Emily Mackevicius

Curriculum Vitae

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Education

2011–2018 **PhD, Brain and Cognitive Sciences**, *Massachusetts Institute of Technology, Cambridge MA.*

2012 **Methods in Computational Neuroscience**, *Marine Biological Laboratory, Woods Hole, MA.*

2007–2011 **BS, Mathematics**, *University of Chicago, Chicago IL.*

2003–2007 **High School**, *Belmont High School, Belmont, MA.*

Employment

2018-present **Postdoctoral Associate**, MIT Department of Brain and Cognitive Sciences, Fee Lab.

2011-2018 **PhD Student**, MIT Department of Brain and Cognitive Sciences, Fee Lab.

2010-2011 **Undergraduate Researcher**, Bensmaia Somatosensory Research Lab, Chicago IL.
• Analyzed neuronal somatosensory data with MATLAB; built precision equipment in the metal shop; trained primates

2009 **VIGRE Summer REU**, University of Chicago Mathematics Department.
• Wrote a research paper on configuration spaces of planar linkages; Attended Topology, Probability, Group Theory, Billiards, and Discrete Math classes

2008-2010 **Personal Assistant to Paul Sally**, University of Chicago Mathematics Department.
• Helped the Director of Undergraduate Mathematics with many tasks related to research, administration, and teaching

2007-2008 **Gearup Classroom Support**, University of Chicago Neighborhood Schools Program.
• Assisted 8th grade Chicago Public Schools classroom

Publications

Mackevicius*, EL, AH Bahle*, AH Williams, S Gu, NI Denissenko, MS Goldman, and MS Fee. Unsupervised discovery of temporal sequences in high-dimensional datasets, with applications to neuroscience. *bioRxiv*, 2018.

Mackevicius, EL and MS Fee. Building a state space for song learning. *Current Opinion in Neurobiology*, 49:59 – 68, 2018.

S Deny*, **EL Mackevicius***, TS Okubo, G Berman, J Shaevitz, and MS Fee. Learning stable representations in a changing world with on-line tsne: proof of concept in the songbird. In *International Conference on Learning Representations (ICLR)*. 2016.

TS Okubo, **EL Mackevicius**, HL Payne, GF Lynch, and MS Fee. Growth and splitting of neural sequences in songbird vocal development. *Nature*, 528(7582):352–357, Nov 2015.

EL Mackevicius, TS Okubo, and MS Fee. Aligning auditory and motor representations of syllable onsets in songbird vocal learning. COSYNE (Computational and systems neuroscience conference) poster, 2015.

EL Mackevicius and MS Fee. Aligning auditory and motor representations of syllable onsets in songbird vocal learning. SfN (Society for Neuroscience) poster, 2014.

EL Mackevicius. Squid skin with a mind of its own. MIT+K12 Videos, `http://k12videos.mit.edu/squid-skin-with-a-mind-of-its-own/`, 2014.

TS Okubo, **EL Mackevicius**, and MS Fee. In vivo recording of single-unit activity during singing in zebra finches. *Cold Spring Harbor protocols*, 2014(12):1273–83, Dec 2014.

Mackevicius, Emily L., Matthew D. Best, Hannes P. Saal, and Sliman J. Bensmaia. Millisecond precision spike timing shapes tactile perception. *Journal of Neuroscience*, 32(44):15309–15317, 2012.

MD Best, **EL Mackevicius**, MA Harvey, and SJ Bensmaia. The coding efficiency and temporal resolution of somatosensory neurons. COSYNE (Computational and systems neuroscience conference) poster, 2011.

EL Mackevicius. Bread mold kills bacteria: Alexander fleming discovers penicillin. `MITTechTVK-12VideoPilot,collaboratingwithKhanAcademy,http://www.khanacademy.org/science/mit-k12/v/bread-mold-kills-bacteria`, 2011.

EL Mackevicius. Configuration spaces. `http://www.math.uchicago.edu/~may/VIGRE/VIGREREU2009.html`, 2009.

Invited and Selected Talks

2018 **Computational Neuroscience Tutorial, MIT Brain and Cognitive Sciences Department**, https://www.youtube.com/playlist?list=PLyGKBDfnk-iAU7N6dYVy7HhK2aLjLSPKM.

2018 **COSYNE (Computational and Systems Neuroscience) conference**, *http://www.cosyne.org/c/index.php?title=Cosyne_18*.

2017 **Janelia J-Theory seminar**.

2017 **Stanford Neuroscience Invited Graduate Student Talk Series**.

2017 **MIT Brain and Cognitive Sciences Department Retreat**.

2016 & 2017 **Quantitative Methods Workshop, MIT Biology Department and Center for Minds Brains and Machines**.

2016 & 2017 **MIT Brain and Cognitive Sciences Department Interview Day Talk**.

2015 **Integrative Neuronal Systems Conference, MIT Brain and Cognitive Sciences Department**.

2014 **Center for Minds Brains and Machines Summer School at Woods Hole**, *http://cbmm.mit.edu/video/emily-mackevicius-learning-computational-neuroscience-perspective*.

