Jason W. Bohland, Ph.D.

Assistant Professor of Communication Science and Disorders
School of Health and Rehabilitation Sciences, University of Pittsburgh
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EDUCATION:

2007 **Boston University**, Boston, MA
Doctor of Philosophy, Cognitive and Neural Systems
Dissertation: *Neuroimaging and computational modeling of syllable sequence production*
Dissertation advisor: Frank H. Guenther, Ph.D.

2000 **University of Cincinnati**, Cincinnati, OH
Master of Science, Electrical Engineering, Systems Engineering specialization (*Honors*)
Thesis: *Associative memory on small-world networks*
Thesis advisor: Ali A. Minai, Ph.D.

1998 **University of Cincinnati**, Cincinnati, OH
Bachelor of Science, Computer Engineering (*Cum Laude*)

ACADEMIC POSITIONS:

2019 – Present   Assistant Professor, Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
University of Pittsburgh, Pittsburgh PA

2022 – Present   Assistant Professor, Department of Bioengineering
Swanson School of Engineering
University of Pittsburgh, Pittsburgh PA

2019 – Present   Faculty, Center for the Neural Basis of Cognition
Carnegie Mellon University / University of Pittsburgh, Pittsburgh PA

2017 – 2019   Associate Director and Senior Research Scientist, Cognitive Neuroimaging Center
Rajen Kilachand Center for Integrated Life Sciences and Engineering
Boston University, Boston, MA

2009 – 2017   Assistant Professor, Department of Health Sciences
Assistant Professor, Department of Speech, Language & Hearing Sciences
College of Health & Rehabilitation Sciences: Sargent College
Boston University, Boston, MA

Additional faculty affiliations held at Boston University:
Joint Programmatic Appointment, Undergraduate Program in Neuroscience
Affiliated Faculty, Graduate Program for Neuroscience
Junior Faculty Fellow, Rafik B. Hariri Institute for Computational Science and Engineering
Faculty, Center for Research in Sensory Communication & Emerging Neural Technology
Faculty, Center for Systems Neuroscience
Faculty, Center for Computational Neuroscience and Neural Technology
Faculty, Center of Excellence for Learning in Education, Science and Technology

2009 – 2013   Research Consultant, Brain Architecture Project
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

2007 – 2009	Scientific Informatics Manager, Brain Architecture Project Cold Spring Harbor Laboratory, Cold Spring Harbor, NY
2007	Postdoctoral Fellow, Brain Architecture Project Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

AWARDS AND HONORS:

2015	Whitney R. Powers Award for Teaching Excellence, Boston University College of Health and Rehabilitation Sciences: Sargent College
2013	Organization for Human Brain Mapping Hackathon Winner ("MNI Mashup" challenge; member of team Mindboggle-102)
2012	Competitively selected as Junior Faculty Fellow, Rafik B. Hariri Institute for Computing and Computational Science and Engineering, Boston University
2012	Competitively selected for participation in ASHA/NIDCD Lessons for Success Workshop, Rockville, MD (fully funded fellowship)
2011	Nominated for Alfred P. Sloan Foundation Sloan Research Fellowship in Neuroscience (not selected)
2011	Featured Speech Science Lecturer, American Speech Language Hearing Association (ASHA) Convention, November 2011, San Diego, CA.
2011	Commencement Speaker, Boston University Undergraduate Program in Neuroscience (selected by student body)
2004	Organization for Human Brain Mapping Travel Award
2000	Presidential University Graduate Fellowship, Boston University
2000	Electrical Engineering Special Service Award, University of Cincinnati
1998 – 2000	M.S. Honors Program, Electrical Engineering, University of Cincinnati
1994 – 1998	University Honors Scholarship, University of Cincinnati

PEER-REVIEWED ARTICLES: (asterisks indicate a student co-author)

Google Scholar Profile: https://goo.gl/frghfA

22. Malloy JR*, Nistal DA*, Heyne M, Tardif MC*, Bohland JW (2022). Delayed auditory feedback elicits specific patterns of serial order errors in a paced syllable sequence production task. *Journal of Speech, Language, and Hearing Research*, 65(5): 1800-1821.

21. Lescht E*, Venker CE, McHanie JR*, Bohland JW, Hampton Wray A (2022). Novel word recognition in childhood stuttering. *Topics in Language Disorders*, 42(1): 41-56.

20. Tomassi NE*, Weerathunge HR*, Cushman MR, Bohland JW, and Stepp CE (2022). Assessing ecologically valid methods of auditory feedback measurement in individuals with typical speech. *Journal of Speech, Language, and Hearing Research*, *65*(1): 121–135.

19. Cler GJ*, Lee JC*, Mittelman T*, Stepp CE, and Bohland JW (2017). Kinematic analysis of speech sound sequencing errors induced by delayed auditory feedback. *Journal of Speech, Language, and Hearing Research*, 60: 1695-1711.

18. Markiewicz CJ* and Bohland JW (2016). Mapping the cortical representation of speech sounds in a syllable repetition task. *NeuroImage,* 141: 174-190.

17. Bohland JW (2016). Toward a multimodal, multiscale understanding of white matter abnormalities in autism spectrum disorder. *Biological Psychiatry*, 79(8): e47-48.

16. Sandberg CW*, Bohland JW, Kiran S (2015). Changes in functional connectivity related to direct training and generalization effects of a word finding treatment in chronic aphasia. *Brain and Language,* 150:103-116.

15. Myers EM*, Bartlett CW, Machiraju R, Bohland JW (2015). An integrative analysis of regional gene expression profiles in the human brain. *Methods*, 73: 54-70.

14. Grange P, Bohland JW, Okaty BW, Sugino K, Bokil H, Nelson SB, Ng L, Hawrylycz M, Mitra PP (2014). Cell-type based model explaining co-expression patterns of genes in the brain. *Proceedings of the National Academy of Sciences of the United States of America*, 111(14): 5397-402.

