

Dominick Faith

PhD Candidate — Cellular, Molecular, and Microbial Biology
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Education

- 2021-Present** **Doctor of Philosophy**, Cellular, Molecular, and Microbial Biology,
University of Montana
- 2015-2019** **Bachelor of Science**, Cell Biology and Neuroscience, Montana State
University

Professional Experience

- 2023-Present** **PhD Candidate, University of Montana**
Fellowship: National Science Foundation Graduate Research Fellow
Advisor: Dr. Patrick Secor
Project: Bacterial threat assessments of cellular injury
- 2022-2023** **PhD Student, University of Montana**
Fellowship: National Science Foundation Graduate Research Fellow
Advisor: Dr. Patrick Secor
Project: Bacterial threat assessments of cellular injury
- 2021-2022** **PhD Student Rotation, University of Montana — Center for
Translational Medicine**
Advisor: Dr. Jay Evans
Project: Developing an anti-phage vaccine to treat Inflammatory
Bowel Disease
- 2020-2021** **Research Technician, University of Montana**
Advisor: Dr. Patrick Secor
Project: Bacteriophage pathobiology of inflammatory bowel disease
- 2018-2019** **Undergraduate Research Assistant, Montana State University**
Advisor: Dr. Blake Wiedenheft
Project: Culture-independent method for novel virus isolation
- 2017-2018** **Undergraduate Research Assistant, Montana State University**
Advisor: Dr. Blake Wiedenheft
Project: Novel phage-based treatment strategy for *Salmonella*
typhimurium

Research Statement

My research has been dedicated to characterizing the interactions between bacteria and the viruses that infect them (phages). As an undergraduate at Montana State University (MSU), my work was supported by the National Institutes of Health (NIH) via the Montana Idea Network for

Biomedical Research Excellence (INBRE) program, the MSU Initiative for Regulation, the Applied Economic Analysis (IRAEA) Undergraduate Research Scholarship, and the MSU Presidential Emerging Scholars Grant. The data generated during this support resulted in a manuscript that was published in *Molecular Cell* and allowed me to attend the 2019 CRISPR Conference in Vilnius, Lithuania. Upon graduating from MSU, I was recruited as a laboratory technician in Dr. Patrick Secor's lab at the University of Montana (UM) to understand the phage pathobiology of inflammatory bowel disease. The knowledge gained during this experience allowed me to contribute to a review that was published in *Annual Reviews of Virology*. In 2021, I was accepted into the Cellular, Molecular, and Microbial Biology (CMMB) PhD program at UM. As a PhD student thus far, I have been awarded a National Science Foundation (NSF) graduate research fellowship (GRFP), an NSF Innovation Corps (I-Corps) grant, the UM Toelle-Bekken Family Memorial Fund Award, and the UM Experiential Learning Scholarship to support projects that have been published in *Molecular Microbiology*, *PLoS Pathogens*, *PNAS*, *Cell Host and Microbe*, *mBio*, and *Microbiology Resource Announcements*. Upon completing my PhD, I aim to become a postdoctoral research scientist to further understand the antiviral immune mechanisms of prokaryotes with an eye towards providing scientific opportunities for others in my home state of Montana by becoming an academic research professor.

Awards and Honors

2023 NSF Graduate Research Fellow

<https://www.nsfgrfp.org/>

Media highlights: <https://www.umt.edu/news/2023/04/041223nsfa.php>
<https://www.montana.edu/news/22932/>

2022 NSF I-Corps Exploration Grant. This research is supported by the National Science Foundation under Award Number 1829187

https://nsf.gov/awardsearch/showAward?AWD_ID=1829187&HistoricalAwards=false

2022 Toelle-Bekken Family Memorial Fund Award

<https://www.umt.edu/humanities-sciences/about/people/awards/default.php>

2022 Experiential Learning Scholarship

<https://www.umt.edu/experiential-learning-career-success/elsf/default.php>

2019 USP-INBRE Undergraduate Research Grant. This research is supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number P20GM103474.

<http://www.inbre.montana.edu>

2018 USP-INBRE Undergraduate Research Grant. This research is supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number P20GM103474.

