

Education	University of Washington – Seattle, WA	2016 - 2019
	M.S. in Applied Mathematics (anticipated Spring 2019)	
	University of Puget Sound – Tacoma, WA	2011 - 2015
	B.S. in Biochemistry and Mathematics Minor in Neuroscience	
Awards & Honors	University of Puget Sound Trustee Scholarship	
	ETC Outstanding Tutor	
	Puget Sound Research Travel Grant	
	University of Puget Sound Summer Research Grant	
	Puget Sound Career and Employment Services Representative	
	Washington State Opportunity Scholarship Mentor	
Research Experience	The Allen Institute for Brain Science – Seattle, WA	Oct. 2015 to Present
	Research Associate I/II in the Department of Neural Coding Advisor: Jérôme Lecoq Ph.D.	
	<ul style="list-style-type: none">Conducted experiments mapping the visual cortex of the mouse using 2-photon functional calcium imaging and infrared imaging.Developed automated quality control tools using Python and SQL using proper OOP programming and software development paradigms.	
	The University of Washington – Seattle, WA	May 2015 to Sep. 2015
	Research Technologist I in the Department of Psychology Advisor: Joseph Sisneros Ph.D.	
	<ul style="list-style-type: none">Conducted field-work and behavioral assays assessing the changes in auditory processing of the midshipman fish during mating.	
	The University of Puget Sound – Tacoma, WA	Sep. 2012 to May 2015
	Research Assistant/Course Assistant in the Department of Biology Advisors: Siddharth Ramakrishnan Ph.D. and Rachel Pepper Ph.D.	
	<ul style="list-style-type: none">Researched the influence of xenoestrogens on mating behaviors of the zebrafish. Conducted treatment, imaging, and analysis of fluorescence data in MATLAB.Carried out experiments investigating how sessile <i>Vorticella</i> manipulate flow to feed in a meso-fluidic device. Used MATLAB and particle image velocimetry for fluid analysis.	
	The University of California – Berkeley, CA	May 2014 to Aug. 2014
	Summer Research Intern in the Department of Biophysics Advisors: Rachel Pepper Ph.D.	
	<ul style="list-style-type: none">Investigated the fluid dynamics of navigatory behavior in the oceanic larvae. MATLAB, Python, and particle image velocimetry for fluid analysis.	
	The University of Hawai'i – Honolulu, HI	May 2013 to Sep. 2013
	Summer Research Intern and Research Assistant Advisor: Linda Chang M.D.	
	<ul style="list-style-type: none">Used independent component analysis and statistical parametric mapping in MATLAB/SPM8 to investigate diagnostic criterion in the default-mode network.	

Publications

The parametrization of differential climatological effects on the returns of Pacific salmon subpopulations using multichannel singular spectrum analysis. **Lee E.K., et al.** Manuscript in preparation. Explored data with non-parametric techniques; prepared results and figures.

Effects of stress on cortical processing in the mouse under a passive viewing task. Ramadan M., Fong F., **Lee E.K., et al.** Manuscript in preparation. Conducted significant amounts of data collection and data annotation. Collected and analyzed eye tracking data annotated for stress.

The Allen Brain Observatory: An open, standardized, physiology data set reveals higher order visual coding in the mouse cortex. de Vries S., Lecoq J. Buice M.A. *et al.* Manuscript in review at Nature. Significant contribution towards data collection over multiple modalities. Created automated data analysis and QC for infrared imaging experiments. Aided software development and hardware iteration; led implementation of a new eye tracking set-up system and software package.

Biological variation in the sizes, shapes, and arrangement of the aged brain. Waters J., **Lee E.K., et al.** Manuscript in review at PLOS One. Conducted data collection and analysis to characterize data set used. Helped suggest and review additional analyses in creation of the manuscript.

Neuropathological and transcriptomic characteristics of the aged brain. Miller J. *et al.* *eLife* (2017). Conducted data collection and image analysis/QC of brightfield-imaging IHC slides.

Aberrant cortical activity in multiple GCaMP6-expressing transgenic mouse lines. Steinmetz N. *et al.* *eNeuro* (2017). Involved in data collection and characterization of epileptiform activity in 2-photon fluorescence and epifluorescence imaging.

Low dose exposure to Bisphenol A alters development of gonadotropin-releasing hormone 3 neurons and locomotor behavior in Japanese Medaka. Inagaki T., Smith N. **Lee E.K.,** Ramakrishnan S. *Neurotoxicology* (2016). Bred and maintained colonies of zebrafish; administered xenoestrogens; conducted dissection and imaging; image analysis and quantification; figure generation and manuscript revision.

Posters & Presentations

The incorporation and uses of eye tracking in a large-scale pipeline for the Allen Institute's Brain Observatory. **Lee E.K., et al.** *Society for Neuroscience Poster Session* (2017). Analysis of the sources of error/noise in current eye tracking modality and the creation of a new implementation using new hardware and software. Comparison of performance increases and better interpolation of eye position and resultant receptive field characterization.

The Allen Brain Observatory: a standardized and ongoing survey of evoked neuronal activity in the mouse visual cortex. Lecoq J. *et al.* *Society for Neuroscience Poster Session*. (2017). Created automated QC and analyses helping increase the throughput of infrared imaging experiments.

Highly conserved functional boundaries of the visual cortex are observed using standardized methods for intrinsic signal imaging in a broad survey of the mouse visual cortex. Griffin F. *et al.* *Society for Neuroscience Poster Session*. (2016). Performed reprocessing and alignment of infrared imaging experiments for the analysis of functional areas across Cre- lines and gender.

Impact of Bisphenol A on the developing GnRH3 neural system and locomotor behavior in Japanese Medaka. Inagaki T., **Lee E.K.,** Ramakrishnan S. *Society for Neuroscience Poster Session* (2014). Bred and maintained colonies of fish; performed optical quantification of changes in GnRH-3 receptor expression.

Research Skills

Programming Languages: Python, SQL, MATLAB, Java, R, HTML/CSS, Git VCS.

Lab Skills: Mouse handling & behavior, 2-photon imaging, infrared imaging, fluorescence imaging

Data Skills: Fiji, non-parametric methods, Keras/TensorFlow, pandas, GUI/PyQT

Coursework: numerical linear algebra, dynamical systems, molecular biology, biochemistry, complex analysis, numerical methods, dimensionality reduction, partial differential equations

Hobbies: boxing, Brazilian jiu-jitsu (eternally a white-belt), cycling, reading about geopolitics, weightlifting, student mentorship, homework