett E.L "Response profiles of inferior colliculus neurons in young and old rats", Annual meeting of the *Society for Neuroscience*, San Diego, 2016
  16. Encina-Llamas G, **Parthasarathy A**, Harte JM, Dau T, Kujawa SG, Shin-Cunningham BG, Epp B "Hidden Hearing Loss with Envelope Following Responses (EFR): The Off-frequency Problem", Mid-winter meeting of the *Association of Research in Otolaryngology (ARO)*, Baltimore, 2017
  17. **Parthasarathy A**, Encina-Llamas G, Shin-Cunningham BG, Kujawa SG "Temporal Processing Deficits Due to Noise-induced Synaptopathy Studied Using Envelope Following Responses", Mid-winter meeting of the *Association of Research in Otolaryngology (ARO)*, Baltimore, 2017
  18. **Parthasarathy A**, Smith EY, Kujawa SG "Temporal Processing Deficits in Age-related Cochlear Synaptopathy", Mid-winter meeting of the *Association of Research in Otolaryngology (ARO)*, Baltimore, 2017
  19. **Parthasarathy A**, Whitton JP, Hancock KE, Polley DB "Psychophysical and Electrophysiological Measures of Temporal Fine Structure Processing in Normal-hearing Listeners", Mid-winter meeting of the *Association of Research in Otolaryngology (ARO)*, Baltimore, 2017
  20. **Parthasarathy A**, Hancock KE, Polley DB "Neural and perceptual signatures of temporal fine structure processing underlying speech-in-noise intelligibility", Mid-winter meeting

- of the *Association of Research in Otolaryngology* (ARO), San Diego, 2018
21. Chen JX, Whitton JP, **Parthasarathy A**, Hancock KE, Polley DB “Audiometric Characteristics of Blast and Non-blast Patients with Chronic Subjective Tinnitus”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Baltimore 2019
  22. Lewis RM, **Parthasarathy A**, Polley DB “Audiological Predictors of Tinnitus in Patients at Massachusetts Eye and Ear”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Baltimore 2019
  23. **Parthasarathy A**, Hancock KE, Polley, DB “From temporal fine structure to patterned motifs: a multiplexing strategy to study contextual modulation of auditory temporal processing in humans”, *Advancements and Perspectives in Auditory Neurophysiology (APAN)*, 2020 (remote).
  24. McGill M, Hight AE, Watanabe Y, Cai D, Clayton KK, **Parthasarathy A**, Polley DB “Cortical Changes Underlying Perceptual Hypersensitivity”, *Advancements and Perspectives in Auditory Neurophysiology (APAN)*, 2020 (remote)
  25. McGill M, Hight AE, Watanabe Y, Cai D, Clayton KK, **Parthasarathy A**, Polley DB “Ensemble Signatures of Cortical Hyperactivity at Cellular Scale”, *Advancements and Perspectives in Auditory Neurophysiology (APAN)*, 2021 (remote)
  26. McGill M, Hight AE, Watanabe Y, Cai D, Clayton KK, **Parthasarathy A**, Polley DB “Ensemble and Cellular Signatures of Cortical Hyperactivity Following Acoustic Trauma”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), San Jose, 2022
  27. Victoria E. Cancel, Jacie R. McHaney, Virginia Milne, Catherine Palmer, **Aravindakshan Parthasarathy** “Hearing Difficulties with Normal Audiograms: Insights from the APD Test Battery”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), San Jose, 2022
  28. Jacie R. McHaney, Kenneth E. Hancock, Daniel B. Polley, **Aravindakshan Parthasarathy** “Neurophysiological markers of central gain and their relationship to speech-in-noise intelligibility”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), San Jose, 2022
  29. G. Nike Gnanateja, Tera Quigley, Golbarg Mehraei, Erik Larsen, Jonathon Whitton, Bharath Chandrasekaran, **Aravindakshan Parthasarathy**, “Middle Ear Muscle Reflexes are Potential Biomarkers of Peripheral Neural Dysfunction in Individuals with Chronic Tinnitus”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), San Jose, 2022
  30. **Parthasarathy A**, Grant KJ, Freitas ME, Caswell-Midwinter B, Polley DB, Liberman MC , Maison SF, “Speech intelligibility deficits in Sensorineural Hearing Loss of Differing Etiologies”, Annual Scientific and Technology Conference of the American Auditory Society, Scottsdale, 2022
  31. Grant KJ, **Parthasarathy A**, Vasilkov V, Polley DB, Liberman MC, Maison SF “Assessing Neural Deficits in Patients with Sensorineural Hearing Loss”, Annual Scientific and Technology Conference of the American Auditory Society, Scottsdale, 2022
  32. Victoria E. Cancel, Jacie R. McHaney, Virginia Milne, Catherine Palmer, **Aravindakshan Parthasarathy** “Hearing Difficulties with Normal Audiograms: Insights from the APD Test Battery”, Annual meeting of the American Academy of Audiology, St. Louis, 2022
  33. Jacie R. McHaney, Kenneth E. Hancock, Daniel B. Polley, **Aravindakshan Parthasarathy** “Neurophysiological markers of central gain and their relationship to speech-in-noise

