Erik Ames Burlingame

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EDUCATION

PhD IN NEUROSCIENCE | Oregon Health and Science University | Portland, OR
Expected June 2022 · GPA: 4.00/4.00

MS IN BIOLOGY | Foci on Bioinformatics and Genomics | University of Oregon | Eugene, OR
Graduated September 2017 · GPA: 4.05/4.00

BS IN BIOCHEMISTRY | University of Oregon | Eugene, OR
Graduated June 2016 · Magna Cum Laude · Departmental Honors · Top Graduate in Major · Major GPA: 3.94/4.00

RESEARCH PROJECTS

MACHINE-DRIVEN APPROACHES FOR HISTOPATHOLOGICAL IMAGE ANALYSIS | Chang Group
January 2017 - Present | Oregon Health and Science University | Portland, OR
Supervisor: Dr. Young Hwan Chang

- Implementing deep learning image analysis technology to stratify metastasis risk in patients with early melanoma.
- Implementing generative adversarial network framework to infer a multiplicity of medical images.
- Streamlining existing workflow to allow parallel processing of images on a distributed compute cluster.

HIGH-THROUGHPUT SCREENING OF PROTEIN-PEPTIDE BINDING SELECTIVITY | Harms Group
September 2016 - December 2016 | University of Oregon | Eugene, OR

- Developed a pipeline to quantitatively determine protein-peptide binding selectivity from phage display experiments.
- Parsed and analyzed sequencing data to build peptide ligand multiple sequence alignments and count matrices.
- Determined biochemical, biophysical, and information theoretical peptide properties that correlate with selectivity.

ASSESSING MOLECULAR DRIVERS OF PRE-SYNAPTIC TERMINAL ASSEMBLY | Washbourne Group
December 2013 – June 2016 | University of Oregon | Eugene, OR
Supervisor: Dr. Philip Washbourne

- Used integrative zebrafish model to assess putative role of calcium-dependent serine kinase (CASK) in synaptogenesis.
- Assayed behavioral deficits that result from injection of anti-CASK morpholinos and misexpression of CASK constructs.
- Immunohistochemically quantified presynaptic proteins correlating with behavioral phenotype.

PUBLICATIONS

Burlingame E.A., Margolin A.A., Gray J.W., and Chang Y.H., "SHIFT: Speedy Histopathological-to-ImmunoFluorescent Translation of whole slide images using conditional generative adversarial networks," in *Proc. SPIE* **10581**, (2018).

RESEARCH PRESENTATIONS

Burlingame E.A., Margolin A.A., Gray J.W., and Chang Y.H. (February 2018) *SHIFT: Speedy Histopathological-to-ImmunoFluorescent Translation of whole slide images using conditional generative adversarial networks.* Oral presentation at SPIE Medical Imaging 2018, Houston, TX.

Burlingame E.A., Thibault G., Hornick N., Leachman S., Margolin A.A., Gray J.W., and Chang Y.H. (May 2017) *Automated segmentation and machine-driven classification in the histopathological image analysis of melanoma.* Poster presented at the UO Graduate Student Research Forum, University of Oregon, Eugene, OR.

Burlingame E.A.*, Sivagnanam S.*, Su W.*, and Wheeler L. (November 2016) *Sequencing analysis of phage display peptide screen for protein binding selectivity.* Poster presented at the Genomics in Action Conference, University of Oregon, Eugene, OR. (* denotes equal contributors).

Burlingame E. A. and Washbourne P.E. (May 2016) *Pre-synaptic terminal assembly modulated by a molecular hitch.* Poster presented at the Undergraduate Research Symposium, University of Oregon, Eugene, OR.

Burlingame E.A. and Washbourne P.E. (May/August 2015) *Investigating the role of CASK in synapse formation.* Poster/oral presentations delivered at McNair and NICHD-R25 symposia, University of Oregon, Eugene, OR.

