

MARIA NEIMARK GEFFEN

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PROFESSIONAL EXPERIENCE

2011-Present Assistant Professor, University of Pennsylvania
Department of Otorhinolaryngology HNS, Department of Neuroscience

2006-2010 Fellow, Rockefeller University
Center for Studies in Physics and Biology

EDUCATION

2006 Ph.D., Harvard University, Biophysics
Advisor: Prof. Markus Meister
Thesis: “Encoding of complex stimuli in early sensory systems”.

2001 A.B., Princeton University, Molecular Biology, Certificates in Biophysics and Visual Arts
Senior thesis advisor: Prof. John Hopfield
Thesis: “The mechanics of whisking: the first stage in the transduction of surface textures into neural signals”.

Additional Training

2014, 2015 Penn STEM Faculty Pathways to Leadership course
2002 Riken Brain Science Institute Summer Program
2001 Woods Hole MBL Methods in Computational Neuroscience Summer Course

PUBLICATIONS

Briguglio, J.J., Aizenberg, M., Balasubramanian, V., Geffen, M.N. (2017) Cortical neural activity predicts sensory acuity under optogenetic manipulation. *BioRxiv*.

Natan, R.G., Carruthers, I.M., Mwilambwe-Tshilobo, L., **Geffen, M.N.** (2017) Gain Control in the Auditory Cortex Evoked by Changing Temporal Correlation of Sounds. *Cerebral Cortex*, 27(3), 2385-2402.

Gervain, J., Werker, J.F., Black, A., **Geffen, M.N.** (2016) The neural correlates of processing scale-invariant environmental sounds at birth. *NeuroImage*, 133:144-150.

Blackwell, J.M., Taillefumier, T.O., Natan, R.G., Carruthers, I.M., Magnasco, M.O., **Geffen, M.N.** (2016) Stable encoding of sounds over a broad range of statistical parameters in the auditory cortex. *European Journal of Neuroscience*, 43(6), 751–764.

Aizenberg, M., Mwilambwe-Tshilobo, L., Briguglio, J.J., Natan, R.G., **Geffen, M.N.** (2015) Bi-directional regulation of innate and learned behaviors that rely on frequency discrimination by cortical inhibitory interneurons. *PLoS Biology*, 13(12): e1002308.

Natan, R.G., Briguglio, J.J., Mwilambwe-Tshilobo, L., Jones, S., Aizenberg, M., Goldberg, E.M., **Geffen, M.N.** (2015) Complementary control of sensory adaptation by two types of cortical interneurons. *eLife* 2015; 4: e09868. doi: 10.7554/eLife.09868.

Carruthers, I.M., Laplagne, D.A., Jaegle, A., Briguglio, J.J., Mwilambwe-Tshilobo, L., Natan, R.G., **Geffen, M.N.** (2015) Emergence of invariant representation of vocalizations in the auditory cortex. *Journal of Neurophysiology*, 114(5):2726-40. doi: 10.1152/jn.00095.2015.

Mwilambwe-Tshilobo, L., Davis, A.J.O., Aizenberg, M., **Geffen, M.N.** (2015) Selective impairment in frequency discrimination in a mouse model of tinnitus. *PLoS ONE*, 10(9): e0137749. doi: 10.1371/journal.pone.0137749.

Gervain, J., Werker, J.F., **Geffen, M.N.** (2014) Category-specific processing of scale-invariant sounds in infancy. *PLoS ONE*, 9(5): e96278.

Zaidi, Q., Victor, J.D., McDermott, J., **Geffen, M.N.**, Bensmaia, S., Cleland, T.A. (2013) Perceptual Spaces: Mathematical structures to neural mechanisms. *Journal of Neuroscience*, 33(45), 17597-17602.

Aizenberg, M., **Geffen, M.N.** (2013) Bidirectional effects of auditory aversive learning on sensory acuity are mediated by the auditory cortex. *Nature Neuroscience*, 16, 994–996.

