

# ROBERT C. LIU, PhD

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## Education

<b>UCSF Sloan-Swartz Center for Theoretical Neurobiology</b> , Postdoctoral fellow	1/98-12/04
<b>Stanford Applied Physics</b> , Doctor of Philosophy	4/93-1/98
<b>Stanford Applied Physics</b> , Master of Science	9/91-4/93
<b>Stanford Physics</b> , with Honors, Bachelor of Science	9/87-6/91

## Positions

<b>Emory Dept. of Biology</b> , Professor	9/19-pres
<b>Emory Dept. of Biology</b> , Associate professor	9/11-8/19
<b>Emory Dept. of Biology</b> , Assistant professor	1/05-8/11
<b>UCSF Dept. of Otolaryngology</b> , Visiting postdoctoral fellow (non-salaried)	1/05-6/05

## Affiliations

<b>Emory NIH T32 Mechanisms of Learning Across Development &amp; Species</b> , Training faculty	9/13-pres
<b>Center for Translational Social Neuroscience</b> , Faculty	12/10-pres
<b>Emory/Atlanta Univ Ctr FIRST Postdoc Program</b> , Research mentor faculty	3/07-pres
<b>GA Tech-Emory Dept of Biomedical Engineering</b> , Graduate program faculty	9/06-pres
<b>Emory Neuroscience graduate program</b> , Program faculty	9/05-pres
<b>GA Tech-Emory NSF IGERT Hybrid Neural Microsystems</b> , Academic faculty	9/05-12/10
<b>Center for Behavioral Neuroscience</b> , Faculty	1/05-5/12

## Honors and Merit Fellowships

Keynote, Emory Mortar Board Senior Honor Society Recognition Ceremony	12/17
Phi Beta Kappa Recognition for Excellent Teaching	3/17
Outstanding Service Award, Advances and Perspectives in Auditory Neuroscience	10/15
Best Poster Award at Auditory Cortex 2014	9/14
Emory's Winship Distinguished Research Chair	9/14-8/17
Outstanding NIMH Application honor for grant submission	9/12
John Merck Scholar, Emory's nominee in Neuroscience	1/09

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Young Investigator Talk, SAND Workshop	5/08
Emory President's Commission on Race and Ethnicity Travel Grant	3/06
NIH Ruth L. Kirschstein National Research Service Awards for Postdocs	9/01-8/04
University of California President's Postdoctoral Fellowship	9/99-8/01
Bank of America Giannini Foundation Fellowship for Medical Research in CA	3/99, decl
Sloan Foundation Postdoctoral Fellowship	1/98-12/04
Joint Services Electronics Program Graduate Fellowship	10/95-12/97
National Defense Science and Engineering Graduate Fellowship	10/91-9/94
Carrington Award for Outstanding Achievement and Service in Physics	6/91
Levine Award for Outstanding Undergraduate Scholarship in Physics	10/90
Undergraduate Research Opportunities Program Major Grant Recipient	3/90
Stanford President's Award for Academic Excellence	10/88

### Current Grants

Collab Research in Computational Neuroscience Grant R01 MHI15831-01 <i>PREDICTABILITY AS A NEW PARADIGM FOR RODENT SOCIAL NEUROBIOLOGY</i> Multi-PIs: Robert C. Liu (Administrative PI) and Gordon Berman Total direct cost: \$1,250,000; Total cost: \$2,066,318	9/17-6/22
National Institutes of Health Conte Center Grant P50 MH100023-06 (Years 6-10) <i>SILVIO O. CONTE CENTER FOR OXYTOCIN AND SOCIAL COGNITION</i> PI: Larry J. Young; Project 2 Leader: Robert C. Liu Year 1 direct cost (Project 2): \$308,532; Year 1 total cost (Project 2): \$501,129	4/18-3/23
National Institutes of Health Grant R01 DC008343-11A1 <i>FUNCTIONAL APPROACH TO COMMUNICATION SOUND PROCESSING IN MOUSE AUDITORY CORTEX</i> PI: Robert C. Liu Total direct cost: \$1,417,925; Total cost: \$2,185,825 (5/18-4/23)	5/18-4/23

### Completed Grants

National Institutes of Health Silvio O. Conte Center Grant P50 MH100023 (Years 1-5) <i>SILVIO O. CONTE CENTER FOR OXYTOCIN AND SOCIAL COGNITION</i> PI: Larry J. Young; Project 1 Co-Leader: Robert C. Liu and Tig Rainnie Direct cost (College): \$539,934; Total cost: \$842,297	7/13-6/18
National Institutes of Health Grant R21 MH102191 <i>EPIGENETICS OF NEURONAL PLASTICITY IN AUDITORY CORTEX IN A SENSORY MEMORY MODEL</i> Multi-PI: Robert C. Liu and Kerry J. Ressler Total direct cost: \$275,000; Total cost: \$490,875	7/13-6/15
National Institutes of Health Grant R21 MH097187 <i>FUNCTIONAL NEURAL CONNECTIVITY DURING SOCIAL BONDING IN VOLES</i> PI: Robert C. Liu (Grant was selected as an Outstanding NIMH Application) Total direct cost: \$283,664; Total cost: \$449,254	6/12-3/15

National Institutes of Health Grant R01 DC008343 (Years 6-10) <i>FUNCTIONAL APPROACH TO COMMUNICATION SOUND PROCESSING IN MOUSE AUDITORY CORTEX</i> PI: Robert C. Liu Total direct cost: \$1,164,841 (9/11-8/16) Total cost: \$1,669,018 (9/11-8/16)	9/11-4/18
Emory Neuroscience Initiative Grant <i>THE MECHANISM BY WHICH OT ENHANCES SOCIAL COGNITION IN RODENTS, NON-HUMAN PRIMATES &amp; HUMANS</i> PI: Larry Young; Component Leader: Robert C. Liu Total direct cost: \$150,000 (7/11-6/12)	7/11-6/12
National Institutes of Health Grant R01 DC008343-03SI <i>ARRA SUPPLEMENT TO R01 DC008343</i> PI: Robert C. Liu Total direct cost: \$87,500; Total cost: \$135,625	7/09-6/11
National Institutes of Health Grant R01 DC008343 (Years 1-5) <i>FUNCTIONAL APPROACH TO COMMUNICATION SOUND PROCESSING IN MOUSE AUDITORY CORTEX</i> PI: Robert C. Liu Total direct cost: \$900,000; Total cost: \$1,363,750	7/06-9/11
Center for Behavioral Neuroscience Venture Grant ELO18-78 <i>DOES OXYTOCIN MEDIATE SOCIAL MEMORIES OF COMMUNICATION VOCALIZATIONS?</i> PI: Robert C. Liu; Co-PI: Larry Young Total direct cost: \$26,700; Total cost: \$42,720	7/08-10/09
Center for Behavioral Neuroscience Venture Grant <i>PLASTICITY OF AUDITORY COMMUNICATION PATHWAYS LEADING TO RECOVERY FROM HEARING LOSS</i> PI: Sarah Pallas (Georgia State University); Co-PI: Robert Liu Total direct cost: \$15,000	7/08-6/09
National Institutes of Health Grant 5 R03 DC005699 <i>AUDITORY CORTICAL PROCESSING AND PLASTICITY IN THE MOUSE</i> PI: Jennifer F. Linden (5/03-11/04); Robert C. Liu (designated from 11/04-4/05) Total direct cost: \$150,000 (5/03-4/05); Total cost: \$227,250 (5/03-4/05)	11/04-4/05
National Institutes of Health Grant 5 F32 DC05279 <i>NEURAL CODING OF CATEGORICAL AUDITORY PERCEPTION</i> PI: Robert C. Liu Total direct cost: \$142,548; Total cost: \$142,548	9/01-8/04
UCSF Research Evaluation and Allocation Committee Grant <i>NEURAL CODING AND CIRCUITRY IN MOUSE AUDITORY PROCESSING</i> PI: Kenneth Miller Total cost: \$25,000	12/98

### Mentee Training Grants

National Institutes of Health Grant F31 DC015395 <i>ESTROGEN DEPENDENT MECHANISMS FOR ENHANCED SOCIAL AUDITORY RECOGNITION</i> PI: Amielle Moreno	12/15-11/18
National Institutes of Health Grant T32 HD071845 <i>AUDITORY LEARNING AND SOCIAL COMMUNICATION OF MICE AND MOMS</i> PI: Kelly K. Chong	9/14-8/17

National Institutes of Health Grant R01 DC008343-06AISI <i>DIVERSITY RESEARCH SUPPLEMENT FOR ALEX DUNLAP</i>	4/12-3/15
National Institutes of Health Grant F31 DC011987 <i>THE NECESSITY OF NOREPINEPHRINE FOR AUDITORY CORTICAL PLASTICITY</i> PI: Kathryn N. Shepard	1/12-12/14
National Institutes of Health Grant R01 DC008343-02SI <i>DIVERSITY RESEARCH SUPPLEMENT FOR JASON MIRANDA, PHD</i>	9/07-6/09

### Previous Research Experience

<b>UCSF Sloan-Swartz Center for Theoretical Neurobiology</b> , Postdoctoral fellow <i>COMPUTATIONAL NEUROETHOLOGY OF THE MOUSE ULTRASOUND COMMUNICATION SYSTEM</i> Prof. Michael Merzenich, Kenneth Miller, Christoph Schreiner (Co-mentors)	1/00-12/04
<b>UCSF Sloan-Swartz Center for Theoretical Neurobiology</b> , Postdoctoral fellow <i>VARIABILITY AND INFORMATION IN A NEURAL CODE OF THE CAT LATERAL GENICULATE NUCLEUS (LGN)</i> Prof. Kenneth Miller (Advisor)	1/98-12/01
<b>NTT Basic Research Labs Atsugi, Japan</b> , Student trainee Dr. Seigo Tarucha (Advisor)	1/96-4/96
<b>Stanford E. L. Ginzton Laboratory</b> , Doctoral thesis <i>QUANTUM NOISE IN MESOSCOPIC ELECTRON TRANSPORT</i> Prof. Yoshihisa Yamamoto (Thesis advisor)	9/92-12/97
<b>Stanford E. L. Ginzton Laboratory</b> , Research rotation student Prof. Robert Byer (Advisor), Martin Fejer (Advisor), Malcolm Beasley (Advisor)	9/91-8/92
<b>Stanford Department of Physics</b> , Honors thesis Prof. Douglas Osheroff (Advisor, Nobel Laureate in Physics, 1996)	6/90-6/91
<b>Army Corps of Engineers Construction Engineering Res Lab</b> , Programmer Dr. Paul Schomer (Advisor)	10/86-9/88

[[Google Scholar: 2447 citations; h = 23; i-10 = 33](#)]

### Peer-Reviewed Publications (Neuroscience) ([Undergraduate author](#))

- (32) A. G. Dunlap, C. Besosa, L. M. Pascual, K. K. Chong, H. Walum, [D. B. Kacsoh](#), [B. B. Tankeu](#) and [R. C. Liu](#), *Becoming a better parent: mice learn sounds that improve a stereotyped maternal behavior*, **Hormones and Behavior** 124: 104779 (May 2020). doi: 10.1016/j.yhbeh.2020.104779.
- (31) K. K. Chong, D. B. Anandakumar, A. G. Dunlap, [D. B. Kacsoh](#) and [R. C. Liu](#), *Experience-Dependent Coding of Time-Dependent Frequency Trajectories by Off Responses in Secondary Auditory Cortex*, **Journal of Neuroscience** 40(23): 4469-4482 (April 2020). doi: 10.1523/JNEUROSCI.2665-19.2020. [1]
- (30) A. Moreno\*, [A. Gumaste\\*](#), G. Adams, K. K. Chong, [M. Nguyen](#), K. N. Shepard and [R. C. Liu](#), *Familiarity with social sounds alters c-Fos expression in auditory cortex and interacts with estradiol in locus coeruleus*, **Hearing Research** 366:38-49 (June 2018) doi: 10.1016/j.heares.2018.06.020 \*co-first authors [3]
- (29) T. N. Ivanova, C. Gross, R. C. Mappus, Y. J. Kwon, G. J. Bassell and [R. C. Liu](#), *Familiarity with a vocal category biases the compartmental expression of Arc/Arg3.1 mRNA in core auditory cortex*, **Learning and Memory** 24(12): 612-621 (December 2017) PMC5688959 doi:10.1101/lm.046086.117 [1]

(28) S. B. Banerjee, V. A. Gutzeit, J. Baman, H. S. Aoued, N. K. Doshi, R. C. Liu\* and K. J. Ressler\*, *Perineuronal nets in the adult sensory cortex are necessary for fear learning*, **Neuron** 95(1): 169-179 (June 2017) PMC5548423 doi: 10.1016/j.neuron.2017.06.007 \*co-senior authors [55]

(27) E. A. Amadei\*, Z. V. Johnson\*, Y. J. Kwon, A. C. Shpiner, V. Saravanan, W. Mays, S. Ryan, H. Walum, D. Rainnie, L. J. Young and R. C. Liu, *Dynamic corticostriatal activity biases social bonding in monogamous female prairie voles*, **Nature** 546(7657): 297-301 (May 2017) PMC5499998 doi: 10.1038/nature22381. \*co-first authors [48]

(26) K. N. Shepard, K. K. Chong and R. C. Liu, *Contrast Enhancement without Transient Map Expansion for Species-Specific Vocalizations in Core Auditory Cortex during Learning*, **eNeuro** 3(6) ENEURO.0318-16.2016 (November 2016). PMC4323536. doi: 10.1523/ENEURO.0318-16.2016. [11]

Highlighted by H. Brüner and R. Rasmussen, *Does Size Really Matter? - the Role of Tonotopic Map Area Dynamics for Sound Learning in Mouse Auditory Cortex*, **eNeuro** 10.1523/ENEURO.0002-17.2017 (February 2017).

