

Robin.Rohwer@gmail.com
Phone: 443-472-2086
ORCID: 0000-0002-2664-6489
Website: RobinRohwer.com

Robin R. Rohwer, PhD

Education

- PhD, University of Wisconsin-Madison** (Madison, WI) 2012 - 2019
Environmental Chemistry and Technology Program
Advisor: Katherine D. McMahon
Thesis: Temporal and taxonomic scales of change in freshwater microbial community composition
- BA, Oberlin College** (Oberlin, OH) 2005 - 2009
High departmental honors in Biochemistry
Advisor: Robert Q. Thompson
Thesis: An HPLC-MS method for determining Oberlin student exposure to bisphenol A from polycarbonate cups and water bottles

Professional Positions

- The University of Texas at Austin** (Austin, TX) 2022 -
Postdoctoral Fellow, Department of Integrative Biology
Advisor: Dr. Brett Baker
Microbial evolution in a freshwater metagenome time-series
- Lawrence Berkeley National Lab** (Berkeley, CA) 2020 - 2022
Postdoctoral Fellow, The DOE Joint Genome Institute
Advisor: Dr. Emiley Eloë-Fadrosh
Environmental Metagenomics
- The University of Wisconsin-Madison** (Madison, WI) 2020
Postdoctoral Fellow, Department of Microbiology
Advisor: Dr. Katherine (Trina) McMahon
Freshwater microbial ecology and evolution
- The Pennsylvania State University** (State College, PA) 2011 - 2012
Research Technologist, Biochemistry and Molecular Biology Department
Advisors: Dr. B. Tracy Nixon, Dr. Ming Tien
Recombinant cloning to express tagged fungal cellulases
- Martek Biosciences Corporation** (Columbia, MD) 2010 - 2011
Research Associate, Development Department
Advisor: Dr. Wei Wang-Nolan
DHA-fortified dairy product development and stability testing
- Nanotech Innovations, LLC** (Oberlin, OH) 2007 - 2008
Research Assistant at month-old startup
Advisor: Dr. Jesse Rowsell
Carbon nanotube production optimization and purity analysis

Publications

PEER-REVIEWED:

Rohwer RR*, Ladwig R*, Hanson PC, Walsh JR, Vander Zanden MJ, Dugan HA. 2024. Increased anoxia following species invasion of a eutrophic lake. *Limnology and Oceanography Letters* 9:33–42.

*Equally contributing first authors.

Vázquez Rosas Landa M, De Anda V, **Rohwer RR**, Angelova A, Waldram G, Gutierrez T, Baker BJ. 2023. Exploring novel alkane-degradation pathways in uncultured bacteria from the North Atlantic Ocean. *mSystems* 0:e00619-23.

Rohwer RR, Hale RJ, Vander Zanden MJ, Miller TR, McMahon KD. 2023. Species invasions shift microbial phenology in a two-decade freshwater time series. *Proceedings of the National Academy of Sciences* 120:e2211796120.

Linz AM, He S, Stevens SLR, Anantharaman K, **Rohwer RR**, Malmstrom RR, Bertilsson S, McMahon KD. 2018. Freshwater carbon and nutrient cycles revealed through reconstructed population genomes. *PeerJ* 6:e6075.

Rohwer RR, Hamilton JJ, Newton RJ, McMahon KD. 2018. TaxAss: Leveraging a Custom Freshwater Database Achieves Fine-Scale Taxonomic Resolution. *mSphere* 3:e00327-18.
Software: github.com/McMahonLab/TaxAss

Hall MW, **Rohwer RR**, Perrie J, McMahon KD, Beiko RG. 2017. Ananke: temporal clustering reveals ecological dynamics of microbial communities. *PeerJ* 5:e3812.
Software: github.com/beiko-lab/Ananke

PREPRINTS/IN REVIEW:

Rohwer RR, Kirkpatrick M, Garcia SL, Kellom M, McMahon KD, Baker BJ. 2024. Bacterial ecology and evolution converge on seasonal and decadal scales. *bioRxiv*
<https://doi.org/10.1101/2024.02.06.579087>. (*In Review*)

Zhou Z, Tran PQ, Martin C, **Rohwer RR**, Baker BJ, McMahon KD, Anantharaman K. 2024. A 20-year time-series of a freshwater lake reveals seasonal dynamics and environmental drivers of viral diversity, ecology, and evolution. *bioRxiv* <https://doi.org/10.1101/2024.02.06.579183>. (*Accepted, Nature Microbiology*)

Krinos AI, Bowers RM, **Rohwer RR**, McMahon KD, Woyke T, Schulz F. 2024. Time-series metagenomics reveals changing protistan ecology of a temperate dimictic lake. *bioRxiv*
<https://doi.org/10.1101/2024.02.09.579653>. (*In Review, Microbiome*)