13. Bohland JW, Myers EM*, Kim E* (2014). An informatics approach to integrating genetic and neurological data in speech and language neuroscience. *Neuroinformatics*, 12(1): 1109-19.

12. Wolock S, Yates A, Petrill SA, Bohland JW, Blair C, Li N, Machiraju R, Huang K, Bartlett C (2013). Gene × smoking interactions on human brain gene expression: finding common mechanisms in adolescents and adults. *Journal of Child Psychology and Psychiatry*, 54(10):1109-19

11. Bohland JW, Saperstein S*, Pereira F, Grady L (2012). Network, anatomical, and non-imaging measures for the prediction of ADHD diagnosis in individual subjects. *Frontiers in Systems Neuroscience*, 6: 78.

10. Golfinopoulos E, Tourville JA, Bohland JW, Ghosh SS, Nieto-Castanon A, Guenther FH (2011). fMRI investigation of unexpected somatosensory feedback perturbation during speech. *NeuroImage.* 55(3): 1324-39.

9. Bohland JW, Bokil H, Pathak SD, Lee CK, Ng L, Lau C, Kuan C, Hawrylycz M, Mitra PP (2010). Clustering of spatial gene expression patterns in the mouse brain and comparison with classical neuroanatomy. *Methods*, 50(2), 105-112.

8. Bohland JW, Bullock D, Guenther FH (2010). Neural representations and mechanisms for the performance of simple speech sequences. *Journal of Cognitive Neuroscience*, 22(7), 1504-1529.

7. Bohland JW, Bokil H, Allen CB, Mitra PP (2009). The brain atlas concordance problem: quantitative comparison of anatomical parcellations. *PLoS ONE*, 4(9), e7200.

6. Bohland JW, Wu C, Barbas H, Bokil H, Bota M, Breiter HC, Cline HT, Doyle JC, Freed PJ, Greenspan RJ, Haber SN, Hawrylycz M, Herrera DG, Hilgetag CC, Huang ZJ, Jones A, Jones EG, Karten HJ, Kleinfeld D, Kötter R, Lester HA, Lin JM, Mensh BD, Mikula S, Panksepp J, Price JL, Safdieh J, Saper CB, Schiff ND, Schmahmann JD, Stillman BW, Svoboda K, Swanson LW, Toga AW, Van Essen DC, Watson JD, Mitra PP (2009). A proposal for a coordinated effort for the determination of brainwide neuroanatomical connectivity in model organisms at a mesoscopic scale. *PLoS Computational Biology*, 5(3), e1000334.

5. Ng L, Bernard A, Lau C, Overly CC, Dong HW, Kuan C, Pathak S, Sunkin SM, Dang C, Bohland JW, Bokil H, Mitra PP, Puelles L, Hohmann J, Anderson DJ, Lein ES, Jones AR, Hawrylycz M (2009). An anatomic gene expression atlas of the adult mouse brain. *Nature Neuroscience*, 12(3), 356-62.

4. Lin JM, Bohland JW, Andrews P, Burns GA, Allen CB, and Mitra PP (2008). An analysis of the abstracts presented at the annual meetings of the Society for Neuroscience from 2001 to 2006. *PLoS ONE*, 3(4), e2052.

3. Bohland JW and Guenther FH (2006). An fMRI investigation of syllable sequence production. *NeuroImage*, 32 (2), 821-841.

2. Guenther FH and Bohland JW (2002). Learning sound categories: a neural model and supporting experiments. *Acoustical Science and Technology*, 23(4): 213-220.

1. Bohland JW and Minai AA (2001). Efficient associative memory using small-world architecture. *Neurocomputing*, 38-40, 489-496.

MANUSCRIPTS IN PREPARATION:

Tardif MC, Ocampo A, and Bohland JW. Adaptation to delayed auditory feedback. To be submitted to special issue of Journal of Speech, Language, and Hearing Research *(Groningen Motor Speech Conference), March 2023.*

Dastolfo-Hromack C, Lipski W, Bush A, Bohland JW, Turner RS, Fraundorf S, Holt LL, Fiez J, Shaiman S, Richardson RM. Activity in the subthalamic nucleus indexes the coupling of articulation and vocal intensity.

Myers EM, Hawrylycz MH, and Bohland JW. A comparative study of regional gene expression in the mouse and human brain.

PREREGISTRATIONS:

Vize C, Helou L, Bohland J, Brown C, Welch B, and Wright AGC. Listener agreement on speaker's personality traits using audio samples. https://doi.org/10.17605/OSF.IO/7QGPS.

BOOK CHAPTERS:

Bohland JW, Tourville JA, and Guenther FH (2019). Neural bases of speech production. In WF Katz and PF Assmann (Eds.), *The Routledge Handbook of Phonetics*, Abingdon, Oxon; New York, NY: Routledge.

Guenther FH, Tourville JA, and Bohland JW (2014). Speech production. In AW Toga and RA Poldrack (Eds.). *Brain Mapping: An Encyclopedic Reference*. Amsterdam: Elsevier.

"PET and fMRI". In Mitra PP and Bokil H (2007). *Observed Brain Dynamics*. Oxford University Press (primary author of book chapter).

OTHER PUBLICATIONS:

Schlafly, E, Cheung, A, Michalka, SW, Lipton, PA, Moore-Kochlacs, C, Bohland, JW, Eden U and Kramer, M (2020). Python for the practicing neuroscientist: an online educational resource. *Authorea Preprints*. July 1, 2020. doi: 10.22541/au.159363438.81020330. Published in *elife Labs*: Aug 10, 2020.

Grange P, Bohland JW, Hawrylycz M, Mitra PP. Brain gene expression analysis: A MATLAB toolbox for the analysis of brain-wide gene-expression data. arXiv:1211.6177 [q-bio.NC].

Guenther FH, Ghosh SS, Nieto-Castanon A, Tourville JA, and Bohland JW (2002). 'Holes' in the brain help us sort out sounds. "Lay language" press paper for the 143rd Meeting of the Acoustical Society of America, Pittsburgh, PA.

