Yaamini R. Venkataraman

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Summary of Qualifications

- Marine Biologist with 7 years of experience, scientific contributions to marine genomics and physiology, and expertise in science communication and community engagement
- Experienced in analyzing large datasets arising from a variety of genomic analysis methods to understand organismal response to climate change
- Well-versed in written and oral communication, ranging from peer-reviewed scientific journal articles, conducting peer reviews, and conference presentations to general interest articles, public talks, and experience in teaching effective science communication to others
- Demonstrated leadership ability by managing various teams and projects, and collaboration by working with partners in academia, government agencies, industry, and non-profit organizations
- Exhibited a commitment to diversity, equity, and inclusion by spearheading a community engagement organization and organizing peers to provide feedback to administrative bodies to improve governance around these issues

Education

University of Washington, Seattle (September 2016-Present)

- Ph.D in Aquatic and Fishery Sciences (expected June 2021)

University of California, San Diego (Summa Cum Laude; September 2012-June 2016)

- B.S. General Biology (with Honors)
- B.A. Environmental Systems: Environmental Policy

Experience

University of Washington School of Aquatic and Fishery Sciences: Graduate Student Researcher (September 2016-Present)

- **Dissertation**: Epigenetic contribution to intergenerational ocean acidification responses in congeneric oyster species (*Crassostrea spp*.) (Adviser: Dr. Steven Roberts)
- Identified differentially abundant proteins in Pacific oysters outplanted in different estuarine conditions in collaboration with Washington Department of Natural Resources and other UW departments
- Lead hatchery experiments subjecting Pacific oysters to low pH conditions with Puget Sound Restoration Fund and Pacific Hybreed
- Catalogued reproductive development in Pacific oysters using histological methods
- Analyzed epigenetic marks induced by ocean acidification in eastern oysters in collaboration with Lotterhos Lab at Northeastern University
- Compared pH-sensitive methylation and gene expression changes in Pacific and eastern oyster adults and offspring to understand intergenerational stress responses
- Prepared samples for either proteomic, gene expression, methylation, or chromatin assays, and analyzed subsequent large molecular datasets
- Developed, implemented, and evaluated library preparation and bioinformatic workflows to analyze genome-wide methylation datasets of two coral species

University of California, San Diego: Undergraduate Student Researcher

- **Biological Sciences Senior Honor Thesis**: Effect of Low pH on Growth and Feeding Quantity in the Surfgrass Limpet (September 2015-June 2016; Advisers: Drs. Kaitlyn Lowder and Jennifer Taylor):

Conducted low pH experiment and feeding trials with surfgrass limpets. Assisted with limpet collection and eelgrass bed water chemistry monitoring at La Jolla Cove. Responsible for animal husbandry

- **Lab Assistant** (April 2013-December 2013, Adviser: Dr. Ronald Burton): Examine copepod life history traits linked to mitochondrial DNA to discern if speciation had occurred between different populations
- **Phage Genomics Research Initiative** (September 2012-June 2013, Adviser: Drs. Joe and Kit Pogliano): Isolated a novel bacteriophage from soil and identified protein and RNA coding regions in the genome

Smithsonian Environmental Research Center: Research Experiences for Undergraduates (June 2015-August 2015)

- **Project**: Mean Residence Time of Carbon in an Experimental Tidal Wetland (Advisers: Drs. Blanca Bernal and Patrick Megonigal)
- Calculated residence time of new recalcitrant carbon inputs into a wetland ecosystem at the Global Change Research Wetland (G-CREW), an experimental wetland
- Processed marsh plant samples and prepared for gas chromatography analysis
- Contributed to long-term dataset by assisting with yearly marsh plant harvest and data collection

Wrigley Institute for Environmental Studies: Research Experiences for Undergraduates (June 2014-August 2014)

- **Project**: Effects of Shading on Environmental Parameters, *Tigriopus californicus* population dynamics, and copper tolerance (Advisers: Drs. Patrick Sun and Suzanne Edmands)
- One of 11 students selected from 275 applicants involved in an NSF-funded research internship
- Conducted an independent research project examining the impact of different levels of shade on environmental parameters and copepod mortality
- Further connected the impact of shade on copper toxin tolerance, a relevant issue for coastal California and high-traffic boating areas
- Selected as the sole representative of the program to present at the 2016 Ocean Sciences Meeting

