

ADDIEN WRAY

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EDUCATION

University of Washington

2016 - Present

Ph.D. Candidate, Earth and Space Sciences and Astrobiology

Advisor: Drew Gorman-Lewis, Associate Professor

University of California, Berkeley

2010 - 2014

B.A., Marine Science (with Honors) and Integrative Biology

Advisors: Prof. James Bishop; Dr. Tori Hoehler

Honors Thesis: Microbial Metabolic Activities Under Serpentinizing Conditions

RESEARCH EXPERIENCE

University of Washington

2016 - Present

Ph.D. Candidate

Seattle, WA

- Dissertation on thermodynamics of microbial interactions with heavy metals and nitrogen, both metabolically and through surface interactions
- Specific work involves the bioenergetics of heavy metal reduction and nitrogen fixation, as well as bacterial surface chemistry and the thermodynamics of metal adsorption onto bacterial surfaces
- Additional work includes the examination of symbiotic and parasitic prophages in SAR11 bacteria

UC Berkeley

August - October 2015

Research Assistant, Power Lab

Berkeley, CA

- Assisted graduate student Keith Bouma-Gregson on his metagenomic study of algae in the Eel River.

UC Berkeley

September 2015

Research Assistant, Eel River Critical Zone Observatory

Berkeley, CA

- Assisted with Stage 4 analysis of the Eel River ecosystem, in accordance with the NSF-CZO guidelines.

NASA-Ames Research Center

2011 - 2014

Intern, Exobiology Branch - Hoehler Lab

Mountain View, CA

- Helped establish a subsurface microbial observatory in a serpentinizing system in California by quantifying natural abundance of subsurface dissolved gases and establishing the role those gases play in the metabolisms of in situ microbial life
- Examined extremophiles in the hot springs at Yellowstone, through collaboration with professors from Montana State and the University of Montana.
- Capped work from 2011 and 2012 by expanding that research into an honors thesis

UC Berkeley

September 2015

Research Assistant, Bishop Lab

Berkeley, CA

- Supported research into the role of detritus in oceanic carbon cycling, with an emphasis on diurnal variations. On 5 research expeditions in the Pacific, operated CTD rosette system, filtered seawater samples to sample for PIC/POC, and deployed automated PIC/POC collection instruments.
- In support of the NSF-CZO project, designed and implemented a novel method for sampling subsurface dissolved gases in a riparian zone, analyzed samples on RGA and FID GCs, reduced data and performed statistical analysis, presented results to faculty and post-doctoral fellows.

TECHNICAL STRENGTHS

Computer Languages	Python, R
Microbiology	Anaerobic culturing, Fluorescence microscopy, Flow cytometry
Geochemistry	Calorimetry, Spectrophotometry, FTIR

PUBLICATIONS

- Wray, Addien & Gorman-Lewis, Drew. Geochemical effects on the adsorption of uranium onto *Shewanella putrefaciens* CN32. **Abstract**. American Chemical Society Fall Meeting. San Diego, CA. 2019.
- Wray, Addien & Gorman-Lewis, Drew. A Thermodynamic Description of Microbial U(VI) Reduction. **Abstract**. Goldschmidt Geochemistry Conference, Session 10m: Microbial Interactions with Minerals and Metals. Boston, MA. 2018.

PROFESSIONAL PRESENTATIONS

- Wray, Addien & Gorman-Lewis, Drew. Geochemical effects on the adsorption of uranium onto *Shewanella putrefaciens* CN32. Poster. American Chemical Society Fall Meeting. San Diego, CA. 2019.
- Wray, Addien & Gorman-Lewis, Drew. Geochemical effects on the adsorption of uranium onto *Shewanella putrefaciens* CN32. Oral Presentation. UW ESS Research Gala. 2019.
- Wray, Addien & Gorman-Lewis, Drew. A Thermodynamic Description of Microbial U(VI) Reduction. Oral Presentation at Goldschmidt Geochemistry Conference, Session 10m: Microbial Interactions with Minerals and Metals. Boston, MA. 2018.
- Wray, Addien & Gorman-Lewis, Drew. Competitive Fe(III) and U(VI) Reduction by *Shewanella putrefaciens* CN32: A Thermodynamic Perspective. Poster. UW ESS Research Gala. 2018.
- Wray, Addien & Gorman-Lewis, Drew. Strange Diets: A Thermodynamic Description of Microbial U(VI) Reduction. Poster. UW Research Gala. 2017.
- Wray, Addien; Kubo, Michael; Bolser, Diana; Hoehler, Tori. Carbon Monoxide and its Role in Subsurface Anaerobic Metabolisms. Poster Symposium, Astrobiology Science Conference. Atlanta, Georgia. April 2012.

ORGANIZATIONS

- American Chemical Society, Geochemistry Division
- University of Washington Astrobiology Program
- Center for Environmental Genomics, University of Washington

FELLOWSHIPS AND AWARDS

- UW Graduate School Fund for Excellence and Innovation Top Scholar Award (2016)
- UW Astrobiology Scholar Award (2016)
- Achievement Rewards for College Scientists (ARCS) Foundation Fellow (2016-2019)
- Inquisitive Graduate Student Fund Awardee, UW ESS (2017 & 2019)
- Best Overall Poster, UW ESS Gala 2018 (2018)
- Richard E. Fuller Endowed Fund Awardee, UW ESS (2018)
- Peter Misch Fellowship, UW ESS (2019 & 2020)
- Stephen G. Warren Endowed Fund for Graduate Students in ESS Awardee, UW ESS (2020)