

William A Liberti III

CONTACT INFORMATION	1152 Euclid Ave Berkeley, CA 94708	617-529-0762 wliberti@berkeley.edu
RESEARCH INTERESTS	Systems Neuroscience, Neuroethology, Reinforcement Learning, Tool development, Motor Sequencing & Learning, Neuroprosthetics, Electrophysiology, Neurophotonics.	
EDUCATION	Boston University Graduate Medical School , Boston, MA Ph.D., Neuroscience, <i>July 2017</i> <ul style="list-style-type: none">• Advisor: Timothy Gardner, Ph.D Boston University , Boston, MA B.S., Biochemistry & Molecular Biology <i>With Distinction</i> , May 2012	
RESEARCH EXPERIENCE	Postdoctoral Fellow October 2017 to Present U.C. Berkeley Department of Electrical Engineering & Computer Science <i>Research Summary:</i> Large-scale neural recordings in freely behaving animals performing interesting behaviors Graduate Research Assistant May 2013 to July 2017 Graduate Program in Neuroscience, <i>Neurophotonics Graduate Fellow</i> <i>Research Summary:</i> Designed and implemented of tools for Electrophysiology and Calcium imaging in awake behaving Zebra Finches to study motor learning and the stability of motor sequencing. The key finding was that the flexible participation of excitatory projection neurons (stabilized by mesoscopic-level inhibition), forms the mechanistic basis of memory maintenance and and motor stability in the songbird.	
REFEREED PUBLICATIONS & PROCEEDINGS	<ol style="list-style-type: none">1. Liberti WA*, Schmid T*, Forli A, Snyder M, Yartsev M "A Stable Hippocampal Code Underlies Aerial Navigation in Bats" <i>Under Review</i>2. Alvarado JS, Goffinet J, Michael V, Liberti WA, Hatfield J, Gardner TJ, Pearson J, Mooney R. "Neural dynamics underlying birdsong practice and performance" <i>Under Review</i>3. Liberti D, Kremp M, Liberti WA, Penkala I, Li S, Zhou S, Morrissey EE "Alveolar epithelial cell fate is maintained in a spatially restricted manner to promote lung regeneration after acute injury" <i>Cell Reports</i> 35.6 (2021): 109092.4. Yanny K*, Antipa N*, Liberti WA, Dehaeck S, Monakhova K, Liu FL, Shen K, Ng R, Waller L "Randoscope: Computational Single-shot Miniature 3D Fluorescence Microscopy" <i>Light: Science & Applications</i> 171 (2020)5. Yanny K*, Antipa N*, Liberti WA, Dehaeck S, Monakhova K, Liu FL, Shen K, Ng R, Waller L "Compressed Sensing 3D Fluorescence Microscopy Using Optimized Phase Mask." <i>Computational Optical Sensing and Imaging</i> (2020)6. Cohen Y, Shen J, Semu D, Leman DP, Liberti WA, Perkins LN, Gardner TJ "Hidden neural states underlie canary song syntax." <i>Nature</i> 582, p539-544 (2020)7. Liberti WA, Gong XL, Rosebery TR, Carmena JM, "Local network coordination supports neuroprosthetic control." <i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i> (2019)8. Liberti WA, Perkins LN, Leman DP, Gardner TJ "An open source, wireless capable miniature microscope system" <i>Journal of Neural Engineering</i> 14.4 (2017): 045001.9. Liberti WA*, Markowitz JE*, Perkins LN, Leman DP, Liberti DC, Guitchounts G, Velho T, Lois C, Kotton DN, Gardner TJ "Unstable neurons underlie a stable learned behavior" <i>Nature Neuroscience</i> 19.12 (2016): 1665-1671.10. Markowitz JE*, Liberti, WA*, Guitchounts G, Velho T, Lois C, Gardner, TJ "Mesoscopic patterns of neural activity support songbird cortical sequences" <i>PLoS Biology</i>, 13.6 (2015): e1002158.11. Guitchounts G*, Markowitz JE*, Liberti WA*, Gardner TJ "A carbon-fiber electrode array for long-term neural recording." <i>Journal of Neural Engineering</i>, 10, 046016 (2013).	

PREPRINTS

12. Shen J*, Blute T*, **Liberti WA***, Yen W, Liberti DC, Kotten DN, Cruz-Martin A, Gardner TJ
“Songbird neural-organotypic culture as an in-vitro model for interrogating self-organizing sparse networks” *bioRxiv* 164228; doi: <https://doi.org/10.1101/164228> *In Submission*
 13. Leman DP, Chen IA, Bolding KA, Tai J, Wilmerding LK, Gritton HJ, Cohen Y, Yen WW, Perkins LN, **Liberti WA**, Kilic K, Han X, Cruz-Martn A, Gardner TJ, Otchy TM, Davison IG “Large-scale cellular-resolution imaging of neural activity in freely behaving mice” *bioRxiv* doi: <https://doi.org/10.1101/2021.03.11.434444> *under Review*
- * indicates co-authorship

