Katherine Mateos

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Education

Expected June 2021	Carleton College, Northfield MN B.A. in Chemistry (Biochemistry)
Fall 2019	SIT Study Abroad, Australia Rainforest, Reef, and Cultural Ecology

Research Experience

Jan 2019 – Present	Anderson Lab, Carleton College, Northfield MN **Undergraduate Research Assistant** · Reconstruct the early evolution of microbial metabolisms relating to the sulfur and nitrogen cycle. · Use publicly available genomic data to build phylogenetic trees and identify incidences of evolutionary events.
Nov 2019	Chase Lab, IMAS at University of Tasmania, Hobart TAS Australia **Visiting Research Assistant** · Improved paleoceanographic analysis by optimizing Thorium-230 protocols. · Acid digested sediment and analyzed using ICP-MS.
Jun 2019 – Aug 2019	Lee Lab, Grice Marine Lab at College of Charleston, Charleston SC **Fort Johnson REU Summer Fellow** · Investigated sulfur cycling by *Shewanella* sp. BF02, a bacterial isolate from Blood Falls, Antarctica. · Used membrane-inlet mass spectrometry (MIMS) and a viable counting procedure to analyze biogeochemical cycling in anaerobic *Shewanella* cultures.

Teaching Experience

Sep 2018 – Present	Carleton College Academic Support Center, Northfield MN **"Prefect" Teaching Assistant** · Class Supported: Introduction to Chemistry (CHEM 122), Principles of Chemistry II (CHEM 224)
Jan 2020 – March 2020	Carleton College Chemistry Department, Northfield MN **Problem Solving Facilitator** · Classes Supported: Principles of Chemistry I (CHEM 123) and II (CHEM 224)
Jan 2018 – June 2019	Carleton College Chemistry Department, Northfield MN **Laboratory Teaching Assistant** · Classes Supported: Principles of Chemistry I (CHEM 123) and II (CHEM 224), Organic Chemistry II (CHEM 234)

Publications

Parsons, C; Stueeken, E; Rosen, C; **Mateos, K**; Anderson, R. Radiation of nitrogen-metabolizing enzymes across the tree of life tracks environmental transitions in Earth history. *Geobiology*. 2021; 19: 18– 34. https://doi.org/10.1111/gbi.12419.

Mateos, K. Improving Thorium-230 Determination in Marine Sediment. SIT Study Abroad Independent Study Project (ISP) Collection. 2019.

Presentations

Mateos, K; Stueeken, E; Anderson, R. "Reconstructing the Evolutionary History of Dissimilatory Sulfur Cycling Genes" American Geophysical Union Fall Meeting, December 9, 2020; Northfield, MN. *Virtual Poster Session*

Mateos, K; Stueeken, E; Anderson, R. "Reconstructing the Evolutionary History of Sulfur Cycling Genes" Carleton College Undergraduate Research Symposium, October, 2020; Northfield, MN. *Virtual Poster Session*

Mateos, K. "Improving Thorium-230 Determination in Marine Sediment" SIT Study Abroad Presentations, November 30, 2019; Cairns, QLD, Australia. *Independent Project Presentation*

Mateos, K; Lee, P. "Sulfur metabolism by the Antarctic Bacterium *Shewanella* sp. BF02 and the Production of Volatile Organic Sulfur Compounds." Fort Johnson REU Colloquium, August 7, 2019; Charleston, SC.

Relevant Coursework

Chemistry	Introductory and Organic Chemistry series with labs (CHEM 224, 233, 234), Kinetics Laboratory (CHEM 301), Quantum Spectroscopy Laboratory (CHEM 302), Biological Chemistry and Lab (CHEM 320, 321), Chemical Thermodynamics (CHEM 343), Quantum Chemistry (CHEM 344) , Instrumental Chemical Analysis and lab (CHEM 330, 331), Inorganic Chemistry and lab (CHEM 351, 352), Organometallic Chemistry (CHEM 358)
Biology	Introductory series with labs (BIOL 125, 126), Microbiology with lab (BIOL 234, 235), Genetics with lab (BIOL 240, 241), Bioinformatics and Genomics with lab (BIOL 338, 339), Biochemistry (BIOL 380), Rainforest Reef and Cultural Ecology (ENVI 3000; SIT Study Abroad)
Other	Introductory to Physics and E&M (PHYS 131, 152,), Calculus through Multi-variable (MATH 120, 210), Environmental Field Study Seminar (ENVI 3500; SIT Study Abroad)

Skills

Wet Lab	**Bench Skills:** Anaerobic culture, microbial spread-plating, acid digestion, general wet lab techniques and safety procedures **Analytical Chemistry:** H-NMR, C-NMR, P-NMR, UV-VIS spectroscopy, FT-IR spectroscopy, GC-MS, MIMS, ICP-MS, HPLC
Bioinformatics	**Skills:** Comprehensive metagenomic pipeline (genome assembly, mapping, annotation, binning), sequence alignment, phylogenetic trees, database use **Tools:** BLAST, MUSCLE, RAxML, Annotree, GToTree, Phylobayes, AnGST, GTDB
Computer	Excel, Microsoft Office Suite, LaTeX, Unix, Python, HTML, CSS, ChemDraw, MestreNova

Extracurricular and Leadership Experience

2019-Present	Carleton Chemistry Major Leadership "The Ring" **Co-President**
2017-Present	Project Friendship **Mentor**, **Program Director**, and **Board Member**
2014-Present	Daybreak Day Camp **Counselor** and **Volunteer**
2018-Present	Carleton College **Tour Guide** and **Slot Leader**
2019-Present	Food Recovery Network **Volunteer**
2017-Present	**Dancer** with Carleton's Jazz Contemporary Company (JCO) and Experimental Dance Board (EDB)
2019-2020	Hope Center **SafeLine Volunteer**
2018	Carleton College **Orientation Leader**

Awards and Grants

2021	Graduate Research Fellowship, National Science Foundation (NSF-GRFP)
2020	Dean of College Research Partner, Carleton College
2019	Fort Johnson REU Fellowship, College of Charleston and NSF