

# Erik Ames Burlingame

3222 SE Milwaukie Ave. Apt. #8 • Portland, OR • 97202  
burlinge@ohsu.edu • 503.929.1389

## 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 • L<sup>A</sup>T<sub>E</sub>X • 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