Fellowships and Awards

2018 **COSYNE Presenters Travel Grant**, *Selected to give a talk and awarded a travel grant based on the high reviewer ranking of my abstract.*

2015-present **Computational Neuroscience Tutorial Series, awarded department funding for filming and admin support**, *https://stellar.mit.edu/S/project/bcs-comp-tut/index.html.*

2013-2016 **National Defense Science and Engineering Graduate Fellowship (NDSEG)**, *Three year graduate fellowship from the Department of Defense covering tuition and stipend for three years.*

2015 **Angus MacDonald Award for Excellence in Undergraduate Teaching**, *Awarded by MIT Brain and Cognitive Sciences Deparment for my work TAing a new undergraduate course in Computational Neuroscience.*

2015 **MIT Graduate Women of Excellence Award**, *One of roughly 50 awardees of more than 200 nominees. Award is meant to "honor graduate women who exemplify leadership and outstanding accomplishment".*

2012 **Scholarship for Methods in Computational Neuroscience course**, *Marine Biology Lab*, Woods Hole, MA.

2011-2012 **Henry E. Singleton (1940) Presidential Fellowship**, *MIT fellowship for first year graduate students.*

2010 **Computational Neuroscience Summer Researcher**, *NIH-sponsored summer research experience for undergraduates.*

2009 **Math Summer Undergraduate Research Fellowship**, *University of Chicago.*

2007-2011 **University Scholarship**, *merit scholarship for entering students*, University of Chicago.

Teaching and Mentorship

2014-present **Member, Education Committee**, MIT Brain and Cognitive Sciences Department.
• Advise committee on graduate and undergraduate curriculum

2013-2017 **Founder, Computational Neuroscience Tutorial Series**, MIT Brain and Cognitive Sciences and Center for Minds Brains and Machines.
• Chose topics, invited speakers, created course website with problem sets, references, slides, and videos: https://stellar.mit.edu/S/project/bcs-comp-tut/index.html

2013-2017 **Teaching Assistant, Methods in Computational Neuroscience**, Woods Hole Marine Biology Laboratory.
• Made tutorials and problem sets, answered student questions, proposed novel projects, and advised students on projects

2016-2017 **Instructor, Quantitative Methods Workshop**, MIT Biology Department and Center for Minds Brains and Machines.
• Designed and taught tutorials at intensive quantitative workshop for undergrads from diverse backgrounds

2013-2017 **Mentor and PAL, MIT Summer Research Program**, MIT Brain and Cognitive Sciences and Center for Minds Brains and Machines.
• Mentored summer student and served as informal PAL to several students in diversity research program

2014-2015 **Teaching Assistant**, MIT Brain and Cognitive Sciences Department.
• 9.40 (Introduction to Computational Neuroscience) TA: designed problem set questions, helped plan lectures and course curriculum, held office hours, answered student questions.

2014 **Teaching Assistant, Brains, Minds and Machines Summer Course**, Woods Hole Marine Biology Laboratory.

• Made MATLAB for neuroscience tutorial, gave neuroscience lecture, answered student questions, advised students on projects.

2014 **Conference organizer**, Graduate Women at MIT (GWAMIT).

• Organized a mentorship event for the 2014 Spring Empowerment Conference, co-chair of the 2014 Fall Leadership Conference

2011-2014 **Video Maker**, MIT+K12 Videos.

• Made outreach videos on science topics for the MIT+K12 Videos project, and Khan Academy. Designated as a 'high quality veteran video maker'.

2012 **Teaching Assistant**, MIT Brain and Cognitive Sciences Department.

• 8.261/9.29 (Introduction to Computational Neuroscience) TA: held office hours and review sessions, and graded assignments

2011 **Teaching Assistant**, University of Chicago Biology Department.

• BIOS 20244 (Biophysics and Chemical Biology) TA: advised and assessed student presentations

2009-2010 **YSP Group Leader**, University of Chicago Mathematics Department.

• Led a discussion group of gifted $5^{th} - 9^{th}$ graders covering topics related to the mathematics of encryption

2008-2010 **VIGRE Course Assistant**, University of Chicago Mathematics Department.

• MATH 151,2,300 (Calculus) TA: held office hours, graded papers, assisted problem sessions

2009 **VIGRE REU**, University of Chicago Mathematics Department.

• Led a discussion group of 11^{th} and 12^{th} graders in Knot Theory and Applied Probability

2007-2008 **Gearup Classroom Support**, University of Chicago Neighborhood Schools Program.

• Assisted 8th grade Chicago Public Schools classroom

Skills and hobbies

Computer	MATLAB, Python, Slurm, LaTex, Mac OS X, Microsoft Office, CAD, Eagle	Fabrication	precision Lathe, precision milling machine, band saw, drill press, laser cutter, computer-controlled machining, electronics, etc.
Cello	MIT Chamber Music Society and Gilbert and Sullivan Pit Orchestra, University of Chicago Symphony Orchestra, Early Music Ensemble, Classical Improvisation Group	Other	Pottery, hiking, slackline, climbing

References

References available upon request