Yaamini R. Venkataraman, Ph.D

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Appointments

Assistant Professor of Organismal Biology (September 2025-Present)
Biology Department, Santa Clara University, CA, USA
Postdoctoral Investigator (March 2025-May 2025)
Woods Hole Oceanographic Institution, MA, USA
NSF Postdoctoral Research Fellow in Biology (April 2023-March 2025)
Woods Hole Oceanographic Institution, MA, USA
Postdoctoral Scholar (October 2021-March 2023)
Woods Hole Oceanographic Institution, MA, USA
NSF Graduate Research Fellow (September 2018-June 2021)
University of Washington School of Aquatic and Fishery Sciences, WA, USA
Graduate Student Research Assistant (September 2016-June 2021)
University of Washington School of Aquatic and Fishery Sciences, WA, USA

Education

University of Washington, Seattle, WA, USA (September 2016-June 2021)
Ph.D in Aquatic and Fishery Sciences with Data Science Option
University of California, San Diego, CA, USA (September 2012-June 2016)
B.S. General Biology (with Honors)
B.A. Environmental Systems: Environmental Policy

Research

Grants and Fellowships

2024 Genetics Society of America Microgrant ($2,000 for Resources for Inclusive Evolution Education (RIE2) working group)
American Genetics Society Special Event Award Grant ($10,000 for Resources for Inclusive Evolution Education (RIE2) working group)
2023 Society for Molecular Biology and Evolution (SMBE) IDEA Grant ($14,500 for Resources for Inclusive Evolution Education (RIE2) working group)
2022 NSF Postdoctoral Research Fellowship in Biology ($54,000 yearly salary, $15,000 yearly research and training allowance)
2021 Woods Hole Oceanographic Institution Postdoctoral Scholar Award ($93,375 total salary, $10,000 research funding)
University of Washington Diversity Seed Grant ($2,000 course funding)
2018 NSF Graduate Research Fellowships Program ($34,000 yearly salary)
2017 Hall Conservation Genetics Research Award ($6,000 research funding)
2016 School of Aquatic and Fishery Sciences Fellowship ($25,188 yearly salary)

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Awards

2023 North Pacific Marine Science Organization (PICES) Early Career Ocean Professional Best Oral Presentation Award in the Marine Environmental Quality section
PICES Early Career Scientist Travel Award

2022 American Physiological Society (APS) Intersociety Meeting for Comparative Physiology Abstract-Based Travel Award

2021 School of Aquatic and Fishery Sciences (SAFS) Faculty Merit Award
SAFS Equity, Inclusion, and Community Service Recognition Award

2019 College of the Environment Outstanding Diversity Commitment
University of Washington Husky 100: Recognition of 100 undergraduate and graduate students actively making a difference on campus and in their communities

2018 Pacific Coast Shellfish Growers Association: Honorable Mention for Best Student Presentation

Publications *(* = equal contribution, † = undergraduate author)*

Peer-reviewed work

16. **Venkataraman YR***, Huffmyer AS*. "Interrogating metabolic plasticity in marine organisms: A framework for best practices using metabolomic and lipidomic approaches." *Integrative and Comparative Biology*. (2025). https://doi.org/10.1093/icb/icaf138
15. **Venkataraman YR**, Kelso JC†, Payne C†, Freitas HL†, Jasmine Kohler†, Tepolt CK. "Plasticity, not genetics, shapes individual responses to thermal stress in non-native populations of the European green crab (*Carcinus maenas*)." *Integrative and Comparative Biology*. (2025). https://doi.org/10.1093/icb/icaf131
14. Chaudhary VB, Kim SL, Medina M, Srivastava DS, Traylor-Knowles N, Brito-Millan M, Camargo-Cely Alejandra, Chatterjee S, Chen N, Chen Y, Gotanda K, Halsey S, Jack CN, McGuire RM, Miller CML, Moore A, Noh S, Ong T, Peralta AL, Puitiza A, Ramirez LN, Romero-Olivares AL, Pulido-Barriga MF, Sanchez K, Sit CY, Su C, Vazquez-Cardona J, **Venkataraman YR**, Werner CM, Khadempour L. "Racial Affinity Groups in STEM." *Science*. (2024). https://doi.org/10.1126/science.adq4733
13. Aluru N, **Venkataraman YR**, Murray CS, DePascuale V. "Gene expression and DNA methylation changes in response to hypoxia in toxicant-adapted Atlantic killifish (*Fundulus heteroclitus*)." *Biology Open*. (2024). https://doi.org/10.1242/bio.061801
12. **Venkataraman YR**, Huffmyer AS, White SJ, Downey-Wall A, Ashey J, Becker DM, Bengtsson Z, Putnam HM, Strand E, Rodriguez-Casariego JA, Wanamaker SA, Lotterhos KE, Roberts SB. "DNA methylation correlates with transcriptional noise in response to elevated pCO_2 in the eastern oyster (*Crassostrea virginica*)." *Ecological Epigenetics*. (2024). https://doi.org/10.1093/eep/dvae018
11. **Venkataraman YR***, Shore A*, Dayal S†, Lee J, Salimi MA, Crandall G, Loeher MM, Stoops M, Swanger M†, Eisenlord MEE, Van Alstyne KL, Fast MD, Burge CA, Groner ML, "Characterizing host-pathogen interactions between *Zostera marina* and *Labyrinthula*