Publications

1. Trigg SA*, **Venkataraman YR***, Gavery M, Roberts SB, Downey-Wall AM, Puritz JM, Eirin-Lopez JM, Lotterhos KE, Putnam HM, “Performance of bisulfite sequencing methods in invertebrates” *in prep*. (* = equal contribution)
2. 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” *in prep*. (* = equal contribution)
3. 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*)” *Front. Mar. Sci.* (in press) https://doi.org/10.3389/fmars.2020.566419
4. **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*)” *Front. Mar. Sci.* 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*)” *J. Shellfish Res.* 38(3):743-750 (2019). https://doi.org/10.2983/035.038.0325
6. 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” *Ecol. Appl.* 30(3):02060 https://doi.org/10.1002/eap.2060

7. 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*." *Exp. Gerontol.* 119:46-56 (2019). https://doi.org/10.1016/j.exger.2019.02.006
8. Spencer LH, Horwith M, Lowe AT, **Venkataraman YR**, Timmins-Schiffman E, Nunn BL, Roberts SB. "Pacific geoduck (*Panopea generosa*) resilience to natural pH variation." *Comp. Biochem. Physiol. Part D: Genomics Proteomics* 30:91-101 (2019). https://doi.org/10.1016/j.cbd.2019.01.010
9. **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)*." *Mar. Ecol. Prog. Ser.* 610:65-81 (2019). https://doi.org/10.3354/meps12858

Presentations

1. **Venkataraman YR** *Oysters, Ocean Acidification, and -Omics* (Huxley Speaker Series, Western Washington University, December 2019; Summer Virtual Seminar Series, Friday Harbor Laboratory, June 2020)
2. **Venkataraman YR**, Downey-Wall A, Lotterhos K, Roberts SB *Influence of ocean acidification on eastern (Crassostrea virginica) and Pacific oyster (Crassostrea gigas) DNA methylation* (Poster, Ocean Sciences Meeting 2020, February 2020) https://doi.org/10.6084/m9.figshare.11868231.v1
3. **Venkataraman YR** *Multidimensional Training for Multidimensional Graduate Students: Better Preparing Tomorrow's Leaders* (School of Aquatic and Fishery Sciences 100 Year Celebration and 2019 Bevan Symposium, April 2019) https://youtu.be/8TbcVPMdo1w
4. **Venkataraman YR** and Roberts SB, *Influence of Ocean Acidification on Pacific Oyster (Crassostrea gigas) DNA Methylation* (Pacific Coast Shellfish Growers Association, September 2019; Western Society of Naturalists, November 2019)
5. **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, March 2018)
6. **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
7. **Venkataraman YR**, Roberts SB, Timmins-Schiffman E *Exploring Proteomic Variation in Pacific Oysters* (Western Society of Naturalists, November 2017)
8. **Venkataraman YR**, Sun PY, Edmands S, *Effects of Shading on Environmental Parameters,* Tigriopus californicus *population dynamics, and copper tolerance* (Ocean Sciences Meeting 2016)

Grants and Awards

- College of the Environment Outstanding Diversity Commitment (May 2019)
- University of Washington Husky 100 (April 2019)
- Pacific Coast Shellfish Growers Association: Honorable Mention for Best Student Presentation (September 2018)
- National Science Foundation Graduate Research Fellowships Program (May 2018-Present)
- Hall Conservation Genetics Research Award (March 2017)
- School of Aquatic and Fishery Sciences Fellowship (September 2016)
- Division of Biological Sciences Distinction (June 2016)
- Physical Sciences Dean's Undergraduate Award of Excellence (May 2015)

Professional Service

Reviewer

- Peer Review for Evolutionary Applications (1), ICES Journal of Marine Science (1), Ecological Applications (1), Molecular Ecology (1)
- Application Reviewer for Dr. Nancy Foster Scholarship Program (2017)

Western Society of Naturalists Student Committee: Co-Chair (November 2019-Present), Member (October 2018-November 2019)

- Organized the Thursday Workshop for the 2019 meeting about mental health in academia
- Committee co-chair for 2020 meeting responsible for delegating roles to committee members and coordinating with WSN Secretariat
- Collaborated with WSN Secretariat and Diversity, Equity, and Inclusion Committee to improve conference atmosphere and create intentional mentoring and networking opportunities for the 2020 virtual conference

