

Amelia K. Schmidt, PhD

📍 Seattle, WA ✉ akschmidt17@gmail.com 🌐 ameliakschmidt.com

Professional Summary

PhD-trained molecular biologist with extensive experience in scientific communication, cross-functional collaboration, and project management. Proven ability to lead interdisciplinary teams, develop data-driven strategies, and translate complex scientific concepts into accessible narratives. Passionate about leveraging scientific expertise to drive business solutions, marketing strategies, and stakeholder engagement in the life sciences sector.

EDUCATION

Ph.D. Cellular, Molecular, and Microbial Biology	Missoula, MT
University of Montana	2024
<i>Dissertation Title: Under the Influence: Pf Bacteriophage Modulate <i>Pseudomonas aeruginosa</i> Virulence & Pathogenesis</i>	
Bachelor of Arts and Sciences	Squamish, British Columbia
Quest University Canada	2020
<i>Thesis Title: The Fight Against Bacteria: An Exploration of the Past, Present and Future of Microbial Resistance</i>	
Relevant coursework: Synthetic biology, Immunology, Biochemistry, Science Communication, Marketing	
Invited Visiting Student	Zürich, Switzerland
ETH Zürich (Swiss Federal Institute of Technology)	2019

EXPERIENCE

Researcher, Bacteriophage Pathobiology Laboratory	Missoula, MT
	2020 – 2024

Project & Team Leadership:

- Managed interdisciplinary teams to achieve research objectives under tight deadlines.
- Fostered collaboration between microbiologists, computational scientists, and industry partners, ensuring efficient project execution and knowledge sharing.

Scientific Writing & Communication:

- Authored multiple peer-reviewed publications and contributed to grant proposals, technical reports, and presentations, translating complex scientific data into accessible formats for diverse audiences, including non-specialist stakeholders.
- Organized and delivered guest lectures for AP Biology students at Hellgate High School, simplifying advanced microbiological concepts and enhancing scientific literacy.

Computational Biology & Data Analysis:

- Developed bioinformatics pipelines for identifying filamentous Inovirus sequences in large complex genomic datasets, streamlining viral discovery and annotation.
- Integrated machine learning algorithms into genomic analysis pipelines to enhance predictive modeling of phage-host interactions.
- Utilized data visualization tools to communicate findings effectively to interdisciplinary teams.

Translational Research:

- Engineered bacteriophages to enhance UV absorption, leading to the development of a coral-safe sunscreen alternative (U.S. Patent Pending).
- Demonstrated the potential for real-world applications of filamentous Inovirus-based solutions, such as vaccine development and scalable manufacturing processes, in healthcare, industrial, and environmental sectors.

Grant Writing & Funding Acquisition:

- Authored successful grant applications, securing over \$10,000 in research funding by articulating the societal and commercial impact of bacteriophage research.

Stakeholder Engagement:

- Presented research outcomes at national and international conferences, engaging with academic, clinical, and industry professionals to promote the translational potential of bacteriophage technology.

PROJECTS

Project Lead, *Pf Prophage Deletion and Impact on Bacterial Pathogenesis.*

Led a team of >10 collaborators from clinical, academic, and private sectors to investigate the impact of targeted deletion of Pf prophages on diverse *Pseudomonas aeruginosa* clinical isolates. Revealed differential impacts of Pf phages on quorum sensing and virulence traits. Findings highlighted potential therapeutic targets for bacterial pathogenicity control.

Project Lead, *Superinfection Prevention in Pseudomonas aeruginosa.*

Identified a filamentous bacteriophage protein that inhibits the canonical virulence factor, Type IV pili, to prevent superinfection. Investigated clinical applications, providing potential avenues for enhanced success of bacteriophage therapy in therapeutic settings.

Contributor, *Prophage Barcoding for Transmission Dynamics.*

Led a project utilizing prophage barcoding to map *Pseudomonas* transmission dynamics, contributing to a deeper understanding of bacterial spread in cystic fibrosis patients.

Contributor, *VIBES Bioinformatics Workflow Development.*

Developed "VIBES," a bioinformatics workflow for annotating and visualizing viral sequences integrated into bacterial genomes, streamlining genomic analysis and fostering interdisciplinary research collaborations.

Contributor, *Vaccine Development.*

Collaborated on the development of an adjuvanted vaccine that induces functional antibodies against *Pseudomonas aeruginosa* filamentous bacteriophages, advancing potential treatments for bacterial infections.

SKILLS

Hard Skills:

Laboratory Techniques: Molecular cloning, Chromatography, PCR, viral genome engineering (allelic exchange/Gibson assembly/CRISPR), bacterial culture, confocal microscopy, and next-generation sequencing.

Bioinformatics: Development of bioinformatics pipelines, sequence alignment, genomic data analysis, and data visualization.

Software Proficiency: Python, R, bash, BLAST, Geneious, GraphPad Prism, and Microsoft Office Suite, Adobe Illustrator.

Soft Skills:

Scientific Communication: Technical writing, grant proposal development, and public speaking for both specialist and non-specialist audiences.

Project Management: Strategic planning, deadline management, and coordination of interdisciplinary research teams.