(25) C. D. Makinson, K. Dutt, F. Lin, L. A. Papale, A. Shankar, A. J. Barela, R. C. Liu, A. L. Goldin, A. Escayg, *An Scn1a epilepsy mutation in Scn8a alters seizure susceptibility and behavior*, **Exp Neurol** 275(Pt. 1): 46-58 (January 2016). PMC4688066. doi:10.1016/j.expneurol.2015.09.008. [8]

(24) J. A. Garcia-Lazaro, K. N. Shepard, J. A. Miranda, R. C. Liu, N. A. Lesica, *An overrepresentation of high frequencies in the mouse inferior colliculus supports the processing of ultrasonic vocalizations*, **PLoS ONE** 10(8): e0133251 (August 2015). PMC4526676. doi: 10.1371/journal.pone.0133251. [16]

(23) K. N. Shepard\*, F. G. Lin\*, C. L. Zhao, K. K. Chong and R. C. Liu, *Behavioral relevance helps untangle natural vocal categories in a specific subset of core auditory cortical pyramidal neurons*, **Journal of Neuroscience** 35(6): 2636-2645 (February 2015). PMC4323536. doi: 10.1523/JNEUROSCI.3803-14.2015. [19]

(22) K. N. Shepard, L. C. Liles, D. Weinshenker and R. C. Liu, *Norepinephrine is necessary for experience-dependent plasticity in the developing mouse auditory cortex*, **Journal of Neuroscience** 35(6): 2432-2437 (February 2015). PMC4323528. doi: 10.1523/JNEUROSCI.0532-14.2015 [22]

Highlighted by R. M. Golovin and N. J. Ward, *Neuromodulatory influence of norepinephrine during developmental experience-dependent plasticity*, **Journal of Neurophysiology** 116:1-4 (January 2016).

(21) J. A. Miranda, K. N. Shepard, S. K. McClintock and R. C. Liu, *Adult plasticity in the subcortical auditory pathway of the maternal mouse*, **PLoS ONE** 9(7): e101630 (July 2014). PMC4081580. doi: 10.1371/journal.pone.0101630 [20]

(20) I. Kirste, Z. Nicola, G. Kronenberg, T. L. Walker R. C. Liu and G. Kempermann. *Is silence golden? Effects of auditory stimuli and their absence on adult hippocampal neurogenesis*, **Brain Structure and Function** 220(2):1221-8 (Mar 2015; Epub December 2013). PMC4087081. doi:10.1007/s00429-013-0679-3 [41]

(19) S. Bennur, J. Tsunada, Y. E Cohen, R. C. Liu. *Understanding the neurophysiological basis of auditory abilities for social communication: A perspective on the value of ethological paradigms*, **Hearing Research** 305:3-9 (November 2013). PMC3818520. doi: 10.1016/j.heares.2013.08.008 [27]

(18) S. B. Banerjee and R. C. Liu, *Storing maternal memories: Hypothesizing an interaction of experience and estrogen on sensory cortical plasticity to learn infant cues*, **Frontiers in Neuroendocrinology** 34(4):300-314 (October 2013). PMC3788048. doi: 10.1016/j.yfrne.2013.07.008 [37]

(17) T. P. Vogels, R. C. Froemke, N. Doyon, M. Gilson, J. S. Haas, R. C. Liu, A. Maffei, P. Miller, C. J. Wierenga, M. A. Woodin, F. Zenke, H. Sprekeler, *Inhibitory synaptic plasticity: Spike timing-dependence and putative network function*, **Frontiers in Neural Circuits** 7:119 (July 2013). PMC3714539. doi: 10.3389/fncir.2013.00119 [98]

- (16) F. G. Lin, E. E. Galindo-Leon, T. N. Ivanova, R. C. Mappus and R. C. Liu, *A role for maternal physiological state in preserving auditory cortical plasticity for salient infant calls*, **Neuroscience** 247:102-116 (July 2013). PMC3722272. doi: 10.1016/j.neuroscience.2013.05.020 [37]
- (15) A. G. Dunlap, F. G. Lin and R. C. Liu, *Auditory processing for contrast enhancement of salient communication vocalizations*, **Proceedings of Meetings on Acoustics** 19(1):010025 (June 2013). PMC4160892. doi: 10.1121/1.4799206 [-]
- (14) C. L. Zhao, F. G. Lin and R. C. Liu, *Spike train distance metric reveals plasticity in discrimination of salient calls by putative excitatory cells of the auditory cortex*, **BMC Neuroscience** 13(Suppl 1):P97 (July 2012). PMC3403242. doi:10.1186/1471-2202-13-S1-P97 [-]
- (13) T. Ivanova, A. Matthews, C. Gross, R. C. Mappus, C. Gollnick, A. Swanson, G. J. Bassell and R. C. Liu, *Arc/Arg3.1 mRNA expression reveals a sub-cellular trace of prior sound exposure in adult primary auditory cortex*, **Neuroscience** 181:117-126 (May 2011). PMC3074009. doi:10.1016/j.neuroscience.2011.02.034 (Picked as the Cover Article) [19]
- (12) K. N. Shepard and R. C. Liu, *Experience restores innate female preference for male ultrasonic vocalizations*, **Genes Brains and Behavior** 10(1):28-34 (February 2011). PMC2947590. doi:10.1111/j.1601-183X.2010.00580.x [51]
- (11) F. Lin and R. C. Liu, *Subset of thin spike cortical neurons preserve the peripheral encoding of stimulus onsets*, **Journal of Neurophysiology** 104(6):3588-3599 (December 2010). PMC3007649. doi:10.1152/jn.00295.2010 [26]
- (10) E. E. Galindo-Leon and R. C. Liu, *Predicting stimulus-locked single unit spiking from cortical local field potentials in awake mice*, **Journal of Computational Neuroscience** 29(3):581-597(December 2010). PMC2935517. doi:10.1007/s10827-010-0221-z [19]
- (9) E. E. Galindo-Leon\*, F. Lin\* and R. C. Liu, *Inhibitory plasticity in a lateral band improves cortical detection of natural vocalizations*, **Neuron** 62:705-716 (June 2009). PMC2709999. doi:10.1016/j.neuron.2009.05.001 \*co-first authors [101]
- Previewed by I. Nelken, *Inhibitory plasticity in auditory cortex*, **Neuron** 62:605-607 (June 2009).
- (8) J. A. Miranda and R. C. Liu, *Dissecting natural sensory plasticity: Hormones and experience in a maternal context*, **Hearing Research** 252:20-27 (May 2009). PMC2698041. doi:10.1016/j.heares.2009.04.014 [46]
- (7) R. C. Liu and C. E. Schreiner, *Auditory cortical detection and discrimination correlates with communicative significance*, **PLoS Biology** 5:e173 1-14 (July 2007). PMC1891324. doi:10.1371/journal.pbio.0050173 [111]
- (6) R. C. Liu, J. F. Linden and C. E. Schreiner, *Improved cortical entrainment to infant communication calls in mothers compared to virgin mice*, **European Journal of Neuroscience** 23:3087-3097 (June 2006). PMID: 16819999. doi:10.1111/j.1460-9568.2006.04840.x [92]
- (5) R. C. Liu, *Prospective contributions of transgenic mouse models to central auditory research*, **Brain Research** 1091:217-223 (May 2006). PMID: 16574081. doi:10.1016/j.brainres.2006.02.030 [13]
- (4) F. Strata, A. R. Delpolyi, B. H. Bonham, E. F. Chang, R. C. Liu, H. Nakahara and M. M. Merzenich, *Perinatal anoxia degrades auditory system function in rats*, **Proceedings of the National Academy of Sciences** 102:19156-19161 (December 2005). PMC1323198. doi: 10.1073/pnas.0509520102 [20]
- (3) R. C. Liu, K. D. Miller, M. M. Merzenich and C. E. Schreiner, *Acoustic variability and distinguishability among mouse ultrasound vocalizations*, **Journal of the Acoustical Society of America** 114:3412-3422 (December 2003). PMID: 14714820. doi:10.1121/1.1623787 [169]

(2) J. F. Linden, R. C. Liu, M. Sahani, C. E. Schreiner and M. M. Merzenich, *Spectrotemporal structure of receptive fields in areas AI and AAF of mouse auditory cortex*, **Journal of Neurophysiology** 90:2660-2675 (October 2003). PMID: 12815016. doi:10.1152/jn.00751.2002 [248]

(1) R. C. Liu, S. Tzonev, S. Rebrik and K. D. Miller, *Variability and information in a neural code of the cat lateral geniculate nucleus*, **Journal of Neurophysiology** 86:2789-2806 (December 2001). PMID: 11731537. doi: 10.1152/jn.2001.86.6.2789 [99]

### Invited Commentaries (Neuroscience)

(1) R. C. Liu, *Yin and Yang from Cortical Oxytocin*, **Nature News and Views** 520:444-445 (April 2015). PMC4418646. doi:10.1038/nature14386 [10]

### Book Chapters and Edited Volumes (Neuroscience)

(5) A. G. Dunlap and R. C. Liu, *Rodent ultrasonic vocalization as a window into auditory cortical processing and plasticity*, in “Handbook of Ultrasonic Vocalization,” ed. by S. Brudzynski (Academic Press, Amsterdam, 2018). doi: 10.1016/B978-0-12-809600-0.00008-1 [1]

(4) K. K. Chong and R. C. Liu, *Hormone-dependent and experience-dependent auditory plasticity for social communication*, in “Hearing and Hormones,” ed. by A. Bass, J. Sisneros, R. R. Fay and A. N. Popper (Springer Science+Business Media, LLC, New York, 2016). doi: 10.1007/978-3-319-26597-1\_6 [1]

(3) C. I. Petkov, T. Q. Gentner and R. C. Liu (editors), *Communication Sounds and the Brain: New Directions and Perspectives*, Special Issue of **Hearing Research** 305:1-2 (November 2013). doi: 10.1016/j.heares.2013.09.001 [1]

(2) K. N. Shepard, M. Kilgard and R. C. Liu, *Experience-dependent plasticity and the auditory cortex*, in “Neural Correlates of Auditory Cognition,” ed. by Y. Cohen, R. R. Fay and A. N. Popper (Springer Handbook of Auditory Research, New York, 2012). doi: 10.1007/978-1-4614-2350-8\_10 [21]

(1) R. C. Liu, *Inhibitory plasticity and auditory function*, in “Inhibitory Synaptic Plasticity,” ed. by M. A. Woodin and A. Maffei (Springer Science+Business Media, New York, 2011). doi: 10.1007/978-1-4419-6978-1\_4 [-]

### Peer-Reviewed Publications (Physics)

(8) W. D. Oliver, J. Kim, R. C. Liu and Y. Yamamoto, *Hanbury Brown and Twiss-type experiment with electrons*, **Science** 284:299-301 (April 1999). PMID: 10195891. doi:10.1126/science.284.5412.299 [475]

(7) R. C. Liu, Y. Yamamoto and S. Tarucha, *Signs of quantum statistical effects in electron collision*, **Physica B** 249-251:152-6 (June 1998). doi:10.1016/S0921-4526(98)00088-X [5]

(6) R. C. Liu, B. Odom, Y. Yamamoto and S. Tarucha, *Quantum interference in electron collision*, **Nature** 391:263-265 (January 1998). doi:10.1038/34611 [283]

(5) Y. Yamamoto, R. Liu, J. Kim, A. Imamoglu, *Electron and photon noise suppression in mesoscopic systems – how to teach noisy photons to follow quiet electrons*, **Materials Science and Engineering B – Solid State Materials for Advanced Technology** 48:19-25 (August 1997). doi:10.1016/S0921-5107(97)00075-5 [3]

(4) R. C. Liu, P. Eastman and Y. Yamamoto, *Inhibition of elastic and inelastic scattering by the Pauli exclusion principle: Suppression mechanism for mesoscopic partition noise*, **Solid State Communications** 102:785-789 (June 1997). doi:10.1016/S0038-1098(97)00099-9 [32]

(3) R. C. Liu and Y. Yamamoto, *Conductance dependent suppression of current partition noise in mesoscopic electron branching circuits*, **Physica B** 210:37-42 (April 1995). doi:10.1016/0921-4526(94)00296-8 [8]



- (2) R. C. Liu and Y. Yamamoto, *Nyquist noise in the transition from mesoscopic to macroscopic transport*, **Physical Review B** 50:17411-17414 (December 1994). PMID: 9976145. doi:10.1103/PhysRevB.50.17411 [41]
- (1) R. C. Liu and Y. Yamamoto, *Suppression of quantum partition noise in mesoscopic electron branching circuits*, **Physical Review B** 49:10520-10532 (April 1994). PMID: 10009877. doi:10.1103/PhysRevB.49.10520 [46]

### Conference Proceedings (Physics)

- (4) R. C. Liu, W. D. Oliver, J. Kim and Y. Yamamoto, *Quantum electron optics*, in “Quantum Physics at Mesoscopic Scale,” ed. by C. Glattli, M. Sanquer and J. Tran Thanh Van (EDP Sciences, Les Ulis, France, 2000) pp. 163-167.
- (3) R. C. Liu, B. Odom, J. Kim, Y. Yamamoto and S. Tarucha, *Partition noise in mesoscopic devices: Experiments in quantum electron optics*, in “Proceedings of the 23rd International Conference on the Physics of Semiconductors,” ed. by M. Scheffler and R. Zimmermann (World Scientific Publishing Co. Pte. Ltd., New Jersey, 1996) pp. 2399-2402.
- (2) R. C. Liu, P. Eastman and Y. Yamamoto, *Simulations of partition noise suppression*, in “Quantum Transport in Semi-conductor Submicron Structures,” ed. by B. Kramer (Kluwer Academic Publishers, The Netherlands, 1996) pp. 365-374.
- (1) R. C. Liu and Y. Yamamoto, *Partition noise in electron transport*, in “Quantum Dynamics of Submicron Structures,” eds. by H. A. Cerdeira, B. Kramer and G. Schon (Kluwer Academic Publishers, The Netherlands, 1995) pp. 427-442.

