

Stephanie I. Anderson

SIMONS FOUNDATION POSTDOCTORAL FELLOW

Massachusetts Institute of Technology Department of Earth, Atmospheric, and Planetary Sciences

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Education

Ph.D. Oceanography

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2015-2021

- Dissertation: Phytoplankton thermal responses as drivers of community composition and biogeography in a changing environment
- Advisor: Dr. Tatiana Rynearson

Single Subject Teaching Credential

Los Angeles, CA

LOYOLA MARYMOUNT UNIVERSITY

2012-2013

B.A. Molecular, Cellular, and Developmental Biology

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER | *magna cum laude*

2008-2012

- Thesis: Identifying Purification and Storage Techniques for the Human Papillomavirus Type 16 Major Capsid Protein L1
- Advisor: Dr. Robert Garcea, M.D.

Research Appointments

Simons Foundation Postdoctoral Fellow

Cambridge, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

2021-Present

- Advisor: Dr. Stephanie Dutkiewicz

Postdoctoral Associate

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

06/2021 - 09/2021

- Advisor: Dr. Tatiana Rynearson

Graduate Research Assistant

Narragansett, RI

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

2015-2021

- Advisor: Dr. Tatiana Rynearson

Departmental Honors Research

Boulder, CO

UNIVERSITY OF COLORADO AT BOULDER

2011-2012

- Advisor: Dr. Robert Garcea, M.D.

Fellowships & Awards

2022	Ocean Carbon and Biogeochemistry Travel Award , (\$1,250)	Cambridge, MA
2021	Simons Foundation Postdoctoral Fellowship in Marine Microbial Ecology , (\$258,418)	Cambridge, MA
2019	Davis Family Endowed Scholarship for Fisheries Oceanography , (\$3650)	Narragansett, RI
2019	Turner Designs Student Award , (\$500), Travel award	Narragansett, RI
2019	University of Rhode Island Alumni Award , (\$1,000), Travel award	Narragansett, RI
2018	Ann Durbin Memorial Award , (\$462), For excellence in biological oceanography	Narragansett, RI
2016	University of Rhode Island Alumni Award , (\$1,000), Travel award	Narragansett, RI
2013	Segal AmeriCorps Education Award , (\$11,000) Dedication to the Teach for America program	Los Angeles, CA
2013	Teacher of the Month , Manual Arts High School	Los Angeles, CA
2012	Departmental Honors , University of Colorado at Boulder	Boulder, CO
2010	National Society of Collegiate Scholars , National Honors Society	Boulder, CO

Publications

Manuscripts in review or in preparation:

Kling J., Lee M.D., Webb E.A., Coelho J.T., Wilburn P., **Anderson S.I.**, Zhou Q., Wang C., Phan M.D., Kremer C.T., Litchman E., Ryneerson T.A., Hutchins D.A. Dual thermal ecotypes co-exist within a nearly genetically identical population of the unicellular marine cyanobacterium *Synechococcus*. (*submitted to PNAS*).

Franzè G., **Anderson S.I.**, Kling J.D., Kremer C.T., Hutchins D.A., Litchman E., Ryneerson T.A., Menden-Deuer S., Synergetic effects of nutrient and temperature on a natural plankton community. (*submitted to Limnology and Oceanography*).

Anderson S.I., Franzè G., Kling J.D., Kremer C.T., Hutchins D.A., Litchman E., Menden-Deuer S., Ryneerson T.A. Short-term temperature and nutrient perturbations alter phytoplankton community structure. (*in prep*).

Anderson S.I., Fronda, C., Barton A.D., Clayton S., Ryneerson T.A., Dutkiewicz S. Varied thermal dependencies lead to increased phytoplankton diversity and more realistic community structure in Earth System Models. (*in prep*).

Peer-reviewed publications:

Bishop I.W., **Anderson S.I.**, Collins S., Ryneerson T.A. (2022), Thermal trait variation may buffer Southern Ocean phytoplankton from anthropogenic warming. *Global Change Biology*, 00, 1– 13. <https://doi-org.libproxy.mit.edu/10.1111/gcb.16329>.