CONFERENCE ABSTRACTS: (asterisks indicate a student co-author, † indicates presenter)

Dastolfo-Hromack C[†], Lipski W, Bush A, Bohland JW, Turner RS, Fraundorf S, Holt LL, Fiez J, Shaiman S, Richardson RM (October 2022). Activity in the subthalamic nucleus indexes the coupling of articulation and vocal intensity. *14th Annual Meeting of the Society for the Neurobiology of Language*, Philadelphia, PA.

Tardif MC[*†], Heyne M, Petitjean A, Fox C, and Bohland JW (August 2022). The effects of delayed auditory feedback depend on the presence of phonetic information in the feedback signal. *8th International Conference on Speech Motor Control*, Groningen, The Netherlands.

Tardif MC[*†] and Bohland JW (August 2022). Adaptation to delayed auditory feedback. *8th International Conference on Speech Motor Control*, Groningen, The Netherlands.

Heyne M[†], Tardif MC*, Petitjean A*, Hacker E*, Pennetti V*, Bohland JW (February 2022). Changes in speech rate induced by delayed auditory feedback under different speaking conditions. *21st Biennial Conference on Motor Speech*, Charleston, SC. (oral presentation)

Lescht E[†*], Bohland JW, Sheppard M, Garnett E, Chang S, Hampton Wray A (November 2021). Nonword repetition error pattern analysis in children who stutter. *2021 ASHA Convention* (virtual poster presentation).

Weerathunge, HR* and Bohland, JW[†] (June 2021). Modeling studies of speech production under delayed auditory feedback. *2021 Boston Speech Motor Control Symposium*, virtual.

Heyne M[†], Tardif MC*, Pennetti VJ*, and Bohland JW (October 2020). Feedback-based alterations of vowel formant production: An analysis of speech produced under delayed auditory feedback. *12th Annual Meeting of the Society for the Neurobiology of Language*.

Kiran S[†], Meier EL*, Johnson JP*, Pan Y*, El Guindy S*, and Bohland JW (October 2018). Functional networks, language impairment and recovery after treatment in aphasia. *56th Annual Meeting of the Academy of Aphasia* (oral presentation).

Cler G*[†], Lee JC*, Mittelman T*, Stepp CE, and Bohland JW (July 2017). Multivariate analyses for large articulography datasets of speech and induced speech errors. 7th International Conference on Speech Motor Control, Groningen, The Netherlands. (oral presentation).

Markiewicz CJ* and Bohland JW[†] (July 2017). Dissociating input- and output-related representations of speech in syllable repetition. 7th International Conference on Speech Motor Control, Groningen, The Netherlands.

Myers EM* and Bohland JW[†] (March 2017). The transcriptional landscape of genes implicated in stuttering. Boston Speech Motor Control Mini-Symposium, Boston, MA.

Bohland JW[†] and Myers EM* (November 2016). The transcriptional landscape of genes implicated in speech and language disorders. American Speech-Language-Hearing Convention, Philadelphia. (oral presentation).

Markiewicz CJ*, Kroshian GS*, You J*, and <u>Bohland JW</u>[†] (June 2016). Multivariate analysis of input and output representations in speech. Organization for Human Brain Mapping Annual Meeting, Geneva.

<u>Bohland JW</u>[†], Novin D*, Kapse K, and Kiran S (June 2016). Graph-theoretic comparison of resting-state networks in patients with aphasia and healthy controls. Organization for Human Brain Mapping Annual Meeting, Geneva.

Poline JB[†], <u>Bohland JW</u>[†], Evans A, Feng D, Flandin G, Fonov V, Ghosh S, Janke A, Jenkinson M, Kennedy D, Lerch J, Ng L, Tourville J, Vincent R, and Zollei L (June 2016). Standardizing neuroimaging atlas formats. Organization for Human Brain Mapping Annual Meeting, Geneva.

Cler MJ*[†], Lee JC*, Mittelman T*, Stepp CE, and <u>Bohland JW</u>. (Mar 2016). Electromagnetic articulographic analysis of speech sound sequencing errors induced by delayed auditory feedback. Conference on Motor Speech, Newport Beach, CA.

<u>Bohland JW</u>[†], Eden UT, and Kramer MA (Nov 2015). An open, online course in neuronal data analysis for the practicing neuroscientist. NIH BD2K All Hands Meeting, Bethesda, MD.

Beal D[†], <u>Bohland JW</u>, and Bartlett, CW (Nov 2015). Family aggregation of developmental stuttering. 2015 American Speech-Language-Hearing Association Convention, Denver, CO.

Markiewicz CJ*[†] and <u>Bohland JW</u> (Jun 2015). Localizing categorical speech representations in perception and production. Neural Processing in Humans, Animals, and Man, Boston, MA.

Myers EM*[†], Feng D, Hawrylycz M, and <u>Bohland JW</u> (Jun 2015). Regional molecular homologies in the mouse and human brain. Neural Processing in Humans, Animals, and Man, Boston, MA.

Johnson CJ*[†] and <u>Bohland JW</u> (Nov 2014). Localizing categorical speech representations in perception and production. 44th Annual Meeting of the Society for Neuroscience, Washington D.C. (oral presentation).

Myers EM*[†] and <u>Bohland JW</u> (Nov 2014). Comparison of regional and brain-wide gene coexpression relationships in the human and mouse. 44th Annual Meeting of the Society for Neuroscience, Washington D.C.

Yan R*[†], Myers EM*, and <u>Bohland, JW</u> (Nov 2014). A survey of gene expression across cortical areas in the adult mouse and human brains. 44th Annual Meeting of the Society for Neuroscience, Washington D.C.

Saperstein S*[†], Sekuler R, and <u>Bohland JW</u> (Nov 2014). Topography and temporal dynamics of resting state network signatures in high-density EEG. 44th Annual Meeting of the Society for Neuroscience, Washington D.C.

<u>Bohland JW</u>[†], Kapse K, and Kiran S (Oct 2014). Graph analytic characterization of resting state networks in post-stroke aphasia. Academy of Aphasia 52nd Annual Meeting, Miami, FL. (oral platform presentation).