Carruthers, I.M., Natan, R.G., **Geffen, M.N.** (2013) Encoding of ultra-sonic vocalizations in the rat auditory cortex. *Journal of Neurophysiology*, 109(7), 1912-1927.

Geffen, M.N., Gervain, J., Werker, J.F., Magnasco, M.O. (2011) Auditory perception of self-similarity in water sounds. *Frontiers in Integrative Neuroscience*, 5:15.

Geffen, M.N., Broome, B.M., Laurent, G., Meister, M. (2009) Neural encoding of rapidly fluctuating odors. *Neuron*, 61(4), 570-586.

Geffen, M.N., de Vries, S.E.J., and Meister, M. (2007) Retinal ganglion cells can rapidly change polarity from Off to On. *PLoS Biology*, 5(3), e65.

Andermann, M.L., Ritt, J., **Neimark, M.A.**, Moore, C.I. (2004) Neural correlates of vibrissa resonance: band-pass and somatotopic representation of high-frequency stimuli. *Neuron*, 42, 451-463.

Neimark, M.A., Andermann, M.L., Hopfield, J.J. and Moore, C.I. (2003) Vibrissa resonance as a transduction mechanism for tactile encoding. *Journal of Neuroscience*, 23(16), 6499-6509.

--under review--

Natan, R.G., Shapiro, K., Xia, C., Rao, W., **Geffen, M.N.** Cortical interneurons control temporal adaptation. *under review*

Blackwell, J.M., **Geffen, M.N.** Progress and challenges for understanding the function of cortical microcircuits in auditory processing. *under review*

Wood, K., Blackwell, J.M., **Geffen, M.N.** Cortical inhibitory interneurons control sensory processing. *under review*.

HONORS AND AWARDS

- 2017 Mentor, Saul Winegrad Award for outstanding Ph.D. dissertation in biomedical sciences
- 2017 Mentor, Ruth L. Kirschstein National Research Service Award (NRSA)
- 2017 Keynote speaker, University of Southern California, Hearing and Communication Neuroscience Retreat
- 2017 Keynote speaker, University of Washington, Seattle – Allen Institute of Science symposium
- 2016 Young Investigator Spotlight Award, Advances and Perspectives in Auditory Neuroscience
- 2015 Keynote speaker, Celebration of Women in Neuroscience, Society for Neuroscience Meeting
- 2014 Human Frontiers in Science Young Investigator Award
- 2011 Klingenstein Fellowship Award in Neuroscience
- 2011 Certificate of Appreciation from the Leadership Alliance
- 2009 Raymond and Beverly Sackler Fellowship in Physics and Biology
- 2008 Burroughs Wellcome Fund Career Award at the Scientific Interface
- 2007 Cell Press award for best poster at the Gordon Research Conference
- 2006 Rockefeller University Fellowship in Physics and Biology
- 2006 Rockefeller University Women in Science Fellowship
- 2003 Harvard University Biophysics Program recognition award
- 2002 HHMI Pre-doctoral Fellowship

2001 Fulbright Scholarship awarded (declined)
 2000 Presidential Scholarship, Princeton University
 1999 Martin A. Dale Award, Princeton University
 1997 Cane Scholar, Princeton University

RESEARCH SUPPORT

Current Support

NIH NIDCD R01DC015527-01A1	Geffen (PI)	\$2,000,000	04/01/2017-03/31/2022
Neuronal circuits supporting learning-driven changes in auditory perception.			
NIH NIDCD F31DC016524	Angeloni (PI), Geffen (mentor)		07/01/2017-06/30/2020
The function of cortical gain adaptation in detecting sounds in noise.			
NIH NIDCD R01DC014479-01	Geffen (PI)	\$2,000,000	04/01/2015-03/31/2020
Circuit mechanisms of sound processing and detection in the auditory pathway			
Human Frontiers in Science Foundation	Geffen (PI)	\$750,000	09/01/2014-08/31/2017
Development of brain mechanisms underlying speech preference in infants: is speech special?			
PA Lions Hearing Research Foundation	Geffen(PI)	\$20,000	09/01/2016-08/31/2017
Central brain circuits of supporting discrimination of signals in noise (renewable for 3 years)			
NIH NIDCD R03DC013660-01	Geffen (PI)	\$480,000	12/01/2013-9/31/2017
The role of cortical interneurons in auditory processing and learning			
Burroughs Wellcome Fund Career Award at the Scientific Interface	Geffen (PI)	\$500,000	08/01/2008-08/31/2017
Perception and neural encoding of textured sounds.			

