ELIZABETH A. SUTER, PhD

Curriculum vitae

Assistant Professor of Environmental Science
Biology, Chemistry and Environmental Studies (BCES) Department
Molloy College

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EDUCATION

2016	Ph.D. Marine and Atmospheric Sciences School of Marine and Atmospheric Sciences at Stony Brook University, SUNY
2011	M.S. Marine and Atmospheric Sciences School of Marine and Atmospheric Sciences at Stony Brook University, SUNY
2009	B.A. Environmental Studies; Minor: Mathematics Macaulay Honors College at Hunter College, CUNY

WORK EXPERIENCE

Aug. 2019 – Present	Assistant Professor, Biology Chemistry and Environmental Studies Department (BCES) & Research Affiliate, Center for Environmental Research & Coastal Oceans Monitoring (CERCOM), Molloy College
Aug. 2017 – Aug. 2019	Assistant Professor, Tenure Track, Department of Biological Sciences, Wagner College
Jan. – Jul. 2017	Postdoctoral Associate, School of Marine and Atmospheric Science (SoMAS), Stony Brook University
2009-2016	Graduate Research Assistant and Teaching Assistant, School of Marine and Atmospheric Science, Stony Brook University
2008-2009	Undergraduate Research Assistant, Lamont-Doherty Earth Observatory (LDEO), Columbia University

RESEARCH AND FIELDWORK

Ongoing

MicroPro: Key Microbial Processes in oxygen minimum zones: From in situ *community rate measurements to single cells.*

This work studies the Eastern Tropical North Pacific oxygen minimum zone, the largest open ocean oxygen-depleted system, to determine the *in situ* rates of microbial processes involved in carbon, nitrogen, and sulfur cycling, reveal the genomic blueprint of active single cells involved in these processes, and obtain estimates of the relative contributions of the dominant chemoautotrophic and heterotrophic groups to the measured rates. PI: Maria Pachiadaki (WHOI)

Microbial ecology of restored urban oyster reefs

Investigation of roles of microbial communities in the health of oysters at a restored oyster reef in New York City. Collaborators: Billion Oyster Project

A Hudson River Estuary microbial network: Interactions between endemic and sewage-derived communities

Determination of relationships between native Hudson River microbial communities and the those introduced by raw sewage. Collaborators: Andy Juhl, Elise Myers (LDEO, Columbia University)

Jan- Jul 2017 *Post-doctoral research: Novel Fine-Scale Insights into Marine Nutrient Flow Via Chemical Fingerprinting and Imaging*

Development of tools for exploration of carbon flow through the marine planktonic viral shunt using Raman microspectrometry.

2011-2016 *PhD Research: Aggregate-Associated Microbial Processes in the Cariaco Basin and Their Implications for Cycling of Carbon, Nitrogen, and Sulfur*

Participating scientist in 8 NSF-sponsored oceanographic cruises to the Cariaco Basin, (Venezuela) on the *R/V Hermano Ginés* (EDIMAR, La Fundación La Salle de Ciencias Naturales, Punta de Piedras, Venezuela).

Responsible for the collection of marine nucleic acid samples, *in situ* isotope tracer incubation studies for microbial activity, and various other marine microbiological and biogeochemical measurements.

Responsible for organization of the scientific party for international research, including transportation of supplies, shipping of samples, and coordination and scheduling for the scientific crew members from 3 laboratories.

2009-2011 *MS Research: Plankton Dynamics, Nutrient Stoichiometry, and Oxygen Utilization in Western Long Island Sound*

Participating scientist in 10 NY Sea Grant-sponsored Long Island Sound Hypoxia Project oceanographic cruises on the *R/V Seawolf* and *R/V Pritchard*.

Responsible for collection of microbiological samples (total bacteria, rates of autotrophic and heterotrophic activity, chlorophyll a, ATP).

2008- 2009 *Effects of Temperature, Organic Matter Concentration, Predation, and Particle-Attachment on Survival and Growth of Sewage-Indicating Bacteria in Hudson River Water*

Participating scientist in 10 oceanographic cruises aboard the *R/V Fletcher* (Hudson Riverkeeper).