Teaching and Mentorship

FISH 441/551: 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 undergraduates, and separate guidelines for graduate students

FISH/OCEAN/BIOL 250: 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, as well as field trip experiences
- Prepared an active learning-style lecture on ocean acidification as part of the course

FHL 568: Advanced Topics in Ecology and Biology (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 lead student groups for final class projects
- 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

FISH 508: 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

Letters to a Pre-Scientist: Scientist penpal (September 2018-June 2020)

- Wrote letters to a middle school penpal each school year to demonstrate that STEM professionals are diverse and foster a curiosity about STEM careers
- Engaged with my penpal's interests to humanize myself as a scientist and connect with them on a deeper level

NSF Graduate Research Fellowship Program (GRFP) Application Workshop: Mentor (Fall 2018, Fall 2019, Fall 2020)

- Helped 2-3 undergraduate and graduate students write and apply for the NSF GRFP each year

Students Mentored

- Lorraine Lee (University of Washington Program on the Environment Capstone Student, Students Explore Aquatic Sciences Intern)
- Three graduate students (University of Washington, School of Aquatic and Fishery Sciences Peer Mentor Program, confidential), one undergraduate student (University of Washington, College of the Environment Interdisciplinary Mentorship Program, confidential)
- Maureen Muñoz (University of California, Berkeley, Society of Women in Marine Science Mentorship Program)

Community Engagement

Activities marked with an asterisk (*) are related to my research on oysters and ocean acidification.

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

- Founded departmental community engagement organization with staff and graduate students
- Worked with teachers from Jane Addams Middle School and a Program on the Environment 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 following organizational restructuring and worked to create a sustainable virtual community engagement program in response to COVID-19 pandemic

Fisheries Interdisciplinary Network of Students: President (June 2017-June 2020)

- Liaison between graduate students, faculty, and administration
- Increased student participation in the organization by restructuring organization to meet student needs
- Focused on improving diversity, equity, and inclusion within the department by coordinating graduate student focus groups to bring concerns to administration and starting work campaigns

National Center for Science Education: **Scientist in the Classroom** (January 2017-August 2017) *

- Taught sixth and seventh-graders about climate change impacts in the Puget Sound region during two in-class visits
- Developed curriculum with science teacher so it could be taught independently

One-day Events

North Cascades Institute Graduate Student Panelist (February 10, 2017), Scientist of the Month at The Evergreen School* (December 14, 2017; December 13, 2018; January 23, 2020, November 20, 2020), Seattle Youth Climate Action Summit Graduate Student Panelist (October 28, 2017), Seattle Climate Action Now Lab Tour Host* (July 26, 2017), Robert Eagle Staff Middle School Guest Teacher (February 6, 2018), UW Botanical Gardens Summer Camp Activity Facilitator (August 22, 2018), Refugee Women's Alliance Summer Camp Activity Facilitator (August 24, 2018), Climate Science on Tap Guest Scientist* (August 28, 2018), Skype-a-Scientist* (May 28, 2017, October 24, 2018, January 31, 2020), EarthTones Podcast Guest* (January 16, 2019, https://lnns.co/HXGS9khCxYr), Sound Waters University Invited Teacher* (February 2, 2019), Public Talk at Town Hall Seattle* (April 23, 2019), Keynote at Shorewood High School STEAM Expo* (May 16, 2019)

Communication Experience

Engage: Board Member (September 2019-Present)

- Lead organization committed to providing science communication education for STEM graduate students at the University of Washington

- Provided feedback on the graduate student science communication course taught annually, as well as graduate student presentations for Town Hall Seattle
- Worked with College of the Environment administration and Board Members to create plan for future of organization, including the development of a second graduate student course
- Created science communication workshops for various conferences (ex. AAAS, Science Talk)

ComSciCon-PNW Organizer (September 2017-September 2019)

- Responsible for recruiting panelists, selecting participants, organizing workshops, securing donations, and coordinating day-of logistics for a graduate-student run conference focused on bolstering science communication skills for other STEM graduate students

NOAA Office of National Marine Sanctuaries: Social Media Volunteer Intern (April 2017-April 2020)

- Spearheaded a written series highlighting graduate students in the Dr. Nancy Foster Scholarship Program
- Curated social media content for the Earth Is Blue campaign for Facebook, Instagram, and Twitter
- Wrote scripts for Earth Is Blue videos