Saperstein S*[†], Sekuler R, and <u>Bohland JW</u> (Sep 2014). Network signatures of resting state in high-density EEG. 4th Biennial Conference on Resting State Brain Connectivity, Cambridge, MA.

<u>Bohland JW</u>[†], Kapse K, and Kiran S (Sep 2014). Graph-theoretic analysis of resting state brain networks in post-stroke aphasia. 4th Biennial Conference on Resting State Brain Connectivity, Cambridge, MA.

Johnson CJ* and <u>Bohland JW</u>[†] (Aug 2014). Mapping the cortical representation of speech sounds during syllable repetition. 6th Annual Meeting of the Society for the Neurobiology of Language, Amsterdam, NL.

<u>Bohland JW</u>[†], Kapse K, and Kiran S (Aug 2014). Graph-theoretic analysis of resting state brain networks in post-stroke aphasia. 6th Annual Meeting of the Society for the Neurobiology of Language, Amsterdam, NL.

Yan R* and <u>Bohland JW</u>[†] (Aug 2014). Classification of cortical areas using gene expression profiles. 7th International Neuroinformatics Coordinating Facility (INCF) Neuroinformatics Congress. Leiden, NL.

Yan R*[†] and <u>Bohland JW</u> (Jul 2014). Classification of cortical areas from gene expression profiles in the mouse brain. 22nd Annual Conference on Intelligent Systems for Molecular Biology, Boston, MA.

Myers E*[†] and <u>Bohland JW</u> (Jul 2014). Region-specific molecular signatures in the human and mouse brain. 22nd Annual Conference on Intelligent Systems for Molecular Biology, Boston, MA.

Malloy JR*[†], Nistal D*, and <u>Bohland JW</u> (Mar 2014). A study of speech sound sequencing errors due to delayed auditory feedback. Motor Speech Conference, Sarasota, FL.

Johnson CJ*[†] and <u>Bohland JW</u> (Mar 2014). Localizing speech sound representations in a syllable repetition task. 6th Annual inter-Science of Learning Center Student and Post-Doc Conference, Pittsburgh, PA.

Beal DS[†], <u>Bohland JW</u>, and Bartlett CW (Nov 2013) Pathway to a cure: A strategic research plan to identify the genetic and neural underpinnings of developmental stuttering. 12th Annual New Principal Investigators Meeting for the Institutes of Genetics and Neurosciences, Mental Health and Addiction, Canadian Institutes of Health Research, Montreal, QC, Canada. (oral presentation)

Myers EM*[†] and <u>Bohland JW</u> (Jun 2013). A data-driven study of comparative molecular neuroanatomy. 17th International Conference on Cognitive and Neural Systems, Boston, MA. (oral presentation).

Myers EM*[†] and <u>Bohland JW</u> (Oct 2012). A database and analyses of gene expression patterns related to heritable disorders of speech and language. 42nd Annual Meeting of the Society for Neuroscience, New Orleans, LA.

Grange P[†], <u>Bohland JW</u>, Hawrylycz M, and Mitra PP (Oct 2012). A toolbox for computational molecular neuroanatomy. 42nd Annual Meeting of the Society for Neuroscience, New Orleans, LA.

Galbraith BV*[†], <u>Bohland JW</u>, Jakimo N*, Havkin GZ, Pinskiy V*, Mitra PP (Oct 2012). The mouse brain architecture project web portal. 42nd Annual Meeting of the Society for Neuroscience, New Orleans, LA.

Johnson CJ*[†], Mitra PP, <u>Bohland JW</u> (Oct 2012). The online brain atlas reconciliation tool: A web application for MRI atlas exploration and multi-atlas labeling. 42nd Annual Meeting of the Society for Neuroscience, New Orleans, LA.

<u>Bohland JW</u>[†], Saperstein S*, Kim E*, Zeid O*, Hawrylycz M (Nov 2010). Towards a knowledgebase for the architecture of speech and language brain systems. 2nd Annual Neurobiology of Language Conference, San Diego, CA. (oral presentation).

Wang H[†], Grange P, <u>Bohland JW</u>, Pinsky V*, Germann J, Khabbaz AN, Henkelman RM, Mitra PP (Nov 2010). A digital reference atlas guiding semi-automated stereotaxic surgery. 40th Annual Meeting of the Society for Neuroscience, San Diego, CA.

Wang H, <u>Bohland JW</u>, Grange P, Svoboda K, and Mitra PP[†] (May 2010). A digital reference atlas for brainwide connectivity data in mouse. Turning Images to Knowledge, HHMI Janelia Farm Meeting, Ashburn, VA.

<u>Bohland JW</u>[†], Bokil H, Pathak S, Lin JM, Lee CK, Ng L, Osorio-Duque F, Lau C, Herrera DG, Hawrylycz M, Mitra PP (2008). Clustering of spatial gene expression patterns in the mouse brain and comparison with classical neuroanatomy. 38th Meeting of the Society for Neuroscience, Washington, DC.

Bokil H[†], <u>Bohland JW</u>, Pathak S, Lin JM, Lee CK, Ng L, Osorio-Duque F, Lau C, Herrera DG, Hawrylycz M, Mitra PP (2008). Spatial correlation and localization patterns of gene expression in the mouse brain. 38th Annual Meeting of the Society for Neuroscience, Washington DC.

Lin JM[†], <u>Bohland JW</u>, Wu C, Berwick RC, Di Sciullo AM, Mitra PP (2008). A literature mining and curation system for neuroscience knowledge discovery. 38th Annual Meeting of the Society for Neuroscience, Washington D.C.

<u>Bohland JW</u>[†], Bokil H, Wu C, Breiter HC, Makris N, Kennedy DN, Allen CB, and Mitra PP (2007). Quantitative comparison of anatomical parcellation schemes for MRI. 37th Annual Meeting of the Society for Neuroscience, San Diego, CA.