### Invited Major Symposium Presentations (Neuroscience)

- (26) R. C. Liu, *A computational neuroethological approach to pair bonding circuitry*, at Vole Meeting 2019 at the University of Texas, Austin, TX, August 23-24, 2019. Host: Steve Phelps
- (25) R. C. Liu, *Dynamic regulation of sound learning in adult auditory cortex*, at Society for Behavioral Neuroendocrinology Symposium #4 on “Mechanisms underlying experience-dependent neural plasticity during development and adulthood” at Bloomington, IN, June 19-22, 2019. Host: Keerthi Krishnan
- (24) R. C. Liu, *Aftershock! Dynamic regulation of auditory cortical perineuronal nets after fear cue learning*, at a Symposium of the 2018 International Conference on Learning and Memory on “A sound model for cortical contributions to information in memory” at Huntington Beach, CA, April 18-22, 2018. Host: Kasia Bieszczad
- (23) R. C. Liu, *The auditory neuroethology of mouse ultrasonic vocal communication*, at the Theo Murphy International Scientific Meeting of the Royal Society on “From sender to receiver: physics and sensory ecology of hearing in insects and vertebrates” at Chicheley Hall, North Buckinghamshire, United Kingdom, December 4-5, 2017. Host: Andrei Kozlov
- (22) R. C. Liu, *Experience-dependent biasing of behaviorally relevant sounds*, at the Birdsong Symposium on “Communication in Context – The Relation Between Perception and Production” at University of Maryland, Baltimore, MD, November 10, 2017. Host: Luke Ramage-Healey
- (21) R. C. Liu, *Dynamic Corticostriatal Activity Biases Social Bonding in Monogamous Female Prairie Voles*, at the Center for Behavioral Neuroscience Symposium on “Social Neuroscience: Male-Female Interactions from Molecules to Behavior” at Georgia State University, Atlanta, GA, May 5, 2017. Host: Walt Wilczynski
- (20) R. C. Liu, *Neuroethology of Prosocial Communication and Learning in Rodents*, at the Suddath Symposium on “Neuromodulation and Synaptic Control: Modern Tools and Applications” at Georgia Institute of Technology, Atlanta, GA, February 21-22, 2017. Host: Garrett Stanley and Hang Lu



- (19) R. C. Liu, *Coding and plasticity for communication sounds in secondary auditory cortex*, at the Frontiers in Interdisciplinary Neuroscience and Technology Symposium at Zhejiang University, Hangzhou, China, September 24-25, 2016. Host: Xiongjie Yu and Anna Wang Roe
- (18) R. C. Liu, *Cortical plasticity for salient social vocalizations*, at the Association for Research in Otolaryngology Symposium on Mechanisms of Social Hearing, Baltimore, MD, February 21-25, 2015. Host: Laura Hurley
- (17) R. C. Liu, *Auditory cortical contributions to social information processing*, Symposium on “Songs of Jerusalem” at the Hebrew University of Jerusalem, Jerusalem, Israel, October 21-23, 2014. Host: Mickey London
- (16) A. G. Dunlap, F. G. Lin, R. C. Liu, *Auditory processing for contrast enhancement of salient communication vocalizations*, Symposium on “Listening in the Natural Environment” at the 21<sup>st</sup> International Congress on Acoustics, Montreal, Canada, June 4, 2013. Host: Peter Narins
- (15) R. C. Liu, *Of mice and moms: Auditory cortical plasticity for acoustic communication*, Workshop on “Plasticity in the Auditory System,” Stockholm, Sweden, October 3-5, 2012. Host: Barbara Canlon
- (14) R. C. Liu, *From calls to cortex: Studying communication processing from the system to subcellular scale*, Gordon Research Conference on the Auditory System, Bates College, Lewiston, Maine, July 8-13, 2012. Host: Dan Sanes
- (13) R. C. Liu, *Physiological state impacts maintenance of adult experience-dependent inhibitory plasticity*, CoSyNe Workshop on “Inhibitory Synaptic Plasticity,” Snowbird, Utah, February 28, 2012. Host: Tim Vogels
- (12) R. C. Liu, *Automated paradigms for studying acoustic communication in mice*, CleverSys Satellite Symposium on “Social Behaviors and Communications in Neuroscience,” Washington, DC, November 14, 2011. Host: Yiqing Liang
- (11) R. C. Liu, *Dissecting natural auditory plasticity: A role for state and experience*, 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Mini-Symposium on “Using vocal signals to understand the auditory forebrain: evidence from songbirds and mice,” Washington, DC, November 12-16, 2011. Host: Timothy Gentner and David Vicario
- (10) R. C. Liu, *Of mice and moms: Auditory processing of behaviorally relevant vocalizations*, Symposium on “Brain processing of auditory signals” at the XXIII meeting of the International Bioacoustics Council, La Rochelle, France, September 12-16, 2011. Host: Frederic Theunissen
- (9) R. C. Liu, *Of mice and moms: Auditory processing of behaviorally relevant vocalizations*, Symposium on “Neural processing of communication sounds across the species” at the European Brain and Behavior Society Meeting, Sevilla, Spain, September 9-12, 2011. Host: Colline Poirier and Chris Petkov
- (8) R. C. Liu, *A “songbird-approach” to studying mouse acoustic communication*, Conference on “Producing and perceiving complex acoustic signals: Songbirds and mice as model systems,” HHMI’s Janelia Farm Research Campus, March 20-23, 2011. Host: Allison Doupe, Roian Egnor and Christine Portfors
- (7) R. C. Liu, *Auditory cortical coding in a natural communication context*, Second Workshop on Natural Environments, Tasks and Intelligence, University of Texas at Austin, TX, April 9-11, 2010. Host: Bill Geisler
- (6) R. C. Liu, *Infant mouse isolation ultrasounds: production, perception and neural plasticity*, Special Session on “Emotion-related Mechanisms of Mammalian Vocalizations” at the 158<sup>th</sup> Meeting of the Acoustical Society of America, San Antonio, TX, October 26-30, 2009. Host: Michael Owren
- (5) R. C. Liu, *Hearing ultrasounds: Neural activity in auditory cortex correlates with communicative significance*, Symposium on “Ultrasonic vocalizations as a social indicator in rodents” at the International Behavioural and Neural Genetics Society, Dresden, Germany, June 4-8, 2009. Host: Maria Luisa Scattoni and Enrico Alleva

- (4) R. C. Liu, *Neurobiology of vocal communication in rodents*, Workshop on the Neural Processing of Communication Calls at the Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2008. Host: Andrew King
- (3) R. C. Liu, *From calls to cortex: Correlating auditory coding with communicative significance*, 37<sup>th</sup> Annual Meeting of the Society for Neuroscience, Mini-Symposium on “Not Just a Genotype: The Mouse as a Model for Auditory Systems Neuroscience,” San Diego, CA, November 4, 2007. Host: Jennifer Linden
- (2) R. C. Liu, *A mouse model for the cortical processing and learning of natural communication sounds*. Association for Research in Otolaryngology Symposium on Neural Correlates of Social Communication Signals, Denver, CO, February 10-15, 2007. Host: Yale Cohen
- (1) R. C. Liu, *Computational neuroethology of natural call coding in mice*. Gordon Research Conference on Sensory Coding and the Natural Environment, Big Sky Resort, MT, August 27-September 1, 2006. Host: Xiaoqin Wang

### Invited Seminar Presentations (Neuroscience)

- (48) R. C. Liu, *Neural Predispositions and Plasticity for Social Information Processing*. University of North Carolina Neuroscience Center Seminar Series, Chapel Hill, NC September 2020.
- (47) R. C. Liu, *Neural Predispositions and Plasticity for Social Information Processing*. Emory Biology Seminar Series, Atlanta, GA, September 6, 2018.
- (46) R. C. Liu, *Neural Predispositions and Plasticity for Social Information Processing*, Stonybrook University, NY, March 29, 2018. Host: Qiaojie Xiong
- (45) R. C. Liu, *Neural Predispositions and Plasticity for Auditory Social Information Processing*, Massachusetts Eye and Ear Infirmary, Boston, MA, February 20, 2018. Host: Dan Polley
- (44) R. C. Liu, *Auditory Cortex: From Learning to Memory in Natural Auditory Behaviors*, Panel Speaker at Winter Conference on Brain Research, Whistler, Canada, January 16, 2018. Host: Li Zhang
- (43) R. C. Liu, *Social Information Processing and Learning in Rodents*, University College London Ear Institute, London, UK, December 1, 2017. Host: Jennifer Linden
- (42) R. C. Liu, *Social Information Processing and Learning in Rodents*, Georgia Tech Neuro Seminar, Atlanta, GA, November 27, 2017. Host: Bilal Haidar
- (41) R. C. Liu, *Neuroethology of Prosocial Communication and Learning in Rodents*, Zilkha Neurogenetic Institute Seminar, Los Angeles, CA, February 1, 2017. Host: Li Zhang
- (40) R. C. Liu, *Neuroethology of Prosocial Communication and Learning in Rodents*, Emory Department of Psychology Cognition and Development Brown Bag Lunch, Atlanta, GA, January 25, 2017. Host: Stella Lourenco
- (39) R. C. Liu, *Neuroethology of Prosocial Communication and Learning in Rodents*, City University of Hong Kong, Hong Kong, December 22, 2016. Host: Jufeng He
- (38) R. C. Liu, *Science at the intersections: From quantum electron optics to social neuroscience*, Retirement Symposium for Professor Yoshihisa Yamamoto, Stanford, CA, June 4, 2016. Host: Jungsang Kim
- (37) R. C. Liu, *Electrophysiological Mechanisms of Social Information Processing*, Emory University Learning Proseminar on “Social Modulation: Brain & Behavior”, Atlanta, GA, April 25, 2015. Host: Patricia Bauer/Rob Hampton

- (36) R. C. Liu, *Auditory cortical contributions to social information processing*, Northeast Ohio Medical University Department of Anatomy and Neurobiology Seminar Series, Rootstown, OH, December 11, 2014. Host: Jasmine Grimsley
- (35) R. C. Liu, *Neural plasticity for social information*, Georgia Institute of Technology Brain Workshop: Enabling Health through Neurotechnologies, Atlanta, GA, October 8, 2013. Host: Doug Ollerenshaw
- (34) R. C. Liu, *Computational neuroethology of social information processing*, Emory Department of Biology Seminar, Atlanta, GA, October 1, 2013.
- (33) R. C. Liu, *From calls to cortex: Auditory plasticity for acoustic communication*, University of Pittsburgh Auditory Research Group Seminar, Pittsburgh, PA, September 13, 2013. Host: Karl Kandler
- (32) R. C. Liu, *Computational Neuroethology: A physicist's journey into wet lab studies of the brain's neural code*, Georgia Institute of Technology Physics Department Seminar, Atlanta, GA, November 15, 2012. Host: Carlos Melo
- (31) R. C. Liu, *Computational neuroethology of acoustic communication in mice*, Georgia State University, Atlanta, GA, September 18, 2012. Host: Sarah Pallas and Anne Murphy
- (30) R. C. Liu, *Neural mechanisms of communication from the systems to sub-cellular scale*, Workshop on Computational Neuroethological Approaches to Problems in Social Neuroscience at Computational Neuroscience 2012, Decatur, GA, July 25, 2012. Host: Beth Buffalo, Robert Liu and Larry Young
- (29) R. C. Liu, *Auditory cortical correlate of a salient communication sound category*, Johns Hopkins Center for Hearing and Balance, Baltimore, MD, April 19, 2012. Host: Amanda Lauer
- (28) R. C. Liu, *The Computational Neuroethology of Mouse Communication*, Mouse Ultrasound Vocalization Workshop, Paris, France, April 16-17, 2012. Host: Elodie Ey
- (27) R. C. Liu, *Of Mice and Moms: A computational neuroethological approach to social communication*, University of Illinois, Champaign, IL, March 13, 2012. Host: Daniel Llano
- (26) R. C. Liu, *Brain plasticity in social contexts*, Center for Translational Social Neuroscience Kickoff Event, Atlanta, GA, February 10, 2011. Host: Larry Young
- (25) R. C. Liu, *Sensorineural plasticity in a maternal context*, Frontiers in Neuroscience Seminar, Atlanta, GA, March 5, 2010. Host: Katy Shepard
- (24) R. C. Liu, *Three lessons from my scientific serendipities: My "unexpected" journey from physics to neuroscience*, Emory Neuroscience Graduate Program Retreat, Dahlonega, GA, August 22, 2009. Host: Sara Freeman
- (23) R. C. Liu, *Of Mice and Moms: Auditory processing of behaviorally relevant vocalizations*, University of Ulm, Ulm, Germany, June 9, 2009. Host: Guenter Ehret
- (22) R. C. Liu, *Of Mice and Moms: A computational neuroethological approach to acoustic communication*, Albert Einstein College of Medicine Neuroscience Seminar, Bronx, NY, April 15, 2009. Host: Jose Luis Pena
- (21) R. C. Liu, F. G. Lin, E. E. Galindo-Leon, *Predicting first spikes at the onset of natural calls in the awake mouse auditory cortex*, Gordon Research Conference on The Auditory System, Colby-Sawyer College, NH, June 29-July 4, 2008. Host: Karl Kandler
- (20) R. C. Liu, E. Galindo-Leon, *Wide-band local field potential phase predicts time-dependent single unit firing in awake auditory cortex*, 4<sup>th</sup> International Workshop on the Statistical Analysis of Neural Data, Pittsburgh, PA, May 29-31, 2008. Awarded as a young-investigator talk
- (19) R. C. Liu, *Auditory plasticity in social contexts: the computational neuroethology of mouse communication*, Rockefeller University Center for Studies in Physics and Biology Weekly Seminar Series, New York, NY, October 25, 2007. Host: Maria Neimark Geffen