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zosterae." *Frontiers in Marine Science.* (2023). https://doi.org/10.3389/fmars.2023.1152647

10. Padilla-Gamiño J*, Alma L*, Spencer LH*, **Venkataraman YR***, Wessler L*, "Ocean acidification does not overlook sex: Review of understudied effects and implications of low pH on marine invertebrate sexual reproduction." *Frontiers in Marine Science.* (2022). https://doi.org/10.3389/fmars.2022.977754
9. **Venkataraman YR**, White SJ, Roberts SB, "Differential DNA methylation in Pacific oyster reproductive tissue associated with ocean acidification." *BMC Genomics.* (2022). https://doi.org/10.1186/s12864-022-08781-5
8. Wanamaker SA*, **Venkataraman YR***, Gavery M, Roberts SB, Bhattacharya D, Downey-Wall AM, Eirin-Lopez JM, Johnson KM, Lotterhos KE, Puritz JM, Putnam HM, "Invertebrate methylomes provide insight into mechanisms of environmental tolerance and reveal methodological biases." *Molecular Ecology Resources*. (2022) https://doi.org/10.1111/1755-0998.13542 (* = equal contribution)
7. Downey-Wall AM, Cameron L, Ford B, McNally, E, **Venkataraman YR**, Roberts SB, Ries J, Lotterhos KE, "Ocean acidification induces subtle shifts in gene expression and DNA methylation in mantle tissue of the eastern oyster (*Crassostrea virginica*)." *Frontiers Marine Science.* (2020). https://doi.org/10.3389/fmars.2020.566419
6. **Venkataraman YR**, Downey-Wall AM, Ries J, Westfield I, White S, Roberts SB, Lotterhos KE, "General DNA methylation patterns and environmentally-induced differential methylation in the eastern oyster (*Crassostrea virginica*)." *Frontiers in Marine Science.* 7:225 (2020). https://doi.org/10.3389/fmars.2020.00225
5. **Venkataraman YR**, Spencer LH, Roberts S. "Larval response to parental low pH exposure in Pacific oysters (*Crassostrea gigas*)." *Journal of Shellfish Research.* 38(3):743-750 (2019). https://doi.org/10.2983/035.038.0325
4. Spencer LH, **Venkataraman YR**, Crim R, Ryan S, Horwith M, Roberts SB, "Carry-over effects of temperature and pCO_2 across multiple Olympia oyster populations." *Ecological Applications.* 30(3):02060 (2019). https://doi.org/10.1002/eap.2060
3. Foley HB, Sun PY, Ramirez R, So BK, **Venkataraman YR**, Nixon EN, Davies KJA, Edmands S. "Sex-specific stress tolerance, proteolysis, and lifespan in the invertebrate *Tigriopus californicus*." *Experimental Gerontology.* 119:46-56 (2019). https://doi.org/10.1016/j.exger.2019.02.006
2. Spencer LH, Horwith M, Lowe AT, **Venkataraman YR**, Timmins-Schiffman E, Nunn BL, Roberts SB. "Pacific geoduck (*Panopea generosa*) resilience to natural pH variation." *Comparative Biochemistry and Physiology Part D: Genomics and Proteomics* 30:91-101 (2019). https://doi.org/10.1016/j.cbd.2019.01.010
1. **Venkataraman YR**, Timmins-Schiffman E, Horwith M, Lowe AT, Nunn BL, Vadopalas B, Spencer LH, Roberts SB. "Characterization of proteomic response to natural environmental differences in the Pacific oyster (*Crassostrea gigas*)." *Marine Ecology Progress Series.* 610:65-81 (2019). https://doi.org/10.3354/meps12858