Lin JM[†], Andrews PA, Burns GA, <u>Bohland JW</u>, Allen CB, and Mitra PP (2007). Community structure of neuroscience research: inferences from a co-authorship graph of Society for Neuroscience meeting abstracts. 37th Annual Meeting of the Society for Neuroscience, San Diego, CA.

Reilly KJ[†], Guenther FH, Tourville JA, and <u>Bohland JW</u> (2007). A neuroimaging investigation of auditory-motor learning. *Journal of the Acoustical Society of America* (154th Meeting of the Acoustical Society of America, New Orleans), 122 (5 Pt 2): 3087.

<u>Bohland JW</u>[†], Guenther FH, and Bullock D (2006). Modeling and imaging of sequencing in speech production. 10th International Conference on Cognitive & Neural Systems, Boston (oral presentation).

Reilly KJ [†], Guenther FH, Tourville JA, and <u>Bohland JW</u> (2006). Brain activations during learning of a novel speech sensorimotor mapping. *Conference on Motor Speech*, Austin, TX.

Ghosh SS and <u>Bohland JW</u> (2005). A speech recording setup for fMRI with online reduction of scanner noise. *NeuroImage* (11th Annual Meeting of the Organization for Human Brain Mapping, Toronto), 26 (S1): S42.

Tourville JA, Guenther FH, Ghosh SS, Reilly KJ, <u>Bohland JW</u>, and Nieto-Castanon A (2005). Effects of acoustic and articulatory perturbation on cortical activity during speech production. *NeuroImage* (11th Annual Meeting of the Organization for Human Brain Mapping, Toronto), 26 (S1): S49.

Tourville JA, Guenther FH, Ghosh SS, and <u>Bohland JW</u> (2004). Effects of jaw perturbation on cortical activity during speech production. *Journal of the Acoustical Society of America* (75th Meeting of the Acoustical Society of America, San Diego), 116 (4): 2631.

<u>Bohland JW</u> and Guenther FH (2004). An fMRI investigation of the neural bases of sequential organization for speech production. *NeuroImage* (10th Annual Meeting of the Organization for Human Brain Mapping, Budapest, Hungary), 22 (S1): S41.

Ghosh SS, <u>Bohland JW</u>, and Guenther FH (2003). Comparisons of brain regions involved in overt production of elementary phonetic units. *NeuroImage* (9th Annual Meeting of the Organization for Human Brain Mapping, New York), 19 (2): S57.

Bohland JW and Minai AA (2000). Small-World model of associative memory. *Proceedings of the International Joint Conference on Neural Networks*, 5: 597-604.

INVITED PRESENTATIONS:

"Mechanisms underlying speech errors elicited by delayed auditory feedback." University of Florida Language and Brain Talk Series, March 2023.

"Models of vocal learning and production." Neural Mechanisms of Acoustic Communication, Gordon Research Conference, July 31-August 15, 2022.

"Using fMRI to understand the neural correlates of speech motor control." Tutorial presentation for trainees. 2021 Boston Motor Speech Motor Control Symposium, June 2021.

"Contemporary models of speech motor control." Short talk and panel discussion, Conference on Motor Speech, Santa Barbara, CA, February 2020.

"The GODIVA model: overview and future directions." Department of Communication Science and Disorders, University of Pittsburgh, January 2020.

"Interactions between perception and production systems in speech". Department of Communication Science and Disorders, University of Pittsburgh, January 2019.

"Dissociating input- and output-related representations of speech in syllable repetition". Cognitive Neuroscience Society Satellite Symposium: Neural Bases of Speech Production, San Francisco, March 2017.

"The role of auditory feedback in serial speech." 2017 Boston Speech Motor Control Mini-Symposium, Boston University, March 2017.

 "A comparative study of gene expression in the mouse and human brain." Delft Bioinformatics Lab, Technical University of Delft, The Netherlands, June 2016.

"Unraveling the multimodal architecture of neural systems for speech and language." Boston University Research Computing Governance Committee, April 2016.

"Mining gene expression data in the mouse and human brain." Boston University Data Science Day, January 2016.

"Behavioral and brain imaging studies of speech 'input' and 'output' representations." Boston University Department of Psychological and Brain Sciences Brain, Behavior, and Cognition Seminar Series, April 2015.

"Data Contest: Similarity of resting-state functional brain networks." 4th Symposium on Biological Data Visualization, Boston, MA, July 2014.

"Encoding of speech sequences during repetition tasks: neural correlates and effects of delayed feedback." Boston University Department of Speech, Language, & Hearing Sciences Colloquium Series, April 2014.

"From genes to neural systems: the transcriptome as an intermediate phenotype." Boston University Rafik B. Hariri Institute for Computing and Computational Science & Engineering Seminar, March 2014.

"Multivariate investigations of neuroanatomically-linked gene expression atlases in mouse and human." Brandeis University Computational Neuroscience, Waltham, MA, December 2013.

"Multivariate investigations of neuroanatomically-linked gene expression atlases in mouse and human." Pfizer Computational Neurology Working Group, Cambridge, MA, December 2013.

"fMRI resting state networks: overview and analysis challenges." Domain expert invited talk. 3rd IEEE Symposium on Biological Data Visualization, Atlanta, GA, October 2013.

"Mining brain images for diagnosis and disease understanding." Sargent Alumni Weekend Technology Expert Panel, Boston, MA, October 2013.

"Data-driven studies of the large-scale molecular architecture of the mouse and human brain." Boston University Systems Biology Seminar Series, October 2012.

"The GODIVA model." Workshop on The syllable as an emerging unit of information, processing, and production. Neukom Institute for Computational Science; Linguistics and Cognitive Science, Dartmouth College, Dartmouth, NH, September, 2012.

"Data-driven studies of large-scale molecular and circuit architecture of the brain." Martinos Center for Biomedical Imaging, Massachusetts General Hospital, BrainMap Seminar Series, Charlestown, MA, May 2012.