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- (18) R. C. Liu, *Sensory plasticity in social contexts: from calls to cortex*, University of California, San Francisco Special Seminar, San Francisco, CA, June 19, 2007. Host: Christoph Schreiner
- (17) R. C. Liu, *Communication coding in mouse cortex: from sounds to spikes*, Georgia State University Biology Graduate Seminar, Atlanta, GA, March 23, 2007. Host: Sarah Pallas
- (16) R. C. Liu, *Communication coding in mouse cortex: from sounds to spikes*, University of Illinois at Chicago Department of Anatomy and Cell Biology, Chicago, IL, January 4, 2007. Host: Scott Brady
- (15) R. C. Liu and C. E. Schreiner, *An information theoretic approach to detecting and discriminating mouse communication sounds*, Computational and Systems Neuroscience, Salt Lake City, UT, March 6, 2006. Selected as a poster preview presentation
- (14) R. C. Liu, *When infants cry: communication processing in the auditory cortex of mouse mothers*. Frontiers in Neuroscience Seminar, Atlanta, GA, October 6, 2005. Host: Michael Wright
- (13) R. C. Liu, *Pups Call, Moms Come: Towards Understanding the Neural Coding of Acoustic Communication in Mice*. Center for Behavioral Neuroscience (CBN) Scientific Retreat, Atlanta, GA, May 7, 2005. Host: Kelly Powell
- (12) R. C. Liu, *Computational Neuroethology Laboratory*. Affiliation Collaboratory Meeting, Center for Behavioral Neuroscience, Atlanta, GA, March 17, 2005. Host: Larry Young
- (11) R. C. Liu, *Communication and cortex: the computational neuroethology of mouse vocalizations*, Redwood Neuroscience Institute, Menlo Park, CA, July 9, 2004. Host: Bruno Olshausen
- (10) R. C. Liu, *Communication coding in mouse cortex*, Eaton-Peabody Seminar in Auditory Physiology, Massachusetts Eye and Ear Infirmary, Boston, MA, April 9, 2004. Host: M. Charles Liberman
- (9) R. C. Liu, *Communication coding in mouse cortex: from pup calls to perception*, Emory University Department of Biology, Atlanta, GA, March 18, 2004. Host: Ron Calabrese
- (8) R. C. Liu, *Communication coding in mouse cortex: from sounds to spikes*, University of Oregon Department of Psychology, Eugene, OR, February 16, 2004. Host: Terry Takahashi
- (7) R. C. Liu, *Communication coding in mouse cortex: from sounds to spikes*, University of California, San Diego Department of Physics, San Diego, CA, February 9, 2004.
- (6) R. C. Liu, *Communication coding in mouse cortex: from sounds to spikes*, Pennsylvania State University Department of Physics, State College, PA, January 19, 2004. Host: Jayanth Banavar
- (5) R. C. Liu, *Communication and cortex: the computational neuroethology of mouse vocalizations*, Stanford Department of Neurobiology informal seminar, Stanford, CA, August 1, 2003. Host: Jennifer Raymond
- (4) R. C. Liu, *Communication and cortex: the computational neuroethology of mouse vocalizations*, Sloan-Swartz Meeting, San Diego, CA, July 26-29, 2003.
- (3) R. C. Liu, *Song and rhythm in the mouse: Cortical processing of natural vocalizations*, Seminar at Washington State University at Vancouver, Vancouver, WA, May 7, 2003. Host: Christine Portfors
- (2) R. C. Liu, *Song and rhythm in the mouse: Cortical processing of natural vocalizations*, Berkeley Ear Club, Berkeley, CA, April 7, 2003. Host: Ervin Hafer
- (1) R. C. Liu, S. Tzonev, S. Rebrik, A. Kurgansky and K. D. Miller, *Cat LGN spike variability*, Neural Information Processing Systems 2000 Workshop, Breckenridge, CO, December 1-2, 2000. Host: Jonathan Victor

Contributed Presentations (Neuroscience)

- (111) C. Besosa, A. G. Dunlap, **B. Tankeu**, D. B. Kacsoh and R. C. Liu. *Auditory Learning Improves a Natural Social Behavior in Mice*. 43<sup>rd</sup> Annual Meeting of the Association for Research in Otolaryngology, San Jose, CA, Jan. 25-29, 2020.
- (110) **B. Tankeu\***, C. Besosa, D. B. Anandakumar, A. G. Dunlap, D. B. Kacsoh and R. C. Liu. *A Y-Maze Behavioral Paradigm to Investigate Association of a Novel Non-natural Sound with a Social Reward*. ABRCMS 2019, Anaheim, CA, Nov. 13-16, 2019. \*Awarded Poster Award
- (109) D. Arslan, Y. J. Kwon, L. J. Young and R. C. Liu. *Ultrasonic vocalizations reflect discrimination of conspecific odors in pair-bonded male prairie voles*. 49<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 19-23, 2019.
- (108) J. Guo, A. M. Borie, S. Agezo, **P. Lunsford**, L. J. Young and R. C. Liu. *Sociosexual experience shapes oxytocin action on glutamatergic transmission in the nucleus accumbens of prairie voles*. 49<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 19-23, 2019.
- (107) S. Agezo, A. M. Borie, K. Jain, Y. J. Kwon, L. J. Young, R. C. Liu and G. J. Berman. *Pair bonding increases the predictability of the behavioral repertoire in prairie voles*. 49<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 19-23, 2019.
- (107) A. M. Borie, J. Guo, S. Agezo, **P. Lunsford**, L. J. Young and R. C. Liu. *Sociosexual experience shapes oxytocin action on glutamatergic transmission in the nucleus accumbens of prairie voles*. Society for Social Neuroscience Annual Meeting, Chicago, IL, October 17-18, 2019.
- (106) I. Pinkoviezky, A. Roman, E. Amadei, R. C. Liu and G. Berman. *The role of neural excitability and coupling in the formation of social bonds*. APS March Meeting 2019, Boston, MA, Mar. 4-8, 2019.
- (105) K. K. Chong, A. G. Dunlap, D. B. Anadakumr and R. C. Liu. *Experience-dependent coding of intonations by offsets in mouse core and secondary auditory cortex*. 42<sup>nd</sup> Annual Meeting of the Association for Research in Otolaryngology, San Diego, CA, Feb. 9-13, 2019.
- (104) A. G. Dunlap and R. C. Liu. *Auditory cortex dependent reprogramming of an innate maternal behavior*. 48<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 3-7, 2018.
- (103) A. G. Dunlap and R. C. Liu. *Auditory cortex dependent reprogramming of an innate maternal behavior*. Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, November 2, 2018.
- (102) **D. Kacsoh**, A. G. Dunlap and R. C. Liu. *Learning infant cues: Forming associations between sound and social reward*. 2018 Emory SURE Symposium, Atlanta, GA, August 2, 2018.
- (101) R. C. Liu, L. J. Young and E. A. Amadei. *Dynamic circuit activity within a social salience neural network during social bond formation in the monogamous prairie vole*. International Congress of Neuroethology, Brisbane, Australia, July 15-18, 2018. (selected for oral presentation)
- (100) A. Moreno, **M. J. Tucker** and R. C. Liu. *Learning infant cues: Estrogen and social experience's effects on mechanisms of sensory plasticity*. 9<sup>th</sup> International Congress of Neuroendocrinology, Toronto, Canada, July 15-18, 2018. (selected for oral presentation)
- (99) S. Agezo, Y. J. Kwon, L. J. Young, G. J. Berman and R. C. Liu. *Unsupervised learning of vole behavior in social contexts*. CRCNS 2018, University of California, Berkeley, CA, June 13-15, 2018.
- (98) **D. Arslan**, Y. J. Kwon, L. J. Young and R. C. Liu. *Conspecific Odour Recognition in Socially Monogamous Prairie Voles*. 2018 Spring Emory Undergraduate Research Symposium, Atlanta, GA, April 24, 2018.
- (97) **S. Hwang**, E. Amadei, L. J. Young and R. C. Liu. *Visualizing brain oscillations during natural interactions in prairie voles*. 2017 Emory SURE Symposium, Atlanta, GA, July, 2017.

- (96) A. Moreno, M. J. Tucker, P. Lunsford, R. Deal and R. C. Liu. *Estrogen's effect on acute maternal response behavior and plasticity associated gene transcription*. 2017 Emory – UNAM Foro Binacional Mecanismos de Aprendizaje: Perception, Memory and Action, Santiago de Querétaro, Qro., Mexico, May 2-6, 2017.
- (95) K. K. Chong, A. G. Dunlap and R. C. Liu. *Secondary Auditory Cortical Responses Shift Towards Statistically Likely Acoustic Features in a Learned Vocal Category*. 2017 Emory – UNAM Foro Binacional Mecanismos de Aprendizaje: Perception, Memory and Action, Santiago de Querétaro, Qro., Mexico, May 2-6, 2017.
- (94) Y. J. Kwon, G. J. Berman and R. C. Liu, *Unbiased automated phenotyping of rodent behavior in nonsocial and social contexts*, 46<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 12, 2016.
- (93) A. Moreno, A. Gumaste, G. Adams and R. C. Liu, *Auditory processing of social cues: Experience affects locus coeruleus and auditory cortical c-fos expression*, Society for Social Neuroscience Annual Meeting, San Diego, CA, November 11, 2016.
- (92) K. K. Chong, A. G. Dunlap and R. C. Liu, *Frequency contour tuning reveals neural tolerance for vocal category variation in mouse A2*, Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, November 11, 2016.
- (91) E. A. Amadei and R. C. Liu, *A dynamic circuit mechanism for social learning in the monogamous prairie vole*, North Georgia Regional Annual Memory Meeting (NGRAMM), Atlanta, GA, October 14, 2016.
- (90) E. A. Amadei\*, Z. V. Johnson\*, Y. J. Kwon, A. C. Shpiner, V. Saravanan, W. D. Mays, S. J. Ryan, H. Walum, D. G. Rainnie, L. J. Young and R. C. Liu, *A novel application of the prairie vole model to study dynamic circuit mechanisms of affiliative behavior*, Silvio O. Conte Center for Oxytocin and Social Cognition Autism Research Symposium, Emory University Winship Ballroom, Atlanta, GA, September 22, 2016.
- (89) E. A. Amadei, Z. V. Johnson, J. Kwon, A. C. Shpiner, V. Saravanan, W. D. Mays, L. J. Young and R. C. Liu, *Measuring and manipulating functional neural circuitry in the socially monogamous prairie vole*, 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2015.
- (88) A. Moreno, K. K. Chong, T. N. Ivanova and R. C. Liu, *Estrogen receptor alpha expression in the auditory cortex changes across motherhood*, 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2015.
- (87) K. K. Chong, K. N. Shepard, T. N. Ivanova and R. C. Liu, *Tolerance to acoustic variation within a natural vocal category increases between core and non-core auditory cortical fields*, 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2015.
- (86) T. N. Ivanova, K. K. Chong and R. C. Liu, *Vocalization-induced Arc mRNA expression in core auditory cortex depends on the interaction of estrogen and social experience*, 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2015.
- (85) E. A. Amadei, Z. V. Johnson, J. Kwon, A. C. Shpiner, V. Saravanan, W. D. Mays, L. J. Young and R. C. Liu, *Measuring and manipulating functional neural circuitry in the socially monogamous prairie vole*, Society for Social Neuroscience Annual Meeting, Chicago, IL, October 16, 2015.
- (84) A. G. Dunlap, G. Adams and R. C. Liu, *An ethological paradigm for associating an auditory stimulus with a social reinforcer*, Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, October 16, 2015.
- (83) K. K. Chong, K. N. Shepard, T. N. Ivanova and R. C. Liu, *Tolerance to acoustic variation within a natural vocal category increases between core and non-core auditory cortical fields*, Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, October 16, 2015.
- (82) T. N. Ivanova, K. K. Chong and R. C. Liu, *Vocalization-induced Arc mRNA expression in core auditory cortex depends on the interaction of estrogen and social experience*, Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, October 16, 2015.



