Madison Walsh

Madison.Walsh@colorado.edu

Education

Graduate Education

University of California, Berkeley

Ph.D. *Fall 2020-May 2025*

Earned a PhD working in the lab of Dr. Elçin Ünal characterizing nuclear remodeling and changes to nuclear permeability in budding yeast meiosis using classic yeast genetics and live cell microscopy.

Co-mentored by Dr. Elçin Ünal and Dr. Gokul Upadhyayula.

GPA: 3.958/4.0

Undergraduate Education

Harvey Mudd College, Claremont CA

B.S. *2016-2020*

Biology major, Molecular biology concentration

Worked in the lab of Dr. Danae Schulz to conduct a drug screen to identify small molecules that inhibit growth or promote surface remodeling of the parasite *Trypanosoma brucei* using transfection, tissue culture, and flow cytometry.

Overall GPA: 3.383/4.0

Major GPA: 3.5/4.0

Publications

Walsh, Madison E., Keerthana Chetlapalli, Srigokul Upadhyayula, Grant A. King, and Elçin Ünal. 2025. "A Conserved Disruption of the Nuclear Permeability Barrier in Meiosis Is Controlled by a Kinase-Phosphatase Pair in *Saccharomyces Cerevisiae*." *Molecular Biology of the Cell*, October, 2025. https://doi.org/10.1091/mbc.E25-05-0229.

Walsh, Madison E., King ,Grant A., and Elçin Ünal. 2024. "Not Just Binary: Embracing the Complexity of Nuclear Division Dynamics." *Nucleus* 15 (1): 2360601. https://doi.org/10.1080/19491034.2024.2360601.

Walsh, Madison E., Eleanor M. Naudzius, Savanah J. Diaz, Theodore W. Wismar, Mikhail M. Shilman, and Danae Schulz. 2020. "Identification of Clinically Approved Small Molecules That Inhibit Growth and Affect Transcript Levels of Developmentally Regulated Genes in the African Trypanosome." *PLoS Neglected Tropical Diseases* 14 (3): e0007790. https://doi.org/10.1371/journal.pntd.0007790.

King, Grant A., Rahel Wettstein, Joseph M. Varberg, Keerthana Chetlapalli, **Madison E. Walsh**, Ludovic C.J. Gillet, Claudia Hernández-Armenta, et al. 2022. "Meiotic Nuclear Pore Complex Remodeling Provides Key Insights into Nuclear Basket Organization." *Journal of Cell Biology* 222 (2): e202204039. https://doi.org/10.1083/jcb.202204039.

Teaching

Assistant Teaching Professor at CU Boulder

From Dirt to DNA: Phage Genomics Laboratory I (MCDB1161)

Fall 2025-present

Phage Genomics Lab is a course-based undergraduate research experience (CURE) in which students isolation and characterize novel bacteriophages. This course has seven sections and serves around 165 students each semester. It serves as a research-focused introductory lab course in molecular and cell biology techniques. In this role, I provide lectures with technical and foundational information, provide personalized feedback to students during lab time and on writing assignments, coordinate and train the TAs and lab assistants, and manage the course logistics.

Introduction to Cellular and Molecular Biology (MCDB 1150 and 1152)

Fall 2025-present

This is an introductory course to cell and molecular biology, meant to serve as a foundation for other courses in the Molecular, Cell, and Developmental Biology department. This course serves around 500 students in the fall semesters and 120 in the spring semesters. The lecture and associated co-seminar utilize peer-learning with the use of the Learning Assistant program. In this role, I help coordinate and train the TAs and LAs, manage the course logistics, write assessment questions, and (starting in spring 2026) co-teach the lecture portion of the course.