- intelligibility in normal-hearing listeners” Gordon Research Conference (Auditory system), Bryant University, 2022
34. David Sorensen, **Aravindakshan Parthasarathy**, Kenneth E. Hancock, Daniel B. Polley “Distracting Synchrony: Multiplexed Measures of Temporal Processing and Auditory Distraction”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  35. Benjamin Caswell-Midwinter, Viacheslav Vasilkov, **Aravindakshan Parthasarathy**, Daniel B. Polley, M. Charles Liberman, Stéphane F. Maison “The Relation Between Cochlear Nerve Survival and Word Recognition Scores”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  36. Satyabrata Parida, Kimberly Yurasits, Victoria E. Cancel, Maggie E. Zink, Claire Mitchell, Meredith C. Ziliak, Audrey V. Harrison, Edward Bartlett, **Aravindakshan Parthasarathy** “Rapid Assessment of Temporal Processing From the Peripheral and Central Auditory Pathway Using Dynamic Amplitude Modulated Stimuli”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  37. Kimberly Yurasits, Jennifer Klara, Victoria Cancel, Claire Mitchell, Satyabrata Parida, **Aravindakshan Parthasarathy** “Age-Related Changes in the Neural Processing of Envelope and Fine-Structure Cues, Assessed in the Mongolian Gerbil”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  38. Leslie Zhen, Jacie R. McHaney, Maggie E. Zink, Claire Mitchell, Satyabrata Parida, Sarah Anthony, Megan Hallihan, Christopher A. Brown, Bharath Chandrasekaran, **Aravindakshan Parthasarathy** “Age-Related Differences in Neural and Perceptual Signatures of Temporal Fine Structure Processing Underlying Multi-Talker Speech Intelligibility”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  39. Maggie Zink, Jacie R. McHaney, Claire Mitchell, Sarah Anthony, Megan Hallihan, Bharath Chandrasekaran, **Aravindakshan Parthasarathy** “Neurophysiological Markers of Sensory Gain and Their Relationship to Speech Perception in Noise in Young and Middle-Aged Adults”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  40. Jacie R. McHaney, Leslie Zhen, Sarah Anthony, Zilong Xie, **Aravindakshan Parthasarathy**, Bharath Chandrasekaran “Deficits in Sensory Decision-Making Underlie Self-Perceived Hearing Difficulties”, Mid-winter meeting of the *Association of Research in Otolaryngology* (ARO), Orlando, 2023
  41. Claire Mitchell, Maggie E. Zink, Jacie R. McHaney, Sarah Anthony, Megan Hallihan, Bharath Chandrasekaran, **Aravindakshan Parthasarathy** “Relationship between altered auditory temporal processing and speech perception in noise in young and middle-aged adults”, Annual meeting of the American Academy of Audiology, Seattle, 2023
  42. Kimberly Yurasits, Leslie Q. Zhen, Satyabrata Parida, Jennifer Klara, Jacie R. McHaney, Victoria Cancel, Maggie E. Zink, Claire Mitchell, Bharath Chandrasekaran, **Aravindakshan Parthasarathy** “Age-related changes in sTFS cues and their relationship to multi-talker speech intelligibility”, Annual meeting of the American Academy of Audiology, Seattle, 2023

