

Dr. Trinity Hamilton

She/Her/Hers

Describe your research interests.

Our lab studies some of the smallest life forms on earth - bacteria and archaea. We study these microbes in environments you might be familiar with — lakes, rivers, streams, and snow. And environments you might be less familiar with (and where we might not like to live or play) — hot springs and glaciers. Our research addresses questions about how microbes figured out how to use sunlight, how microbes live across such a large temperature range (snow and ice to boiling water), and how tiny life (microbes) impacts big environmental processes including greenhouse gases, oxygen, and nitrogen in the air we breath.

Outside of your scientific studies, what are your other interests?

I like to read, hike, and bike. However, in addition to science, my job includes many other aspects that I enjoy including teaching, evaluating science outside my own, and serving on committees and panels. I teach classes at both the graduate and undergraduate level at the U. I also mentor and advise students and researchers in the lab.

What is a question people always ask you when they learn what you do? What is your typical response?

Whoa what's the coolest place you have been? To which I usually respond Iceland — the landscape is almost unbelievable (often used in filming for Star Wars).

If you could study any one topic or idea, and money/time/equipment were not an issue, what would you study?

The research we do on snow and ice environments is very challenging: its difficult to travel in remote mountains that receive a lot snow. However, these systems are very important water sources for lots of people and communities. At the same time, these regions are often protected as wilderness areas. I would like better satellite systems that can track these regions in higher resolution — we can detect snow and ice from space but we need higher resolution cameras to track small microbes! With advances in technology, I also dream of smaller, lightweight sensors that we can take in the field with us — our backpacks are only so large and minimizing our impact on these regions is a top priority (“leave not trace”, “pack in, pack out”. On area of advance is smart phones which can now serve as microscopes but measuring other parameters in the field still requires heavy cumbersome equipment or collection of samples that can be analyzed in the lab like measuring water quality of the snow and ice or obtaining and analyzing DNA from microbes.