Anderson S.I., Franzè G., Kling J.D., Wilburn P., Kremer C.T., Hutchins D.A., Litchman E., Menden-Deuer S., Ryneerson T.A. (2022), The Interactive Effects of Temperature and Nutrients on a Spring Phytoplankton Community. *Limnology and Oceanography*. doi: <https://doi.org/10.1002/lno.12023>

Anderson S.I., Barton A.D., Clayton S., Dutkiewicz S., Ryneerson T.A. (2021), Marine Phytoplankton Functional Types Exhibit Diverse Responses to Thermal Change. *Nature Communications*. doi: <https://doi.org/10.1038/s41467-021-26651-8>

Anderson S.I., Ryneerson T.A. (2020), Variability Approaching the Thermal Limits Drives Diatom Community Dynamics. *Limnology and Oceanography*. doi: <https://doi.org/10.1002/lno.11430>

Non-refereed publications:

Anderson S.I., McDuffie K., Menezes S. (2020), Science Communication for Natural Resource Managers: Techniques and Examples in Marine Systems. *The Handbook of Natural Resources: Coastal and Marine Environments*, 5, 143-149.

Anderson S.I. "Identifying Purification and Storage Techniques for the Human Papillomavirus Type 16 Major Cap-sid Protein L1" (2012). *Molecular, Cellular, and Developmental Biology Undergraduate Contributions*. Available at: https://scholar.colorado.edu/mcdb_ugrad/1

Invited Seminars

Ocean Seminar, February 2022, University of Liverpool – Liverpool, England

Conference Presentations

Anderson S.I., Barton A.D., Clayton S., Dutkiewicz S., and Ryneerson T.A.. Marine Phytoplankton Functional Types Exhibit Diverse Responses to Thermal Change. Fifth Traits Meeting, Knoxville, TN. January 2022.

Anderson S.I., Franzè G., Kling J., Kremer C., Menden-Deuer S., Litchman E., Hutchins D., and Ryneerson T.A.. Plankton Shuffle: Temperature-Nutrient Interplay Restructures Phytoplankton Community. ASLO, Virtual. June 2021.

Anderson S.I., Barton A.D., Clayton S., Dutkiewicz S., and Ryneerson T.A.. Changing Rates and Shifting Ranges: Assessing the Phytoplankton Global Response to Ocean Warming. Ocean Sciences, San Diego, CA. February 2020.

Bishop I., **Anderson S.I.**, Collins S., and Ryneerson T.A.. Intraspecific Variability in Thermal Tolerance Buffers Southern Ocean Diatoms from Biogeographic Range Contraction in a Warming Ocean. Ocean Sciences, San Diego, CA. February 2020.

Anderson S.I., Kling J., Kremer C., Franzè G., Hutchins D., Litchman E., Menden-Deuer S., and Ryneerson T.A.. Winners and Losers in a Changing Tide: Temperature-Nutrient Impact on Phytoplankton Community Dynamics. ASLO, San Juan, Puerto Rico. February 2019.

Kling J., Phan M., Fu F., **Anderson S.I.**, Franzè G., Wilburn P., Kremer C., Litchman E., Ryneerson T.A, and Hutchins D.. Thermal Diversity in a Coastal Marine *Synechococcus* Community Selected Under Low and High Temperatures. ASLO, San Juan, Puerto Rico. February 2019.

Anderson S.I. and Ryneerson T.A.. Life at the Edge: Physiology at the Thermal Limits Drives Diatom Community Dynamics. RI NSF EPSCoR Research Symposium, Kingston, RI. April 2018.

Franzè G., **Anderson S.I.**, Kremer C., Kling J., Wilburn P., Hutchins D., Litchman E., Ryneerson T.A, Menden-Deuer S.. Direct and indirect effects of temperature and nutrient on plankton community dynamics. Ocean Sciences, Portland, Oregon. February 2018.

Anderson S.I., Ryneerson T.A.. Thermal traits and community structure in diatoms. Trait-Based Approaches to Ocean Life, Bergen, Norway. August 2017.

Anderson S.I., Ryneerson T.A.. In hot water? Thermal trait variability among diatom species. RI NSF EPSCoR Research Symposium, Providence, RI. April 2017.

Anderson S.I., Ryneerson T.A.. Thermal trait variability in seasonally differentiated morphologically cryptic diatom species. ASLO, Honolulu, HI. March 2017.

Canesi K.L., Ryneerson T.A., **Anderson S.I.** New Methods and an old time series reveal temporal trends in diversity among morphologically cryptic diatom species. ASLO, Honolulu, HI. March 2017.

Teaching Experience

Graduate Teaching Assistant

GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

- Teaching Assistant for graduate level Biological Oceanography

Narragansett, RI

2018-2019

AP Science and Math Tutor

C2 EDUCATION

- Prepared students for AP and college entrance exams through personalized instruction.

Los Angeles, CA

2015

High School Chemistry Teacher

TEACH FOR AMERICA

- Joined highly selective national teacher corps and committed two years to teaching in under-resourced public schools.
- Developed and implemented science curriculum for 250 students that resulted in 68% of students passing statewide end-of-year assessment; a 20% increase from the previous year.