Collaboration & Leadership: Facilitating teamwork across scientific disciplines, mentoring students, and fostering partnerships with academic and industry stakeholders.

Problem-Solving & Critical Thinking: Analytical approach to complex research challenges, innovative solution development, and adaptive learning.

INTERESTS

- | | | | |
|-------------------|------------------------|---------------------|-------------------|
| • Graphic design | • Business development | • Digital Marketing | • Sewing |
| • Public speaking | • Data visualization | • Science outreach | • Skiing/climbing |

AWARDS & PRESENTATIONS

- Dr. Mitsuru J. (Jim) Nakamura Graduate Scholarship in Microbiology (2024-2025) Award; \$3,600
- Dr. Linda Phillips Knoblock Fellowship (2023-2024) Award; \$7,150
- Honorable Mention- National Science Foundation, Graduate Research Fellowship Program (2022)
- Presentation and Poster, Center for Biomolecular Structure and Dynamics (2021) *Montana*
- Presentation, Annual Food Microbiology Workshop (2018) *ETH Zürich*

PUBLICATIONS

- Schmidt, A.K.**, Schwartzkopf, C.M., Pourtois, J.D., Burgener, E.B., Faith, D.R., Joyce, A., Lamma, T., Kumar, G., Bollyky, P.L., Secor, P.R. 2024. *Targeted deletion of Pf prophages from diverse Pseudomonas aeruginosa isolates has differential impacts on quorum sensing and virulence traits*. **J Bacteriol** 206:e00402-23. <https://doi.org/10.1128/jb.00402-23>
- Pourtois, J., Haddock, N., Martinez, H., **Schmidt, A.K.**, Gupta, A., Prakash, P., Chang, T., Amantullah, D., Milla, C., Secor, P. and De Leo, G., (2024). 13 *Pseudomonas* transmission dynamics revealed by prophage barcoding. **Journal of Cystic Fibrosis**, 23, S7-S8.
- Copeland, C.J., Roddy, J.W., **Schmidt, A.K.**, Secor, P.R., Wheeler, T.J., *VIBES: a workflow for annotating and visualizing viral sequences integrated into bacterial genomes*, **NAR Genomics and Bioinformatics**, Volume 6, Issue 2, June 2024, lqae030, <https://doi.org/10.1093/nargab/lqae030>
- Román-Cruz, V.C.; Miller, S.M.; Schoener, R.A.; Lukasiewicz, C.; **Schmidt, A.K.**; DeBuysscher, B.L.; Burkhardt, D.; Secor, P.R.; Evans, J.T. *Adjuvanted Vaccine Induces Functional Antibodies against Pseudomonas aeruginosa Filamentous Bacteriophages*. **Vaccines** 2024, 12, 115. <https://doi.org/10.3390/vaccines12020115>
- Schwartzkopf, C.M., Taylor, V.L., Groleau, M., Faith, D.R., **Schmidt, A.K.**, Lamma, T.L., Brooks, D.M., Déziel, E., Maxwell, K.L., Secor, P.R., 2023. *Inhibition of PQS signaling by the Pf bacteriophage protein PfsE enhances viral replication in Pseudomonas aeruginosa*. **Molecular Microbiology**. <https://doi.org/10.1111/mmi.15202>
- Schwartzkopf, C. M., Robinson, A. J., Ellenbecker, M., Faith, D.R., **Schmidt, A.K.**, et al., *Tripartite interactions between filamentous Pf4 bacteriophage, Pseudomonas aeruginosa, and bacterivorous nematodes*, 2023, **PLOS Pathogens**, 10.1371/journal.ppat.1010925
- De Mattos, C. D., Faith, D., Nemudryi, A. A., **Schmidt, A. K.**, et al. *Polyamines and linear DNA mediate bacterial threat assessment of bacteriophage infection*, 2023, **PNAS**. <https://doi.org/10.1073/pnas.2216430120>
- Schmidt, A. K.**, et al., *PICI thieves: Molecular piracy and cooperation*, 2023, **Cell Host & Microbe**, doi.org/10.1016/j.chom.2022.12.008
- Schmidt, A. K.**, et al., *A Filamentous Bacteriophage Protein Inhibits Type IV Pili To Prevent Superinfection of Pseudomonas aeruginosa*, 2022, **mBio** doi:10.1128/mbio.02441-21
- Faith, D., Kinnersley, M., Schwartzkopf, C., de Mattos, C., **Schmidt, A. K.**, Secor, P. *Complete Genome Sequence of the N4-like Pseudomonas aeruginosa Bacteriophage vB_PaeP_CMS1*, 2022, **Microbial Resource Announcements** doi:10.1128/mra.00239-22

REFERENCES

Dr. Patrick Secor

Associate Professor, Microbiology & Cell Biology, Montana State University | patrick.secor@montana.edu

Dr. Paul Bollyky

Professor of Medicine (Infectious Diseases), Stanford University | pbollyky@stanford.edu

Dr. Brandon S. Cooper

Associate Professor Evolutionary Genetics, University of Montana | brandon.cooper@umontana.edu

Dr. Elizabeth B. Burgener

Assistant Professor of Clinical Pediatrics, University of Southern California | burgener@usc.edu