Completed Support

Klingenstein Fellowship Award in Neurosciences	Geffen (PI)		07/01/2011-06/30/2014
Neural mechanisms of encoding of complex natural sounds			
Pennsylvania Lions Club Hearing Research Foundation	Geffen (PI)		07/01/2011-06/30/2014
Encoding of complex natural sounds in the rodent auditory cortex.			
University of Pennsylvania CNC	Geffen (PI)		07/01/2011-06/30/2012
The role of cortico-cortical connections of the mammalian sensory cortex in information processing			

SERVICE

Conference organizer

2017	Co-organizer, eight week KITP workshop. Physics of Hearing.
2016	General chair, Computational and Systems Neuroscience conference (CoSyNe), Salt Lake City, UT. CoSyNe is a 6-day long premier international meeting in the field of systems and computational neuroscience, attracting upward of 750 participants.
2015	Program committee chair, CoSyNe
2013, 2012	Program committee member, CoSyNe
2010-2012	Working group at NIMBioS, Knoxville, TN, member
2009	Abstract reviewer, CoSyNe

Reviewer

Grant Proposals	NIH Brain Initiative research grant proposal review panel, 2017 NIH NIDCD Fellowship proposal review panel, 2015, 2016, 2017 Israel Science Foundation, 2017 Wellcome Trust, 2016 Leverhulme Foundation, 2016 NSF-NIH CRCNS review panel, 2013 Keck Foundation, 2011
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Journals *Nature, Nature Neuroscience, Journal of Neuroscience, Journal of Neurophysiology, Nature Communications, PNAS, PLoS Computational Biology, PLoS One, Cerebral Cortex, Current Biology, eLife.*

Service at Penn

2016-present Interdisciplinary Mind/Brain seminar organizing committee, member
2016 Department of Otorhinolaryngology fellow admissions, interviewer
2012 Department of Otorhinolaryngology resident admissions, interviewer
2015 Department of Otorhinolaryngology Faculty Search committee, member
2015 Neuroscience Graduate Group awards committee, member
2012-2014 Neuroscience Graduate Group admissions committee, member
2012, 2014 Penn CNC grant review committee, member

Community Outreach

2016 Discussion participant. Musical experimental performance. Philadelphia, PA
2014, 2015, 2016, 2017 Instructor, Series of workshops on neuroscience with NGG at Independence Charter School, Philadelphia PA.
2015 Music Hackathon, New York, NY, presenter
2014, 2015 Philadelphia Science Festival, presenter
2014 Instructor, Workshop at Penn Children Center, Philadelphia, PA.

Professional organization memberships

2012-present American Physiological Society, member
2010-present Association for Research in Otolaryngology, member
2006-present AAAS, member
2002-2003 Biophysical Society, member
2001-present Society for Neuroscience, member