Los Angeles, CA

2012-2014

Undergraduate Biology Teaching Assistant

UNIVERSITY OF COLORADO AT BOULDER

- Facilitated student discussion during undergraduate lectures and led exam review sessions.

Boulder, CO

2011-2012

Calculus Learning Assistant

UNIVERSITY OF COLORADO AT BOULDER

- Led recitation sessions each week and guided students through new course material.

Boulder, CO

2011

Community Engagement

2021	URI Teaching Assistant Training Workshop , Speaker on Teaching Assistant Panel	<i>Narragansett, RI</i>
2019-2020	Summer Undergraduate Research Fellowship in Oceanography (SURFO) , Presented Biological Oceanography Introductory Lecture	<i>Narragansett, RI</i>
2017-2019	Narragansett Bay Classroom , Lead summer outdoor explorations for K-12 students	<i>Narragansett, RI</i>
2019	Hamilton Elementary , Engaged elementary students in ocean density lesson	<i>North Kingston, RI</i>
2019	Society for Women in Marine Science (SWMS) , Graduate school panel	<i>Kingston, RI</i>
2016-2019	METCALF Annual Science Immersion Workshop for Journalists , Assisted with lesson on reading scientific literature and engaging in scientific methods	<i>Narragansett, RI</i>
2018	Northwest Passage Project , Presented lesson on Arctic plankton to visiting high school students	<i>Narragansett, RI</i>
2018	Women in Marine Science , Exhibit Presenter at Mystic Aquarium	<i>Mystic, CT</i>
2018	4-H Teen Science Cafe , Presented potential career paths in oceanography to middle school students	<i>Exeter, RI</i>
2018	Bay-Informed Discussion Series , Community presentation on the importance of marine microbes	<i>Narragansett, RI</i>
2017-2018	URI Graduate School of Oceanography Open House , Led interactive DNA extraction demonstrations for the public	<i>Narragansett, RI</i>
2016-2017	Bio-at-Noon Seminar Series Organizer , Organize seminar series that brings outside scientists for informal discussion at the Graduate School of Oceanography	<i>Narragansett, RI</i>

2016	Ocean Sciences Bowl , Assisted in grading at regional high school oceanography competition	Avery Point, CT
2016	Girls Reaching Remarkable Levels (GRRL) Tech , Led phytoplankton microscopy lab for high school girls	Kingston, RI
2016	Teach for America, RI , Engaged elementary school students and teachers in lessons about the ocean, including food webs and phytoplankton	Providence, RI
2016	Rhode Island Educators Cruise , Directed Rhode Island science teachers in field research aboard the R/V Endeavor	Narragansett, RI

Mentorship

During my doctoral studies, I mentored three summer undergraduate research fellows through the completion of their research projects, later presented at research symposiums. Projects included examining the thermal responses of phytoplankton, engineering a new method for phytoplankton growth assessment, and examining temperature driven lineage sorting using microsatellites.

Research Cruises

2018	AE1812 , R/V Atlantic Explorer (14 days); Chief Scientist: Dr. Tatiana Rynearson	Bermuda to Narragansett, RI
2017	Phosphorus Hydrocarbon And Transcriptomics (PHAT); AR16 , R/V Neil Armstrong (19 days); Chief Scientist: Dr. Benjamin Van Mooy	Woods Hole to Bermuda
2016-2017	Antarctic Diversity Among Plankton and their Transformations (ADAPT); NBP17-01 , R/V Nathaniel B. Palmer (29 days); Chief Scientist: Dr. Tatiana Rynearson	Southern Ocean Transect

Skills and Certifications

Certifications:	Single Subject Teaching Credential
Computation:	R (fluent), Python and IPython Notebook (proficient), Matlab and C++ (basic), SQL (familiar)
Machine Learning:	Regression Analysis, Clustering (e.g. k-means), Time-Series Analysis, Classification (e.g. decision trees)
Software:	LaTeX
Laboratory Techniques:	Molecular: DNA extraction, PCR, Sanger sequencing, microsatellites
	Other: Aseptic cell culturing, Microscopy, Plankton taxonomy, CHN Analysis, Chlorophyll extraction, Flow Cytometry, Ship-board sampling and sample processing (preservation)
Workshops:	ANGUS Next Generation Sequence Analysis Workshop, UC Davis, Summer 2017
Memberships:	Association for the Sciences of Limnology and Oceanography Society for Women in Marine Science
Reviewer:	Limnology and Oceanography, Limnology and Oceanography Letters