Erin M Eggleston, PhD

Assistant Professor, Department of Biology, Middlebury College
276 Bicentennial Way, MBH 309A, Middlebury, VT 05753 USA
eeggleston@middlebury.edu (802) 443-5779
https://sites.middlebury.edu/eggleston/

Education:

2015

PhD Microbiology, Cornell University, Ithaca, NY (Minors in genomics and biogeochemistry) Dissertation: Investigating Aquatic Microbial Community Dynamics from Rivers to Oceans Using Molecular Biological Techniques

2008

Bachelor of Arts Environmental Microbiology, Hampshire College, Amherst, MA

Thesis: Characterization of Microbial Communities in Biofilms Associated with Rock Varnish from Panamint Valley, CA

Teaching Experience:

Fall 2017-Present

Assistant Professor of Biology, Middlebury College

- FYSE 1560 Gut Check: Exploring Microbiomes
- BIOL 140 Ecology & Evolution
- BIOL 310 Microbiology (with lab)
- BIOL 365 Molecular Microbial Ecology (with lab)
- BIOL 371 Advanced Field Biology
- BIOL 449 Extremophiles Seminar
- BIOL/MBBC 500/700/701 Independent Research/Senior Ind Study/ Senior Thesis

Spring 2017

Adjunct Professor, Clarkson University, Department of Biology

- BY320 Microbiology

Fall 2016-Spring 2017

Visiting Assistant Professor, St. Lawrence University, Department of Biology

- BIO 231 Microbiology (with lab)

Fall 2015–Spring 2016

Adjunct Professor Rensselaer Polytechnic Institute, Department of Biology

- BIOL 4320-01 Microbiology Laboratory
- BIOL2120 Intro to Cell & Molecular Biology Lab

Adjunct Professor Sage College of Albany, Department of Biology

- BIO 110 Environmental Issues
- BIO 208 Microbiology Lab

2010-2015

Teaching assistant/lead instructor/guest lecturer for six semesters, Cornell University

- BioMI 2900: General Microbiology (with lab)

Summer 2013

Teaching Assistant for Microbial Diversity, Marine Biological Laboratory. Course directors: Drs. Steven Zinder and Daniel Buckley.

Teaching responsibilities:

- Supervise graduate students, post-docs, and faculty on individual microbial ecology research projects.
- Maintain and facilitate ion chromatograph equipment and sample processing.
- Prepare growth media for a variety of microbial enrichment experiments.

Research Experience and Training:

2017-Present

Eggleston Lab (Team Tiny) at Middlebury College - Molecular Microbial Ecology

- Ongoing lab projects:
  - Cyanobacterial harmful algal blooms and lake virome assessment
  - Coral reef microbiome resilience
  - *Toxoplasma gondii* detection in traditional foods
  - Mercury methylation in St. Lawrence River Wetlands

2018

Strategies and Techniques for Analyzing Microbial Population Structures (Marine Biological Laboratory)

2016

Clarkson University

- Collaboration with Dr. Michael Twiss on Hg-methylating wetland microbes

UNOLS Great Lakes Chief Scientist Training Cruise

- Chief Scientist for Leg 3 onboard the R/V Blue Heron

2010-2015

Graduate Student, Hewson Laboratory

- Life in the Dead Zone: Bacterioplankton metatranscriptomic analysis in Chesapeake Bay
- Atlantic Ocean viral genotype tracking and deep water viral community analysis

2009-2010

Research Technician for Dr. Thomas Ravens at University of Alaska Anchorage, School of Engineering, Civil Engineering

- Deflt3D and SWAN modeling of sediment transport throughout Cook Inlet, AK
- Project Manager for Kenai Peninsula Bluff Erosion Project
- Logistics coordinator and assistant surveyor for a statewide hydrokinetic feasibility study (assessing possible small-scale hydro turbines in villages throughout rural AK)
- Yukon-Kuskokwim Delta storm surge model and sediment analysis
- UAA Coordinator for the US Army Corp of Engineers Workshop on Climate Change

Summer 2007

American Society for Microbiology Undergraduate Research Fellowship Research at Hampshire College with Dr. Jason Tor

Undergraduate Student Trainees:

1. Jiatong (Irene) Hu, Research Assistant, F'22-S'23, Eggleston Lab
2. Peter Streufert, Research Assistant F'22-S'23, co-advised Eggleston and Kimambo Labs
3. Isabel Tseng, Lab Volunteer Spring '22, Summer Research Student '22, Senior Independent Study Fall '22-Spring '23, Eggleston Lab
4. Olwethu Ngubo, Summer Research Student '22, Eggleston Lab
5. Katie Baker, Summer Research Student '22, Eggleston Lab
6. Emma Román, Senior Thesis Committee Spring '22, Moody Lab
7. Briana Johnson, Summer Research Student '21, Research Student F'21-S'22, Eggleston Lab
8. Gifty Atanga, Summer Research Student '21, Research Student F'21-S'22, Eggleston Lab
9. India Drummond, Senior Thesis Committee Winter '22, Spatafora Lab
10. Matt Brockley, Summer Research Student '20, Lab Volunteer Spring '22, Eggleston Lab
11. Kaja Aagaard, Lab Volunteer Fall '19-Spring'22 , Eggleston Lab
12. Evan Fedorov, Summer Research Student '19, Independent Study, Senior Independent Study & Thesis Fall 19'-Spring '21, Eggleston Lab
13. Margot Chisholm, Senior Independent Study Fall '20, Eggleston Lab
14. Jenny Pushner, Lab Volunteer Fall '20, Eggleston Lab
15. Amanda Girod, Summer Research Student '20, Eggleston Lab

16. Colin Howe, Summer Research Student '20, Eggleston Lab; Senior Thesis Committee F'20, Allen Lab
17. Ellie Broeren, Independent Study Spring 20, Eggleston Lab
18. Kathryn Van Artsdalen, Senior Independent Study Spring '20, Eggleston Lab
19. Miranda Seixas, Summer Research Student '18, Senior Ind. Study & Thesis Fall '19-Spring '20, Eggleston and Munroe Labs
20. Laura Blum, Senior Independent Study & Thesis Fall '19-Spring '20, Eggleston Lab
21. Niko Carvajal, Senior Thesis Committee Spring '20, Coe Lab
22. Bryn Hester, Lab Volunteer Fall '19-Spring '20, Eggleston Lab
23. Clara Loftis, Summer Research Student '19, Eggleston Lab
24. Omar Valencia, Independent Study Spring '19, Eggleston Lab
25. Therese Tran, Independent Study Spring '19, Eggleston Lab
26. Rebecca Lightman, Summer Research Student '18 Independent Study Spring '18- Spring '19, Eggleston Lab
27. Monica Melendez, Lab Volunteer Fall '17-Spring '18, Eggleston Lab
28. John Rustad, Lab Volunteer Fall '17-Spring '18, Eggleston Lab
29. Alexander Pastora, Senior Thesis Committee Spring '18, Spatafora Lab
30. Katherine Morillo, Senior Thesis Committee Spring '18, Giddings Lab
31. Zachary Peters, Senior Thesis Committee Fall '18, Spatafora Lab

Peer Reviewed Publications: (* denotes student author)

1. Ishaq SL, Wissel EF, Wolf PG, Grieneisen L, **Eggleston EM**, *et al*. (2022) Designing the Microbes and Social Equity Symposium: A Novel Interdisciplinary Virtual Research Conference Based on Achieving Group-Directed Outputs. *Challenges*. **13**(30) 1-20
2. Choudoir MJ and **EM Eggleston**. (2022) Reciprocal inclusion of microbiomes and environmental justice can contribute solutions to global environmental health challenges. *mSystems* https://doi.org/10.1128/msystems.01462-21
3. Parker K, Ward JO, **Eggleston EM**, Fedorov E*, Parkinson JE, Dahlgren C, and R Cunning. (2020) Characterization of a thermally tolerant *Orbicella faveolata* reef in Abaco, The Bahamas. *Coral Reefs*. **39**(3) 675-685
4. Brahmstedt ES*, Zhou H, **Eggleston EM**, Holsen TM, MR Twiss. (2019) Assessment of mercury mobilization potential in Upper St. Lawrence River riparian wetlands under new water level regulation management. *Journal of Great Lakes Research.* **45**(4) 735-741
5. **Eggleston EM** and I Hewson. (2016) Abundance of two *Pelagibacter ubique* bacteriophage genotypes along a latitudinal transect in the North and South Atlantic Oceans. *Frontiers in Microbiology* **7** (Sept.) 1-9.
6. Pepe-Ranney C, Koechli C, Potrafka R, Andam C, **Eggleston EM**, Garcia-Pichel F, and DH Buckley. (2016) Non-cyanobacterial diazotrophs dominate dinitrogen fixation in biological soil crusts during early crust formation. *ISME Journal* **10**(2) 287-298.
7. **Eggleston EM**, Dong Y, Owens MS, Cornwell JC and I Hewson. (2015) Key respiratory genes elucidate bacterial community respiration in a seasonally anoxic bay. *Environ Microbiol* **17** 2306-18.
8. Lee DY, Owens MS, Doherty M, **Eggleston EM**, Hewson I, Crump BC and JC Cornwell. (2015) The effects of oxygen transition on community respiration and potential chemoautotrophic production in a seasonally stratified anoxic estuary. *Estuaries and Coasts* **38**(1) 104-117.
9. Hewson I, **Eggleston EM**, Doherty M, Lee DY, Owens M, Shapleigh JP, Cornwell JC and BC Crump. (2014) Life in the dead zone: Metatranscriptomic analyses of plankton communities inhabiting surface and subpycnocline waters of the Chesapeake Bay during oxic-anoxic-oxic transitions. *Applied and Environmental Microbiology*. **80**(1) 328-338.
10. Hewson I, Barbosa JG, Brown JM, Donelan RP, Eaglesham JB, **Eggleston EM** and BA LaBarre. (2012) Temporal dynamics and decay of putatively allochthonous and autochthonous viral genotypes in contrasting freshwater lakes. *Applied and Environmental Microbiology* **78**(18) 6583-91.