SKILLS

WET LAB
PCR • DNA Preparation • RNA-seq Library Prep • RNA Synthesis • Pipetting • Molecular Cloning • Protein Purification • Western Blot • SDS-PAGE • Enzymatic Assays • Chromatography • Immunohistochemistry • Confocal Microscopy • Micro-injection • Fish Husbandry

SOFTWARE
BLAST • DESeq2 • edgeR • GMAP-GSNAP • limma-voom • PEP-FOLD3 • SPSS • SQL • Trinity • Velvet • WebLogo • Windows • MacOS • Linux • Office • LaTeX • Copasi • PyMol • Nikon EZ-C1 • Adobe Suite • Cytomine • CV2 • Keras

HARDWARE
LI-COR Odyssey Fc Imaging System • Nikon Eclipse TE2000-U Confocal Microscope• NanoDrop Spectrophotometer

SCRIPTING
UNIX • Python • R • MATLAB

RELEVANT COURSEWORK

Biochemistry + Lab • Organic Chemistry + Lab • Physical Biochemistry • Statistical Mechanics • Thermodynamics • Bioinformatics • Molecular Genetics • Genomic Analysis • Neurophysiology • Neurobiology • Systems Neuroscience • General Physics • Computer Science • Calculus • Statistics • Discrete Math • Biomedical Ethics

WORKSHOPS ATTENDED

Workshop on Deep Learning for Cryo-EM at the National Resource for Automated Molecular Microscopy, Simons Electron Microscopy Center, New York Structural Biology Center, New York City, NY. April 10th, 2018.

TEACHING EXPERIENCE

GRADUATE TEACHING FELLOW | Department of Biology
University of Oregon | Eugene, OR | September 2016 – December 2016
- Taught lab portion of introductory human anatomy and physiology course for non-biology majors.
- Evaluated student lab notebooks with emphasis on skills that are transferable to other biology courses.

LECTURER | Science Literacy Program
University of Oregon | Eugene, OR | January 2015 – March 2015
- Facilitated discussions of scientific topics in a 200-seat genetics class for non-science majors.
- Prepared curriculum and delivered two eighty-minute lectures on mutation and genetic disease.

TEACHING LABORATORY ASSISTANT AND TUTOR | Department of Biology
University of Oregon | Eugene, OR | September 2014 - December 2014
- Provided teaching support for biochemistry teaching lab, including demonstrations of technique and instrumentation.
- Assisted students during scheduled tutoring hours outside of lab.

RELEVANT WORK EXPERIENCE

ASSISTANT FISH TECHNICIAN | Institute of Ecology and Evolution
Federal Work-Study Program
University of Oregon | Eugene, OR | Sept 2013 – June 2014
- Maintained research stock of three-spined stickleback used in studies of evolutionary and functional genomics.
- Followed standard fish husbandry protocols in compliance with the IACUC.

LABORATORY ASSISTANT | Department of Biology
Portland Community College | Portland, OR | Aug 2012 – June 2013
- Maintained general science laboratories, including instrument calibration, maintenance of chemical stocks, and data entry.
- Worked with instructional support technicians to improve organization of teaching materials.

OTHER WORK EXPERIENCE

ADMINISTRATIVE ASSISTANT | Institute of Ecology and Evolution
Federal Work-Study Program
University of Oregon | Eugene, OR | June 2014 – June 2016

- Assist with general administrative tasks, including invoice processing, file organization, and delivery handling.

CO-FOUNDER AND EDITOR | THE BRIDGE NEWSPAPER
Portland Community College | Portland, OR | January 2012 – June 2013
- Developed a budgetary proposal to fund a faculty adviser position and resuscitate the student-run newspaper of PCC.
- Managed a staff of writers, reporters, photographers, and artists.

ACADEMIC AWARDS

2017	Achievement Rewards for College Scientists (ARCS) Foundation Scholarship	Oregon Health and Science University
2016	Biochemistry Achievement Award (Top Graduate in Major)	University of Oregon
2015	Undergraduate Research Fellowship	Sole Awardee of Full Tuition Waiver	University of Oregon
2016	Mary E. Russell Scholarship	University of Oregon
2016	Biology Poster Award	Undergraduate Research Symposium	University of Oregon
2016	General University Scholarship	University of Oregon
2016	Henry V. Howe Scholarship	University of Oregon
2016	Paul and Helen Weiser Memorial Scholarship	University of Oregon
2015	Mary Alden Scholarship	University of Oregon
2015	Henry V. Howe Scholarship	University of Oregon
2015	Summer Program for Undergraduate Research Award	University of Oregon
2014	Science Literacy Scholarship	University of Oregon
2014	Ronald E. McNair Scholarship	University of Oregon
2013	Swayne Family Scholarship	University of Oregon
2012	Phi Theta Kappa Honors Institute Scholarship	Portland Community College

RESEARCH GRANTS

2017	Cancer Early Detection and Research (CEDAR) Seed Grant ($37K)	Oregon Health and Science University
2015	UROP Mini-Grant ($1K)	University of Oregon