RECENT INVITED TALKS

2018 University of Maryland, Biology
2017 **Keynote speaker**, University of Washington, Seattle – Allen Institute of Science joint symposium on the brain
Keynote speaker, University of Southern California, Hearing and Communication Neuroscience Retreat
Computational and Systems Neuroscience meeting (COSYNE), invited talk
COSYNE workshop, invited talk
Cold Spring Harbor Laboratory, Neurobiology
John Hopkins University, Neurobiology
University of Maryland, Biology
Auditory Cortex meeting, Banff, Canada, invited talk
Bioengineering Department, Penn
Clinical Neurosciences Training Program, Penn
2016 Birdsong pre-SFN meeting
Advanced and Perspectives in Auditory Neuroscience, Spotlight Young Investigator Seminar
Massachusetts Eye and Ear Institute, Harvard University Medical School
Duke University, Neurobiology
Human Frontier in Science Program Meeting, Singapore
Max Planck Institute for Brain Research, Frankfurt, Germany
Federation of European Neuroscience Societies Forum, Copenhagen, Denmark
Workshop on Unsolved Problems in Systems Neuroscience, Janelia Farm HHMI
Imperial College, London
University College London
Universite Paris Descartes
Rutgers University, Neurobiology
Princeton University, Psychology Colloquium

- 2015 **Keynote speaker**, Celebration of Women in Neuroscience, Society for Neuroscience Meeting
 Food for Thought Lunch, University of Pennsylvania
 NYU, Center for Neural Science Colloquium
 University of Oregon, Neuroscience Colloquium
 Klingenstein-Simons Foundation Meeting, NYC
 Georgia Tech, Colloquium
 Emory University, Workshop
 University of Pennsylvania, Computational Neuroscience Initiative
- 2014
 SISSA, Trieste
 University of Texas, Austin
 Hebrew University, Jerusalem, Workshop on Vocalizations
 University of Pennsylvania, Center for Cognitive Neuroscience
 University of Pennsylvania, Food for Thought Lunch
 UCL Ear Institute
 Harvard University Center for Brain Science
- 2013
 University of Pennsylvania, Systems Lab Night
 Society for Neuroscience meeting, Platform presentation
 CoSyNe, Session Chair
 ARO Mid-Winter Meeting, Platform presentation
- 2012
 Caltech
 Eastern Auditory Retreat, Baltimore
 CUNY, Initiative for Theoretical Science
 CoSyNe Workshop
- 2011
 NSF/NIH CRCNS meeting, Princeton University
 NIMBiOS working group
 ARO Mid-Winter meeting, Platform presentation
- 2010
 University of Pennsylvania, Mahoney Institute in Neurological Sciences
 Janelia Farm, Vibrissa meeting, Session chair

TEACHING

- 2017 Harvard University, Methods in Biophysics. Guest Lecturer.
 2016 Woods Hole Marine Biological Laboratory, Methods in Computational Neuroscience. Lecturer.
 2016, 2017 NGG 573. Systems and Integrative Neuroscience. Modules on computational methods and on auditory processing. Lecturer.
 2012- Organizer, Auditory Journal Club.
 2012, 2015 NGG 573. Systems and Integrative Neuroscience. Lecturer (auditory processing).
 2011, 2014 Department of Otorhinolaryngology, Grand Rounds. Lecturer.
 2014 Instructor. International School in Quantitative Biology, Trieste, Italy (3 lectures)
 2013-present IGERT Perception journal club. Faculty moderator/Guest lecturer.
 2012 ENG 305. Introduction to Physiology. Guest Lecturer.
 2013, 2011 NGG 598. Advanced Systems Neuroscience. Lecturer (auditory processing).
 2012, 2011 Summer Course in Computational Neuroscience, Guest Lecturer.
 2012 Penn Institute for Research in Cognitive Science summer workshop. Guest Lecturer.
 2011 NGG 577, Core IV. Neuroscience graduate group seminar. Course organizer.
 2011 Psychology 217. Visual Neuroscience, Guest Lecturer.

MENTORING

Post-doctoral Fellows: Katherine Wood, Ph.D. UCL (2016 –); Mark Aizenberg, Ph.D. Weizmann Institute (2011 –)
Ph.D. students: Chris Angeloni, Psychology; Jennifer Blackwell, Neuroscience; John Briguglio, Physics (jointly supervised with Vijay Balasubramanian, graduated 2016, now postdoc at Janelia Farm HHMI); Ryan Natan, Neuroscience (graduated in 2016, now postdoc at Janelia Farm HHMI); Isaac Carruthers, Physics (graduated in 2015, now at Quant Consulting, NYC).