- (81) E. A. Amadei, Z. V. Johnson, J. Kwon, A. C. Shpiner, V. Saravanan, W. D. Mays, L. J. Young and R. C. Liu, *Measuring and manipulating functional neural circuitry in the socially monogamous prairie vole*, Cell Symposium on Engineering the Brain: Technologies for Neurobiological Applications, Chicago, IL, October 15-16, 2015.
- (80) A. Moreno, K. K. Chong, T. N. Ivanova and R. C. Liu, *Estrogen receptor alpha expression in the auditory cortex changes across motherhood*, Learning about the Vocal World: Deciphering the Statistics of Communication, Emory University, Atlanta, GA, May 20, 2015.
- (79) T. N. Ivanova and R. C. Liu, *Familiarity with a vocal category revealed through the expression of a synaptic plasticity gene in auditory cortex*, Learning about the Vocal World: Deciphering the Statistics of Communication, Emory University, Atlanta, GA, May 20, 2015.
- (78) K. N. Shepard, F. G. Lin, K. K. Chong, C. Zhao and R. C. Liu, *Modulation of core auditory cortex putative pyramidal neuron responses by vocalization categories depends on behavioral relevance*, Learning about the Vocal World: Deciphering the Statistics of Communication, Emory University, Atlanta, GA, May 20, 2015.
- (77) A. Willats, T. N. Ivanova, A. A. Prinz and R. C. Liu, *Modeling the Kinetics of a Memory-Associated Immediate Early Gene's Compartmental Expression After Sensory Experience*, American Physical Society March Meeting, San Antonio, TX, March 2-6, 2015.
- (76) S. N. Banerjee, V. Gutzeit, R. C. Liu and K. J. Ressler, *The role of perineuronal nets and Nogo signaling in auditory cortex-mediated fear learning*, 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2014.
- (75) K. N. Shepard, F. G. Lin, K. K. Chong, C. Zhao and R. C. Liu, *Modulation of core auditory cortex putative pyramidal neuron responses by vocalization categories depends on behavioral relevance*, 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2014.
- (74) A. A. Gumaste, K. N. Shepard and R. C. Liu, *Estrogen- and maternal experience-dependent Fos expression in the locus coeruleus in adult female mice following playback of pup calls*, 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2014.
- (73) S. N. Banerjee, V. Gutzeit, R. C. Liu and K. J. Ressler, *The role of perineuronal nets and Nogo signaling in auditory cortex-mediated fear learning*, Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2014.
- (72) K. N. Shepard, K. K. Chong, F. G. Lin, C. Zhao and R. C. Liu, *Modulation of core auditory cortex putative pyramidal neuron responses by vocalization categories depends on behavioral relevance*, Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2014.
- (71) E. A. Amadei, A. C. Shpiner, V. Saravanan, W. Mays, L. J. Young and R. C. Liu, *Mating dynamically modulates a medial prefrontal cortex to nucleus accumbens circuit in the socially monogamous prairie vole*, The Social Brain, Copenhagen, Denmark, October 5-8, 2014.
- (70) T. N. Ivanova and R. C. Liu, *Familiarity with a vocal category revealed through the expression of a synaptic plasticity gene in auditory cortex*, Auditory Cortex 2014, Magdeburg, Germany, September 13-17, 2014. Awarded poster prize.
- (69) E. A. Amadei\*, V. Saravanan\*, A. C. Shpiner, L. J. Young and R. C. Liu, *A novel application of functional neural connectivity analysis to social interactions in rodents*, Atlanta Functional Neuroimaging Workshop, Atlanta, GA, April 25, 2014. (\* co-first authors)
- (68) K. N. Shepard and R. C. Liu, *The spatial representation of ultrasound frequencies in the maternal mouse auditory cortex*, 43<sup>rd</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 9-13, 2013.

- (67) E. A. Amadei, A. C. Shpiner, H. P. Lipp, L. J. Young and R. C. Liu, *Electrophysiological activity in medial prefrontal cortex and nucleus accumbens differs across social behaviors in monogamous prairie voles*, 43<sup>rd</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 9-13, 2013.
- (66) T. N. Ivanova, R. C. Mappus, C. Gross, G. J. Bassell and R. C. Liu, *Plasticity in hierarchical auditory cortical processing of behaviorally relevant vocalizations revealed by Arc/Arg 3.1 mRNA expression*, 43<sup>rd</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 9-13, 2013.
- (65) T. N. Ivanova, R. C. Mappus, C. Gross, G. J. Bassell and R. C. Liu, *Plasticity in hierarchical auditory cortical processing of behaviorally relevant vocalizations revealed by Arc/Arg 3.1 mRNA expression*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, November 8, 2013.
- (64) S. Banerjee, F. G. Lin and R. C. Liu, *A sensory cortical role in maternal memories for infant cues*, Society for Behavioral Neuroendocrinology Annual Meeting, Atlanta, GA, June 23-26, 2013.
- (63) E. A. Amadei, A. C. Shpiner, H. P. Lipp, L. J. Young and R. C. Liu, *Quantifying functional neural activity across social behaviors in prairie voles*, Rhythmic Dynamics and Cognition, Boston, MA, June 4-5, 2013.
- (62) K. N. Shepard, L. C. Liles, D. Weinshenker and R. C. Liu, *Evaluating the necessity of norepinephrine for experience-dependent plasticity during auditory cortical development*, 42<sup>nd</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA, October 15, 2012.
- (61) K. N. Shepard, L. C. Liles, D. Weinshenker and R. C. Liu, *Evaluating the necessity of norepinephrine for experience-dependent plasticity during auditory cortical development*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, New Orleans, LA, October 12, 2012.
- (60) K. N. Shepard, L. C. Liles, D. Weinshenker and R. C. Liu, *Evaluating the necessity of norepinephrine for experience-dependent plasticity during auditory cortical development*, Auditory Cortex 2012, Lausanne, Switzerland, August 31-Sept 3, 2012.
- (59) F. G. Lin, C. L. Zhou and R. C. Liu, *Saliency of a vocalization category correlates with excitatory plasticity in putative principal neurons of core auditory cortex*, Auditory Cortex 2012, Lausanne, Switzerland, August 31-Sept 3, 2012.
- (58) E. A. Amadei, H-P Lipp, L. J. Young and R. C. Liu, *In vivo electrophysiology in a prairie vole model of social bonding*, Workshop on Computational Neuroethological Approaches to Problems in Social Neuroscience at Computational Neuroscience 2012, Decatur, GA, July 25, 2012.
- (57) C. L. Zhou, F. G. Lin and R. C. Liu, *Spike train distance metric reveals plasticity in discrimination of salient calls by putative excitatory cells of the auditory cortex*, Computational Neuroscience 2012, Decatur, GA, July 21-26, 2012.
- (56) R. Mappus, F. Lin, A. Dunlap, T. Ivanova and R. C. Liu, *Passive sound exposure does not explain inhibitory plasticity for natural calls in adult mice*, 35<sup>th</sup> Annual Meeting of the Association for Research in Otolaryngology, San Diego, CA, Feb. 25-29, 2012.
- (55) K. N. Shepard and R. C. Liu, *Does the absence of norepinephrine affect auditory cortical development?*, 35<sup>th</sup> Annual Meeting of the Association for Research in Otolaryngology, San Diego, CA, Feb. 25-29, 2012.
- (54) F. G. Lin, J. A. Miranda, E. E. Galindo-Leon, K. N. Shepard and R. C. Liu, *Role of pup experience and hormones on auditory system plasticity in the maternal context*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, D.C., November 11, 2011.
- (53) T. Ivanova, R. C. Mappus, C. Gross, G. J. Bassell and R. C. Liu, *Sensitivity of Arc/Arg 3.1 expression in mouse auditory cortex to the saliency of ultrasounds*, 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Washington, D.C., November 12, 2011.

- (52) F. G. Lin, J. A. Miranda, E. E. Galindo-Leon, K. N. Shepard and R. C. Liu, *Role of pup experience and hormones on auditory system plasticity in the maternal context*, 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Washington, D.C., November 12, 2011.
- (51) K. N. Shepard, F. G. Lin and R. C. Liu, *Discriminating communication calls through selective versus differential responses in auditory cortex*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, San Diego, CA, November 12, 2010.
- (50) T. Ivanova, C. Gross, G. J. Bassell and R. C. Liu, *Correlating auditory cortical expression of Arc/Arg 3.1 mRNA to communicative significance*, 40<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 13-17, 2010.
- (49) K. N. Shepard and R. C. Liu, *Discriminating communication calls through selective versus differential responses in auditory cortex*, 40<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 13-17, 2010.
- (48) T. Oishi and R. C. Liu, *Quantitative approach to analyzing acoustic communication behavior in the house mouse*, Neuroscience and Behavioral Biology Undergraduate Research Symposium, Atlanta, GA, April 19, 2010.
- (47) E. E. Galindo-Leon and R. C. Liu, *Stimulus-specific theta-band gating of auditory cortical spiking in awake mice*, Joint South East Nerve Net and Georgia/South Carolina Neuroscience Consortium Conference 2010, Atlanta, GA, March 5-7, 2010.
- (46) F. G. Lin and R. C. Liu, *Cortical first spikes can encode the peripheral transformation of natural sounds*, 33<sup>rd</sup> Annual Meeting of the Association for Research in Otolaryngology, Anaheim, CA, Feb. 6-10, 2010.
- (45) T. Ivanova, A. Matthews, C. Gross, G. J. Bassell and R. C. Liu, *Compartmental analysis of auditory cortical Arc/Arg 3.1 mRNA expression induced by novel and familiar sounds*, 39<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2009.
- (44) J. A. Miranda and R. C. Liu, *Maternal context influences the timing of neural responses in the early auditory system*, 39<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2009.
- (43) F. G. Lin, E. E. Galindo-Leon, J. A. Miranda and R. C. Liu, *Plasticity in pup call evoked cortical inhibition reflects differences in maternal experience*, 39<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, October 17-21, 2009.
- (42) J. A. Miranda, Kathryn N. Shepard and R. C. Liu, *Maternal context influences the timing of neural responses in the early auditory system*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Chicago, IL, October 16, 2009.
- (41) F. G. Lin, E. E. Galindo-Leon and R. C. Liu, *Inhibitory plasticity in a lateral band improves cortical detection of natural vocalizations*, Auditory Cortex 2009, Magdeburg, Germany, August 29-Sept 2, 2009.
- (40) R. C. Liu, *Of mice and moms: Auditory processing of behaviorally relevant vocalizations*, Spring 2009 Biology Seminar Series, Emory University, Atlanta, GA, February 4, 2009.
- (39) E. E. Galindo-Leon and R. C. Liu, *Wide-band LFP predicts cortical single unit firing probability better than  $\theta$ ,  $\beta$  or  $\gamma$ -band LFP*, 38<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2008.
- (38) F. G. Lin, E. E. Galindo-Leon and R. C. Liu, *Predicting first spikes at the onset of natural calls in the awake mouse auditory cortex*, 38<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2008.

