Alaina Rose Weinheimer, PhD

60 Bigelow Drive, Bigelow Laboratory for Ocean Sciences, East Boothbay, ME – alainarw94@gmail.com
alainaweinheimer.weebly.com – ORCID: 0000-0002-6066-0591
updated: 21 Feb 2023

EDUCATION AND POSITIONS

Simons Postdoctoral Fellow in Marine Microbial Ecology February 2023 – present
Bigelow Laboratory for Ocean Sciences, East Boothbay, ME
Postdoctoral advisor: Dr. Ramunas Stepanauskas

Ph.D. in Biological Sciences August 2018 – November 2022
Virginia Polytechnic Institute and State University
Blacksburg, VA
Institute for Critical Technology and Applied Science Doctoral Scholar
Interfaces of Global Change Fellow
Advisor: Dr. Frank Aylward

M.Sc. in Marine Microbiology October 2016 – March 2018
Max Planck Institute for Marine Microbiology/University of Bremen
Bremen, Germany
Advisors: Dr. Nicole Dubilier and Dr. Matthew Sullivan (Ohio State)

B.S. in Biology – ecology concentration August 2012 – May 2016
Schreyer Honors College, Pennsylvania State University
University Park, PA
Minors: Microbiology, Marine Science
Advisors: Dr. Iliana Baums, Dr. Mónica Medina

GRANTS / AWARDS / HONORS

Postdoctoral Fellow in Marine Microbial Ecology, Simons Foundation, **$90,000/year** Feb 2023 - present
Young Ambassador Project Fund, American Society for Microbiology,**$2,000** Aug 2022
ISME Microbes Travel Award, International Society for Microbial Ecology **€800** May 2022
CeZAP ID IGEP Grant, Center for Emerging, Zoonotic, and Arthropod-borne Pathogens, Virginia Tech, **$1635.28** March 2022
Robert Patterson Scholarship, Dept. Biological Sciences, Virginia Tech **$800** June 2021
First Place, 2021 Karen P. DePauw Outstanding Interdisciplinary Presentation Award, Interfaces of Global Change Graduate Research Symposium **$200** April 2021
Young Ambassador to Virginia, American Society for Microbiology Jan 2021 – Dec 2022
Doctoral Scholar, Institute for Critical Technology & Applied Science, **$33,000/yr** Aug 2018-Aug 2022

PUBLICATIONS (Google Scholar Profile)

Weinheimer, AR, Aylward, FO, Leray, M, Scott, J. J. (2023). Contrasting drivers of abundant phage and prokaryotic communities in tropical, coastal ecosystems across the Isthmus of Panama. Preprint at bioRxiv doi: https://doi.org/10.1101/2023.01.26.525695 .

Weinheimer, AR, Aylward, FO, (2022). Infection strategy and biogeography distinguish cosmopolitan groups of marine jumbo bacteriophages. ***The ISME Journal***, 16:1657-1667.

Moniruzzaman, M, **Weinheimer, AR**, Martinez-Gutierrez, CA, & Aylward, FO (2020). Widespread endogenization of giant viruses shapes genomes of green algae. ***Nature***, 588(7836), 141-145.

Lakoba, V, Wind, L, DeVilbiss, S, Lofton, M, Bretz, K, **Weinheimer, A**, Moore C, Baciocco C, Hotchkiss E, & Hession, WC (2020). Salt Dilution and Flushing Dynamics of an Impaired Agricultural–Urban Stream. ***ACS ES&T Water***, 1(2), 407-416.

Weinheimer, AR, & Aylward, FO. (2020). A distinct lineage of *Caudovirales* that encodes a deeply branching multi-subunit RNA polymerase. ***Nature communications***, 11(1), 1-9.

Moniruzzaman, M, Martinez-Gutierrez, CA, **Weinheimer, AR**, & Aylward, FO. (2020). Dynamic genome evolution and complex virocell metabolism of globally-distributed giant viruses. ***Nature communications***, 11(1), 1-11.

Cordes, EE, Auscavitch, S, Baums, IB, Fisher, CR, Girard, F, Gomez, C, McClain-Counts J, Mendlovitz HP, & **Weinheimer, A.** (2016). ECOGIG: Oil spill effects on deep-sea corals through the lenses of natural hydrocarbon seeps and long time series. ***Oceanography***, 29(1), 28-29.

SELECTED POSTERS/PRESENTATIONS

Weinheimer AR, Scott, J, Leray, M, Aylward FO*., Uncoupled patterns of phage diversity in contrasting ecosystems along Panama's coasts.* Viruses of Microbes 2022. Centro Cultural Vila Flor, Guimarães, Portugal. July 19, 2022. (poster)

Weinheimer AR, Scott, J, Leray, M, Aylward FO*., Patterns of phage diversity in contrasting ecosystems along Panama's coasts.* ASM Microbe. Walter E. Washington Convention Center, Washington D.C., USA. June 10, 2022. (poster)

Weinheimer AR, Scott, J, Leray, M, Aylward FO*., Variation in phage diversity reflects parallel, yet divergent ecosystems along Panama's coasts.* Biological Sciences Research Day. (virtual) Virginia Tech, Blacksburg, VA, USA. February 5, 2022. (oral presentation)