PATENTS

Minimally invasive splaying microfiber electrode array and methods of fabricating and implanting the same.
U.S. Patent Application 14/902,734, 2014

AWARDS

- PLoS Young Investigator Award 2018
- GPN 1st place poster prize 2016, 2017
- Neurophotonics Graduate Fellowship 2016
- BioWeek 1st place poster prize 2015
- B.U. Computational Neuroscience Fellowship 2013
- Department of Biology Teaching Fellowship 2012–2015
- Department of Chemistry Teaching Fellowship 2011–2012

PRESENTATIONS First Author Conference Abstracts

- “Wireless Calcium Imaging in the hippocampus of freely flying bats” *Chicago, 2019*
- “Cortical sequences underlie neuroprosthetic control” *Chicago, 2019*
- “Local network coordination supports neuroprosthetic control” *San Francisco, 2019*
- “Local network coordination supports neuroprosthetic control” *San Diego, 2018*
- “Spatiotemporal credit assignment in neuroprosthetic control” *Janelia, 2018*
- “Premotor network exploration during practice” *COSYNE, Denver CO, 2018*
- “Social context mediated pre-motor encoding” *Washington DC, 2017*
- “Structured illumination ready Miniscopes” (Second co-author) *Janelia, 2017*
- “Rules for motor planning and order in the songbird HVC ” *San Diego, 2017*
- “Sleep promotes maintenance of stable motor performance in songbirds” *San Diego, 2016*
- “Unstable neurons underlie a stable learned behavior” *Salt Lake City, 2016*
- “Stability and drift in songbird cortical sequencing” *Chicago, 2015*
- “Mesoscopic patterns of neural activity support songbird cortical sequences” *Washington DC, 2014*
- “A carbon-fiber electrode array for long-term neural recording.” *New Orleans, 2012*

Invited Talks

- UC Berkeley (HWNl Retreat) September 2019
- UC Berkeley (Neuroscience), Cortex Club Seminar February 2019
- Janelia Research Campus, (Mechanistic Cognition Meeting) February 2019
- Faculty Debate Moderator, Helen Wills Neuroscience Retreat October 2018
- 6th European Birdsong Meeting, (Odense, Denmark), Keynote April 2018
- Georgia Tech (Neuroscience), Invited talk April 2018
- Santa Clara U. (Bioengineering), Invited talk February 2018
- Tufts (Neuroscience), Invited talk July 2017
- Duke (Neuroscience), Invited talk April 2017
- UC Berkeley (Neuroscience), Invited talk March 2017
- UC Berkeley (EE& CS), Invited talk February 2017
- NSF-NRT Neurophotonics Spotlight September 2016
- Computational and Systems Neuroscience (COSYNE) February 2016
- Boston College Neuroscience Seminar Guest Speaker January 2016
- Boston U. Neuroscience Seminar Series May 2015, Sept 2016, April 2017
- Boston U. Biology Seminar Series March 2015
- Boston U. Graduate Program in Neuroscience Retreat June 2015

TEACHING

CHEMISTRY Boston University

EXPERIENCE

- CH203 - Organic Chemistry 2011–2012
- CH131- Inorganic Chemistry for Engineers 2011–2012

	NEUROSCIENCE/BIOLOGY Boston University	
	BI315 - Systems Physiology	2012–2013
	BI644/NE644 - Neuroscience Design Lab	2013–2016
MENTORSHIP	<p>Daniel Leman 2014–2017 Undergraduate Researcher; <i>Developed surgical/optical methods to longitudinally record cells in HVC. Received UROP award every semester from 2015-2017.</i></p> <p>Michelle Crough 2015–2017 Undergraduate Researcher; <i>Pioneered cell-type specific imaging in the songbird HVC</i></p> <p>Miko Dimov 2015–2016 Undergraduate Researcher; <i>Adapted optical recording rigs to study motor systems in canaries</i></p> <p>Carlos Gomez 2015–2016 Biomedical Engineering Senior design project; <i>Designed proof-of-concept wireless miniature microscopes.</i></p> <p>Ale Eguren 2015–2016 Biomedical Engineering Senior design project; <i>Designed proof-of-concept multi-wavelength capable miniature microscopes.</i></p> <p>Christe Ye 2016–2017 Research for credit; <i>Explored the effects of sleep on the stability of vocal motor production</i></p>	
SERVICE	<p>CELEST Electronics & Experimental Design Course 2013–2015 <i>Course Overview:</i> Through NSF initiative CELEST: (Center of Excellence for Learning in Education, Science and Technology). Taught students from traditionally underrepresented backgrounds in science to program in C, and design simple circuits.</p> <p>Graduate Resident Assistant 2011–2017 <i>Overview:</i> Support diverse student populations in living/learning communities on Boston University's campus.</p> <p>Ad Hoc Referee: <i>PLoS ONE, IEEE/EBMC, eLife</i>(Reviewing Editor), 2016–present</p>	
PUBLIC	<ul style="list-style-type: none"> • Personal website • GitHub • Google Scholar 	