<http://www.inbre.montana.edu>

2018 Montana State University Initiative for Regulation and Applied Economic Analysis (IRAEA) Undergraduate Research Scholarship

<https://www.montana.edu/regecon/researchprograms/undergraduateprogram/>

2017 Montana State University Presidential Emerging Scholars Grant
<https://www.montana.edu/calendar/events/18180>

Publications — [Google Scholar](#)

*Equal author contributions

1. Schwartzkopf CM, Robinson AJ, Ellenbecker M, **Faith DR**, et al. Tripartite interactions between filamentous Pf4 bacteriophage, *Pseudomonas aeruginosa*, and bacterivorous nematodes. *PLoS Pathog*. 2023 Feb 17;19(2):e1010925. doi: 10.1371/journal.ppat.1010925. PMID: 36800381; PMCID: PMC9980816.
2. de Mattos CD* and **Faith DR***, et al. Polyamines and linear DNA mediate bacterial threat assessment of bacteriophage infection. *Proc Natl Acad Sci U S A*. 2023 Feb 28;120(9):e2216430120. doi: 10.1073/pnas.2216430120. Epub 2023 Feb 21. PMID: 36802441; PMCID: PMC9992862.
3. Schmidt AK*, **Faith DR***, Secor PR. PIC1 thieves: Molecular piracy and cooperation. *Cell Host Microbe*. 2023 Jan 11;31(1):3-5. doi: 10.1016/j.chom.2022.12.008. PMID: 36634621.
4. **Faith D**, et al. Complete Genome Sequence of the N4-like *Pseudomonas aeruginosa* Bacteriophage vB_PaeP_CMS1. *Microbiol Resour Announc*. 2022 Jul 21;11(7):e0023922. doi: 10.1128/mra.00239-22. Epub 2022 May 31. PMID: 35638894; PMCID: PMC9302080.
5. Schmidt AK, Fitzpatrick AD, Schwartzkopf CM, **Faith DR**, et al. A Filamentous Bacteriophage Protein Inhibits Type IV Pili To Prevent Superinfection of *Pseudomonas aeruginosa*. *mBio*. 2022 Jan 18;13(1):e0244121. doi: 10.1128/mbio.02441-21. Epub ahead of print. PMID: 35038902; PMCID: PMC8764522.
6. Kirsch JM, Brzozowski RS, **Faith D**, et al. Bacteriophage-Bacteria Interactions in the Gut: From Invertebrates to Mammals. *Annu Rev Virol*. 2021 Sep 29;8(1):95-113. doi: 10.1146/annurev-virology-091919-101238. Epub 2021 Jul 13. PMID: 34255542; PMCID: PMC8484061.
7. Rollins MF, Chowdhury S, Carter J, Golden SM, Miettinen HM, Santiago-Frangos A, **Faith D**, et al. Structure Reveals a Mechanism of CRISPR-RNA-Guided Nuclease Recruitment and Anti-CRISPR Viral Mimicry. *Mol Cell*. 2019 Apr 4;74(1):132-142.e5. doi: 10.1016/j.molcel.2019.02.001. Epub 2019 Mar 11. PMID: 30872121; PMCID: PMC6521718.

Conferences

2023 Molecular Genetics of Bacteria and Phages Meeting
Madison, WI

2021 Center for Biomolecular and Structural Dynamics Research Symposium
Seeley Lake, MT

2018 CRISPR Conference
Vilnius, Lithuania

Presentations

- 2023 Molecular Genetics of Bacteria and Phages Meeting
Madison, WI
“Bacteriophages Modulate Intracellular Polyamine Levels to Evade Host Defenses”
- 2021 Center for Biomolecular and Structural Dynamics Research Symposium
University of Montana
“A Filamentous Bacteriophage Protein Inhibits Type IV Pili to Prevent Superinfection of *Pseudomonas aeruginosa*”
- 2019 INBRE Summer Research Celebration
Montana State University
“Culture-Independent Method for Novel Virus Isolation”
- 2018 CRISPR Conference
Vilnius, Lithuania
“CRISPR defense and viral counter-defense”
- 2018 INBRE Summer Research Celebration
Montana State University
“Novel Phage-Based Treatment Strategy for *Salmonella typhimurium*”

Service

- 2023** Established the University of Montana Phage Pathobiology Mentorship Program
- 2022** Instructor for Sentinel High School Big Burn Fair
Activities/outreach fair for ~1,400 high school students
- 2019** Organizer for the “Montana Wild Virus Hunt”
<https://magazine.medlineplus.gov/article/the-montana-wild-virus-hunt>
- 2018** Organizer for the “Montana Wild Virus Hunt”
<https://magazine.medlineplus.gov/article/the-montana-wild-virus-hunt>

Mentoring Experience

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| Lily Khang | High school student, summer research — University of Montana |
| Max Berndt | High school student, summer research — University of Montana |
| Mason Mazzola | Undergraduate research scientist — University of Montana |
| Laina Hall | Undergraduate research scientist — Montana State University |
| Michael Angyus | Undergraduate research scientist — Montana State University |

Claire Stevenson High school student, summer research — Montana State University

Teaching

Course number	Course	Number of Students	Year
BIOM 451	Microbial Physiology Lab	14	2021