"Brain architecture and neuroinformatics: applications for speech and language systems." Speech Science Featured Lecture, American Speech-Language-Hearing Association Convention, San Diego, CA, November, 2011.

"Informatics efforts linking gene expression data to speech / language brain systems." USC International Workshop on Action, Language, and Neuroinformatics, Los Angeles, CA, July, 2011.

"Large-scale, data driven approaches to understanding brain architecture." Boston University Program in Neuroscience Seminar Series, December, 2009.

"Neuroanatomy 2.0: Large scale approaches to understanding the organization of the brain." Cold Spring Harbor Laboratory Seminar Series, Cold Spring Harbor, NY, March, 2009.

"Reverse engineering the brain." Strongsville High School Science Club, Strongsville, OH, November 2006.

"An fMRI investigation of syllable sequence production." Massachusetts Institute of Technology Neurolinguistics Group, Cambridge, MA, April, 2006.

"Neural substrates for syllable sequence planning and production." Massachusetts Institute of Technology Speech Communication Group Seminar Series, Cambridge, MA, March, 2006.

"Modeling the representation of speech sounds in auditory cortical areas." 145th Meeting of the Acoustical Society of America, Nashville, TN, April 29, 2003.

RESEARCH FUNDING:

Grants Funded (Active):

NIH NIDCD R01: *Neural Processing of Speech Signals in Children Who Stutter*. PI: Amanda Hampton Wray, 03/2022 – 02/2027. Role: Co-investigator.

NIH 1R13DC017674: *The Boston Speech Motor Control Symposium*. PI: Cara Stepp, 01/2019 – 12/2023. Role: co-investigator.

University of Pittsburgh Momentum Funds Seed Grant: *Manipulation of sensory-motor coupling during speech production*. PI: Jason W. Bohland, 2022-2023.

Grants Funded (Completed):

NSF BCS 2029245: *The effects of delayed auditory feedback on speech sequencing: acoustics, physiology, and computational modeling*. PI: Jason W. Bohland, 03/2017 – 02/2022.

NIH R25 GM11-01A1: *An open, online course in neuronal data analysis for the practicing neuroscientist*, PIs: Jason W. Bohland, Uri T. Eden, and Mark A. Kramer, 09/15/2015 – 06/30/2018.

American Speech-Language-Hearing Foundation New Century Scholars Award: *The transcriptional landscape of genes implicated in speech and language disorders*. 01/2016 – 12/31/2016. PI: Jason W. Bohland

Rafik B. Hariri Institute for Computing and Computational Science & Engineering Research Award: *Computational neuroimaging analysis of language and cognitive control networks: Mining the Human Connectome Project data set*, PIs: Jason W. Bohland and David Somers, 07/2014 – 05/2016.

Women's and Children's Health Research Institute Innovation Award: *Genetic contributions to developmental stuttering*, PI: Deryk Beal (University of Alberta). 2013-2014. Role: co-investigator.

Dudley Allen Sargent Research Fund: *Classification of cortical areas using gene expression profiles*, PI: Jason W. Bohland, 06/2013 – 11/2014.

Dudley Allen Sargent Research Fund: *Understanding the nature of resting state connectivity in individuals with post-stroke aphasia*, co-PIs: Swathi Kiran and Jason W. Bohland, 06/2013 – 11/2014.

NSF SMA-0835976: *CELEST: A Center of Excellence for Learning in Education, Science, and Technology*, PI: Barbara Shinn-Cunningham (Boston University), 3/1/2010 – 2/28/2015. Prof. Bohland received competitive funding for graduate student stipends and other expenses on two CELEST-sponsored projects.

R01 MH084802-01: *The Online Brain Atlas Reconciliation Tool*, PI: Partha P. Mitra (Cold Spring Harbor Laboratory), 08/01/2010 – 05/31/2013. Role: Co-investigator (subcontract to Boston University).

RESEARCH MENTORING EXPERIENCE:

Postdoctoral fellows:
Matthias Heyne, PhD, 2020 – 2022, Currently Assistant Professor, SUNY New Paltz, New Paltz, NY

Samantha Michalka, PhD, 2016, Currently Assistant Professor at Olin College, Needham, MA.
Emma Myers, PhD, 2017

PhD students:

Alex Swiderski (University of Pittsburgh, Communication Science and Disorders, 2021 – Present, Dissertation Committee Member)

Brett Welch (University of Pittsburgh, Communication Science and Disorders, 2021 – Present, Dissertation Committee Member)

Erica Lescht (University of Pittsburgh, Communication Science and Disorders, 2021 – Present, Dissertation Committee Member)

Monique Tardif (University of Pittsburgh, Communication Science and Disorders, 2020 – Present, Primary Mentor)

Christina Dastolfo-Hromack (University of Pittsburgh, Communication Science and Disorders, 2019 – 2021, Dissertation Committee Member)

Hasini Weerathunge (Boston University, Biomedical Engineering, 2017 – Present, Fall 2018 Lab Rotation)

Jeffrey Johnson (Boston University, Speech, Language & Hearing Sciences, 2013 – 2018, Dissertation Committee Member)

Christopher Markiewicz (Boston University, Cognitive & Neural Systems, 2011 – 2016, Primary Mentor / First Reader)

Emma Myers (Boston University, Graduate Program for Neuroscience, 2010 – 2017, Primary Mentor / First Reader)

Gabriel Cler (Boston University, Graduate Program for Neuroscience, 2014 – 2018, 2014 Lab Rotation, Dissertation Committee Chair)

Sara Saperstein (Boston University, Graduate Program for Neuroscience, 2010 – 2015, Primary Mentor)

Omar Zeid (Boston University, Cognitive & Neural Systems, 2010 – 2018, Dissertation Committee Chair)

Marissa Simms (Boston University, Anatomy & Neurobiology, 2009 – 2010, Lab Rotation)

Chris Watson (Boston University, Graduate Program for Neuroscience, 2015 - 2016, Dissertation Committee Member and Chair)

Ahmed Mahfouz (Delft University of Technology, 2016, External Dissertation Committee Member)

