

Amanda R. Williams

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PROFESSIONAL PREPARATION

Rutgers, The State University of New Jersey,
B.A., Chemistry and Applied Mathematics (Summa cum laude)
09/2011 - 01/2015

Rutgers, The State University of New Jersey,
Ph.D., Biochemistry and Microbiology
09/2018 - Present

APPOINTMENTS

PhD Candidate: Rutgers, The State University of New Jersey
Department of Biochemistry and Microbiology **September 2018-Present**
PI Debashish Bhattacharya
Thesis: *A multi-omics approach to elucidate the evolution and adaptation of the coral reef holobiont*

L'Oréal USA Research and Innovation, Clark, NJ **June 2015-August 2018**
Skincare Department, Formulation Chemist

Laboratory Technician: Rutgers, The State University of New Jersey
Department of Marine and Coastal Sciences **January 2015-June 2015**

- Worked on various projects, primarily preparing foraminifera to gain deep ocean temperature reconstructions using Mg/Ca ratios with Prof Elisabeth Sikes.

Undergraduate Research: Rutgers, The State University of New Jersey
Department of Chemistry **January 2012- January 2015**

- Sea surface temperature reconstruction from the Holocene to present in the Southern Hemisphere using alkenones with Prof. Elisabeth Sikes as my honors thesis. The resultant publication is listed below.

Department of Marine and Coastal Sciences **September 2011-December 2012**

- Research on understanding and correcting thermal lag in Slocum Glider unpumped CTD's with Prof Scott Glenn and Prof Oscar Schofield

SKILLS AND INTERESTS

- ❖ Utilizing multi-omics approaches (genomic, transcriptomic, proteomic, and metabolomic) individually, as well multi-omics data integration, to provide useful insights into the flow of biological information at multiple levels to unravel the basis of the symbiotic relationships and organisms' responses to stress.

- ❖ The connection between the genome and cellular chemistry through omics data to generate hypotheses and direct experiments to test them.
- ❖ Mass spectrometer instrumentation and utilization (GC-MS, GC, LC-MS, MS/MS, and NMR).
- ❖ Next-generation sequencing (Illumina, PacBio) library preparation, quantitation and quality control using manufacturer-approved and custom wetlab protocols.
- ❖ Bioinformatic analysis of multiomics data using high-performance computing infrastructure.
- ❖ Skills include, but are not limited to:
 - Metabolite extraction (polar and non-polar), sample preparation, data generation, data quality control, and data analysis
 - Metabolite identification
 - Protein extraction, data quality control, and data analysis
 - Proteomic functional annotation
 - Genome/transcriptome library assembly and functional annotation
 - Shotgun metagenome sequencing, binning, functional and taxonomic classification
 - Differential expression e.g., RNAseq analysis
 - Enrichment analysis
 - Phylogenetic/phylogenomic evolutionary analyses
 - Multiomics data integration
 - Network construction (co-regulation, co-occurrence, PPI)
- ❖ Scripting languages: R, Python, Perl, Ruby, awk, sed, Bash.
- ❖ Systems: Mac OS X, multiple clustered and stand-alone Linux/Unix operating system based HPC servers
- ❖ Excellent written, verbal, and team-oriented communication skills.
- ❖ Science communication

FELLOWSHIPS AND AWARDS

Coastal Climate Risk and Resilience (C2R2) Fellow (2018-2020) - \$96,000
 ASLO LOREX Fellow (2019-2020) - \$15,000
 NSF Graduate Research Fellowship Program (GRFP) (2020-2023) - \$138,000
 Robert S. and Eileen A. Robison Scholarship Award for Excellence in Graduate Studies (2020)
 Eveleigh and Cuskey Graduate Student Travel Awards (2021) - \$2,000

PUBLICATIONS

Sikes E., Williams A., Schiraldi B. 2019. Seasonal and latitudinal response of New Zealand sea surface temperature to warming climate since the last glaciation: Comparing alkenones to Mg/Ca foraminiferal reconstructions. In revision for AGU. *Paleoceanography and Paleoclimatology*, 34(11), pp.1816-1832.

Williams, A., Chiles, E.N., Conetta, D., Pathmanathan, J.S., Cleves, P.A., Putnam, H.M., Su, X. and Bhattacharya, D., 2020. Metabolomic shifts associated with heat stress in coral holobionts. *Science Advances*, 7(1), p.eabd4210.

- Williams, A., Pathmanathan, J.S., Stephens, T.G., Su, X., Chiles, E.N., Conetta, D., Putnam, H.M. and Bhattacharya, D., 2021. Multi-omic characterization of the thermal stress phenome in the stony coral *Montipora capitata*. *PeerJ*, 9, p.e12335.
- Stephens, T.G., Strand, E.L., Mohamed, A.R., Williams, A., Chiles, E.N., Su, X., Bhattacharya, D. and Putnam, H.M., 2021. Ploidy variation and its implications for reproduction and population dynamics in two sympatric Hawaiian coral species. *bioRxiv*.
- Williams, A., Shumaker, A., Stephens, T.G., and Bhattacharya, D., 2022. Peeling back the layers of coral holobiont multi-omics data. *In review at mSystems*.
- Zhuolun, M*, Williams, A*, Liau, P., Stephens, T.S., Drury, C., Javanmard, M., and Bhattacharya, D. 2022. Development of a portable toolkit to diagnose coral stress. *Submitted to Scientific Reports*.

RESEARCH CONFERENCE PRESENTATIONS

- 2012 RUCOOL Undergraduate Poster Presentation. Williams, A., Kerfoot, J., Schofield, O., Kohut, J., Glenn, S. *Investigating Thermal Lag in Slocum Glider CTD Data*. Poster
- 2013 Rutgers Chemistry Undergraduate Research Presentation. Williams, A., Vinyard, D., Dismukes, C. *Quantifying the efficiency of the Water Oxidation Center in Photosystem II*. Poster
- 2020 AGU Ocean Sciences Meeting. Williams, A., Su, X., Bhattacharya, D. *A multi-omics approach to the analysis of coral health*. Poster
- 2020 American Society of Mass Spectrometry. Chiles, E., Williams, A., Bhattacharya, D., Su, X. *Identifying heat stress correlated metabolites in reef building corals*. Poster
- 2020 International Coral Reef Symposium. Williams, A., Su, X., Bhattacharya, D. *Analysis of coral health using multi-omic data*. Oral
- 2021 Sigma Xi Virtual Student Research Showcase. Williams, A., Pathmanathan, J., Bhattacharya, D. *Elucidating the stress phenome in reef building corals with a multi-omics approach*. Oral
- 2021 Rutgers Microbiome Program. Amanda Williams, Zhuolun Meng, Mehdi Javanmard, Debashish Bhattacharya. *Applying diagnostic test devices to detect bleaching stress in the coral holobiont*. Poster
- 2021 International Coral Reef Symposium. Williams, A., Su, X., Bhattacharya, D. *Peeling back the layers of coral holobiont multi-omics data*. Oral