Tracie J. Haan

UAF M.S. Biological Sciences Candidate

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EDUCATION

2019-Current **M.S. Biological Sciences Candidate**
University of Alaska Fairbanks, GPA: 3.90/4.00, Expected Graduation: August 2021
Thesis Title: "Health Implications of the Changing Arctic: Examining the Effects of Permafrost Thaw on the Boreal Soil Resistome"

2014-18 **B.S. Biological Sciences with a focus in Physiology**
University of Alaska Fairbanks, Cum Laude, GPA: 3.71/4.00

GRANTS

2020 **Co-PI**, PI: Devin Drown. "Linking the mobilome to the resistome." *Alaska INBRE Biomedical Informatics Core* ($15,571)

2020 "Antibiotic Exploration in Sub-Arctic Soils." *UAF Undergraduate Research & Scholarly Activity Mentor Award* ($5,000)

2017-18 "Co-Selection of Heavy Metal and Antibiotic Resistance Genes in Boreal Forest Soil Bacteria Affected by Thawing Permafrost." *BLaST Undergraduate Research Experience Award* ($5,000)

FELLOWSHIP/AWARDS

2020 Professional Development Award, *Alaska INBRE* ($125)

2020-21 2020-2021 Graduate Research Assistantship, *Alaska INBRE*

2019 Best Lightning Talk Lab Supply Award, *Alaska INBRE* ($500)

2019 2019-2020 Graduate Research Assistantship, *Alaska INBRE*

2019 Summer Research Award, *Institute of Arctic Biology* ($7,500)

2018 Student Travel Award, *Biomedical Learning and Student Training* ($1,500)

2014-15 UAF Cornerstone Scholarship, *University of Alaska Fairbanks* ($2,500)

2014-18 UA Scholars Award, *University of Alaska* ($11,000)

2014-18 Tier 1 Alaska Performance Scholarship ($19,024)

PUBLICATIONS

1. **Haan T**, & Drown DM. (2021). Unearthing Antibiotic Resistance Associated with Disturbance-Induced Permafrost Thaw in Interior Alaska. *Microorganisms*, *9*(1), 116. Doi: 10.3390/microorganisms9010116
2. **Haan T**, Seitz TJ, Francisco A, Glinter K., Gloger A., Kardash A, Matsui N, Reast E, Rosander K, Sonnek C, Wellman R, & Drown, D. M. (2020). Complete Genome Sequences of Seven Strains of Pseudomonas spp. Isolated from Boreal Forest Soil in Interior Alaska. *Microbiology resource announcements*, *9*(25). Doi: 10.1128/MRA.00511-20
3. **Haan T**, McDougall S, Drown D. (2019). Complete genome sequence of Bacillus mycoides TH26, isolated from a Permafrost Thaw Gradient. *Microbiology Resource Announcements,* 8:e00507-19. Doi: 10.1128/MRA.00507-19
4. Humphrey J, Seitz T, **Haan T,** Ducluzeau A, & Drown D. (2019). Complete Genome Sequence of Pantoea agglomerans TH81, Isolated from a Permafrost Thaw Gradient. *Microbiology Resource Announcements*, 8(1), e01486-18. Doi: 10.1128/MRA.01486-18

PRESENTATIONS

"Assessing Risks Posed by Alaska's Active Layer Resistome Associated with Permafrost Thaw," *ASM Conference on Rapid Applied Microbial Next-Generation Sequencing and Bioinformatic Pipelines*, Virtual, December 7-11, 2020 (Poster).

"Antibiotic Resistance in Active Layer Microbial Communities from a Permafrost Thaw Gradient," *Alaska ASM Branch Meeting*, Virtual, October 31, 2020 (Talk).

"Unearthing the Boreal Soil Resistome Associated with Permafrost Thaw," *ASM Microbe*, Chicago, IL, June 18-22, 2020 (Poster).

"Shifting Boreal Soil Resistome: Linking Environment To Clinic," *One Health, One Future conference*, Fairbanks, AK, March 11-13, 2020 [Cancelled due to COVID-19] (Poster).

"Antibiotic Resistance in the Changing Arctic:Examining the Effects of Permafrost Thaw on Antibiotic Resistance in Boreal Soil Bactria," *Annual Meeting of the Alaska Branch of the American Society for Microbiology*, Anchorage, AK, October 19, 2019 (Talk).