Rotation Ph.D. students: Sneha Narasimhan, Neuroscience; Andrew Jaegle, Neuroscience; Aaron Williams, M.D.-Ph.D. Neuroscience; Cedric Xia, M.D.-Ph.D. Neuroscience; Kyra Schapiro, Neuroscience; Daniel Kalamarides, Neuroscience; Solymar Rolon Martinez, Neuroscience.

Medical students: Adetokundo Obayemi (now resident in Otolaryngology at New York Presbyterian)

Undergraduate honors students: Nitay Caspi '18, Sara Jones '16 (now MD student at Johns Hopkins), Joshua Margolis '14 (now at Amazon), Andrew Davis '13 (now MD student at University of Pennsylvania), Liana Cheung '12 (now MD student at University of Brisbane).

Undergraduate technicians/summer students: Andrew Chen '17, Anh Nguyen '15, Danielle Mohabir '15, Lisa Liu '14, General Lee (Case Western), Norbert Cruz (University of Puerto Rico)

Qualifying Exam Committee: Yue Ji, Neuroscience; Yunshu Fan, Neuroscience; Morgan Taylor, Neuroscience; Adam Gifford, Neuroscience; Matt Churgin, Bioengineering; John Burke, Neuroscience; Opeyemi Obami, Neuroscience.

Thesis Committee: Morgan Taylor, Advisor: Diego Contreras; Patrick McClanahan, Advisor: Chris Fang-Yen.

Ph.D. external examiner: Stephane Deny, Institut de la Vision, Paris VI.

PRESS INTERVIEWS: Brain Matters (<http://brainpodcast.com/page/3>), 2014

WHYY feature story on the Pulse (<http://www.newsworks.org/index.php/local/the-pulse/70702-ear-researcher-looks-at-how-your-brain-gets-meaning-from-sound>), 2014

Burroughs Welcome Fund Focus in Sound interview (<http://www.bwfund.org/newsroom/awardee-profiles/focus-sound-maria-geffen>), 2014

CONFERENCE PRESENTATIONS

Angeloni, C., Aizenberg, M., Geffen, M.N. Cortical gain adaptation to extract signals from background noise. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2017.

Blackwell, J., Aizenberg, M., Rao, W., Natan, R.G., Geffen, M.N. Activating distinct neuronal subtypes in auditory cortex differentially affects collicular responses. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2017.

Natan, R.G., Rao, W., Geffen, M.N. Adaptation in auditory cortex is actively shaped by somatostatin-positive and not parvalbumin-positive interneurons. Society for Neuroscience meeting, San Diego, CA, 2016. 51.13. Also poster presentation at Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, 2016.

Blackwell, J., Aizenberg, M., Mwilambwe-Tshilobo, L., Jones, S., Natan, R.G., Geffen, M.N. Two types of interneurons differentially modulate behavioral frequency discrimination acuity. Society for Neuroscience meeting, San Diego, CA, 2016. 51.18. Also poster presentation at Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, 2016.

Gervain, J., Werker, J.F., Black, A., Geffen, M.N. The neural correlates of processing scale-invariant environmental sounds in infancy. Boston University Conference on Language Development, Boston, MA, 2016.

Gervain, J., Geffen, M.N. Speech Perception: A new perspective from efficient neural coding. HFSP meeting, Singapore. 2016.

Geffen, M.N. Dynamic modulation of auditory acuity by circuits in the auditory cortex. FENS meeting, Copenhagen, 2016.

Natan, R.G., Xia, C.H., Rao, W., Geffen, M.N. Cortical adaptation is actively shaped by somatostatin-positive and not parvalbumin-positive neurons. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2016.

Xia, C.H., Natan, R.G., Rao, W., Geffen, M.N. Two subtypes of interneurons complementarily mediate behavioral detection of deviant sounds. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2016.