- (37) T. Ivanova, C. Gross, G. Bassell and R. C. Liu, *Compartmental analysis of sound-induced Arc/Arg 3.1 mRNA expression in mouse auditory cortex*, 38<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15-19, 2008.
- (36) E. E. Galindo-Leon and R. C. Liu, *Network precision plasticity for communication calls in awake mouse auditory cortex*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2008.
- (35) F. G. Lin, E. E. Galindo-Leon and R. C. Liu, *Predicting first spikes at the onset of natural calls in the awake mouse auditory cortex*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2008.
- (34) T. Ivanova, C. Gross, G. Bassell and R. C. Liu, *Compartmental analysis of sound-induced Arc/Arg 3.1 mRNA expression in mouse auditory cortex*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 14, 2008.
- (33) R. C. Liu, F. Lin and E. Galindo-Leon, *Communication processing in a mammalian auditory cortex: pre-wired or plastic?* 2<sup>nd</sup> International Conference on Acoustic Communication by Animals, Corvallis, OR, August 12-15, 2008.
- (32) T. Oishi, J. A. Miranda and R. C. Liu, *Age-dependence of formants in mouse pup wriggling calls*, CBN BRAIN Poster Symposium, Emory, Atlanta, GA, July 31, 2008. Awarded 2<sup>nd</sup> place poster prize.
- (31) A. V. Save and R. C. Liu, *Classification of cortical action potentials by waveform analysis*, Biology Undergraduate Research Symposium, Emory, Atlanta, GA, April 15, 2008. Awarded 2<sup>nd</sup> place poster prize for non-Honors research.
- (30) A. V. Save and R. C. Liu, *Classification of cortical action potentials by waveform analysis*, SIRE Undergraduate Research Symposium, Emory, Atlanta, GA, April 15, 2008.
- (29) E. Galindo-Leon and R. C. Liu, *Bayesian prediction of action potentials*, Emerson Symposium, Emory, Atlanta, GA, March 31, 2008.
- (28) E. Galindo-Leon and R. C. Liu, *Local field potential-single unit interactions in awake mouse cortex*, COSYNE 2008, Salt Lake City, UT, February 28-March 2, 2008.
- (27) E. Galindo-Leon and R. C. Liu, *Cortical network plasticity to communication sounds in awake mice*, 31<sup>st</sup> Annual Meeting of the Association for Research in Otolaryngology, Phoenix, AZ, February. 16-21, 2008.
- (26) R. C. Liu, *Auditory plasticity in social contexts: The computational neuroethology of mouse communication*, Emory Biology Departmental Seminar, Emory, Atlanta, GA, November 27, 2007.
- (25) F. Lin, E. Galindo-Leon, B. Kocher, S. Freeman and R. C. Liu, *Exploring task dependent plasticity in the auditory cortex*, GA Tech-Emory IGERT Orientation, Atlanta, GA, August 17, 2007.
- (24) S. Brink, R. Hammett and R. C. Liu, *Modeling changes in pup call responses using spike-timing dependent plasticity (STDP)*, GA Tech-Emory IGERT Orientation, Atlanta, GA, August 17, 2007.
- (23) R. C. Liu, *Sensory plasticity in the maternal state: from cries to cortex*, 2007 Parental Brain Conference, Boston, MA, June 7-10, 2007.
- (22) I. Vollmar, R. C. Liu and G. Kempermann, *Communication, music and adult neurogenesis*, International Max Planck Research School Spring Academy 2007, Harnack-House, Berlin, Germany, May 21-25, 2007.
- (21) T. S. Sangha, S. Freeman, R. C. Liu, *Mouse love songs? Male and female behavior during courtship*, Emory Undergraduate Research Symposium, Atlanta, GA, April 11, 2007.

- (20) E. Galindo-Leon, Y. K. Zhang, B. Kocher and R. C. Liu, *Towards an awake auditory cortex electrophysiology preparation in the mouse*, 30<sup>th</sup> Annual Meeting of the Association for Research in Otolaryngology, Denver, CO, Feb. 10-15, 2007.
- (19) R. C. Liu, *Auditory cortical detection and discrimination correlates with communicative significance in a mouse model*, abstract 579.1, 36<sup>th</sup> Annual Meeting of the Society for Neuroscience, Atlanta, GA, October 17, 2006.
- (18) R. C. Liu, *Auditory cortical detection and discrimination correlates with communicative significance in a mouse model*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Atlanta, GA, October 13, 2006.
- (17) R. C. Liu, *An information theoretic approach to detecting and discriminating mouse communication sounds*, GA Tech-Emory IGERT Orientation, Atlanta, GA, August 18, 2006.
- (16) R. C. Liu, *Auditory cortical "memory traces" of communication sounds*, Center for Behavioral Neuroscience Foundations in Five Seminar, Atlanta, GA, April 14, 2006.
- (15) R. C. Liu and C. E. Schreiner, *An information theoretic approach to detecting and discriminating mouse communication sounds*, Computational and Systems Neuroscience, Salt Lake City, UT, March 6, 2006.
- (14) R. C. Liu and C. E. Schreiner, *Behavioral salience and neural coding: maternal effects on pup call coding in the mouse cortex*, abstract 616.4, 35<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC, November 15, 2005.
- (13) R. C. Liu and C. E. Schreiner, *Behavioral salience and neural coding: maternal effects on pup call coding in the mouse cortex*, Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology, Washington, DC, November 11, 2005.
- (12) R. C. Liu and C. E. Schreiner, *Effects of maternal experience on auditory cortical responses to pup calls in mice*, abstract 706, 28<sup>th</sup> Annual Meeting of the Association for Research in Otolaryngology, New Orleans, LA, February 19-25, 2005.
- (11) R. C. Liu, J. F. Linden and C. E. Schreiner, *The representation of categorically perceived vocalizations in mouse auditory cortex*, abstract 503, 27<sup>th</sup> Annual Meeting of the Association for Research in Otolaryngology, Daytona Beach, FL, February 22-26, 2004.
- (10) R. C. Liu, J. F. Linden and C. E. Schreiner, *Auditory cortical representations of natural and synthetic mouse vocalizations*, contributed poster 182.17, 33<sup>rd</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA, November 8-12, 2003.
- (9) F. Strata, A. E. Delpolyi, E. F. Chang, H. Nakahara, R. C. Liu, and M. M. Merzenich, *Perinatal anoxia affects auditory processing and the auditory system organization in rats*, contributed poster 148.14, 33<sup>rd</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA, November 8-12, 2003.
- (8) R. C. Liu, J. F. Linden, K. D. Miller, M. M. Merzenich and C. E. Schreiner, *A mouse model for the cortical processing of species-specific vocalizations*, contributed poster 914, 31<sup>st</sup> Annual Meeting of the Association for Research in Otolaryngology, Daytona Beach, FL, February 22-27, 2003.
- (7) R. C. Liu, J. F. Linden, K. D. Miller, M. M. Merzenich and C. E. Schreiner, *The variability and distinguishability of mouse ultrasound vocalizations*, contributed poster 588.16, 32<sup>nd</sup> Annual Meeting of the Society for Neuroscience, Orlando, FL, November 2-7, 2002.
- (6) J. F. Linden, R. C. Liu, M. Sahani, M. M. Merzenich and C. E. Schreiner, *Spectrotemporal structure of receptive fields in areas AI and AAF of mouse auditory cortex*, contributed poster 458.4, 32<sup>nd</sup> Annual Meeting of the Society for Neuroscience, Orlando, FL, November 2-7, 2002.
- (5) R. C. Liu, J. F. Linden, K. D. Miller, M. M. Merzenich and C. E. Schreiner, *A neuroethological approach to mouse ultrasound communication*, contributed poster 29, Gordon Research Conference on Neuroethology:

Behavior, Evolution and Neurobiology, Queen's College, Oxford University, United Kingdom, August 18-23, 2002.

(4) J. F. Linden, R. C. Liu, M. Kvale, C. E. Schreiner and M. M. Merzenich, *Reverse-correlation analysis of receptive fields in mouse and rat auditory cortex*, contributed poster 621.7, 31<sup>st</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 10-15, 2001.

(3) R. C. Liu, J. F. Linden, K. D. Miller, M. M. Merzenich and C. E. Schreiner, *Neural responses to ultrasound vocalizations in the mouse auditory cortex*, contributed poster 512.8, 31<sup>st</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA, November 10-15, 2001.

(2) R. C. Liu, S. Tzonev, S. Rebrik, A. Kurgansky and K. D. Miller, *Spike precision and information in cat visual thalamus*, contributed poster 447.9, 30<sup>th</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA, November 4-9, 2000.

(1) R. C. Liu, S. Tzonev, S. Rebrik, A. Kurgansky and K. D. Miller, *Minimal redundancy in the coding of visual information in the thalamus*, contributed talk JC32.6, 1999 March Meeting of the American Physical Society, Atlanta, GA, March 20-26, 1999.

### Invited Presentations (Physics)

(3) R. C. Liu, W. Oliver, J. Kim and Y. Yamamoto, *Quantum electron optics*, 18<sup>th</sup> Moriond Workshop on Quantum Physics at Mesoscopic Scale, Les Arcs, France, January 23-30, 1999.

(2) R. C. Liu and Y. Yamamoto, *Quantum interference in electron collision*, International Symposium on Quantum Optics and Mesoscopic Physics, Atsugi, Japan, July 13, 1998.

(1) R. C. Liu and Y. Yamamoto, *Noise suppression in electron transport*, NATO Advanced Research Workshop on "Quantum Dynamics of Submicron Structures," Trieste, Italy, June 14-30, 1994.

### Contributed Presentations (Physics)

(6) R. C. Liu, B. Odom, J. Kim, Y. Yamamoto and S. Tarucha, *Partition noise in mesoscopic devices: Experiments in quantum electron optics*, contributed talk Th2D-2 at the 23<sup>rd</sup> International Conference on the Physics of Semiconductors, Berlin, Germany, July 21-26, 1996.

(5) R. C. Liu, B. Odom, J. Kim, Y. Yamamoto and S. Tarucha, *Mesoscopic partition noise: Experiments in quantum electron optics*, contributed talk at the NATO Advanced Studies Institute on Mesoscopic Electron Transport, Curacao, June 25-July 5, 1996.

(4) R. C. Liu, P. Eastman and Y. Yamamoto, *Simulations of partition noise suppression*, contributed poster II-2 at the NATO Advanced Studies Institute on Quantum Transport in Semiconductor Submicron Structures, Bad Lauterberg, Germany, August 21-31, 1995.

(3) R. C. Liu, P. Eastman, B. Odom and Y. Yamamoto, *Shot noise suppression in mesoscopic circuits*, contributed talk I17.11, 1995 March Meeting of the American Physical Society, San Jose, CA, March 20-24, 1995.

(2) R. C. Liu and Y. Yamamoto, *Dissipation induced squeezing in mesoscopic branching circuits*, contributed talk QThD5, 1994 International Quantum Electronics Conference, Anaheim, CA, May 8-13, 1994.

(1) R. C. Liu and Y. Yamamoto, *Spin squeezing of quantum partition noise in mesoscopic electron branching circuits*, contributed talk O12 12, 1994 March Meeting of the American Physical Society, Pittsburgh, PA, March 21-25, 1994.



Current Liu Lab Members (May 2020)

Sena Agezo (grad), Dakshitha Anandakumar (grad), Danial Arslan (UG), Cristina Besosa (research specialist), Amélie Borie (postdoc), Drayson Campbell (UG), Dori Kacsoh (research specialist), Kai Lu (postdoc), Li-Ling Shen (research specialist, lead), Vanessa Wong (UG), Hong Zhu (postdoc)

Undergraduate Teaching**Emory BIO 360/NBB301** Introduction to Neurobiology, Instructor

Overall: 7.45/9; Course: 7.70/9; Instructor (Liu): 7.33/9	Fall Sem 19
Overall: 7.55/9; Course: 7.52/9; Instructor (Liu): 7.57/9	Fall Sem 18
Overall: 7.93/9; Course: 8.10/9; Instructor (Liu): 7.84/9	Fall Sem 16
Overall: 8.09/9; Course: 8.30/9; Instructor (Liu): 7.99/9	Fall Sem 15
Overall: 7.46/9; Course: 7.70/9; Instructor (Liu): 7.35/9	Fall Sem 13
Overall: 7.47/9; Course: 7.44/9; Instructor (Liu): 7.54/9	Fall Sem 11
N/A (under the new evaluation system)	Fall Sem 10
Overall: 6.68/9; Course: 6.60/9; Instructor (Liu): 6.77/9	Fall Sem 08
(BIO) Overall: 7.44/9; Course: 7.41/9; Instructor (Liu): 7.47/9	Fall Sem 05
(NBB) Overall: 7.03/9; Course: 6.99/9; Instructor (Liu): 7.06/9	

**Emory BIO 360L/NBB301L** Neurobiology Simulation Lab, Instructor

Overall: 8.13/9; Course: 7.99/9; Instructor (Liu): 8.20/9	Fall Sem 17
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**Emory BIO 348** Mechanisms of Animal Behavior, Instructor

Overall: 8.13/9; Course: 8.00/9; Instructor (Liu): 8.20/9	Spr Sem 10
Overall: 7.38/9; Course: 7.50/9; Instructor (Liu): 7.27/9	Spr Sem 07

**Emory BIO 190S** Science of Our Social Brains (freshman seminar), Instructor

Overall: 8.32/9; Course: 8.34/9; Instructor (Liu): 8.31/9	Spr Sem 19
Overall: 7.84/9; Course: 8.03/9; Instructor (Liu): 7.75/9	Fall Sem 14
Overall: 7.87/9; Course: 7.78/9; Instructor (Liu): 7.91/9	Spr Sem 13

**Emory BIO 190S** Science of Animal Song (freshman seminar), Instructor

Overall: 6.05/9; Course: 5.14/9; Instructor (Liu): 6.91/9	Fall Sem 07
Overall: 6.34/9; Course: 5.56/9; Instructor (Liu): 7.07/9	Fall Sem 06

**Emory BIO 470** Sensory Physiology & Perception, Instructor

Overall: 7.51/9; Course: 7.25/9; Instructor (Liu): 7.77/9	Spr Sem 09
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**Emory BIO 450/IBS534** Computational Neuroscience (UG & grad)

Lecturer, Spr 2020 (1 lecture); Spr 2019 (2 lectures); Spr 2018 (1 lecture); Spr 2016 (2 lectures); Spr 2015 (4 lectures); Spr 2010 (3 lectures); Spr 2008 (4 lectures); Spr 2007 (2 lectures); Spr 2006 (2 lectures)