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Community resources

2. Manafzadeh A*, Navon D*, **Venkataraman YR***, Millward JK, Khan F, Ashiru O (2024). DNA Genotype-phenotype associations: What are they and how do they relate to broader society? Resources for Inclusive Evolution Education, QUBES Educational Resources. https://doi.org/10.25334/MWZF-D038
1. **Venkataraman YR**, Greiner-Ferris K, White SJ, Roberts SB (2024). DNA Methylation Assessment. MarineOmics. https://marineomics.github.io/FUN_02_DNA_methylation.html

Presentations

Invited Talks (= nominated by graduate students)*

2025 Santa Clara University, CA, USA

2024 University of Rhode Island Biological and Environmental Sciences Graduate Program, RI, USA*
Mount Holyoke Department of Biological Sciences, MA, USA
Bigelow Laboratory for Ocean Sciences, ME, USA
Colby College, ME, USA

2023 UMass Amherst Department of Biology, MA, USA

2022 UMass Dartmouth School for Marine Science and Technology, MA, USA
Epigenetics in Marine Biology Conference, Woods Hole, MA, USA

2021 The Chew Series: Recent Advances in Shellfish Aquaculture Research, University of Washington School of Aquatic and Fishery Sciences, WA, USA
Regional Climate Resilience and Mitigation Seminar Series, University of Washington Tacoma, WA, USA

2020 Summer Virtual Seminar Series, Friday Harbor Laboratory, WA, USA

2019 Huxley Speaker Series, Western Washington University, WA, USA
School of Aquatic and Fishery Sciences 100 Year Celebration and 2019 Bevan Symposium, WA, USA https://youtu.be/8TbcVPMdo1w

Contributed Talks (= poster presentation, † = undergraduate author)*

15. **Venkataraman YR**, Shapiro S, Zuidema S, Freitas H†, Kelso J†, Payne C†, Stephenson L†, Tepolt CK, *Mechanisms associated with short-term thermal acclimation in European green crab (*C. maenas*)* (Society for Integrative and Comparative Biology 2025)
14. Payne C†, **Venkataraman YR**, Tepolt CK, *Has the European green crab (*Carcinus maenas*) benefited from parasite escape in North America?* (Society for Integrative and Comparative Biology 2025) *
13. Freitas H†, **Venkataraman YR**, Tepolt CK, *Examining population differences in cold tolerance between invasive European green crabs (*Carcinus maenas*) from Massachusetts and Washington* (Woods Hole Summer Student Symposium 2024) *
12. **Venkataraman YR**, Shapiro S, Zuidema S, Calloway V†, Kelso J†, Newbrey M†, Stephenson L†, Tepolt CK, *Investigating genomic and plastic contributions to thermal tolerance in a*

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non-indigenous crab (Society for Experimental Biology 2024) * https://doi.org/10.48448/mzjs-7178