Lecturer at UC Berkeley

Survey of the Principles of Biochemistry and Molecular Biology (MCB102)

Summer 2025

Biochemistry is an upper division course of around 200 students focused on the fundamentals of how the chemistry of macromolecules govern the function of a cell, including protein structure, metabolism, and the molecular biology of the central dogma. As the sole instructor of record, I designed over 40 hours of lecture class time, activities for 15+ hours of discussion section, wrote formative and summative assessments, and managed the course logistics, including disability accommodations.

Graduate Student Instructor at UC Berkeley

General Genetics (MCB140)

Fall 2021, fall 2024

Genetics is an upper division course of around 100 students focused on the fundamentals of inheritance, linkage, gene regulation, and population genetics. As a GSI, I designed and ran weekly discussion sections, managed logistics, and designed and implemented a learning-from-failure assignment that was permanently integrated into the course.

Guest lecture for General Genetics (MCB140)

Fall 2024, Spring 2025

Researched, designed, and presented a guest lecture for the General Genetics course. The lecture has an emphasis on situating genetics in the context of a larger picture of what determines phenotype and how that relates to human traits. Recording available upon request.

Genetics Laboratory (MCB140L)

Spring 2023

Genetics Laboratory is an upper division course that covers topics of cloning, genetic screening, complementation, and RNAi using budding yeast and *C. elegans* as models. In this role I facilitated in-class lab sessions with 20 students twice a week, re-designed the journal club assignment, and wrote assignment instructions, rubrics, and examples for students.

Lab Fundamentals Bootcamp Instructor

Summer 2024
The Lab Fundamentals Bootcamp is a training program for undergraduates students who have no experience with lab work. The aim is to promote equity in research and empower students to engage with research on campus. The program includes a project involving cloning and purifying the protein GFP, facilities tours, mini-lectures and activities to support foundational knowledge.

Pedagogy Training

SEA-PHAGES Bioinformatics Workshop

December 2025
Hands-on training in bacteriophage genome annotation and classroom applications for bioinformatics courses.

UC Berkely Teaching Certificate

Fall 2021-May 2025
The Teaching Certificate program includes a series of pedagogy workshops, trainings, and reflection on teaching practices.

Pedagogy Coursework

Fall 2021 (MCB375), fall 2023 (IB375)
Both courses feature evidence-based pedagogy training with a focus on reading papers, accessibility, and active learning.

Universal Design for Learning (UDL) Working Group

Spring 2024
The Preparing Future Faculty: Designing Courses through the Lens of Universal Design for Learning (UDL) working group was a semester-long course focused on syllabus and course design through the lens of UDL and accessibility.

Science Education Journal Club

Summer 2023, summer 2024
Science Education Journal club meets weekly over the summer to discuss papers in the field of science education with the aim to improve teaching practices at UC Berkeley.

Awards and Fellowships

National Science Foundation Graduate Research Fellowship Program (NSF GRFP)
Awarded 2022

UC Berkeley Outstanding Graduate Student Instructor Award
Fall 2021

Best Biology Senior Thesis Award (Harvey Mudd College)
Spring 2020

Best Poster Award from the Southern California Society of Parasitologists
Fall 2019

Mentorship, Outreach, and Other Experience

Laboratory Mentorship

Summer 2021 – May 2025

One-on-one mentoring of a UC Berkeley undergraduate student in laboratory research.

Bay Area Scientists Inspiring Students (BASIS)

Fall 2023-May 2025

BASIS is a community outreach volunteer program in which we visit local elementary schools to teach a science lesson and answer questions about what it's like to be a scientist.

UPchieve online tutor

2022

UPchieve provides free online tutoring to high school students with the goal of reducing barriers to learning for all.

Harvey Mudd College Biology Writing Fellow

Fall 2019, Spring 2020

Writing center employee with specialization in helping students with scientific writing in the field of biology.

Course Grader

UC Berkeley

- General Genetics (*Fall 2022, spring 2023*)
- Macromolecular Synthesis and Cellular Function (*Fall 2020*)

Harvey Mudd College

- Evolutionary Biology (*Fall 2019*)
- Introductory Biology (*Spring 2018)*