Oliver T, Varghese N, Roux S, Schulz F, Huntemann M, Clum A, Foster B, Foster B, Riley R, LaButti K, Egan R, Hajek P, Mukherjee S, Ovchinnikova G, Reddy TBK, Calhoun S, Hayes RD, **Rohwer RR**, Zhou Z, Daum C, Copeland A, Chen I-MA, Ivanova NN, Kyrpides NC, Mouncey NJ, Glavina del Rio T, Grigoriev IV, Hofmeyr S, Olikier L, Yelick K, Anantharaman K, McMahon KD, Woyke T, Eloë-Fadrosch EA. 2024. Coassembly and binning of a twenty-year metagenomic time-series from Lake Mendota. (*Accepted, Scientific Data*)

Vander Zanden MJ, Gorsky A, Hansen GJA, Johnson PTJ, Latzka AW, Mikulyuk A, **Rohwer RR**, Spear MJ, Walsh JR. 2024. Nine Lessons about Aquatic Invasive Species from the North Temperate Lakes Long-Term Ecological Research Program. (*Accepted, BioScience*)

Rohwer RR, McMahon KD. 2022. Lake iTag measurements over nineteen years, introducing the limony dataset. bioRxiv <https://doi.org/10.1101/2022.08.04.502869>.
Software: github.com/rrohwer/limony

Datasets

Rohwer RR. 2024. rrohwer/TYMEFLIES_manuscript: v1.0 (v1.0). Zenodo.

Rohwer RR, Ladwig R, Dugan HA, Hanson PC, Walsh JR, Vander Zanden MJ. 2023. Dataset: The aftermath of a trophic cascade: Increased anoxia following invasive species introduction of a eutrophic lake (v0.1). Zenodo.

Rohwer RR, McMahon KD. 2022. Lake Mendota Microbial Observatory Secchi Disk Measurements 2012-present. Environmental Data Initiative.

Rohwer RR, McMahon KD. 2022. Lake Mendota Microbial Observatory Temperature, Dissolved Oxygen, pH, and conductivity data, 2006-present. Environmental Data Initiative.

Hall M, **Rohwer R**, Perrie J, McMahon K, Beiko R. 2017. Ananke Data Sets. figshare <https://doi.org/10.6084/m9.figshare.c.3707938.v1>.

Patents

Wang-Nolan W, Pena POV, **Rohwer RR**. April 2014. Milk and dairy products containing omega-3 and omega-6 hufas and pasteurization processes thereof. WO2012122531A3.

Grants and Fellowships

- ASLO 2024 Early Career and Childcare Grants, **\$410** 2024
- Texas Advanced Computing Center Research Allocation, **10,000 node hours** 2024
- ESA 2023 Registration Grant, **\$360** 2023
- Texas Advanced Computing Center Research Allocation, **20,000 node hours** 2023
- ASLO 2023 Travel Grant, **\$500** 2023
- Texas Advanced Computing Center Research Allocation, **31,000 node hours** 2022
- NSF Postdoctoral Research Fellowship in Biology Supplement, **\$69,000** 2021
- NSF Postdoctoral Research Fellowship in Biology, **\$138,000** 2020
- E. Michael and Winona Foster WARF Wisconsin Idea Fellowship, **\$29,500** 2018
- The ISME16 Travel Grant, **€300** 2016
- Anna Grant Birge Memorial Award for summer research in limnology, **\$1,100** 2015
- Anna Grant Birge Memorial Award for summer research in limnology, **\$2,050** 2014

Awards

- Best Early Career Flash Talk, EGSB Annual Meeting, \$500 2022

- JW Costerton Award, €500 2014
For research that best evolves new theories in microbial ecology and wider interdisciplinary significance, awarded through the International Society for Microbial Ecology at ISME15
- The International Society for Microbial Ecology (ISME15) Poster Award 2014
- High departmental honors in Biochemistry, Oberlin College 2009