Responsible for collection of microbial indicators for sewage contamination and for performing experiments assessing the accuracy of those indicators.

TEACHING AND MENTORSHIP

Molloy College **Courses:** Introduction to Environmental Issues (ENV101); Air Pollution (ENV213); Water Pollution (ENV214); Rocks & Minerals (ESC127); Organic and Biological Chemistry- lab (CHE112); Scientific Research Techniques (ENV257)

Mentorship/ Advising:

- Research thesis advisor for 3 undergraduate students
- Academic advisor, 5 students

Wagner College **Courses:** Biochemistry I (CH517) with lab; Biochemistry II (CH518) with lab; Microbial Ecology (MI523) with lab; Advanced Microbial Physiology (MI626) with lab; Applied Food and Industrial Microbiology (MI512) with lab; Graduate Seminar II (MI720); Advanced Statistics (MI591); Global Change (BI291); Reflective Tutorial, First Year Program (RFT-FYP)

Mentorship/ Advising:

- Research thesis advisor for 3 undergraduate and 2 graduate students
- Committee member for 6 undergraduate and 4 graduate student theses
- Academic advisor for the M.S. program in Microbiology, 4 semesters
- Academic advisor for freshmen in First Year Program, 1 semester

Stony Brook University

Courses: Fundamentals of Scientific Inquiry in Biological Sciences (BIO205); Long Island Sound: Science and Use (MAR101); Invited Guest Lecturer: Environmental Microbiology (MAR301) AND Oceanography (MAR104)

Mentorship/ Advising:

- Mentor and thesis advisor for 11 undergraduate student research projects in marine microbial ecology

PEER-REVIEWED PUBLICATIONS

Suter, E.A., Pachiadaki, M. Edgcomb, V., Scranton M., Montes, E. Taylor, G.T. (2020) Diverse nitrogen cycling pathways across a marine oxygen gradient indicate a decoupling from organic matter degradation. In press at *Environmental Microbiology*. doi: 10.1111/1462-2920.15187.

Mara, P., Vik, D., Pachiadaki, M.G., Suter, E.A., Taylor, G.T., Sullivan, M., Poulos, B., Edgcomb V.P. (2020) Viruses and their auxiliary metabolic genes along the redoxcline of the permanently stratified Cariaco Basin. In press at *The ISME Journal*.

Spanbauer, T., Briseno. C., Pitz, K., Suter, E.A. (2019) Salty sensors, fresh ideas: The use of molecular and imaging sensors in understanding plankton dynamics across marine and freshwater ecosystems. *Limnology and Oceanography Letters.* doi: 10.1002/lol2.10128.

Suter, E.A., Pachiadaki, M. Taylor, G.T., Y. Astor, Edgcomb, V. (2018) Free-living chemoautotrophic and particle-associated heterotrophic prokaryotes dominate microbial assemblages along a pelagic redox gradient. *Environmental Microbiology* 20(2):693-712.

Millette, N.C., Grosse, J., Johnson, W., Jungbluth, M., Suter, E.A. (2018) Hidden in plain sight: The importance of cryptic interactions in marine plankton. *Limnology and Oceanography Letters.* doi: 10.1002/lol2.10084.

Taylor, G.T., Suter, E.A, Pachiadaki, Astor, Y., M. Edgcomb, V., Scranton, M. (2017b) Temporal shifts in dominant sulfur-oxidizing chemoautotrophic populations across the Cariaco Basin's redoxcline. *Deep-Sea Research Part II: Special Issue on Ocean Deoxygenation.* doi: 10.1016/j.dsr2.2017.11.016.

Taylor, G.T., Suter E.A., Li, Z.Q., Chow, S.C., Stinton, D., Zaliznyack, T., Beaupre, S.R. (2017a) Single cell growth rates in photoautotrophic populations measured by stable isotopic probing and resonance Raman microspectrometry. *Frontiers in Microbiology* 8:1-16.