Madhura Baxi (Boston University, Graduate Program for Neuroscience, 2016, Lab Rotation, Dissertation Committee Member)

Chaleece Sandberg (Boston University, Speech, Language, and Hearing Sciences, 2014, Dissertation Committee Member)

Samantha Michalka (Boston University, Graduate Program for Neuroscience, 2014, Dissertation Committee Member)

Lingqiang Kong (Boston University, Cognitive & Neural Systems, 2012, Dissertation Committee Member)

Melissa St. Hilaire (Boston University, Cognitive & Neural Systems, 2012, Dissertation Committee Member)

Elisa Golfinopoulos (Boston University, Cognitive & Neural Systems, 2012, Dissertation Committee Member)

Alex Storer (Boston University, Cognitive & Neural Systems, 2010, Dissertation Committee Member)

Master's students:

Caroline Fox (University of Pittsburgh, Speech-Language Pathology), 2022 – Present, Research Assistant

Ashley Petitjean (University of Pittsburgh, Speech-Language Pathology), 2022 – 2023, Research Assistant

Yue Pan (Boston University, Biomedical Engineering, 2017 – 2018, Secondary research advisor)

Timothy Farrell (Boston University, Bioinformatics, 2015 – 2016, Primary research advisor)

Kaitlin Dempsey (Boston University, Human Physiology, 2016, Mentor for critical review paper)

Raymond Yan (Boston University, Bioinformatics, 2013 – 2015, Primary research advisor)

Emily Franz (Boston University, Human Physiology, 2015, Mentor for critical review paper)

Hannah Rutherford (Boston University, Human Physiology, 2014, Mentor for critical review paper)

Christine Mitchell (Boston University, Human Physiology, 2013, Mentor for critical review paper)

Margaux Canevari (Boston University, Human Physiology, 2011 – 2012, Thesis reader)

Deepika Cattry (Boston University, Human Physiology, 2011, Mentor for critical review paper)

Undergraduate students:

Megan Liu (University of Pittsburgh, Communication Science and Disorders, 2021 – Present)
Emily Hacker (University of Pittsburgh, Communication Science and Disorders, 2020 – 2021)
Vincent Pennetti (Boston University, Human Physiology, 2017 – 2018, Dean's Scholars Program, Paid Research Assistant, Undergraduate Research Opportunities Program Award)
Anant Gupta (Boston University, Biomedical Engineering, 2017, Paid Research Assistant, Undergraduate Research Opportunities Program Award)
Grace Michnovicz (Boston University, Neuroscience, 2017)
Ashling Lupiani (Boston University, Speech, Language, & Hearing Sciences, 2017, Thesis committee member)
Delaney Moran (Middlebury College, 2016, Undergraduate Summer Program in Neuroscience)
Garen Kroshian (Boston University, Human Physiology, 2015-2016, Thesis mentor)
Deana Novin (Boston University, Neuroscience, 2014-2016, Computational Neuroscience trainee, Thesis mentor)
Jackson Lee (Boston University, Neuroscience, 2015-2016)
Nishmar Cestero (Boston University, Psychological and Brain Sciences, Thesis committee member)
Jacqueline You (Boston University, Computer Science, 2014-2015)
Jake Uminski (Boston University, Neuroscience, 2014-2015, Thesis mentor)
Mengyuan Xu (Boston University, Psychological and Brain Sciences, 2015, Thesis committee member)
Aparna Panja (Boston University, Neuroscience, 2015, Thesis committee member)
Talia Rainey (Boston University, Neuroscience, 2014, Thesis committee member)
Dominic Nistal (Johns Hopkins University, Neuroscience, 2013, CELEST summer internship program)
Jessica Malloy (Boston University, Neuroscience, 2012-2013, Thesis mentor, Undergraduate Research Opportunities Program Award)
Noah Kelley (Boston University, Neuroscience, 2011)
Krhystyne Pablo (Boston University, Neuroscience, 2011)
Marlee McDonald (Boston University, Physics and Music, 2011, Undergraduate Research Opportunities Program Award)
Alexander Vera (Boston University, Neuroscience and Music Composition, 2010, CELEST summer internship program)
Esther Kim (University of Maryland, Biological Sciences, 2010, CELEST summer internship program)

High School students:
Johan Girgenrath (Medway High School, 2015, summer volunteer)
Anshul Shah (North Allegheny High School, 2022, summer volunteer)

TEACHING EXPERIENCE:

Courses taught or developed at University of Pittsburgh:

CSD 1233 (3 credits) Introduction to Research (Fall 2019-2021)
CSD 1026/1030 (3 credits + 1 credit lab) *Speech Science* (Spring 2023)
CSD 2101 (3 credits) *Data and Statistical Literacy* (Spring 2022)
CSD 3479 (3 credits) *PhD Seminar for Speech-Language Pathology.* Topic: "Computational models of speech and language production" (Spring 2022)
CSD 3479 (3 credits) *PhD Seminar for Speech-Language Pathology.* Topic: "Data-centric analysis methods" (Spring 2021)
Guest Lectures: *PhD Seminar for Audiology* (Spring 2020, Fall 2022)
                    PhD Seminar for Speech-Language Pathology (Fall 2020)

Courses taught or developed at Boston University:

SAR HP151 (2 credits) *Introduction to Health Professions (Spring 2010-2017)*
SAR HS361 / CAS NE360 (4 credits) *Introduction to Computational Neuroscience of Speech, Language, and Hearing (Fall 2010-2016)*
CAS NE202 (4 credits) *Introduction to Cognitive Neuroscience (Spring 2017)*

Guest Lectures: *Topics in the Theory of Biological Networks (Spring 2011-2012)*
Speech, Language, and Hearing Sciences Doctoral Seminar (Fall 2013, Spring 2017)
Frontiers in Neuroscience (Fall 2011 and 2013-2014)
Neural Systems: Functional Circuit Analysis (Spring 2016-2018)

Additional teaching experience:

