

Career Relevance: As an early-career researcher in terrestrial biogeochemistry, I am excited to tackle questions about the fundamentals of ecosystem N cycling, especially questions linking trace element geochemistry to ecosystem N and C cycling. I am particularly interested in N fixation, and my dissertation research focuses on controls of free-living N fixation in terrestrial ecosystems, making this project a logical extension of my graduate work. I am currently preparing a manuscript for publication on Mo limitation of free-living N fixation and look forward to the opportunity to study interactions between Mo and N cycling in greater depth. I am also excited by the opportunity to expand my research to symbiotic N fixation, as my previous thesis work has focused on free-living N fixation. My dissertation research makes use of N stable isotopic tools; this project will enable me to expand my isotopic skill set to the use of Mo stable isotopes. My undergraduate degree is in biochemistry, and I look forward to applying my skills and knowledge of biochemistry to examine Mo recycling and interaction with soil organic matter.

My career goal is to be a principal investigator and continue to research questions involving terrestrial N cycling and links to other biogeochemical cycles. This internship will allow me to gain additional N cycling research experience and work with mentors who are experts in my areas of research interest: Dr. Steven Perakis (USGS) is an expert in forest biogeochemistry, and works collaboratively with Dr. Julie Pett-Ridge (Oregon State University), an expert in Mo geochemistry. Working closely with Dr. Perakis and Dr. Pett-Ridge will contribute to my development as a researcher and allow me to build lasting professional collaborations. This internship will also allow me access to Dr. Perakis's temperate forest field sites, which have already been well-studied and provide an ideal natural laboratory in which to examine coupled C-N-Mo cycling. Additionally, I will be able to utilize the W.M. Keck Collaboratory for Plasma Spectrometry at Oregon State University for my measurements of Mo concentrations and Mo isotopes. Although I am familiar with the use of stable isotope data, I have not yet had the opportunity to operate the machinery myself. The Keck Collaboratory encourages users to conduct their own measurements and offers training on machine use. Having access to this facility will thus allow me to develop new skills in mass spectrometry that I will be able to draw upon in my later research career.

Professional Development Plan: My career goal is to be a principal investigator in the field of terrestrial biogeochemistry. I am particularly interested in N fixation, interactions between multiple nutrient cycles, and the use of stable isotopic tools to answer questions about N cycling. This project will enable me to continue to develop skills that will be essential in my future career, such as designing and conducting field experiments, performing chemical and isotopic analyses, performing data analysis, and writing peer-reviewed articles based on that research. This project will also help me develop new skills in working with Mo stable isotopes and the use of ICP-MS equipment. I look forward to establishing a professional collaboration with Steven Perakis and Julie Pett-Ridge through this internship. Their mentorship will contribute to my development as a researcher and I hope that it will lead to a continued productive research collaboration. This project is aligned with my previous publications, current dissertation work, and future research interests, so these are valuable collaborations for me to build. Furthermore, because I am interested in a career as a researcher with the U.S. Geological Survey, spending time in a USGS laboratory and building collaborations with USGS scientists is an important step in my professional development.