"Health Implications of the Environmental Reservoir of Antibiotic Resistance across a Permafrost Thaw Gradient," *NIH IDeA Western Regional Conference*, Las Vegas, NV, October 8, 2019 (Poster).

"Environmental Reservoir of Antibiotic Resistance," *Alaska INBRE Retreat*, Talkeetna, AK, September 21-22, 2019 (Poster & Talk). [Awarded $500 lab reward for best presentation]

"Heavy Metal and Antibiotic Resistance in Thawing Permafrost," *Midnight Sun Science Symposium*, Fairbanks, AK, April 2018 (Talk).

"Co-selection of Heavy Metal and Antibiotic Resistance," *Western Alaska Interdisciplinary Science Conference*, Nome, AK, March 2018 (Talk) [Awarded as best undergraduate presentation]

RESEARCH EXPERIENCE

2019 - Present **Alaska INBRE Graduate Research Assistant**
Department of Biology and Wildlife, University of Alaska Fairbanks
Conducted robust bioinformatics analyses to test hypotheses about how antibiotic resistance in soils is affected by disturbance-induced shifts in microbial community composition for my thesis work, attended conferences, mentored students, and helped with lab work for several other research projects.

2019 **Institute of Arctic Biology Lab Technician**
University of Alaska Fairbanks, Fairbanks, AK
Played a key role in designing and carrying out protocol for DNA extraction, PCR, and sequencing of over 250 soil cores while mentoring colleagues entering the lab to successfully coordinate large-scale research project.

2017-18 **BLaST Undergraduate Research Experience**
UAF Biomedical Learning and Student Training (BLaST), Fairbanks, AK
Cultured, maintained, and tested sensitivity of 90 soil isolates to clinically relevant antibiotics and common environmental heavy metal contaminants to examine co-selection of resistance mechanisms.

2018 **Undergraduate Researcher**
Podlutsky Lab, UAF Department of Biology and Wildlife
Maintained cancer cell lines employing clean cell culture technique. Performed comet assay to examine radiation induced cellular damage to triple negative breast cancer cell line, Hs578T.

TEACHING EXPERIENCE

2020 **URSA Undergraduate Mentor**
University of Alaska Fairbanks, Fairbanks, AK
Designed 8-week workshop with goal of teaching undergraduates skills such as culturing, sequencing, and how to employ bioinformatics to analyze the genomes of antibiotic producing bacteria from soils at UAF.

2018-19 **Student Learning Coach**
Tanana Middle School, Fairbanks, AK
Designed online educational material, collaborated with teaching staff to devise and implement coordinated personalized learning strategies and student support networks, and mentored a group of middle school students to help them develop a community engagement project.

2018-19 **Substitute Teacher**
Fairbanks North Star Borough School District, AK
Followed classroom plans left by teacher to continue student education and reinforce core concepts while keeping students on-task with proactive behavior modification and positive reinforcement.

PROFESSIONAL MEMBERSHIPS

2018 - Present Member, American Society for Microbiologists
2018 - Present Member, American Society for the Advancement of Science

BIOINFORMATICS COURSEWORK

2021 Building a Website with HTML, CSS, and GitHub Pages, *CodeAcademy*, Online
2020 Metagenomics, *biovcnet.github.io*, Online
2020 The Art of Bioinformatics Scripting*, BioStar Handbook*, Online
2019 Learn Bioinformatics in 100 hours*, BioStar Handbook*, Online
2019 Biology Meets Programming: Bioinformatics for Beginners, *University of California San Diego*, Coursera
2019 INBRE Bioinformatics Workshop, *Alaska INBRE*, Fairbanks, AK

OUTREACH & VOLUNTEER WORK

2019 **Woodriver Elementary Microbiology Outreach**
Fairbanks, AK
Presented to 1st grade class about the role of microbes in our world and their presence in and on everything around us by implementing an activity where students culture bacteria from their hands and swabs collected by students from around the classroom.

2018-19 **Watershed Elementary Microbiology Outreach**
Fairbanks, AK
Helped implement a workshop to 1st grade class about "Making the Invisible Visible" where students make a hypothesis about how washing hands affect microbes on the hands and then had them imprint their hands on agar plates before and after washing.

2018-19 **Western Alaska Interdisciplinary Science Conference Workshop**
Nome, AK
Helped carry out a workshop in Nome, Alaska; "Mobilizing Alaska genomics: What's in my backyard microbiome?" in which we taught members of the community and fellow researchers at conference about MinION sequencing and how to load a flow cell.