Cernadas-Martín, S., Suter, E.A., Scranton, M.I., Astor, Y. Taylor, G.T. (2017) Aerobic and anaerobic ammonium oxidizers in the Cariaco Basin: Distributions of major taxa and nitrogen species across the redoxcline. *Aquatic Microbial Ecology* 79:31-48.

Suter, E.A., Scranton, M.I., Chow, S., Stinton, D., Medina Faull, L., Taylor, G.T. (2016) Niskin bottle sample collection aliases microbial community composition and biogeochemical interpretation. *Limnology and Oceanography* doi:10.1002/lno.10447

Suter, E.A., Lwiza, K.M.M., Rose, J.M., Gobler, C., Taylor, G.T. (2014) Phytoplankton assemblage changes during decadal decreases in nitrogen loadings to the urbanized Long Island Sound estuary, USA. *Marine Ecology Progress Series* 497: 51-67

Suter, E., Juhl, A., O'Mullan, G. (2011). Particle Association for *Enterococcus* and Total Bacteria in the Lower Hudson River Estuary, U.S.A. *Journal of Water Resource and Protection* 3: 715-725

In preparation:

Pachiadaki, M., Suter, E.A., Mara, P., Scranton, M., Bruchert, V., Butler, K., Taylor, G.T., Edgcomb, V. Metatranscriptomics reveals a cryptic sulfur cycle in the Cariaco Basin.

Suter, E.A., Pachiadaki, M., Taylor, G.T. Edgcomb, V.E., Protistan functional diversity in an anoxic marine water column.

OTHER PUBLICATIONS

Educational Modules:

Suter, E.A., Corbo, C., Blaize, J. How diverse microbial species establish a unified ecosystem: The Winogradsky Column. *JoVE Journal of Visualized Experiments*.

Corbo, C., Blaize, J., Suter, E.A. Needs of the Many; what different bacteria need to grow successfully. *JoVE Journal of Visualized Experiments*. URL:

Blaize, J., Suter, E.A., Corbo, C.Too Numerous to Count! An evaluation of microbial enumeration through serial dilution and plating. *JoVE Journal of Visualized Experiments*

Goni, M., Gownaris, N., Suter, E.A., Lichtenwalner, C. S. Our Dynamic Ocean: Surface and Subsurface Interactions from Coast-to-Coast *Ocean Observatories Initiative Data Labs Collection*.

Protocols:

Taylor, G.T., Li, Z.Q., Suter E.A., Chow, S.C. (2017) Modified Filter-Transfer-Freeze ("FTF") Technique for Raman Microspectroscopic Analysis of Single Cells. *Protocols.io* doi: 10.17504/protocols.io.ikqccvw

AWARDS

2018-2019	Support from an anonymous donor, Wagner College
2018	John Deane Fund for Research in Environmental Studies
2018	Travel award, Ocean Observatories Initiative Early Career Workshop (NSF)
2016	Travel award, Ecological Dissertations in the Aquatic Sciences workshop (NSF & ASLO)
2013	Student Travel Award, ASLO Meeting, New Orleans, LA.
2012	Tuition and travel award, "Microbial Diversity" course at Marine Biological Laboratory
2012	Squires Award for Best Master's Thesis, SoMAS, Stony Brook University
2011	Sea Grant Thesis Completion Award
2011	Dean Prize, New England Estuarine Research Society (NEERS) Meeting
2009-2011	Sea Grant Scholar Fellowship Award, New York Sea Grant
2009	Tibor T. Polgar Fellowship recipient, Hudson River Foundation (declined)
2009	Miriam and Saul B. Cohen Prize for Geographic Excellence, Hunter College
2008	NSF REU Award recipient, LDEO, Columbia University