Presentations: (* denotes student author)

1. Tseng I*, and **EM Eggleston**. (2022) Lake Champlain Cyanobacterial Harmful Algal Bloom Ecology Over a Summer Time Series. Middlebury College Biology Department Seminar Series. (Oral Presentation)
2. Johnson B*, Atanga G*, and **EM Eggleston**. (2022) Characterization of Viral and Bacterial Dynamics in Lake Champlain Cyanobacterial Harmful Algal Blooms. Lake Champlain Research Conference. (Poster Presentation)
3. Atanga G*, Johnson B*, and **EM Eggleston**. (2022) Characterization of Viral and Bacterial Dynamics in Lake Champlain Cyanobacterial Harmful Algal Blooms. Pioneer Valley Microbiology Symposium. (Poster Presentation)
4. Aagaard K*, Pushner J*, Román E*, Byrne S, and **EM Eggleston**. (2022) Oocysts & Oysters: Initial methods for an environmental health survey of *Toxoplasma gondii* in Alaskan shellfish. Pioneer Valley Microbiology Symposium. (Poster Presentation)
5. Atanga G*, Johnson B*, and **EM Eggleston**. (2022) Characterization of Viral and Bacterial Dynamics in Lake Champlain Cyanobacterial Harmful Algal Blooms. Dartmouth M2P2 Retreat. (Poster Presentation)
6. Choudoir M and **EM Eggleston** (co-authors). Connecting environmental microbiomes to social (in)equity across temporal and ecological scales. Invited Seminar for the University of Maine Institute of Medicine series, "The Microbial Link Between Human Health and Social Equity." (March 2, 2021).
7. **EM Eggleston** (2020) Assessing coral reef resilience to thermal stress in the face of climate change. Faculty at Home: Summer Series. https://www.middlebury.edu/office/provost/faculty-home
8. Seixas M*, **Eggleston EM**, Munroe J, D Herron (2020) A characterization of microbial diversity in the Winter Wonderland Ice Cave, Uinta Mountains, Utah, USA. European Geophysical Union. (Online Poster due to COVID-19 travel restrictions)
9. Blum L*, **Eggleston EM**, Pachiadaki M, and H Alexander (2020) Microbial Drivers of Nitrogen Fixation: Searching *Tara* Oceans metagenomes. ASLO/AGU/TOS Ocean Sciences Meeting San Diego. (Poster Presentation)
10. Blum L*, **Eggleston EM**, Pachiadaki M, and H Alexander (2020) Microbial Drivers of Nitrogen Fixation: Searching *Tara* Oceans metagenomes. M2P2 Retreat. (Poster Presentation)
11. Fedorov E*, Tran T*, Valencia O*, Chiu B, Leavitt W, and **EM Eggleston** (2020) The Effect of Geranylgeranyl Reductase on GDGT Membrane Cyclization in the Extremophilic Archaeon *Sulfolobus islandicus* REY15A. Dartmouth M2P2 Retreat. (Poster Presentation)
12. Broeren E*, Loftis C*, and **EM Eggleston** (2019) Building a Virome: The Role of Phages in Harmful Cyanobacterial Blooms. Biology Department Seminar Middlebury College. (Oral Presentation)
13. R Lightman*, E Brahmstedt*, M Windle, M Twiss, J Ridal, and **EM Eggleston** (2019) Microbial Community Structure in St. Lawrence River Wetlands and Management of Mercury-Methylation. NEMPET 2019. (Oral Presentation)
14. R Lightman* and **EM Eggleston** (2019) Characterization and Mercury Methylation Capacity of St. Lawrence River Microbes. Dartmouth M2P2 Retreat. (Oral Presentation)
15. **EM Eggleston** (2019) Microbial Community Structure in St. Lawrence River Wetlands and Management of Mercury-Methylation. Dartmouth M2P2 Retreat. (Oral Presentation)
16. **Eggleston EM**, Brahmstedt E*, Holsen T, Waller ME, Windle M, Ridal J and M Twiss (2018) Microbial Community Structure in St. Lawrence River Wetlands and Management of Mercury Methylation, IAGLR 61st Conference on Great Lakes Research, Toronto, ON. (Oral presentation)
17. Brahmstedt E*, Zhou H*, **Eggleston EM**, Holsen T, Waller M, Windle M, Ridal J and M Twiss (2018) Water Levels May Impact Mercury Cycling in Upper St. Lawrence River Riparian Wetlands, IAGLR 61st Conference on Great Lakes Research, Toronto, ON. (Oral presentation)
18. **Eggleston EM** (2016) Investigating Aquatic Microbial Communities Using Molecular Biological Techniques. Institute for Health & Environment Group Meeting, SUNY Albany, Invited Speaker.
19. **Eggleston EM**, Lee DY, Owens MS, Cornwell JC, Crump BC and I Hewson (2014) Curated gene analysis elucidates bacterial community respiration in seasonally anoxic Chesapeake Bay. ASM 114th General Meeting, Boston, MA. (Poster Presentation)
20. **Eggleston EM**, Lee DY, Doherty M, Crump BC, Cornwell JC, Owens MS, Barbosa JG and I Hewson (2013) Metatranscriptomic insights into microbial community respiration in seasonally anoxic Chesapeake Bay. ASLO 2013 Aquatic Sciences Meeting, New Orleans, LA. (Poster Presentation)