Teaching and Mentoring

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| Sofia Haggard Arce , UT Austin Interdisciplinary Life Sciences PhD student | 2024 - |
| Natalie Sarno , UT Austin Marine Science Institute PhD student | 2024 - |
| Emily Aguilar-Pine , UT Austin Integrative Biology Technician | 2024 - |
| Jasmine Yuan , UT Austin Biology undergraduate student | 2023 - |
| Jacqueline Lemaire , UW-Madison Genetics PhD student | 2023 - |
| Peter Golightly , UT Austin Ecology, Evolution, and Behavior master's student | 2023 |
| Riley Hale , UC San Diego Scripps Institution of Oceanography PhD student | 2018 - |
| NSF Graduate Research Fellowship in Biology | |
| Masters Thesis: Characterization of the cyanobacterial community and cyanotoxins in Lake Mendota across time, space, and the water column | |
| North Temperate Lakes Long Term Ecological Research Program REU | |
| Krys Kibler , UW-Madison Freshwater and Marine Sciences PhD student | 2019 |
| Kylie (Zhiyan) Huang , UW-Madison Industrial Engineering undergraduate student | 2015 - 2018 |
| Samuel Schmitz , UW-Madison Microbiology undergraduate student | 2015 - 2016 |
| American Society of Microbiology Undergraduate Research Fellowship | |
| William Harmon Write Microbiology Undergraduate Research Scholarship | |
| Joshua Breider , UW-Madison Microbiology undergraduate student | 2015 - 2016 |
| Patrick Dowd , UW-Madison Civil and Environmental Engineering undergraduate student | 2014 - 2015 |
| Holstrom Environmental Fellowship Award | |
| Jean B. and E.T. Juday Award | |
| Emily Hardcastle , UW-Madison Chemistry undergraduate student | 2015 |
| Kaitlin Jasper , UW-Madison Biology undergraduate student | 2012 - 2015 |
| North Temperate Lakes Long Term Ecological Research Program REU | |
| Holstrom Environmental Fellowship Award | |
| Senior Biology Honors Thesis | |
| Rachel Russel , McFarland High School student | 2013 |

Invited Talks

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| Bacterial ecology and evolution converge on seasonal and decadal scales | 2024 |
| Association for the Sciences of Limnology and Oceanography (ASLO24) | |
| Madison, WI | |
| Freshwater bacteria populations shift on decadal and seasonal time scales over 20 years | 2023 |
| Center for Computational, Evolutionary and Human Genomics Seminar, | |

Stanford University, Stanford, CA

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| Direct observations of ecological and evolutionary dynamics in a two-decade freshwater microbial time series. Scripps Institution of Oceanography Ecology Seminar, University of California San Diego, San Diego, CA | 2023 |
| Computational Barriers to Realistic Reproducibility: Examples From a 20-year, 471-metagenome Freshwater Time Series, Incorporating Data Science and Open Science in Aquatic Research (Hacking Limnology), Virtual Summit | 2023 |
| Species Invasions Shift Microbial Phenology in a Two-Decade Freshwater Time Series Mycotoxins and Phycotoxins Gordon Research Conference, Easton, MA (Cancelled due to positive COVID test) | 2023 |
| Seasonal Patterns and Decadal Shifts: Microbial Change in a 20-year Freshwater Time Series College of Earth, Ocean, and Atmospheric Sciences Ocean Ecology and Biogeochemistry Seminar, Oregon State University, Corvallis, OR | 2023 |
| Custom Databases in Amplicon Sequencing Leveraging Microbiome Research in Environmental Engineering and Science AEESP Workshop, St. Louis, MO | 2022 |
| Macro-scale Invasions Shift Microbial Phenology North Temperate Lakes LTER Science Meeting, Madison, WI | 2022 |

Contributed Talks

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| Freshwater Bacteria Populations Shift on Decadal and Seasonal Time Scales Over 20 Years Ecological Society of America (ESA 2023), Portland, OR | 2023 |
| Freshwater Bacteria Populations Respond to Seasonal and Decadal Environmental Change Over 20 Years, Association for the Sciences of Limnology and Oceanography (ASLO23) Palma de Mallorca, Spain | 2023 |
| Species Invasions Shift Microbial Phenology in a Two-decade Freshwater Time Series 18 th International Symposium on Microbial Ecology (ISME18), Lausanne, Switzerland | 2022 |
| Macro-species Invasions Shift Microbial Phenology over 19 years Joint Aquatic Sciences Meeting (JASM 2022), Grand Rapids, MI | 2022 |
| Invasive Species Shift Cyanobacterial Phenology EGSB Annual Meeting, Lawrence Berkeley National Lab, Berkeley, CA | 2022 |
| Temporal and Taxonomic Scales of Change in Freshwater Microbial Communities Defense, UW-Madison: https://youtu.be/VI-H1KATQI0 | 2019 |
| Facilitating further integration of microbes into long-term ecological research (workshop leader) Long-Term Ecological Research All Scientists' Meeting (LTER-ASM), Pacific Grove, CA | 2018 |
| Development of Quantum Dot Probes for Studies of Synergy Between Components of the Wood Degrading Fungal Enzymes, DOE Genomic Science Contractors Grantees Meeting | 2012 |