RECENT PROFESSIONAL SERVICE

- Instructor and co-author of 7 video tutorials for the Bioinformatics Coordination Network (BVCN), a virtual learning network to teach bioinformatics to lab bench biologists and students during the COVID-19 pandemic.
- Reviewer for the National Science Foundation (NSF), 2019-2020
- Peer reviewer for *Continental Shelf Research*, *Environmental Microbiology*, *Geobiology, Limnology and Oceanography Letters, Biogeosciences*
- Mentor for research students from New York CSTEP (Collegiate Science and Technology Program) and the NSURP (National Summer Undergraduate Research Project) programs
- Current and/or former affiliate of American Society for Limnology and Oceanography (ASLO), American Society for Microbiology (ASM), American Geophysical Union (AGU), Association for Women in Science (AWIS), New York Academy of Sciences (NYAS), and Metropolitan Association of College and University Biologists (MACUB)
- Reviewer of student research submissions to the Annual Biomedical Research Conference for Minority Students (ABRCMS, American Society for Microbiology), Eastern Colleges Science Conference (ECSC), and the Metropolitan Association of College and University Biologists (MACUB) Conference
- Invited speaker at *DNA Day* (Staten Island Technical High School) and the *After Dark Series* (Staten Island Zoo)

WORKSHOPS AND PROFESSIONAL TRAINING

2019	Participant in Ocean Observatories Initiative (OOI) Data Labs workshop for undergraduate educators in Oceanography to develop data-based lab modules for Oceanography courses using real data from the OOI.
2019	Trained as an instructor for the Tiny Earth initiative, a research-based laboratory course module designed to crowdsource the discovery of new antibiotics.
2018	Participant in OOI Chemistry Early Career Workshop, a workshop for early-career scientists to learn to use the Ocean Observatories Initiative database.
2018	Participant in EDAMAME (Explorations in Data Analyses for Metagenomic Advances in Microbial Ecology), a workshop covering microbial metagenome workflows for environmental microbiome data.
2016	Participant in Eco-DAS XII (Ecological Dissertation in the Aquatic Sciences), a symposium of early career researchers to establish cross-disciplinary collaborations and receive training on building research programs.
2016	Participated in "C-STEP, Meet Genomics Researchers," an event of the Collegiate Science and Technology Entry Program for underrepresented undergraduate students to meet researchers at Stony Brook University.
2014-2016	Spent 10 weeks training in Dr. Virginia Edgcomb's laboratory at Woods Hole Oceanographic Institution (WHOI/ MIT) for the handling and processing of sensitive environmental RNA samples.
2009-2016	Trained and certified in Radiation Safety for use of radioisotopes in research.
2013	Invited participant in a joint meeting of the University of Connecticut and Stony Brook University to enhance collaboration and establish the terms of a cooperative institute.
2012	Participated in 6-week course in Microbial Diversity for graduate students and post-doctoral researchers at Marine Biological Laboratory.
2011	Invited to participate in the Long Island Sound Study (LISS) Indicators Review meeting to assess the status and viability of indicators of water quality.
2011	Trained CTD Operator on the *R/V Seawolf* (Stony Brook University).

SELECTED PRESENTATIONS

Suter, EA, Pachiadaki, Taylor GT, Edgcomb VP. February 2019 Key Microbial Taxa Link Chemoautotrophic Carbon Fixation To Higher Trophic Levels in the Cariaco Basin Food Web. *Association for the Sciences of Limnology and Oceanography (ASLO): Aquatic Sciences Meeting*. San Juan, Puerto Rico. Oral presentation.

Suter, E. January 2019. Microbial Ecology of Coastal And Marine Ecosystems. Invited Talk: *SIZoo After Dark Series*. Staten Island Zoo, Staten Island, NY. Oral presentation.

Suter, E. Juhl, A., O'Mullan, G. December, 2017. Particle Association of *Enterococcus* and Total Bacteria in the Lower Hudson River Estuary, U.S.A. *Environmental Health and Health of the Environment*. St. Francis College, NY. Oral presentation.

Suter, EA, Pachiadaki M, Edgcomb VP, Scranton MI, Astor, Y. Taylor GT. February 2017 Particle-Associated Microbes Contribute to Cryptic Cycling of Sulfur and Nitrogen. *ASLO: Aquatic Sciences Meeting*. Honolulu, HI. Oral presentation.