2007 – 2012   *Faculty,* Neuroinformatics Summer Course
Marine Biological Laboratory, Woods Hole, MA
<u>Topics</u>: Human brain atlases, fMRI analysis, Databases and web programming, image processing

2010 – 2011   *Faculty,* Workshop on Circuit and Molecular Architecture of the Vertebrate Brain
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY
<u>Topics</u>: Computational neuroanatomy, image processing

2002 – 2003   *Teaching Assistant*, Department of Cognitive and Neural Systems
Boston University, Boston, MA
<u>Courses</u>: Principles and Methods of Cognitive and Neural Modeling II and Neural and Computational Models of Recognition, Memory and Attention

1999 - 2000   *Instructor*, College of Engineering and College of Continuing Education
University of Cincinnati, Cincinnati, OH
<u>Courses</u>: Introduction to C++, Introduction to Java and Web Programming, Data Structures and Discrete Math, and Computer Architecture and Organization.

1998 – 1999   *Teaching Assistant*, Department of Electrical and Computer Engineering
University of Cincinnati, Cincinnati, OH
<u>Courses</u>: Measurements Lab, Electronics Lab, Intro to UNIX, Compiler Theory.

SERVICE:

University of Pittsburgh:

Member, Educational Excellence Advisory Council, School of Health and Rehabilitation Sciences, 2022 - Present
Member, Admissions Committee, Speech Language Pathology Program, Department of Communication Science and Disorders, 2019 – Present
Member, Faculty Search Committees, Department of Communication Science and Disorders, 2021

Boston University:

Member, Boston University Research Computing Governance Committee, 2018 – 2019
Member, Boston University Premedical and Predental Advisory Board, 2017
Faculty Adviser, Human Physiology students (120+ unique undergraduates, 7 graduate students), 2009 – 2017
Member, Human Physiology Graduate Admissions Committee, 2009 – 2017
Rehabilitation Engineering Task Force, Sargent College, 2017
Sargent College Representative, BU Interdisciplinary Computational Neuroimaging Collective, 2013 – 2017
Chair, Sargent College Undergraduate Education Committee, 2012 – 2016
Member, Sargent College Faculty Council, 2012 – 2016
Member, Center for Computational Neuroscience and Neural Technology Travel Award Committee, 2012 – 2016
Faculty Representative and Presenter, Human Physiology Program Open Houses, 2012 – 2016
Participant, Psychological and Brain Sciences Academic Program Review (departmental collaborator), 2015
Member, Sargent College Undergraduate Education Committee, 2010 - 2012

Member, Human Physiology Faculty Search Committee, 2014 – 2015
Faculty Moderator, BU IBM Watson Jeopardy Challenge Watch Event and Discussion, 2011
Poster Judge, BU Science and Engineering Day, 2010 – 2012
Member, BU MRI Strategic Planning Task Force, 2010
Member, BU Systems Biology / Quantitative Biology Task Force, 2010
Member, Speech, Language, & Hearing Sciences Faculty Search Committee, 2009 – 2010

Professional Service:

Member, Program and Organizing Committee, *Boston Speech Motor Control Symposium*, 2019, 2021, 2023
Program Committee, 20th Biennial Conference on Motor Speech, 2019 – 2020
Reading Committee, 19th Biennial Conference on Motor Speech; Guest Associate Editor, Special Issue in *Journal of Speech, Language, and Hearing Research*, 2018 – 2019
Speech and Language Science Topic Committee, American Speech Language Hearing Association (ASHA) Convention, 2016
Human Atlas Working Group, International Neuroinformatics Coordinating Facility (INCF), 2015 – 2016.
Session Chair ("Integrative Data Analysis in Neuroscience"), *Neural Processing in Humans, Animals, and Machines* [*NeuroHAM*] conference (2015)
Contest Chair and Organizing Committee Member, Symposium on Biological Data Visualization [*biovis*] (2014-2015)
Reviewer, Society for Neurobiology of Language Meeting, 2010

Grant Reviewer:

National Science Foundation Perception, Action, and Cognition, 2022, 2023
NIH Motor Function and Speech Rehabilitation (MFSR), ad hoc panel member, 2019 and 2021
University of Pittsburgh Rehabilitation Institute Pilot Grant Program, 2020, 2021, 2023
National Sciences and Engineering Research Council of Canada (NSERC), 2019
Canada Foundation for Innovation (CFI), 2015, 2016, 2019
The Israel Science Foundation (ISF), 2018
W.M. Keck Foundation, 2018
Ohio Supercomputer Center, 2013
Dudley Allen Sargent Research Fund (Boston University), 2010 – 2017

Editorial Positions:

Review Editor, *Speech and Language, Frontiers in Human Neuroscience* (2022 – Present)
Review Editor, *Brain Imaging Methods, Frontiers in Neuroscience / Neuroimaging* (2012 – Present)
Book Review Editor, *Neural Networks* (2010 – 2013)

Manuscript Reviewer:

BMC Bioinformatics
Bioinformatics
Brain and Language
Brain Communications
Brain Informatics
Brain Structure and Function
Cerebral Cortex
Communications Biology
Cortex
European Journal of Neuroscience
Frontiers in Genetics
Frontiers in Human Neuroscience
Frontiers in Neuroinformatics
Frontiers in Neurology
Frontiers in Systems Neuroscience

Human Brain Mapping
IEEE Scientific Visualization (SciVis)
IEEE Transactions on Neural Networks
Journal of Cognitive Neuroscience
Journal of Experimental Psychology: Human Perception and Performance
Journal of Neural Engineering
Journal of Neuroscience
Journal of Speech, Language, and Hearing Research (JSLHR)
Language, Cognition, and Neuroscience
Methods
Neural Networks
NeuroImage
Neuroinformatics
Neuron
Neuropsychologia
Neuroscience
Philosophical Transactions of the Royal Society B
PLoS Computational Biology
PLoS ONE
Proceedings of the National Academy of Sciences
Psychonomic Bulletin & Review
Scientific Reports