Web-Based Publications and Press:

2021 Cohen L. "Thanks to climate change, toxic bacterial blooms stick around for the fall." *VT Digger*. https://vtdigger.org/2021/10/15/thanks-to-climate-change-toxic-bacterial-blooms-stick-around-for-the-fall/
2019 Murphree G. "Biology Professor Examines Toxic Blooms on Lake Champlain and Other Vermont Waters" *Middlebury Newsroom*. http://www.middlebury.edu/newsroom/archive/2019-news/node/629433
2019 Spencer C and S Ray. "Biology Field Course Explores the Health of Coral Reefs in the Bahamas" *Middlebury Newsroom*. http://www.middlebury.edu/newsroom/archive/2019-news/node/612674
2019 Diehl S. "Professor's Research Warns of Potential Mercury Release in Upper St. Lawrence River" *Middlebury Newsroom*. http://www.middlebury.edu/newsroom/archive/2019-news/node/615926
Contributor at *Femina Sciscitator* (https://www.feminasci.com/blog**)**
2019 "So You Want to Work at a Liberal Arts College? Tips for applying and interviewing at a PUI" (April 28)
2018 "Who is Your Science Idol or Role Model?" (August 31)
2018 "Interview: Early Career Quantitative Scientists" (April 7)
2018 "Reflections on 2017" (January 25)
2017 "2017 in Review" (December 31)
2017 "March for Science" (April 28)
2017 "The Oroville Dam Crisis: Part 1" (March 7)
2017 "Books! Books! and more Books!" (February 17)
2017 "Does Basic Research Matter?" (February 9)
2017 "Science & Scientists in Politics" (January 31)
2017 "Women's March Musings" (January 26)
2017 " Science & Hope in 2017" (January 17)

Grants, Fellowships, and Awards:

Awarded:
2022 USGS Annual State Water Resources 104b "Lake Champlain winter microbial dynamics and long-term data trends," PI ($66,182)
2020 USGS Annual State Water Resources 104b **"**Vermont cyanobacterial harmful algal bloom ecology and toxin biosynthesis gene activity: a path to novel management strategies," PI ($69,997)
2019 VGN Small Award "Investigating the Role of Cyanophage in Cyanobacterial Harmful Algal Blooms" PI ($5,000)
2018 NSF BSC-MRI "Acquisition of High Performance Computing Equipment for Research and Teaching at an Undergraduate Liberal Arts College," Key Personnel ($151,164)
2018 *Feminist of the Year Faculty Award, Middlebury College*
2017 Great Lakes Research Consortium Co-PI ($20,338)
2017 OMECC Best in Science Contract ($10,000)
2016 UNOLS Chief Scientist Trainee Grant ($1,500)
2014 Sigma Xi Grant in Aid of Research ($999)
2014 Cornell Graduate Student Conference Travel Grant ($400)
2013 *ASLO Aquatic Sciences Meeting Outstanding Student Presentation Award*
2013 Cornell Graduate Student International Travel Grant ($2,000)
2013 Cornell Graduate Student Conference Travel Grant ($400)
2012 Cross-scale Biogeochemistry and Climate IGERT Small Grant ($4,000)
2011 *CALS Microbiology Outstanding Teaching Assistant Award*
2011 *NSF Graduate Research Fellowship Program Honorable Mention*
2007 *American Society for Microbiology Undergraduate Research Fellowship* ($4,000)
Unfunded Proposals:
2020 NSF URoL MTM "Assessing the role of the phycosphere microbiome as a regulator of cyanobacterial bloom maintenance and function" Co-PI ($1,433,711) *Resubmission planned February 23, 2021*

2019 NSF EPSCoR "Determination of Viromes in Environmental Samples" Co-PI (PI: Scott Morrical UVM, total award $3,865,504, sub-award to Middlebury $421, 492).
2018 VGN Pilot Award "Investigating the Role of Cyanophage in Cyanobacterial Harmful Algal Blooms" PI ($24,999)
2018 Johnson & Johnson Women in STEM^{2}D Scholars Program "Disentangling cyanotoxin gene mobility in harmful algal blooms" PI ($150,000)

Service:

Fall 2022-Present Middlebury Schools Abroad Brazil Faculty Advisory Board
July 2022-Present Middlebury College Administration Committee
July 2022 Microbe and Social Equity Summer Symposium "Session 5: MSE Education Practices and Curriculum Design" co-leader (with Drs. Monica Trujillo and Carla Bonilla)
June 2021 Microbes and Social Equity Summer Symposium "Session 3: Natural resources and access to environmental microbes" breakout session coordinator
July 2020-Present Microbes and Social Equity working group member
July 2020-Present Lake Champlain Research Consortium Board Member
Fall 2019- Spring 2021 Middlebury Schools Abroad France Faculty Advisory Board
July 2019-June 2021 Faculty Committee on Diversity Equity and Inclusion, Middlebury College
Summer 2020 Departmental lead on the Biology Department Letter in Support of Black Lives Matter
Summer 2017, 2018, 2019 Middlebury Summer Immersion Program for LA Posse Scholars
Fall 2019 Letters to a Pre-Scientist pen pal (Santa Ana, CA)
Fall 2018-Spring 2019 Ad-hoc Center for Teaching, Learning, and Research Faculty Advisory Committee
September 2019 Middlebury Academic Forum: Biology Department
Fall 2018 Middlebury College Aquatic Ecology Search Committee Member
Fall 2018, Fall 2019 Middlebury Academic Forum: Biology Department
Fall 2017, Spring 2018, Fall 2018, Fall 2019
Skype-a-Scientist mentor (VA Robious Middle School 6th and 7th graders, western MA home school group, NC Salisbury High)
Spring 2014 and 2015
Career Day presenter for Homer Junior High School
Spring 2011-2015
Expanding Your Horizon: Workshop Leader and Registration Chair
E - An outreach program for middle school girls to generate interest in STEM
Reviewer: Ecology Letters, Frontiers in Water Science, Swiss National Science Foundation, Environmental Microbiology, Microbiome, Frontiers in Microbiology, Aquatic Microbial Ecology, National Geographic Society, Journal of Plankton Research, Freshwater Science, AAAS Research Competitiveness Program, WI Sea Grant, and MN Sea Grant.

Experience At Sea:

2017-2019 R/V Folger, 1-2 days per summer, Lake Champlain, Chief Scientist Dr. Erin Eggleston. *Lake virome diversity assessment and cyanobacterial bloom dynamics.* (No Summer 2020 activities due to COVID restrictions for summer research assistants)
2016 R/V Blue Heron, 4 days, Lake Michigan and Lake Superior, Chief Scientist Dr. Erin Eggleston. *Chief Scientist Training Cruise, Leg 3*.
2013 R/V Knorr, 45 days, Montevideo, Uruguay to Bridgetown, Barbados, Chief Scientist Dr. Elizabeth Kujawinski WHOI, *Deep DOM: Characterizing DOM in Deep Atlantic Waters.*
2011 R/V Sharp, 7 days, Chesapeake Bay, Chief Scientist Dr. Mary Doherty UMCES Horn Point Laboratory, *Life in the Dead Zone.*