11. Kelso J†, **Venkataraman YR**, Tepolt CK, *Impact of Individual Plasticity and Genotype on* C. maenas *Heat Wave Response* (Society for Integrative and Comparative Biology 2024) Division of Comparative Physiology & Biochemistry Best Student Poster Award *
10. **Venkataraman YR**, Shapiro S, Zuidema S, Kelso J†, Newbrey M†, Stephenson L†, Tepolt CK, *Investigating genomic and plastic contributions to thermal tolerance in a non-indigenous crab* (Society for Integrative and Comparative Biology 2024)
9. **Venkataraman YR**, Shapiro S, Zuidema S, Kelso J†, Newbrey M†, Stephenson L†, Tepolt CK, *Investigating the basis of thermal tolerance of a rapidly spreading crab* (PICES Conference 2023) Early Career Ocean Professional Best Oral Presentation Award
8. Stephenson L†, **Venkataraman YR**, Tepolt CK, *Understanding the Effect of Salinity on Green Crab Biochemical Pathways* (Partnership Education Program Summer Symposium 2023)
7. **Venkataraman YR**, *Evolved pollutant-resistance shapes methylation and gene expression responses to hypoxia in Atlantic killifish* (Fundulus heteroclitus) (APS Comparative Physiology Meeting 2022)
6. **Venkataraman YR**, Haws M, White SJ, Thiyagarajan V, Roberts SR, *Polyploidy and environmental stress have distinct impacts on Pacific oyster (*Crassostrea gigas*) ctenidia methylomes* (Plant and Animal Genome Conference Aquaculture Workshop 2022)
5. **Venkataraman YR**, Downey-Wall A, Lotterhos K, Roberts SB, *Influence of ocean acidification on eastern (*Crassostrea virginica*) and Pacific oyster (*Crassostrea gigas*) DNA methylation* (Ocean Sciences Meeting 2020) https://doi.org/10.6084/m9.figshare.11868231.v1 *
4. **Venkataraman YR** and Roberts SB, *Influence of Ocean Acidification on Pacific Oyster (*Crassostrea gigas*) DNA Methylation* (Pacific Coast Shellfish Growers Association 2019; Western Society of Naturalists 2019)
3. **Venkataraman YR**, Spencer LH, Roberts SB, *Adult low pH Exposure Influences Larval Abundance in Pacific Oysters (*Crassostrea gigas*)* (Western Society of Naturalists, November 2018; National Shellfisheries Association 2018)
2. **Venkataraman YR**, Roberts SB, *Influence of Ocean Acidification on Eastern oyster (*Crassostrea virginica*) reproductive tissue* (Pacific Growers Shellfish Growers Association 2018). Honorable Mention for Best Student Presentation Award
1. **Venkataraman YR**, Roberts SB, Timmins-Schiffman E, *Exploring Proteomic Variation in Pacific Oysters* (Western Society of Naturalists 2017)

Teaching and Mentorship

Instructor of Record

The Settler-Colonial and White Supremacist History of Aquatic and Fishery Sciences (Spring 2021)

- Co-created graduate seminar recognizing how colonialism and white supremacy shape the field and addressing this context in research
- Acquired University of Washington Diversity Seed Grant funding for course
- Successfully lobbied for this course to be required for future Aquatic and Fishery Science graduate students as part of introductory coursework

Outreach in Aquatic and Fishery Sciences to Diverse Audiences (Spring 2018)

- Co-planned and taught a class to empower graduate students to engage in outreach
- Presented core concepts and language around diversity, equity, and inclusion in the sciences and scientific education
- Helped students develop outreach activities for middle school students from communities historically faced with barriers to participation in science

Teaching Assistant

Bioinformatics for Environmental Sciences (Winter 2021)

- Worked with team to teach bioinformatics over Zoom during COVID-19 pandemic
- Answered student questions about specific analyses (ex. RNA-Seq, metabarcoding) during class and in course Github page
- Helped students develop open science and coding skills
- Was not an official teaching assistant, but was requested to take on an informal teaching assistant role to aid with virtual instruction

Integrative Environmental Physiology (Spring 2020)

- Worked with virtual teaching team to facilitate discussions and implement active learning classroom structure over Zoom during COVID-19 pandemic
- Developed creative project guidelines for undergraduate and graduate students
- Was not an official teaching assistant, but was requested to take on an informal teaching assistant role to aid with virtual instruction

Marine Biology (Fall 2019)

- Facilitated an active learning classroom in an undergraduate marine biology course for majors and non-majors with a teaching team
- Organized, developed, and taught two weekly lab sessions and field trips
- Prepared an active learning-style lecture on ocean acidification as part of the course

Advanced Topics in Ecology and Biomechanics (Summer 2019)

- Worked with professors to teach Ecology of Infectious Marine Diseases at Friday Harbor Laboratories
- Coordinated and ran lab sessions and field excursions, and led student groups for final class projects (Venkataraman et al. 2023, *Frontiers in Marine Science*)
- Taught basic genomic analysis methods and open science skills (https://github.com/eimd-2019/tutorials)
- Created science communication course module, which included helping students create blog posts and short presentations