## PROFESSIONAL ACTIVITIES

## TEACHING

### Student Teaching:

2007, ( <i>Spring semester</i> )	Human Anatomy and Physiology BIOL203- nursing students, Total class size – 65/term	Purdue University, Teaching Assistant, 8 hours/week/semester
2008, 2010, 2012, ( <i>Fall semester</i> )	Human Anatomy and Physiology BIOL204- nursing students, Total class size – 65/term	Purdue University, Teaching Assistant, 8 hours/week/semester
2009, 2010, 2011 ( <i>Fall semester</i> )	Lab in Neurophysiology BIOL 542N – senior undergraduate and graduate students, Total class size – 8/term	Purdue University, Teaching Assistant, 20 hours/week for 6 weeks/semester
2021 ( <i>Spring semester</i> )	Advanced physiological assessment CSD 2214 – Audiology graduate students, Total class size – 12	University of Pittsburgh, Instructor, 3 hours/week/semester
2022 ( <i>Fall semester</i> )	Ph.D. Seminar in Audiology CSD 2221 – Communication Science and Disorders graduate students, Total class size – 5	University of Pittsburgh, Instructor, 3 hours/week/semester
2022 ( <i>Spring semester</i> )	Advanced physiological assessment CSD 2224 – Audiology graduate students, Total class size – 10	University of Pittsburgh, Instructor, 3 hours/week/semester
2023 ( <i>Fall semester</i> )	Ph.D. Seminar in Audiology CSD 2221 – Communication Science and Disorders graduate students, Total class size – 3	University of Pittsburgh, Instructor, 3 hours/week/semester
2023 ( <i>Spring semester</i> )	Advanced physiological assessment CSD 2224 – Audiology graduate students, Total class size – 10	University of Pittsburgh, Instructor, 3 hours/week/semester

### Mentoring:

2008-2010	<u>Paul Cunningham</u> Career stage: Undergraduate biomedical engineering student. Mentoring Role: Research supervisor. Accomplishments: Co–author on one peer
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- reviewed research article, and two poster presentations at national conferences
- 2010-2011 Chris Evenson  
 Career stage: Undergraduate pre-medical student. Mentoring Role: Research supervisor. Accomplishments: Co–author on one poster presentation at a national conference
- 2012-2014 Jesyin Lai  
 Career stage: Graduate student. Mentoring Role: Research trainer. Accomplishments: Co–author on one peer reviewed research article, and two poster presentations at regional conferences
- 2013 Charneka L Hopkins  
 Career stage: Undergraduate summer intern. Mentoring Role: Research supervisor. Accomplishments: Co–author on one peer reviewed research article, and two poster presentations at regional conferences
- 2013 Julie Ann Luna Torres  
 Career stage: Undergraduate summer intern. Mentoring Role: Research supervisor. Accomplishments: Co–author on one peer reviewed research article, and two poster presentations at regional conferences
- 2013-2014 Emily X Han  
 Career stage: Graduate student. Mentoring Role: Research supervisor. Accomplishments: Co–author on one poster presentation at a national conference
- 2017 Jared Hill  
 Career stage: Undergraduate summer intern. Mentoring Role: Research supervisor. Accomplishments: Development of a graphical user interface to search the Mass Eye and Ear clinical audiology database and access patient records, which is currently being used by multiple otolaryngology research groups at Mass. Eye and Ear.
- 2020 Weston Enterline  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: “Interactions between overt hearing loss and hidden neural loss as assessed by existing clinical markers”, Graduate research poster.
- 2020- 2022 Victoria Cancel  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Studied patterns of Auditory Processing Disorders and clinical indicators of cochlear synaptopathy for graduate research project. Presented two posters, at the midwinter meeting of ARO and the annual

meeting of AAA. Won the James and Susan Jerger Award for Excellence in Student Research at the annual AAA meeting 2022.

