Maya Weissman

https://www.sciencemaya.com/
mweissman97@gmail.com

Postdoctoral researcher investigating adaptation to environmental stress in natural populations

SKILLS

Programming languages: SLiM, Julia, R, MATLAB, Python, Unix/BASH, LaTeX, Git, Cluster Computing
Research areas: population genetics, microbiome dynamics, population genomics, stochastic individual-based models, biogeography, data science, conservation genomics, Markov matrix models, creating/managing large scale datasets, differential equations, infectious diseases

EDUCATION

Brown University - Providence, Rhode Island
PhD in Ecology and Evolutionary Biology
AUGUST 2019 - APRIL 2024

San Diego State University - *San Diego, California*
Bachelors of Science in Cellular and Molecular Biology, Minor in Mathematics
AUGUST 2015 - MAY 2019 GPA - 3.49

PUBLICATIONS

- Application of close-kin mark-recapture to an American black bear population using harvest samples. A. Sévêque, R.C. Lonsinger, L.P. Waits, K.E. Brzeski, S.L. Mayhew, D.C. Norton, C.N. Ott-Conn, T.R. Petroelje, A. K. Tallon, **M. Weissman**, D.J. Morin. *(in review).*
- Balancing the risks of mating: biogeographic evidence of cleistogamy as a bet hedging strategy. **M. Weissman**, D. Zhang, R. Kartzinel, D. Weinreich. *bioRxiv.* March 2024. https://doi.org/10.1101/2024.03.28.587200. *(in review).*
- Beyond the (geometric) mean: stochastic models undermine deterministic predictions of bet hedger evolution. **M. Weissman**, Y. Raynes, D. Weinreich. *The American Naturalist*. https://doi.org/10.1086/735690. May 2025.
- Modeling the Role of Temperature-Dependent Microbiome Composition in Black Band Disease Transmission Among Coral Reefs. A. Busalacchi, **M. Weissman**, F. Wang, N.K. Vaidya. *Mathematical Biosciences.* Feb 2025. https://doi.org/10.1016/j.mbs.2024.109371.
- Modeling of the Coral Microbiome: the Influence of Temperature and Microbial Network. L.F.O. Lima, **M. Weissman**, M. Reed, B. Papudeshi, A.T. Alker, M.M. Morris, R.A. Edwards, S.J. de Putron, N.K. Vaidya, E.A. Dinsdale. *mBio*. Mar 2020. https://doi.org/10.1128%2FmBio.02691-19.

RESEARCH EXPERIENCE

Garud Lab, UCLA - *Postdoctoral Researcher*
APRIL 2025 - PRESENT

- Researching the genetic architecture of adaptations in the microbiome to better understand how adaptive variants rise in frequency and are maintained.
- Developing SLiM population genetic simulations to predict patterns of linkage

disequilibrium associated with complex genetic interactions, such as epistasis.

Brezski Lab, Michigan Technological University - *Data Analyst*
MAY 2024 - APRIL 2025

- Constructed pedigree analysis on Upper Michigan black bears to estimate population size and inform Department of Natural Resources harvest policy. Performed quality control, analyzed using population genetics, and identified parent-offspring pairs.
- Created SNPhound: an R package for conservation genomics using limited GTSeq data that can match duplicate samples, infer species, and identify admixed samples. Analyzed 1,000 Canid DNA samples from five species to identify ancestry informative markers and validate the efficacy of SNPhound.

Brown University Ecology and Evolutionary Biology - *Graduate Student, The Weinreich Laboratory*
SEPTEMBER 2019 - MAY 2024

- Thesis entitled: ***"Life's a gamble: how evolution plays the odds and reduces risk"***
- Created population genetics models to study the importance of modeling stochasticity in predicting the evolution of bet hedging, a trade-off that reduces risk.
- Studied the biogeographic distribution of cleistogamy in angiosperms, synthesizing species occurrences, climate, biome, and ArcGIS data.
- **Undergraduate mentees:** Neal Yin (*Computational Biology '24*), Andrew Fogarty (*Neuroscience '26*), Anwen Lin (*Premed '23*)

San Diego State Mathematics - *Undergraduate Researcher, The Vaidya DiMoLab*
JANUARY 2018 - JUNE 2019

- Leveraging ordinary differential equation models to study disease dynamics within a host during an HIV infection, taking into account latency and pharmacodynamics.
- Modeled temperature dependent drivers of coral reef microbiome composition in order to predict differences in abundance across geographic zones and in relation to Black Band Disease dynamics.