**Emory NBB 401SWR** Topics in Neuro and Behavior, Lecturer, Fall 2007, 2011 (1 lecture)**Emory BIO 470S** Science and Sound of Water, Lecturer, Spr 2007 (1 lecture)Undergraduate Mentoring**Undergraduate/Postbac research supervised in the Liu Lab: 41 (\* URM)**

Drayson Campbell, Applying DeepSqueak to vole ultrasounds	I/20-pres
Danial Arslan (Honors), Recognition of conspecific cues in prairie voles	9/19-pres

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Vanessa Wong, Video analysis of rodent behavior	9/19-pres
*Brenda Tankeu Djiotchui (SURE, SOAR), <small>A Y-Maze Behavioral Paradigm to Investigate Association of a Novel Non-natural Sound with a Social Reward</small>	5/19-8/19
Danial Arslan (SURE), Ultrasonic vocalization preference in prairie voles	5/19-8/19
Parker Lunsford, Behavioral analysis of vole jealousy	4/19-pres
Swetha Rajagopalan (Honors), Expression of MeCP2 in a Social Maternal Learning Paradigm in Mice	8/18-5/19
*Cristina Besosa (postbac), T-Maze Behavioral Paradigm for Pairing Sounds with a Social Reward	7/18-pres
Dori Kacsoh (SURE), Does oxytocin play a role in nonsocial learning?	5/18-8/18
Kevin Xu (Beckman, co-mentor), Analysis of ultrasonic vocalizations in prairie voles	1/18-pres
Swetha Rajagopalan, Estrogen effects on auditory cortex activity	1/18-8/18
Drayson Campbell, Video analysis of prairie vole behavior	11/17-pres
Danial Arslan (SIRE), Recognition of conspecific cues in prairie voles	10/17-4/19
Sydney Hwang (SURE), Graphical User Interface for behavior-triggered neural analysis	6/17-8/17
Matthew Tucker, Epigenetics of maternal response to pup vocalizations	2/17-5/18
Dori Kacsoh, Electrophysiological data processing	10/16-4/18
Ryan Ashiqueali (SIRE), Social learning of behaviorally relevant sounds	8/15-4/16
Tracy Xu, Experience dependent Arc expression	1/15-12/16
Rasika Tangutoori, Behavioral analysis of prairie vole partner preference test	10/14-2/15
Michael Nguyen, Analysis of mouse behavior and vocalizations	5/14-11/16
Gerald Wong (Honors), Effects of norepinephrine deficiency on mouse vocalizations	5/14-4/16
Chris Rothfusz, Fos expression in LC in adult female mice following exposure to pup calls	5/14-12/14
Ruchi Ahuja (SIRE), Immunohistochemical studies of LC activation by estrogen and behaviorally relevant sounds	11/13-5/14
*Wittney Mays (postbac), Behavioral scoring of socially interacting prairie voles	10/13-8/14
*Alonzo Whyte (postbac), Mouse surgery	5/13-8/13
Mengqi Zhang (Kent State), Chronic implant fabrication	5/13-8/13
Aaron Shpiner, Ethogram of socially interacting prairie voles	10/12-5/14
Ankita Gumaste (Honors), Fos expression in LC in adult female mice following exposure to pup calls	8/12-5/14
Bhavesh Patel, Ethogram of socially interacting prairie voles	1/12-5/12
Ankita Gumaste, Analyzing electrophysiological recordings from norepinephrine-deficient mice	8/11-6/12
Zachary Aberman, Measuring maternal retrieval behavior in mice	1/11-5/12
Malan Kern, Role of maternal experience in pup call recognition	1/11-12/11
Mary Stoumbos, Communicative significance of mouse "song" during courtship	3/10-9/10
Tatsuya Oishi (Honors), Quantitative approach to analyzing acoustic communication behavior in mice	9/08-5/10
Christopher Newhouse, Predicting spikes from LFP's	6/09-12/09
Andrew Matthews (Honors), Novelty and Arc expression in auditory cortex	9/08-5/09

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Tatsuya Oishi (CBN BRAIN), Recording mouse pup wriggling calls	5/08-8/08
Ameya Save (SIRE), Correlating spike shape with neural activity	9/07-8/08
Thalvinder Steven Sangha (SIRE), Female perception of adult male mouse song	9/06-5/07
Huey P. Huynh, Ultrasonic vocalizations of 5HT2C KO mice	Fall Qtr 05
Yasamin Vojdani, Ultrasonic vocalizations of 5HT2C KO mice	Spr Qtr 05

**Undergraduate thesis committees served: 20 (Research in the Liu Lab)**

Danial Arslan, Biology (Honors)	9/19-pres
Veronica Chiu, Biology (Honors)	1/19-5/19
Kate Rubin, Neuroscience and Behavioral Biology (Honors)	9/18-5/19
Swetha Rajagopalan, Biology (Honors)	8/18-5/19
Liz O’Gorman (Honors)	12/17-1/18
Madison Malone, Biology (Honors)	8/15-12/15
Patrick Curtin, Biology (Honors)	10/14-4/15
Gerald Wong, Neuroscience and Behavioral Biology (Honors)	5/14-4/15
Jeremy Rouanet, Neuroscience and Behavioral Biology (Honors)	10/13-5/14
Ankita Gumaste, Neuroscience and Behavioral Biology (Honors)	9/13-5/14
Claire Tang, Biology (Honors)	1/13-4/13
Olga Alexeeva, Biology (Honors)	10/11-5/12
Satvik Hadigal, Biology (Honors)	1/11-5/11
Natalee Wilson, Biology (BS/MS)	12/10-5/11
Remy Weinberger, Neuroscience and Behavioral Biology (Honors)	10/10-5/11
Tatsuya Oishi, Biology (Honors)	9/09-5/10
Joseph Krakowiak, Neuroscience and Behavioral Biology (Honors)	9/09-5/10
Andrew Matthews, Biology (Honors)	9/08-5/09
Ranjith Babu, Biology (Honors)	8/08-5/08
Bi Mo, Biology (Honors)	8/08-5/08
Meredith M. Leblanc, Psychology (Honors)	4/07

**Undergraduates advised: 102 (Freshman PACE: 31; Biology majors: 71)**

Graduate Teaching

**Emory IBS535** Behavioral Neuroendocrinology  
Fall 2018 (1 lecture)

**Emory NS570R** Neuroscience: Communication, Ethics and Prof Development  
Spr 2013-2017 (Course Co-Director); Spr 2012 (Course Faculty)

**Emory IBS530R** Frontiers in Neuroscience  
Fall and Spr 2016-present (Course Director)

- Emory NS551** Techniques in Neuroscience  
Fall 2014, 2016-2019 (1 module demo)
- Emory IBS526** Neuroanatomy and Systems Neuro, Sensory Module  
Fall 2013 (1 lecture); Fall 2018, 2019 (2 lectures)
- Emory IBS522R** Grants Class  
Spr 2010, 2012, 2013, 2016; Fall 2019 (Faculty mentor)
- Emory IBS703** Current Topics in Behavioral Neuroscience  
Fall 2011 (1 lecture)
- Emory PSYC730R** Behavioral Neuroendocrinology  
Spr 2007 (1 lecture)

## Graduate Training

- GDBBS Task Force**  
Member (10/2019-4/2020)
- Emory Neuroscience Graduate Program**  
Executive Committee (6/2013-pres)  
Admissions Committee (11/2013-2/2016; 2019)  
Mock NRSA Study Section (5/2008)  
Oral Exam Committee (2/2008, 11/2009, 12/2016, 12/2017, 9/2019)
- Georgia Tech-Emory Biomedical Engineering Graduate Program**  
Qualifying Exam Committee (5/2011, 5/2012, 5/2015, 5/2017)
- Georgia Tech Bioengineering Graduate Program**  
Qualifying Exam Committee (1/2012)
- Mechanisms of Learning Graduate Training Grant**  
Selection Committee (Spr 2013, 2015)
- Computational Neuroscience Training Grant**  
Website & Recruitment Committees (6/2011-5/2019)

## Graduate Mentoring

### **Graduate students (including rotation/visiting students) advised: 28 (\* URM)**

Sena Agezo\* (Emory NS), Liz Ann Amadei (GT-Emory BME), Dakshitha Anandakumar (GT-Emory BME), Stephen Brink (IGERT), Kelly Chong (GT-Emory BME), Alex Dunlap\* (GT-Emory BioE), Sara Freeman (Emory NS), Rich Hammett (IGERT), Liz Heaton (Emory NS), Lukas Hoffman (Emory NS), Jasmine Hope\* (Emory NS), Michael Kelberman (Emory NS), Jim Kwon (Emory NS), Damon Lamb (IGERT), Frank Lin (IGERT), Sara List (Emory NS), Vasiliki Michopoulos (Emory NS), Amielle Moreno\* (Emory NS), David Nicholson (Emory NS), Leila Pascual\* (Emory NS), Varun Saravanan (Emory NS), Katy Shepard (Emory NS), Clarissa Shephard (GT-Emory BME), Fu Hung Shiu (Emory NS), Archana Venkataraman (Emory NS), Imke Vollmar (International Max Planck Research School: The Life Course), Adam Willats (GT-Emory BME CNTG), Charles Zhao (GT-Emory BME CNTG)

### **Graduate thesis committees served: 35 (Research in the Liu Lab, \* URM)**

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Steven Riley, Emory Psychology	1/20-pres
Ellen Woon, Emory Neuroscience	4/19-pres
Abigail Paulson, GT-Emory BME	2/19-pres
Charles Ford, Emory Neuroscience	12/18-pres
Henry Kietzman, Emory Neuroscience	11/18-pres
Dan Li, Emory Neuroscience	9/18-pres
<a href="#">Dakshitha Anandakumar</a> , GT-Emory BME	5/18-pres
* <a href="#">Sena Agezo</a> , Emory Neuroscience	5/18-pres
Penny Buelow, Emory Neuroscience	1/18-pres
James McGregor, Emory Neuroscience	10/17-pres
Archana Venketaraman, Emory Neuroscience	6/17-2/20
Sara List, Emory Neuroscience	8/16-3/19
Nathan Ahlgrim, Emory Neuroscience	8/16-5/19
Peter Borden, Georgia Tech-Emory BioMedical Engineering	11/15-1/19
Arthur (Rhett) Morrissette, Emory Neuroscience	8/15-10/18
Varun Saravanan, Emory Neuroscience	8/15-8/19
<a href="#">Jim Kwon</a> , Emory Neuroscience	7/14-12/19
Sean Kelly, Georgia Tech BioMedical Engineering	4/14-1/15
Clarissa Shephard, Georgia Tech BioMedical Engineering	3/14-10/17
* <a href="#">Amielle Moreno</a> , Emory Neuroscience	4/13-12/19
John Trimper, Emory Psychology	12/13-6/16
He Zheng, Georgia Tech BioMedical Engineering	10/13-12/15
Kevin Watkins, Emory Neuroscience	9/13-1/18(MS)
<a href="#">Kelly Chong</a> , Georgia Tech-Emory BioMedical Engineering	9/12-12/18
David Nicholson, Emory Neuroscience	9/12-8/17
Lukas Hoffman, Emory Neuroscience	9/12-4/17
Nathan Killian, Georgia Tech BioEngineering	12/11-4/13
* <a href="#">Alexander Dunlap</a> , Georgia Tech-Emory BioEngineering	5/11-1/19
Stephen Brink, Georgia Tech BioEngineering	4/11-8/12
<a href="#">Liz Ann Amadei</a> , Georgia Tech-Emory BioMedical Engineering (Postdoc, ETH-Zurich)	9/10-2/17
Douglas Ollerenshaw, Georgia Tech BioMedical Engineering	7/10-8/13
Lisa Matragrano, Emory NS	9/09-2/12
<a href="#">Katy Shepard</a> , Emory NS (Program Manager, Boston University)	8/09-12/14
Amy Mahan, Emory NS	8/08-8/11

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 Yuting Mao, Georgia State University Biology

1/08-4/12

Frank Lin, Georgia Tech-Emory BioEngineering (Data Scientist, Northrop Grumman)

8/07-6/12

## Other Mentoring in the Liu Lab

### **Visiting scholars: 1**

Dong Cui (Associate Professor, Yanshan University, China)

### **Postdoctoral researchers advised: 12 (\* URM)**

Geoff Adams (Postdoc, Michael Platt Lab, University of Pennsylvania Penn)

Liz Ann Amadei (Postdoc, Benjamin Grewe Lab, ETH Zurich; HFSP Awardee)

Sunayana Banerjee (Medical Science Liaison, Jazz Pharmaceuticals)

Amélie Borie (currently in the lab)

\*Alex Dunlap (Mathematician, Boeing)

\*Edgar Galindo-Leon (Research Associate, Institut für Neurophysiologie und Pathophysiologie, Hamburg, Germany)

Tamara Ivanova (Retired)

Kai Lu (currently in the lab)

Rudolph “Chip” Mappus (Associate Director, AT&amp;T Data Insights)

\*Jason Miranda (Investigator, Galvani Bioelectronics)

Yongkui Zhang (Assistant Professor, Southeast University, China)

Hong Zhu (currently in the lab)

### **High school student interns: 3**

Saket Kumar (Gwinnett School of Mathematics, Science, and Technology, 8/2010-4/2011), Parker Lunsford (Paideia High School, 5/2016-4/2017), Victoria Swyers (Brookwood High School, 9/2015-5/2016)