2020- present

Jacie McHaney

Career stage: Graduate Student, Communication Science and Disorders. Mentoring Role: Research supervisor. Accomplishments: Currently studying interactions between cognitive effort and neural coding for speech intelligibility, for graduate research project. Presented a poster at the midwinter meeting of ARO.

2021- present

Kimberly Yurasits

Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently studying role of peripheral and central auditory pathway in age-related deficits representing temporal envelope cues, for graduate research project.

2021- present

Maggie Zink

Career stage: Graduate Student, Communication Science and Disorders. Mentoring Role: Graduate Advisor. Accomplishments: Currently studying interactions between cognitive effort and neural coding for speech intelligibility, for graduate research project.

2021- present

Claire Mitchell

Career stage: Undergraduate Student, Communication Science and Disorders. Mentoring Role: Research Advisor. Accomplishments: Currently studying role of peripheral and central auditory pathway in age-related deficits representing temporal envelope cues. Awarded the McMurtry Family Undergraduate Research Award in 2022 for project titled "Development of an objective electrophysiological diagnostic test to characterize early-onset effects of Alzheimer's Disease using auditory temporal processing".

2021- 2022

Mayan Gershon-Harris

Career stage: Highschool Student, Taylor-Allderdice High School. Mentoring Role: Research Advisor. Accomplishments: Comparative assessment of objective hearing thresholds obtained using phasic and sustained auditory evoked potentials, for high school Research Rotation class. Presented posters at multiple regional high school science fairs. Won First place in "Best Presentation" category at Taylor Allderdice High School poster presentation competition for poster titled "Objective Measures of Hearing Thresholds".

2021- present

Elizabeth Hary

Career stage: Graduate Student. Mentoring Role: PhD planning committee.

2022- present

Vishal Bandaru

Career stage: Undergraduate Student. Mentoring Role: Research Advisor. Accomplishments: Currently studying role of peripheral and central auditory

- pathway in age-related deficits representing temporal envelope cues, as a research rotation.
- 2022 Megan Arnold  
 Career stage: MD/PhD graduate student. Mentoring Role: Research Advisor. Accomplishments: Studied the effects of round-window application of ouabain on auditory temporal processing as a research rotation.
- 2022-present Owen Hohner  
 Career stage: Undergraduate student, BioEngineering. Mentoring Role: Research Advisor. Accomplishments: Currently studying various spectral analysis for auditory evoked potentials.
- 2022-present Hansini Kumar  
 Career stage: Undergraduate student, BioEngineering. Mentoring Role: Research Advisor. Accomplishments: Currently studying the role of fine structure cues in auditory temporal processing
- 2021- present David Jedlicka  
 Career stage: Graduate Student. Mentoring Role: PhD planning committee.
- 2022- present Shelby Sydenstricker  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently studying role of peripheral and central auditory pathway in noise-induced deficits representing temporal envelope cues, for graduate research project.
- 2022- present Elizabeth Piorkowski  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently studying interactions between cognitive effort and neural coding for speech intelligibility, for graduate research project.
- 2022- present Courtney Hannigan  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently conducting retrospective chart review on pediatric unilateral hearing loss, for graduate research project.
- 2022- present Leslie Zhen  
 Career stage: Graduate Student, Communication Science and Disorders. Mentoring Role: Research supervisor. Accomplishments: Currently studying interactions between cognitive effort and neural coding for temporal fine structure cues as it relates to speech intelligibility.
- 2022- present Olivia Flemm  
 Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently studying the role of noise damage on

peripheral auditory function and speech perception in middle-aged adults, for graduate research project.