AWARDS, FELLOWSHIPS, AND CERTIFICATES

Doctoral Dissertation Enhancement Grant, $10,000
Brown Ecology, Evolutionary, and Organismal Biology, January 2022

Predoctoral Training Fellowship in Biological Data Science
National Institute of Health, June 2020-2022

Graduate Research Fellowship Program Honorable Mention
National Science Foundation, April 2021

Undergraduate Research Excellence Award
San Diego State Student Research Symposium, March 2019

PRESENTATIONS

Society for Molecular Biology and Evolution - *Luck of the draw: how environmental variability shapes the evolution of conservative vs. diversified bet-hedging strategies*
JULY 2023; POSTER

Genetics Society of America: Population, Evolutionary, and Quantitative Genetics - *Don't put all your eggs in one basket: what stochastic modeling tells us about bet hedger evolution*

JUNE 2022; SELECTED TALK

Cold Spring Harbor Labs: Probabilistic Genomics - *Take a chance on mean (fitness): the evolution of bet hedging*
APRIL 2021; SELECTED TALK

SIAM Southern California Applied Mathematics Symposium - *Mathematically modeling the coral reef microbiome*
APRIL 2019; POSTER

- Poster presentation on the relationship between temperature and the coral reef microbiome.

SDSU Student Research Symposium - *Mathematically modeling the coral reef microbiome*
MARCH 2019; POSTER

- **Honors Received**: Undergraduate Research Excellence Award

SDSU Student Research Symposium - *Modeling HIV pharmacodynamics*
MARCH 2018; TALK

TEACHING EXPERIENCE

Brown University - *Adjunct Assistant Professor, The Ecology and Evolution of Infectious Diseases*
AUGUST 2024 - DECEMBER 2024

- Instructor of record for an interdisciplinary course with 75 students enrolled.
- Course content focused on learning about infectious diseases through the lenses of ecological and evolutionary theory, public health, history, and mathematical modeling.
- Managed a team of 6 Undergraduate TAs and 2 Graduate TAs in facilitating discussion sections, grading assessments, and developing their own pedagogy skills.

Sheridan Center for Teaching and Learning - *Head Teaching Consult Fellow*
AUGUST 2023 - MARCH 2024

- One of 3 selected Head Teaching Consult Fellows that serve as leadership in the graduate training programs in inclusive pedagogy.
- Facilitated and designed workshops for Graduate Teaching Consult Fellows during the Inclusive and Reflective Pedagogy course.
- Worked with program leadership to invite and host a guest speaker.

Sheridan Center for Teaching and Learning - *Teaching Consult Fellow*
AUGUST 2021 - JANUARY 2023

- Facilitated peer workshops of 6 graduate students participating in the Reflective Teaching Certificate over Zoom.
- Developed skills related to providing peer feedback, crafted a teaching philosophy statement, and deepened my knowledge of evidence-based teaching practices.

Brown University - *Head Teaching Assistant, Evolutionary Biology*
AUGUST 2021 - DECEMBER 2021

- Held regular office hours and answered student questions.
- Taught two guest lectures on a) migration and mutation, and b) levels of selection to a lecture hall of eighty undergraduate students. Lectures were held synchronously in person and over Zoom.
- Facilitated a weekly small group section of fifteen undergraduate students where students discussed assigned readings and in-class exercises.

- Developed and graded tests and assignments.

Brown University - *Teaching Assistant, The Ecology and Evolution of Infectious Diseases*
AUGUST 2019 - DECEMBER 2019

- Held regular office hours and answered student questions.
- Taught a guest lecture on modeling zoonotic emergence in a lecture hall of seventy-five undergraduate students.
- Developed and graded tests and assignments, adapted homework to an online platform, and provided feedback on students' progress.

Sheridan Center for Teaching and Learning - *Reflective Teaching Certification*
AUGUST 2019 - DECEMBER 2019

- Developed and refined fundamental, evidence-based teaching skills and strategies through a semester-long interdisciplinary seminar.
- Coursework covered critical reflection, supporting an inclusive classroom, classroom management, learning design, and active learning.

OTHER EXPERIENCE

EEOB Graduate Student Association - *President*
JUNE 2021 - JUNE 2022

- Served as the liaison between the graduate student body and faculty by attending bi-weekly faculty meetings, attending curriculum meetings, assisting with planning of the departmental retreat, and acting as the point of contact with Directors of Graduate Study.
- Organized Graduate Student Association meetings once per semester where graduate students discussed the current state of the program.

Science Coloring Books - *Author and Illustrator*
2013 - PRESENT

- Written and illustrated seven coloring books on topics in ecology, evolution, and microbial biology.
- Partnered with on-campus student organizations and educators to design corresponding curricula and distribute over 2,000 copies.
- https://www.sciencemaya.com/outreach/