Blackwell, J., Aizenberg, M., Mwilambwe-Tshilobo, L., Jones, S., Natan, R.G., Geffen, M.N. Two types of cortical interneurons differentially modulate behavioral frequency discrimination acuity. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2016.

Natan, R.G., Briguglio, J., Mwilambwe-Tshilobo, L., Goldberg, E.M., Geffen, M, N. Multiple mechanisms for stimulus-specific adaptation in the primary auditory cortex. Society for Neuroscience meeting, Chicago, IL, 2015 57.07/J1. Also poster presentation at Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, 2015.

Blackwell, J., Aizenberg, M., Mwilambwe-Tshilobo, L., Jones, S., Natan, R.G., Geffen, M.N. Two types of interneurons differentially modulate tone-evoked responses in the primary auditory cortex. Society for Neuroscience meeting, Chicago, IL, 2015 N226-652.04. Platform. Also presented at Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, 2015.

Geffen, M.N., Cabrera, L., Werker, J.F., Gervain, J. The perception of natural sounds: an efficient neural coding perspective. Auditory Development, Seattle, WA, 2015

Natan, R.G., Briguglio, J., Mwilambwe-Tshilobo, L., Geffen, M, N. Multiple mechanisms for stimulus-specific adaptation in the primary auditory cortex. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2015.

Aizenberg, M., Mwilambwe-Tshilobo, L., Geffen, M.N. Cortical inhibition regulates frequency discrimination acuity and specialization of emotional learning. Platform Presentation, Society for Neuroscience Meeting, Washington, DC, 2014. Platform. Also platform presentation at Advances and Perspectives in Auditory Neurophysiology, Washington, DC, 2014.

Mwilambwe-Tshilobo, L., David, A.J.O., Geffen, M.N. Effects of noise-induced tinnitus on frequency discrimination acuity in mice. Society for Neuroscience Meeting, Washington, DC, 2014. Also presented at Advances and Perspectives in Auditory Neurophysiology, Washington, DC, 2014.

Briguglio, J., Natan, R.G., Mwilambwe-Tshilobo, L., Geffen, M, N. Effects of local inhibition on stimulus-specific adaptation across laminae of primary auditory cortex. Society for Neuroscience Meeting, Washington, DC, 2014. Also presented at Advances and Perspectives in Auditory Neurophysiology, Washington, DC, 2014. One of 3 posters selected for travel award at APAN.

Natan, R.G., Mwilambwe-Tshilobo, L., Geffen, M.N. The role of local inhibitory interneurons in stimulus-specific adaptation in primary auditory cortex. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2014. Platform presentation.

Carruthers, I.A., Natan, R.G., Jaegle, A.C., Mwilambwe-Tshilobo, L., Geffen, M.N. Noise correlations and invariance to basic acoustic transformations of vocalizations in the auditory cortex. Society for Neuroscience Meeting, 214.04, San Diego, CA 2013. Platform Presentation. Also presented at: Advances and Perspectives in Auditory Neurophysiology, San Diego, CA 2013, Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2014. Platform.

Natan, R.G., Carruthers, I.A., Geffen, M.N. Cellular and laminar specificity of stimulus-specific adaptation in the primary auditory cortex. Society for Neuroscience Meeting, 354.03, San Diego, CA 2013. Also presented at: Advances and Perspectives in Auditory Neurophysiology, San Diego, CA 2013.

Geffen, M.N. Specialization of the auditory cortex for temporal statistics of communication signals. Association for Research in Otolaryngology, Mid-Winter Meeting, Baltimore, MD 2013. Platform

Natan, R.G., Carruthers, I.A., Geffen, M.N. Adaptation to temporal correlation in the primary auditory cortex. Society for Neuroscience meeting, New Orleans, LA, 2012. Also presented at: Advances and Perspectives in Auditory Neurophysiology, New Orleans, LA, 2012; Eastern Auditory Retreat meeting, College Park, MD, 2012.

