

Marlena Bartkus

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EDUCATION

St. Lawrence University June 2022
Bachelor of Science in Biology Cumulative GPA: 3.5/4.0
Oakmont Regional High School (Summer Enrollment at Mount Wachusett CC) June 2018
 GPA: 3.89/4.0

RELEVANT COURSEWORK

Grades: Frequently recognized as part of the Dean's List.
Courses: Ecology, Epigenetics, Endocrinology, Cell Biology, Soil Microbial Diversity, Mosses and Sedges, Senior Research in Soil Microbial Dynamics

SKILLS

Languages: Python, R, MATLAB, L^AT_EX
Retained Skills: Gas Chromatography, ELISAs, PCR, Analytical Chemistry, Field Sampling, Trace Gas Analysis, Spectrophotometry, Literature Data Extraction, Hardware and Software Engineering
Interests: Anthropogenic Ecology, Biogeochemistry, Conservation, Environmental Modeling, Evolution and Natural Development, Greenhouse Gas Flux, Microbial Ecology, Microbiome Behavior, Plant-Soil Interface

CURRENT RESEARCH PROJECTS

Methane Cycling in Northern Forests | *Woodwell Climate Research Center* Summer 2023-Ongoing
 Assisting Kathleen Savage in quantifying greenhouse gas exchange in soils using our incubation multiplexer to measure flux. This project aims to understand the drivers of methane source and sink transitions in Howland Forest of Maine.

Quantifying Carbon Fluxes in wetland tropics | *Woodwell Climate Research Center* Summer 2023-Ongoing
 Aiding Marcia Macedo in pre- and post-field work for the Tanguro project, such as preparing materials and running samples in the lab. The Tanguro project is based at Tanguro Field Station, located in Mato Grosso, Brazil, is a farm on the front lines of deforestation in the Amazon.

Permafrost Pathways | *Woodwell Climate Research Center* Summer 2023-Ongoing
 The Permafrost Pathways project is the largest and most involved project at the Center. Under the instruction of Jackie Hung, performed biogeochemical analysis on sediment, resin, and gas samples from the Yukon-Kuskokwim Delta.

Cover Crops Soil Carbon | *Woodwell Climate Research Center* Summer 2023-Ongoing
 Supporting Taniya RoyChowdhury in understanding the indicators of changes in soil health in agricultural systems under cover crops. This study involves incubating 300 soil samples from industrial farms in Iowa.

PREVIOUS RESEARCH PROJECTS

Permafrost Warming Database | *Woodwell Climate Research Center* Fall 2023-Spring 2024
 Actively engaged in comprehensive literature review pertaining to permafrost warming across diverse Arctic locations. The focus involves analyzing research utilizing methodologies such as snow fences and open top chambers, which simulates warming conditions in order to determine how soil and flora respond to permafrost thaw.

Acute Damage Induced Actin | *Dartmouth College Biochemistry and Cell Biology* Summer 2022-Summer 2023
 Previous members of the Higgs Lab at Dartmouth College noticed that actin would polymerize around mitochondria as a result of acute mitochondrial stress. Focused on treating various mammalian cell lines with drugs to promote or inhibit ADA.

Bokashi Fermented Compost | *St. Lawrence University* Summer 2021-Summer 2022
 Designed and conducted an original research project titled Preliminary Investigations on the Use of *Bokashi Effective Microbes* and Fermented Compost on Soil Microbial Community Profile, Soil Fertility, and Crop Yield under the mentorship of Alice Tarun. Bokashi is a composting technique that utilizes known microbes under anaerobic conditions to ferment organic scraps. The end product is used as a fertilizer in soils, commonly in garden settings.

Soil Microbial Diversity | *St. Lawrence University* Summer 2021
 Instructed by Alice Tarun. Objectives included isolating single colonies of bacteria, performing a series of assays to understand the characteristics of the isolate, and, if the isolate showed potential, performing identifying tests to understand its novelty.

RELEVANT WORK EXPERIENCE

Research Assistant | *Woodwell Climate Research Center*

Summer 2023 – Ongoing

- Collaborated on multiple projects in climates including agriculture, permafrost, marshlands, and tropics; all with a focus on biogeochemistry.
- Developed and modified procedures and methods for new and revised assays.
- Assessed soil health using characteristics such as water content, gas exchange, community genomics, and nutrients.
- Used R and Python to collect, process, organize, and visualize data.
- Aided in the development and refinement of an automated incubation multiplexer. Developed specified codes and procedures for each project.
- Conducted in-lab incubations using manual and automated techniques.
- Performed gas chromatography to measure greenhouse gasses in the headspace of soil and water samples.
- Analyzed nutrients using equipment such as an Elementar and SEAL Discrete Analyzer to quantify carbon, phosphate, ammonia, and nitrogen content.
- Used ELISAs to isolate microbial communal DNA. Sent to secondary lab for sequencing.
- Performed literature research to compile data on the impact of permafrost warming on soil and plant dynamics.

Laboratory Technician | *Dartmouth College*

Sept. 2022 – July 2023

- Maintained laboratory stock and tracked spending.
- Designed experiments, wrote protocols, made necessary calculations, prepared reagents and equipment.
- Conducted experiments, redesigned as needed, blinded and processed data.
- Maintained mammalian cell lines, regularly count and split, made media specified to cell needs.
- Collaborated with graduate students and postdoctoral researchers. Maintained a laboratory notebook with protocols, results, and interpretations.
- Presented ongoing research for feedback from peers.
- Conducted literature reviews to develop insights into experimental significance and methods, reported findings back to team members.
- Monitored lab equipment and organized maintenance and repairs when needed.

Biology Lab Prep | *St. Lawrence University*

Aug. 2021 – Nov. 2021

- Prepared materials, disposed of waste, and inspected equipment in the biology department.

Teacher's Assistant | *St. Lawrence University*

Aug. 2020 – Nov. 2021

- Helped the professor prepare for lectures, labs, and field work; organized the classroom, and ran assays to confirm class data.