

Research Interest

My primary research interest is focused on investigating carboxyl-rich alicyclic molecules (CRAM), a highly refractory component of dissolved organic material (DOM). My studies focus on the reactivities of this poorly understood class of refractory dissolved organic material (RDOM) to photochemistry and microbes in natural waters through interdisciplinary methods.

Education

Boston University, Boston, Massachusetts

Expected Graduation 2023

GPA: 3.69

Second-Year Ph.D. Student, Earth and Environment

Fichtel Aquatic Optics and Photobiogeochemistry Laboratory

Occidental College, Los Angeles, California

Graduated May 2018

Bachelor of Arts, Geology

Minor, Biology

Research Experience

Plum Island Estuary Bio-Optical Time Series

6/2018-present

Performing river transects at the Plum Island Estuary long-term ecological research area (LTER) from May to October yearly in order to sample water and measure bio-optical properties in the water as well as measurements of dissolved organic carbon (DOC) and RDOM.

WISE-Man Project and Field Campaign, Québec, Canada

8/2018-present

Used hyperspectral sensor data to analyze water components and water quality in the Manicouagan/des Outardes Rivers coastal estuary system near Baie-Comeau, QC. Assisted Canadian collaborators in taking ship-board ground validation data to compare against the hyperspectral measurements. I also assisted in processing of water samples for optical components in the laboratory. Data analysis is ongoing.

Oze Geology Laboratory Research, Occidental College

1/2017-5/2018

Member of Dr. Chris Oze's lab. Spent the Spring '16 semester doing literature research on the role of hydrogen peroxide in Earth's systems. Researched the situations in which the chemical forms abiotically and its effect on all aspects of the environment. Research led to a had focus on the interaction between atmospherically-precipitated hydrogen peroxide and microbial communities.

REU Intern, Bigelow Laboratory for Ocean Sciences

5/2017-8/2017

With the assistance of my mentors Dr. Beth Orcutt and Dr. Stephanie Carr, developed two separate projects investigating microbial biofilm formation both in estuarine and recreated subsurface environments. Examined possible patterns and determinants for the activity of the microbes when faced with different substrates and phosphate treatments, respectively.

Vantuna Research Group Student Researcher, Occidental College

1/2015-1/2017

Worked in campus-based oceanographic lab where I assisted with various lab activities such as data entry, bacterial and water sampling, seining, plankton sampling, and dissection.

Teaching Experience

Teaching Fellow, Boston University

Introduction to Earth Systems Science

9/2018-12/2018

Directed three individual lab sections per week. Was responsible for approximately 40 students during the semester and held weekly office hours to help with both laboratory and lecture information. Graded all labs for the three sections weekly and assisted in grading of the class exams.

Teaching Assistant, Occidental College

Earth: Our Environment

1/2017-5/2017

Assisted professor in running labs and providing an additional resource for students in lab and outside running study sessions before each test and answering student questions throughout the semester.

Teaching Assistant, Occidental College

Earth's Climate: Past and Future

8/2017-12/2017

Assisted professor in running labs and providing an additional resource for students in lab and outside running study sessions before each test and answering student questions throughout the semester.

Relevant Coursework

Geology- Earth: Our Environment, Intro to Field Methods, Earth's Climate: Past and Future, Earth's Materials, Evolution of the Earth, Spatial Analysis with GIS, Advanced Field Mapping, Petrology, Geochemistry, Structural Geology, Sedimentology, Geophysics and Tectonics, Dynamic Landsurface Hydrology, Geographic Information Systems

Biology- Organisms on Earth, Ecology, Evolutionary Biology, Intro to Cell and Molecular Biology, Molecular Biology

Chemistry- General Chemistry, Organic Chemistry

Biogeochemistry- Aquatic Optics and Remote Sensing, Marine Biogeochemistry

Mathematics- Calculus I, Statistical Data Analysis, Multivariate Analysis for Geographers

Conference Presentations

2020 Ocean Sciences Meeting-

Weiser, M., Kaiser, K., & Fichot, C. G. (2020, February). Concentrations and Reactivities of Refractory Carboxyl-rich Alicyclic Molecules (CRAM) in Contrasting Natural Waters. In *Ocean Sciences Meeting 2020*. AGU.

Bélanger, S., Araujo, C., Cusson, M., Blot, C., Danhiez, F. P., Desrochers, J., ... & Légaré, B. (2020, February). WaterSat Imaging Spectrometer Experiment (WISE) for optically shallow and coastal waters assessment. In *Ocean Sciences Meeting 2020*. AGU.

2017 AGU Fall Meeting-

Weiser, M., D'Angelo, T., Carr, S.A. and Orcutt, B., 2017, December. Investigating Microbial Biofilm Formations on Crustal Rock Substrates. In *AGU Fall Meeting Abstracts*.

Laboratory Skills

Biology: seining, otter trawling, data entry, plankton trawling, water sampling, otolith sanding, dissection (fish, shark), DNA isolation and fingerprinting by PCR, Northern blotting, gel electrophoresis, DNA extraction and quantification, EPS quantification, Flow Cytometry for cell counting, epifluorescence microscopy

Geology: Petrographic microscopy, confocal microscopy, mineral identification techniques, spectrophotometry, ArcGIS analysis

Computer and Programming Skills

R, MATLAB, ArcGIS, seadas, Hydrolight, QGIS, Microsoft Suite (PowerPoint, Excel, etc.), IgPet, ImageJ, S-Plus

Additional Experience and Other Interests

4 Year Member of Occidental College Swim and Dive Team	2014-2018
4 Year Member and Captain of Occidental College Men's Water Polo Team	2014-2018
<i>ACWPC All-American Honorable Mention 2017</i>	
Graduate Assistant Swimming and Diving Coach, Boston University	2018-present