Carruthers, I.A., Natan, R.G., Geffen, M.N. A specialized mechanism for encoding con-specific vocalizations in the auditory cortex. Society for Neuroscience meeting, New Orleans, LA, 2012. Also presented at: Advances and Perspectives in Auditory Neurophysiology, New Orleans, LA, 2012; Eastern Auditory Retreat meeting,

College Park, MD, 2012; Gordon Research Conference Auditory Systems, Lewiston, ME, 2012; Auditory Cortex, Lausanne, Switzerland, 2012.

Aizenberg, M., Geffen, M.N. Differential modulation of perceptual acuity by coarse and fine discriminative auditory fear conditioning. Society for Neuroscience meeting, New Orleans, LA, 2012. Also presented at: Advances and Perspectives in Auditory Neurophysiology, New Orleans, LA, 2012, Platform; Eastern Auditory Retreat meeting, College Park, MD, 2012; Gordon Research Conference Auditory Systems, Lewiston, ME, 2012.

Gervain, J., Werker, J.F., Geffen, M.N. Infants' perception of naturalness in water sounds: the role of scale-invariance. International Conference on Infant Studies Minneapolis, Minnesota, 2012.

Natan, R.G., Carruthers, I.A., Geffen, M.N. Adaptation to spectro-temporal correlation in the primary auditory cortex. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2012.

Carruthers, I.A., Natan, R.G., Geffen, M.N. Encoding of ultra-sonic vocalizations in the rodent primary auditory cortex. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2012.

Carruthers, I.A., Natan, R.G., Laplagne, D.A., Geffen, M.N. Encoding of ultra-sonic vocalizations in the rodent primary auditory cortex. Society for Neuroscience meeting, Washington, DC, 2011. Also presented at: APAN, Washington, DC 2011.

Laplagne, D.A., Geffen, M.N. Neurons in the auditory cortex adapt to the global temporal structure of the stimulus. Vibrissa meeting, JFRC/HHMI, Ashburn, VA, 2010. Also presented at APAN, San Diego CA, 2010.

Geffen, M.N., Taillefumier, T., Magnasco, M.O. The mammalian auditory cortex encodes information about global statistics of naturalistic sounds. Society for Neuroscience meeting, Chicago, IL 2009.

Geffen, M.N., Magnasco, M.O. Statistical analysis of natural sounds. Computational and Systems Neuroscience meeting, 2008. Salt Lake City, UT. Also presented at: Gordon Research Conference: Sensory Processing and the Natural Environment. Luca, Italy, 2008.

Geffen, M.N., Broome, B., Laurent, G., Meister, M. Temporal dynamics in the early olfactory system. Gordon Research Conference, Neural systems and plasticity, Newport, RI, 2007.

Neimark, M.A., Meister, M. Dynamic modulation of On and Off inputs to a retinal ganglion cell. Society for Neuroscience meeting, Washington, DC, 2005. Also presented at Gordon Research Conference, Neural Systems and Plasticity, Newport, RI, 2005.

Neimark, M.A., Meister, M. Salamander ganglion cell identity as on or off is determined by balance of differential inhibition on the two pathways. Computational and Systems Neuroscience meeting, Salt Lake City, UT, 2004.

Neimark, M.A., Meister, M. The classical receptive field of retinal ganglion cells changes from On to Off due to a peripheral shift. Society for Neuroscience meeting, San Diego, CA, 2004.

Neimark, M.A., Meister, M. Retinal Ganglion Cells Convert From OFF-type to ON-type During a Visual Saccade. Society for Neuroscience meeting, New Orleans, LA, 2003. Also presented at Gordon Research Conference: Neural Systems and Plasticity, Newport, RI, 2003.

Neimark, M.A., Andermann, M.L., Hopfield, J.J., Moore, C.I. A model of Texture Encoding by Vibrissa Resonance Properties, Society for Neuroscience Meeting, Orlando, FL 2002. Also presented at Barrels conference, San Diego, CA, 2001.