Weinheimer AR, Aylward FO*., Hidden jumbo phages make waves in the global ocean*. Aquatic Virus Workshop 10. (virtual) Hosted by Kyoto University, Kyoto, Japan. June 27 – July 1, 2021. (pre-recorded oral presentation)

Weinheimer AR, Aylward FO, *Hidden jumbo phages make waves in the global ocean*. World Microbe Forum. Virtual hosted by the American Society for Microbiology and the Federation of European Microbiological Societies. June 20 -24, 2021. (ePoster)

Weinheimer AR, Aylward FO, *Too big to see: large viruses are overlooked players in the ocean's nutrient cycles.* Interfaces of Global Change Graduate Research Symposium. (virtual) Virginia Tech, Blacksburg, VA, USA. April 23, 2021. (oral presentation) – **First Place Presentation**

Weinheimer AR, Aylward FO, *Ancient origin and acquisition of multi-subunit RNA polymerase by bacteriophages revealed by an RNA polymerase Tree of Life*. International Society of Microbial Ecology Virtual Summit #UnityInDiversity, November 11-12, 2020. (ePoster)

Weinheimer AR, Aylward FO*, Ancient Origin and Deep Phylogenetic Placement of Bacteriophage in the Tree of Life*. American Society of Microbiology Microbe Online, 2020. (ePoster)

Weinheimer AR, Navarro-Muñoz J, Glöckner FO, Medema M, Fernandez-Guerra F.*, Defining gene cluster families from globally-distributed seawater samples using community detection methods*. YOUMARES 8 Conference, Kiel University, Kiel, Schleswig-Holstein, Germany. September 15, 2017. (oral presentation)

RESEARCH EXPERIENCE

Graduate Research Assistant, *Dr. Frank O. Aylward Lab* August 2018 – November 2022
Dept. of Biological Sciences, Virginia Tech, Blacksburg, VA
Examining the ecology and evolution of marine phages using metagenomic and metatranscriptomic datasets (i.e. Tara Oceans)

Master's Thesis Research, *Dr. Nicole Dubilier Lab and* September 2017 – August 2018
Dr. Matthew B. Sullivan Lab
Dept. of Symbiosis, Max Planck Institute of Marine Microbiology, Bremen, Germany
Dept of Microbiology, Ohio State University, Columbus, Ohio, USA
Prepared and analyzed viromes of deep sea mussel (*Bathymodiolus*) gills

Master's Rotations

Rotation I: Microsensors Group, measured pH of coralline algae *Lithamnion glaciale* exposed to prolonged darkness

Rotation II: Microbial Genomics and Bioinformatics Group, performed cluster analyses on biosynthetic gene clusters belonging to metagenomic-assembled genomes from TARA Oceans samples

Rotation III: Dr. Jillian Petersen's Group, Division of Microbial Ecology, Vienna, Austria, Examined the feet of Lucinid clams for the presence of sulfur oxidizing symbionts using FISH

Research Assistant, *Dr. Mónica Medina Lab* August 2015 – April 2017
Pennsylvania State University, University Park, PA
Projects associated with the Global Coral Microbiome Project and characterizing the *Symbiodinium* microbiome with culture and sequence-based approaches

Research Assistant, *Dr. Iliana Baums Lab* August 2013 – May 2016
Pennsylvania State University, University Park, PA
Thesis research on coral reproduction using microsatellites to distinguish mating corals

Summer Intern, *Dr. Joshua Voss Lab* May 2015 – July 2015
Harbor Branch Oceanographic Institute, Fort Pierce, FL
Compared boulder star coral (*Montastrea covernosa*) bacterial community composition before and after exposure to runoff from rainy season in Port Lucie, FL

NSF REU Marine Microbiology Intern, *Dr. Kim Ritchie Lab* May 2014 – August 2014
Mote Marine Laboratory, Sarasota, FL
Analyzed the effects of ocean acidification on calcification rates, microbial communities, respiration and photosynthetic rates, of six different genotypes of *Acropora cervicornis*, staghorn coral

LEADERSHIP AND SERVICE

Young Ambassador to Maine, American Society for Microbiology 2023 – present
- Co-organized the Communicating Science with a General Audience Webinar with ASM Public

Outreach Specialist Dr. Geoff Hunt for early career microbiologists in ASM
- Co-founder and editor of the ASM-sponsored blog site The Microbial Times (microbialtimes.wordpress.org) that helps train early career microbiologists in communicating with a general audience

President, VT Biology Graduate Student Association 2021 – 2022
Vice President – 2020-2021
Run meetings, interface with department head, established Recognized Student Organization Status, organized departmental events (i.e. Student Brown Bag Series, Postdoc Q&A Mixer), coordinate fundraising for club (candy cane grams, T-shirt sales)

Vice President, Interfaces of Global Change Grad Student Organization 2021 – 2022
Social Chair – 2019 – 2021
Organized 2 or 3 social events per semester, advertised, made food orders, coordinated with finance offices, developed social-distancing preference survey