## Peer Review

### **Journals (since 2005)**

The Anatomical Record Part A

Autism Research

Behavioural Brain Research

Brain Research

Behavioural Processes

Cell Reports

Cerebral Cortex

Computational Statistics and Data Analysis

Current Zoology



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Developmental Neurobiology  
Ear and Hearing  
European Journal of Neuroscience  
Frontiers in Behavioral Neuroscience  
Frontiers in Integrative Neuroscience  
Frontiers in Human Neuroscience  
Hearing Research  
International Conference on Bioacoustics  
Journal of the Acoustical Society of America  
Journal of the Association for Research in Otolaryngology  
Journal of Computational Neuroscience  
Journal of Comparative Physiology A  
Journal of Neurophysiology  
Journal of Neuroscience  
Nature Communications  
Nature Neuroscience  
Neuron  
Neuroscience  
Neuroscience Bulletin  
Neuroscience and Biobehavioral Reviews  
Physiology and Behavior  
PLoS Computational Biology  
PLoS One  
Scientific Reports

**Grants (United States)****NIH AUD Study Section**

Regular Member (2x per year, 2014-2020)  
Ad-hoc Reviewer (2/2014)

**NIH ZDCI Study Section**

Ad-hoc Reviewer (5/2010, 3/2011, 6/2011, 11/2011, 6/2012, 10/2012, 10/2013)

**NIH CDRC Study Section**

Ad-hoc Reviewer (6/2009, 2/2010)

**NSF Grant Review**

Panel Reviewer (3/2018, 3/2020)  
Ad-hoc Reviewer (10/2014)

**Children's Heart Res & Outcomes Center Pilot Grant**

Ad-hoc Reviewer (4/2015)

**ICTS Conte Center**

Ad-hoc Reviewer for seed grants (1/2014)

**Grants (International)****Swiss National Science Foundation**

Ad-hoc Reviewer (5/2020)

**Leverhulme Trust (United Kingdom)**

Ad-hoc Reviewer (2/2018)

**Netherlands Organization for Scientific Research**

Ad-hoc Reviewer (9/2017)

**European Research Council**

Ad-hoc Reviewer (8/2017)

**The French National Research Agency**

Ad-hoc Reviewer (4/2017, 5/2018)

**Israeli Science Foundation**

Ad-hoc Reviewer (4/2015, 4/2016, 3/2017)

**German-Israeli Foundation**

Ad-hoc Reviewer (1/2015)

**Austrian Science Fund**

Ad-hoc Reviewer (7/2013)

**Wellcome Trust**

Ad-hoc Reviewer (3/2010, 3/2013)

Service to Profession: Scientific Meeting Organization

<b>Learning about the Vocal World</b> <i>Emory Symposium Organizer</i>	5/15
<b>Auditory Cortex 2017</b> <i>Program Committee Co-Chair</i>	2/15-9/17
<b>Mouse Ultrasound Vocalization Workshop Meeting</b> <i>Session Chair</i>	4/12
<b>CNS 2012</b> <i>Organized Workshop on Computational Neuroethological Approaches to Problems in Social Neuro</i>	1/12-7/12
<b>Advances and Perspectives in Auditory Neuroscience</b>	
<i>Program Committee Chair</i>	10/12-10/15
<i>Program Committee Member</i>	1/10-10/15
<b>COSYNE</b> <i>Abstract reviewer</i>	11/11
<b>Auditory Cortex 2009 Meeting</b> <i>Session Chair</i>	8/09

Service to Profession: Other

<b>Neuro-PSI</b> <i>Scientific Advisory Board Member</i>	5/13-pres
<b>Hearing Research Guest Editor</b> <i>Special Volume on Vocalizations and Hearing</i>	6/12-11/13
<b>Center for Translational Social Neuroscience</b> <i>Executive Committee Member</i>	12/10-pres
<b>Center for Behavioral Neuroscience</b>	

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AAAS Site Visit Participant	4/10
Templeton Planning Grant Project Leader	4/09-3/11
NSF Site Visit Participant	11/05

### Service to Department and Programs

<b>Emory Biology Long Range Planning Committee Member</b>	10/19-pres
<b>Emory Neuroscience and Behavioral Biology Executive Committee Member</b>	9/14-pres
<b>Emory Biology Search Committees</b>	
<i>Neuro-Theorist Search Committee, Chair</i>	9/14-5/15
<i>Neuroscientist Search Committee, Member</i>	12/09-5/10
<i>Neuroscientist Search Committee, Member</i>	8/08-1/09
<b>Emory Biology BS/MS Program Director</b>	9/11-5/14
<b>Emory Biology Departmental Seminar Committee (Chair)</b>	8/08-12/16
<b>Emory Biology Computer Committee</b>	1/08-pres
<b>Emory Monthly Systems-Electrophysiology Journal Club (Founder)</b>	9/06-5/18

### Service to Emory College

<b>Emory College Center for Mind Brain and Culture Advisory Board Member</b>	9/18-8/22
<b>Emory College Search Committees</b>	
<i>Psychology Department/YNPRC Primate Behavioral Neuroscience Faculty Search, Member</i>	8/18-4/19
<i>Psychology Department Cognition and Behavior Faculty Search, Member</i>	9/17-5/18
<b>Emory College Ad-hoc Strategic Planning Committee Member</b>	12/16-4/17
<b>Emory College Senate Senator</b>	8/16-4/19
<b>Emory College Neural Basis of Cognition &amp; Learning Seminar Chair</b>	3/15-4/17
<b>Emory College Affirmative Action Committee</b>	
<i>Chair</i>	5/13-pres
<i>Member</i>	9/11-pres
<b>Emory College PACE Mentor</b>	8/09-pres
<b>Emory College Composite Letter Writer</b>	2/09-5/12
<b>Emory College Honor Code Appeals Panel</b>	11/07

### Service to Emory University

<b>Emory University Res. &amp; Innov. Master Planning Advisory Committee Member</b>	10/18-5/19
<b>Emory University Provost's Diversity and Inclusion Discussion Discussant</b>	5/18
<b>Emory University Strategic Planning Ad-hoc Faculty Committee Member</b>	8/17-1/18
<b>Emory University Office of Equity and Inclusion</b>	
<i>Speaker in Inclusive Classrooms Faculty Workshop on Teaching International Students</i>	9/16
<i>Unconscious Bias Trainer</i>	12/15-pres

**Emory University Senate Diversity Committee***Co-chair*

6/09-5/12

*Member*

8/08-5/12

**Emory University Conduct Council**

9/08-5/09

**Emory University President's Commission on Race and Ethnicity**

2/06

Participated in discussion with Asian American faculty on new faculty issues

Other Academic Service**Mouse vocalization library**

3/07-pres

Provided library of mouse calls to colleagues

**Center for Behavioral Neuroscience UG Education Committee (member)**

1/07-5/12

Participated in selecting undergrads for 2007, 2008, 2009, 2012 BRAIN Program

**Center for Behavioral Neuroscience Undergrad Social at Zoo Atlanta**

9/06

**Center for Behavioral Neuroscience Memory & Cognition X-Collab (member)**

4/06-5/10

**Center for Behavioral Neuroscience Affiliation Collab (member)**

2/05-5/10

**UCSF Sloan-Swartz Center for Theoretical Neurobiology**

9/00-12/00

Organized faculty lecture series for new Sloan postdoctoral fellows

**Optical Society of America Stanford student chapter, Vice-president**

9/96-6/97

Educational Outreach**Paideia High School, Atlanta, GA**

5/20

Science Research Immersion, 5x 1 hour Zoom sessions to mentor 4 high school students

**Senior University of Greater Atlanta, Atlanta, GA,**

9/18

"How the brain changes when you learn about others" lecture to senior citizens

**Myrtle Philip Community School, Whistler, Canada**

1/18

"Senses and Illusions" lecture to 3<sup>rd</sup> graders**Imagining the Future, Atlanta Science Festival**Stoneview Elementary School, 4<sup>th</sup> graders

3/19

Woodridge Elementary School

3/17

Adamsville Primary Elementary School

3/15

Discussion and Tour for Lanier High School Students

3/14

Open Tour of Computational Neuroethology Lab

3/14

**Paideia High School Atlanta, GA, Science Speaker Series: Neuroscience of Music Perception**

2/17

**Emory STEM Symposium, Atlanta, GA, Lab tours**

9/16

**Emory Neuroscience Association, Atlanta, GA, Guest Speaker**

10/14

"Auditory System/Music in the Brain"

**Georgia Perimeter College, Department of Fine Arts Clarkston, GA, Guest Speaker**

3/14

"Music Perception 101: From Hearing Sounds to Perceiving Pitch"

**K. E. Taylor Elementary School Lawrenceville, GA, Volunteer lecturer**"Expert" lecture to 3<sup>rd</sup> graders on the brain (CBN-organized)

5/07

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<b>Flood Magnet School</b> <i>Menlo Park, CA</i> , Volunteer teacher	
Taught science to 3 <sup>rd</sup> graders	10/96-6/97
Taught after-school science activities to 1 <sup>st</sup> through 4 <sup>th</sup> graders	10/94-12/95
<b>Ronald McNair Middle School</b> <i>East Palo Alto, CA</i> , Volunteer teacher	
Taught science and math to 7 <sup>th</sup> and 8 <sup>th</sup> graders	9/93-5/94
<b>Stanford Explorama Museum</b> , Volunteer	
Designed and fabricated a laser delay line cavity demonstration	1/91-6/91

### Professional Associations

American Association for the Advancement of Science	2000-pres
American Physical Society	1994-pres
Association for Research in Otolaryngology	2002-pres
International Society for Neuroethology	2001-pres
Optical Society of America	1994-1998
Organization for Computational Neuroscience	2012-2013
Society for Neuroscience	1999-pres
Society for Social Neuroscience	2018-2019
The American Physiological Society	2010-2019

### Media Requests and Public Outreach

<b>Interviews with Emory Wheel on Emory Research Ramp Up/Down</b>	3/20, 5/20
<b>Interviews for Science of Love (Valentine's Day)</b>	2/20
Video clip for The Times in London (Biba Kang)	
<b>Interviews for Banerjee et al, Neuron (2017)</b>	6/17
Phone Interview for <a href="#">BioTechniques</a> (Kayt Sukel)	
<b>Interviews for Amadei et al, Nature (2017)</b>	6/17
Phone Interview for <a href="#">Newsweek</a> (Hannah Osborne)	
Phone Interview for <a href="#">The Guardian</a> (Hannah Devlin)	
Phone Interview for <a href="#">Scientific American Online</a> (Stephani Sutherland)	
Phone Interview for <a href="#">Popular Science</a> (Aparna Nathan)	
Email Interview for <a href="#">Daily Mail</a> (Phoebe Weston)	
Email Interview for <a href="#">The Australian</a> (John Ross)	
Email Interview for <a href="#">New Scientist</a> (Andy Coghlan)	
Phone Interview for <a href="#">Psychology Today</a> (Lydia Denworth)	
Email Interview for <a href="#">Quartz</a> (Katherine Foley)	
Skype Interview for Quartz (Michael Tabb)	
Phone Interview for <a href="#">Inverse.com</a> (Dan Robitzski)	
Email Interview for <a href="#">ALN Magazine</a> (Liz Doughman)	
Phone Interview for <a href="#">Gizmodo</a> (Rachel Paoletta)	
Phone Interview for CBC News (Nicole Ireland)	
Email Interview for El Mundo (Teresa Guerrero)	

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Email Interview for PUBLICO (Teresa Serafim)	
Email Interview for AFP New Agency (Marianne Le Roux)	
Email Interview for Correio Braziliense (Vilhena Soares)	
Phone Interview for Nature (Sara Reardon)	
<b>Interview on oxytocin and monogamy</b>	2/17
Phone Interview for book project (Dani Fankhauser)	
<b>Commentary on Marlin et al, Nature (2015)</b>	4/15
Phone Interview for <a href="#">National Geographic</a> (Ed Yong)	
Phone Interview for <a href="#">The Guardian</a> (Hannah Devlin)	
Phone Interview for Nature Neuropod (Elie Dolgin)	
Phone Interview for Nature Media (Helen Shen)	
Phone Interview for <a href="#">Science Magazine</a> (Virginia Morell)	
<b>Lay summary for Society for Neuroscience Annual Meeting</b>	6/10
<b>Interview for Galindo-Leon et al, Neuron (2009)</b>	6/09
ANSA	
Swedish Radio	
<a href="#">Emory Press Release: How young mice phone home</a>	
<b>Press Package for Society for Neuroscience Annual Meeting</b>	9/07
<b>Interview for Center for Behavioral Neuroscience's Synapse</b>	8/07
<b>Interview for Liu and Schreiner, PLoS Biology (2007)</b>	6/07
Softpedia: <a href="#">Motherhood Changes the Brain's Structure</a>	
Phone Interview for New Scientist: <a href="#">Having Children Alters the Brain</a>	
Science Daily: <a href="#">Mother Mice More Attuned to Pup Sounds Than Others</a>	
CBN Synapse: <a href="#">Mother Mice More Attuned to Pup Sounds Than Others</a>	
<b>Phone Interview for Discovery/Animal Planet News</b>	10/05
<b>Phone Interview for Science News</b>	10/05