2022- present Rachel Blake

Career stage: Graduate Student, Audiology. Mentoring Role: Graduate Mentor. Accomplishments: Currently studying role of peripheral and central auditory pathway in noise-induced deficits representing temporal envelope cues, for graduate research project.

## RESEARCH

### *Current Grant Support:*

<b><i>Grant Number (funded)</i></b>	<b><i>Grant Title</i></b>	<b><i>Role in Project</i></b> <b><i>%Effort</i></b> <b><i>Clnr Mnths</i></b>	<b><i>Years Inclusive</i></b>	<b><i>Source \$ Amount</i></b>
NIDCD R21DC018882 (NIH)	“Effects of Age-related Cochlear Synaptopathy on Speech-in-noise Intelligibility: A Cross-species Approach”	PI 25% 3 months	3/1/22 - 2/30/25	\$575, 169
DoD W81XWH2110602 (Department of Defense)	“Rapid Triage to Dissociate Peripheral and Central Auditory Effects Using Objective Electrophysiological Measures in Rodents and Humans”	Co-I (PI Bartlett) 16.67% 2 months	11/2021 - 10/2023	\$ 103,400
Hearst Foundation	“SUPPORT- scale of usability, performance, and participation for optimizing real-world technology”	Co-I 0% 0 months	1/1/23 - 12/31/23	\$100,000
Competitive Medical Research Fund (University of Pittsburgh)	Effects of age-related cochlear synaptopathy on the neural coding of stimulus temporal fine structure	PI 15% 1.8 months	07/2021 – 06/2023	\$25,000
PNC-Trees Charitable Fund	Assessing Communication Disorders Across the Lifespan Using Neuroimaging Technology	Co-I 5% 0.6 months	07/2020 - 06/2023	\$500,000

**Pending Grant Support:**

<b>Grant Number</b>	<b>Grant Title</b>	<b>Role in Project %Effort Clnr Mnths</b>	<b>Years Inclusive</b>	<b>Source \$ Amount</b>
NIDCD R25 DC020922-01A1	<i>“Translational Auditory NeuroScience: Lab-based Training for Empowered Self-efficacy (TRANSLATES)”</i>	PI 5% 0.6 months	12/2023 - 11/2028	\$1,330,152
NIDCD R01DC021247	<i>“A cross species approach to unraveling complex listening difficulties in children with unilateral hearing loss”</i>	PI 12.5% 1.5 months	07/2023 - 09/2028	\$3,721,443
DoD HRRP	<i>“Peripheral Damage and Central Consequences of Noise Exposure as a Function of Age”</i>	PI 11% 1.32 months	07/2023 - 06/2026	\$1,533,841

**Non-Funded Research**

- “Objective Biomarkers for tinnitus”, Collaboration with Decibel Therapeutics Inc., IRB# STUDY21060049, DUA# 00003119
- “Retrospective Chart Review of Pediatric Unilateral Hearing Loss”, IRB# STUDY22100094
- “Retrospective study to identify clinical markers of underlying neural deficits in patients with normal audiometric thresholds”, IRB# STUDY20090208
- “Retrospective study to identify clinical markers of underlying neural deficits in patients with high frequency hearing loss.”, IRB# STUDY20090200

**Patents**

1. Provisional US Patent Application No. 63/479,768, titled “Rapid Assessment of Temporal Processing, Such as from the Peripheral and Central Auditory Pathway, Using Dynamic Amplitude Modulated Stimuli”, filed on Jan 13, 2023.