Posters

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| Temporal Scales of Change in Freshwater Microbial Communities Long-Term Ecological Research All Scientists' Meeting (LTER-ASM), Pacific Grove, CA | 2018 |
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| Temporal Scales of Change in Freshwater Microbial Communities 17 th International Symposium on Microbial Ecology (ISME17), Leipzig, Germany | 2018 |
| What Does Real Microbial Community Change Look Like? Incorporating Variability of Biological Duplicates into 16S Analyses, Madison Microbiome Meeting, UW-Madison | 2018 |
| 17 Years of Bacterial Community Dynamics in Lake Mendota Water@UW Poster Session, UW-Madison | 2017 |
| Finer Taxonomic Resolution Achieved with a Custom Database: Introducing TaxAss 16 th International Symposium on Microbial Ecology (ISME16), Montreal, Canada | 2016 |
| Finer Taxonomic Resolution Achieved with a Custom Database: Introducing TaxAss Kenneth B. Raper Symposium, UW-Madison | 2016 |
| A Decade of Microbial Community Dynamics in Lake Mendota 15 th International Symposium on Microbial Ecology (ISME15), Seoul, South Korea | 2014 |
| Microbial Communities in Lake Mendota and Trout Bog Intl. Water Association Microbial Ecology & Water Engineering Conference (MEWE), Ann Arbor, MI | 2013 |
| Microbial Communities in Lake Mendota and Trout Bog DOE Joint Genome Institute Microbial Genomics and Metagenomics Workshop, Walnut Creek, CA | 2013 |

Training

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| Introduction to Programming for Bioinformatics (Python short course) Center for Computational Biology, University of California, Berkeley, Berkeley, CA | 2021 |
| ASM Scientific Writing and Publishing Online Course | 2018 |
| Microbial Genomics and Metagenomics Workshop US DOE Joint Genome Institute, Walnut Creek, CA | 2013 |
| Dispersions in Liquids: Suspensions, Emulsions, and Foams American Chemical Society Short Course, Anaheim, CA | 2012 |
| Sea Education Association Oceanography Study Abroad Program Accredited by Boston University, Woods Hole, MA, and North Pacific Gyre | 2008 |

Outreach

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| Video The Megadata of Lake Mendota: Sample Set Up for a 20-year Microbial Archive DOE Joint Genome Institute YouTube channel | 2024 |
| Video The Megadata of Lake Mendota: Sampling a Frozen Lake DOE Joint Genome Institute YouTube channel | 2023 |
| Podcast, The Megadata of Lake Mendota – Part 3: Boating Out to David Buoy Genome Insider S4 Episode 8 | 2023 |
| Press Rivers Are Drowning in Toxic Sludge, by Chris Baraniuk Wired | 2023 |
| Radio Species Invasions impact on Microbes and Toxins in Lake Mendota 15 min interview with Madison's WORT 89.9 FM on the 8 O'clock Buzz | 2023 |

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| Tweet | Viral tweet about long-term data, phenology, climate change, and data visualization 2.1M Views, 37.2K Likes | 2023 |
| Press | Earlier Algae Blooms, Lingering Toxins, by Adam Hinterthuer NSF News, Phys.org, UW-Madison News, and Center for Limnology Water Blogged | 2023 |
| Mentor | Big Sister in Big Brothers Big Sisters Madison Chapter | 2014 - 2023 |
| Demo | Sampling Methods walk-by hands-on lesson Annual Center For Limnology Open House | 2013 - 2019 |
| Demo | Sonde measurements paired with shiny app visualization of full time series Wisconsin Congressional Staffers Research Tour App: tiny.cc/mymendota Code: github.com/rrohwer/MyMendota/ | 2019 |
| Press | Wading through Mendota's Mysteries, by Erik Ness GROW, Wisconsin's Magazine for the Life Sciences | 2017 |
| Talk | Limnology on Lake Mendota Hoofer Sailing Club Winter Ed Seminar Series | 2016 |
| Demo | Lake Stratification 30-minute hands-on lesson Expanding Your Horizons, program for middle school age girls | 2015 |
| Demo | Winogradsky Columns walk-by hands-on lesson Wisconsin Science Festival | 2015 |

Professional Memberships

North Temperate Lakes Long-Term Ecological Research (NTL-LTER)

International Society for Microbial Ecology (ISME)

American Society for Microbiology (ASM)

American Society for Limnology and Oceanography (ASLO)

Ecological Society of America (ESA)

Service

Reviewer: Limnology and Oceanography, Nature Biotechnology, Freshwater Biology, Environmental Microbiology, Ecosphere, Scientific Reports, mSystems, mSphere, Water Research

Stack Overflow Contributor: Top 9% in 2023

Software Maintenance and Support: limony R package (<https://github.com/rrohwer/limony>)

TaxAss software (<https://github.com/McMahonLab/TaxAss>)