Suter EA, Pachiadaki M, Edgcomb VP, Scranton MI, Taylor GT., February 2016. Redox Conditions and Microbial Particle Association: A Multi-Year Study in the Cariaco Basin. *ASLO: Ocean Sciences Meeting.* New Orleans, LA. Poster presentation.

Suter EA, Montes E, Pachiadaki M, Edgcomb VP, Taylor GT., February 2015. Assessing Nitrogen loss from the Cariaco Basin Using 15N Isotopic Pairing and Gene Expression Approaches. *ASLO: Aquatic Sciences Meeting*. Granada, Spain. Poster presentation

Suter, E.A., Scranton, M.I., Tong, L., Astor, Y., Taylor, G.T., February 2014. Partitioning of Sulfur Cycling Between Particle-Associated and Free-Living Organisms in the Cariaco Basin. *ASLO: Ocean Sciences Meeting 2014*. Honolulu, HI. Oral presentation.

Suter, E. Lwiza, K., Rose, J., Gobler, C., Taylor, G., February, 2013. Regime Shifts in Nutrients, Phytoplankton, and Hydrography Over the Last Fifteen Years in Long Island Sound. *ASLO: Aquatic Sciences Meeting*. New Orleans, LA. Oral presentation

Suter, E. Taylor, G., Lwiza, K., Rose, J. October, 2011. Changing Nutrient Regimes in Long Island Sound. *Student Conference on Conservation Science.* New York, New York. Poster presentation

Suter, E., Taylor, G., Lwiza, K. May, 2011. Evidence of Changing Nutrient Regimes in Long Island Sound. *New England Estuarine Research Society Spring Meeting*. Port Jefferson, New York. Poster presentation

Suter, E. Juhl, A., O'Mullan, G. December, 2008. Effects of Temperature, Organic Matter Concentration, UV, and Predation on Survival and Growth of Sewage-Indicating Bacteria in Hudson River Water. *American Geophysical Union Fall Meeting*. San Francisco, California. Poster presentation

RESEARCH TECHNICAL SKILLS

- Proficiency in the computing languages R and Matlab and ability to code in ImageJ (macros).
- Application of bioinformatic algorithms for metagenomic and metatranscriptomic datasets.
- Trained to extract and analyze datasets from Ocean Observatories Institute (OOI) using Python.
- DNA & RNA collection and extraction from seawater and downstream molecular analyses, including PCR, qPCR, RTqPCR, and cloning.
- Microscopic approaches, including fluorescent *in situ* hybridization (FISH) and epifluorescent microscopy, Raman microscopy, atomic force microscopy (AFM).
- Culturing of prokaryotic and eukaryotic microbes including anaerobes, photo-, and chemoautotrophs.
- Use of high-performance liquid chromatography (HPLC) for detection of microbial intermediates.

RECENT COLLABORATORS

Astor,I., Fundacion La Salle de Ciencias Naturales (Venezuela)
Beaupre, SR., Stony Brook University
Blaize, J., Wagner College
Briseno-Avena, C., University of San Diego
Corbo, C. Wagner College
Edgcomb, V. Woods Hole Oceanographic Institution
Grosse, J., GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany)
Johnson, W., Naval Research Laboratory
Juhl, A. Lamont Doherty Earth Observatory
Jungbluth, M., San Francisco State University
McKenna Myers, E., Lamont Doherty Earth Observatory
Medina Faull, L., Stony Brook University
Millette, N.C., Woods Hole Oceanographic Institution
Montes, E. University of South Florida
O'Mullan, G. CUNY Queens College
Pachiadaki, M., Woods Hole Oceanographic Institution
Pitz, K., Monterey Bay Aquarium Research Institute
Rojas, J., Fundacion La Salle de Ciencias Naturales (Venezuela)
Scranton, M., Stony Brook University
Spanbauer, T. University of Texas at Austin
Taylor, G.T., Stony Brook University