**Editorships**

2016-	Review Editor	Frontiers in Neuroscience
2016-	Review Editor	Frontiers in Psychology
2019-	Review Editor	Frontiers in Human Neuroscience
2023	Guest Editor, Special Issue	Brain and Language

**Ad hoc Reviewer**

- Communications Biology
- Ear and Hearing
- Journal of Neurophysiology
- Journal of the Association for Research in Otolaryngology
- Neurobiology of Aging

- Hearing Research
- Scientific Reports
- Journal of the Acoustical Society of America
- Trends in Hearing
- Seminars in Hearing
- Frontiers in Cellular Neuroscience
- International Journal of Audiology
- Journal of Clinical Medicine
- International Journal of Developmental Neuroscience

### **Grant Reviewing**

- National Institutes of Health (NIH) National Institute of Deafness and Other Communication Disorders (NIDCD) Auditory systems (AUD) study section, *Ad Hoc* Reviewer, October 2022

### **LIST OF CURRENT RESEARCH INTERESTS**

I am interested in understanding how changes in the peripheral auditory system and in central auditory pathways contribute to various forms of hearing loss. My skill set and experience make me one of few people in the field of hearing research to assess hearing function in animal models and in human clinical populations, with non-invasive electrophysiological measurements forming the translational bridge between the two. I am in a unique position to study the entire auditory pathway, from synaptic elements in the cochlea to neural deficits in the cortex, in humans and in animal models. This will be particularly insightful for studying complex process like aging and noise trauma, whose effects manifest in a systemic way and is not limited to a particular region of the auditory pathway. I believe this will help me make significant contributions to our understanding of changes in hearing due to acoustic trauma and its interactions with various pathologies associated with the aging process.

### **INVITED SEMINARS AND LECTURESHIPS**

#### **Local Presentations**

- |      |  |
|------|--|
| 2013 | “Using Frequency following responses to examine age-related changes in auditory temporal processing” (Invited lecture)<br>Seminars in Hearing Research, Purdue University, West Lafayette IN                     |
| 2013 | “Relationship between frequency following responses and other measures of auditory function in an animal model of aging” (Invited lecture)<br>Seminars in Hearing Research, Purdue University, West Lafayette IN |
| 2013 | “Age-related changes in the neural encoding of sounds in the auditory pathway” (Invited lecture)   |

- Biological Sciences departmental retreat, Plymouth IN
- 2014 “Age-related changes in the representation of simultaneous amplitude-modulated tones in the auditory brainstem and midbrain” (Invited lecture)  
Seminars in Hearing Research, Purdue University, West Lafayette, IN,
- 2014 “Separating the contributions of the peripheral and central auditory system to age-related deficits in temporal processing” (Invited lecture)  
Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston MA
- 2020 “A cross-species approach for studying markers and mechanisms of speech intelligibility” (Grand Rounds)  
University of Pittsburgh, Pittsburgh PA
- 2021 “A cross-species approach for studying markers and mechanisms of speech intelligibility” (Research Round Table, Communication Science and Disorders)  
University of Pittsburgh, Pittsburgh PA
- 2021 “A cross-species approach for studying markers and mechanisms of speech intelligibility” (T32 seminar) University of Pittsburgh, Pittsburgh PA
- 2021 “A Cross-Species Approach to Understanding the Physiological Mechanisms of Age-related Hearing Loss” Aging Institute, University of Pittsburgh, Pittsburgh PA
- 2021 “A Cross-Species Approach to Understanding the Physiological Mechanisms of Age-related Hearing Loss” Aging Institute, University of Pittsburgh, Pittsburgh PA
- 2022 “Towards objective diagnostic tests for “hidden” hearing loss” Department of Otolaryngology, University of Pittsburgh, Pittsburgh PA
- 2022 “Modeling of Auditory Disorders” Department of Neurobiology (T32 lecture), University of Pittsburgh, Pittsburgh PA
- 2022 “Age-related changes in auditory temporal processing: peripheral declines and central effects” Department of Communication Science and Disorders (Neuroscience of Communication Lecture), University of Pittsburgh, Pittsburgh PA
- 2023 “A cross-species approach to understanding the physiological mechanisms underlying hidden hearing loss” Department of BioEngineering Seminar Series, University of Pittsburgh, Pittsburgh PA
- 2023 “A cross-species approach to understanding the physiological mechanisms underlying hidden hearing loss” Department of Communication Science and Disorders (Neuroscience of Communication Lecture), University of Pittsburgh, Pittsburgh PA