Young Ambassador to Virginia, American Society for Microbiology 2021 – 2022
- Co-organized Lounge & Learn Session at the World Microbe Forum. Opening Academic Borders: Graduate and Postdoctoral Opportunities in the USA and Abroad. June 23, 2021
- Co-organizer, moderator, and video editor for the ASM Early Career Flashtalk Series. October 21, 2021

Biological Sciences Delegate, Virginia Tech Graduate Student Association 2019 – 2020
- Disseminated GSA information to department grad students, voted for items on behalf of department

TEACHING EXPERIENCE

Teaching Assistant – Spring 2021
Course: Systems Biology of Genes and Proteins (SYSB 3036), Virginia Tech, VA, USA
Held weekly recitation, graded assignments and quizzes, and presented lecture on viral diversity

Learning Assistant – Spring 2016
Course: Principles of Virology (MICRB 4015), Pennsylvania State University, PA, USA
Hold exam review sessions, assist exam development

MENTORING EXPERIENCE

Undergraduate, Riley Wilson (now program coordinator at the National Human Genome Research Institute,NIH), 2021-2022, providing guidance on coding and analyses for senior project required by the Systems Biology program; comparing bacteriophage genomes based on shared genes

Undergraduate, Meagen Todd (now graduate student at Wake Forest University), 2019 – 2020
taught network analyses and genome annotation to study prophage of *Clostridium*

Undergraduate, Ashleen Harris (now graduate student at Radford University), Spring 2020
guided project on identifying toxin homology to non-toxin proteins, taught how to perform sequence searches (BLASTp) and structural searches (DALI) in batch

Undergraduate HHMI Millennial Scholar, Fabiola Maldonado, 2016
taught DNA isolation, algal culturing, cell counting, bacterial culturing, and microscopy for a project I led on the microbiome of *Symbiodinium*

OUTREACH AND SCIENCE COMMUNICATION

Co-editor and **co-founder** of The Microbial Times blog site. Sponsored by the American Society for Microbiology's Young Ambassador Project Fund. Website.

Co-editor of Food Water and Communities website on ArcGIS StoryMaps. Funded by the Center for Communicating Science at Virginia Tech. Paid position. Website

Blog posts

Weinheimer, Alaina. "Too big to see: the uncovering of large phage genomes in the world's oceans." *Nature Microbiology: Behind the Paper.* Blog Post. March 8, 2022. https://microbiologycommunity.nature.com/posts/too-big-to-see-the-uncovering-of-large-phage-genomes-in-the-world-s-oceans

Weinheimer, Alaina. "Impossible Coral Reef in Varadero Cartagena, Colombia – 2018". *Food Waters & Communities*. Article. May 21, 2021. https://storymaps.arcgis.com/stories/c89693a368314fedb9ddbda7549568b2

Weinheimer, Alaina. "A Mystery Clade in the Tree of Life". *Nature Ecology and Evolution: Behind the Paper*. Blog Post. September 9, 2020. https://natureecoevocommunity.nature.com/posts/a-mystery-clade-in-the-tree-of-life

K-12 activities

"Are viruses dead or alive?", Virginia Tech Science Festival Annual Exhibit 2020
Virtual exhibit to a 7th grade class, described how viruses infect cells and answered questions about viruses and immunology

"The DNA of You and Me" Kindergarten Visit as part of Virginia Tech's Center for Communicating Science Girls Launch Program, developed activity and presentation, taught the terms of DNA, genes, and genomes with colored stickers 2020

Training

ComSciCon, Center for Communicating Science, Virginia Tech, Blacksburg, VA, USA, Feb 27-28, 2020
- seminars and editing sessions for graduate students on communicating their science

Outreach in Biology, course at Virginia Tech, Instructor Dr. Dana Hawley, Fall Semester 2020
- learned effective communication strategies from guest speakers and instructor, wrote blog posts, developed outreach plan

Community science events

Science Olympiad Grader (2020), Virginia Tech Science Festival exhibitor with the Interfaces of Global Change Graduate Student Organization, Gilbert Linkus Elementary School science fair judge (2019), Virginia State Science Fair judge (2019), Science Olympiad Grader (2020), STEMposium at Eastern Elementary exhibitor volunteer (2019)

WORKSHOPS AND CERTIFICATES

ComSciCon, Center for Communicating Science, Virginia Tech, Blacksburg, VA, USA, Feb 27-28, 2020
- seminars and editing sessions for graduate students on communicating their science

Workshop on Molecular Evolution, Marine Biological Laboratory, Woods Hole, MA, USA Aug 1-11, 2019
- sessions on theory, statistics, and tools in molecular evolution and evolutionary genomics

NAUI Advanced SCUBA Diver

FIELD EXPERIENCE

Varadero Reef Field Expedition, Cartagena Bay, Colombia (2018)
Global Coral Microbiome Project Field Expedition, Cartagena Bay, Colombia (2015)
R/V Manta Cruise, Flower Garden Banks, Gulf of Mexico (2015)
E/V Nautilus Cruise 057, Gulf of Mexico (2015)