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Guest Lectures

- **Environmental Bioinformatics** (Woods Hole Oceanographic Institution, December 2023): Lecture and coding workshop on epigenetic analysis in marine organisms
- **Molecular Methods** (University of Padova, December 2022): Lecture on application of epigenetics in marine systems and career paths
- **Molecular Ecology** (Woods Hole Oceanographic Institution, November 2022): Lecture on epigenetics in marine organisms

Mentorship

- **Jasmine Kohler** (Cape Cod Community College, Blue Economy Internship at WHOI)
- **Catlin Payne** (University of Massachusetts, Boston, Woods Hole Partnership Education Program at WHOI)
- **Heidi Freitas** (University of Massachusetts, Boston, Community College Research Experiences at WHOI)
- **Vanessa Calloway** (Cape Cod Community College, Blue Economy Internship at WHOI)
- **Julia Kelso** (Cornell University, Summer Student Fellowship at WHOI)
- **Lauren Stephenson** (St. Augustine College, Woods Hole Partnership Education Program at WHOI)
- **Mikayla Newbrey** (Cape Cod Community College, Community College Research Experiences at WHOI)
- **Lorraine Lee** (University of Washington Program on the Environment Capstone Student, Students Explore Aquatic Sciences Intern)
- **Maureen Muñoz** (University of California, Berkeley, Society of Women in Marine Science Mentorship Program)
- **Vanessa Morales** (Missouri State University, Científico Latino Graduate Student Mentorship Initiative)
- **Confidential**: Three graduate students (University of Washington, School of Aquatic and Fishery Sciences Peer Mentor Program), one undergraduate student (University of Washington, College of the Environment Interdisciplinary Mentorship Program), one graduate student and one postdoc (Women of Color in Ecology and Evolutionary Biology Mentorship Program)

Service

Leadership

- **Resources for Inclusive Evolution Education (RIE2) Leadership Team** (July 2023-Present): Leading effort to create a central resource (wiki) to educate scientists and improve undergraduate biology education by clarifying core concepts in evolutionary biology and providing relevant historical context. Obtained funding from scientific societies (AGA, GSA, SMBE) and organized working groups to create inclusive, publicly-available lesson plans on adaptation, genotype-phenotype associations,

phenotypic plasticity, natural selection, and genetic drift. Established partnerships with Drs. Banu Subramaniam and Angela Google to provide science-technology studies and biology education perspectives on working group products. https://qubeshub.org/community/groups/rie2

- **Epigenetics in Marine Biology Conference (EPIMAR) Organizational Committee** (October 2021-October 2022)
- **Woods Hole Oceanographic Institution Postdoctoral Association**: Governing Council Member (November 2021-December 2022)
- **Western Society of Naturalists Student Committee**: Co-Chair (November 2019-November 2020), Member (October 2018-November 2019)
- **School of Aquatic and Fishery Sciences Fisheries Interdisciplinary Network of Students**: President (June 2017-June 2020)

Scientific Publishing and Funding

- **Peer Review**: Aquaculture (1), Biological Bulletin (1), Ecological Applications (2), Evolutionary Applications (5), Genomics (1), ICES Journal of Marine Science (1), Integrative and Comparative Biology (1), Journal of Experimental Biology (1), Journal of Heredity (1), Journal of Oceanology and Limnology (1), Journal of Thermal Biology (1), Molecular Ecology (7), PLOS Biology (1), PLOS Climate (1), PLOS One (1), Scientific Data (1)
- **Assistant Editorship**: Integrative and Comparative Biology
- **Grant Proposal Review**: NSF Integrative Ecological Physiology (2025), Genome British Columbia GeneSolve Program (2023), Ravoltain Foundation (2022), Dr. Nancy Foster Scholarship Program Applications (2017)

Community Engagement

Committee for Diversity and Inclusion Undergraduate Working Group: Member (September 2022-September 2024)

- Collaborated on a proposal for a new one-week program to bring systemically-excluded students to Woods Hole for a professional development program

Students Explore Aquatic Sciences: Founding Member (August 2017-June 2021)

- Founded community engagement organization with staff and graduate students
- Taught aquatic science lessons in classrooms and summer camps
- Worked with teachers from Jane Addams Middle School and undergraduate capstone student Lorraine Lee to teach a week-long science course May 2019, including generation of a Shiny App (https://sthurner.shinyapps.io/oav1/) *
- Joined Board of Directors Fall 2020 and worked to create a sustainable virtual community engagement program in response to COVID-19 pandemic