### **Regional**

- 2013 “Using Frequency following responses to examine age-related changes in auditory temporal processing” (Invited lecture)  
University of Illinois at Urbana-Champaign, Urbana- Champaign IL

- 2013 “Age-related changes in the neural encoding of sounds in the auditory pathway”  
(Invited lecture)  
Neuroscience division, Eli Lilly, Indianapolis IN
- 2017 “Age-related changes in neural coding of envelope cues: peripheral declines and  
central compensation” (Invited lecture)  
Workshop on Synaptopathy, Boston University, Boston MA,
- 2018 “Using Envelope following responses to assess auditory temporal processing”  
(Invited lecture)  
AKOUOS, Boston MA
- 2019 “Age-related changes in neural coding of envelope cues: peripheral declines and  
central compensation” (Invited lecture)  
University of Pittsburgh, Pittsburgh PA
- 2022 “A Cross-Species Approach to Understanding the Physiological Mechanisms of  
Age-related Hearing Loss”, Northeast Ohio Medical University
- 2023 “A Cross-Species Approach to Understanding the Physiological Mechanisms  
underlying Age-related Hearing Loss”, Neuroscience and Cognitive Science  
Seminar, University of Maryland

#### **National/International**

- 2013 “Relationship between frequency following responses and other measures of  
auditory function in an animal model of aging” (selected oral abstract)  
Aging and Speech Communication conference, Indiana University, Bloomington  
IN, October 2013
- 2014 “Relationship between frequency following responses and other measures of  
auditory function in an animal model of aging” (selected oral abstract)  
Midwinter meeting of the Association for Research in Otolaryngology (ARO), San  
Diego CA
- 2017 “Age-related changes in neural coding of envelope cues: peripheral declines and  
central compensation” (Invited lecture)  
Aging and Speech Communication Conference, University of Southern Florida,  
Tampa FL
- 2018 “Exaggerated temporal processing deficits as animals age after synaptopathic  
noise” (selected oral abstract)  
Midwinter meeting of the Association for Research in Otolaryngology (ARO), San  
Diego CA
- 2019 “Age-related changes in neural coding of envelope cues: peripheral declines and  
central compensation” (Invited lecture)  
Midwinter meeting of the Association for Research in Otolaryngology (ARO),  
Baltimore MD

- 2019 “Individual variability in temporal fine structure processing underlying speech-in-noise intelligibility in listeners with “normal” audiograms” (selected oral abstract)  
Midwinter meeting of the Association for Research in Otolaryngology (ARO), Baltimore MD
- 2021 “A cross-species approach for studying markers and mechanisms of speech intelligibility”  
Electronic Auditory Research Seminar series (E.A.R.S)
- 2022 “Using Envelope Following Responses (EFRs) to Objectively Assess Auditory Temporal Processing”  
AudiologyOnline Webinar

## **SERVICE**

### University and Medical School Service

- 2020 - present SHRS Academic Integrity Board - Graduate
- 2022-present SHRS Educational Excellence Advisory Council member

### Departmental Service

- 2020 Research Round Table faculty panel on post-doctoral searches
- 2020 – present Audiology graduate program admissions committee member.
- 2020 – present Audiology graduate program 4<sup>th</sup> year comprehensive exams committee member.
- 2021 Research Round Table faculty panel on transitioning to an academic position
- 2021 Audrey Holland Endowed Student Research Award Review Committee
- 2022-present Audiology graduate program 2<sup>nd</sup> year comprehensive exams committee

### Professional Society Service

- 2021 Faculty panel on transitioning to a career in academia, Association for Research in otolaryngology (ARO) midwinter meeting (*remote*)
- 2023 Co-organizer, special session titled “Top-down and bottom-up processing in individuals with normal hearing and hearing difficulties” at the Acoustical Society of America meeting, Sydney, Australia