Christopher Dade, Ph.D. | Curriculum Vitae

Postdoctoral research associate; University of Nebraska–Lincoln

Education

Ph.D. Chemistry (Chemical Biology) 2025
University of Wisconsin–Madison
Advisor: Dr. Katrina Forest
Dissertation: "Structural and Functional Studies of Prepilin Peptidase PilD: An antivirulence target in *Pseudomonas aeruginosa"*
Minor: Life Sciences Communication

M.Sc. in Science and Health Communication (1st Class Honours) 2019
Dublin City University; Dublin, Ireland
Dissertation: "Do You Hate Scientists? An Investigation of Science Polarisation in Irish Society"
Advisors: Dr. Dónal Mulligan, Dr. Padraig Murphy

B.S. in Chemistry (Honors) 2018
University of Missouri
Honors Thesis: "Structural and Kinetic Crystallography Studies of the Class B Flavoenzyme *Sinorhizobium meliloti* Proline Utilization A"
Advisor: Dr. John Tanner

Publications and Presentations

Journal Publications

1. Cabading, J.*; **Dade, C. M.***; Forest, K. T. AI-Enabled Insights into the Architecture and Dynamics of the Bifunctional Prepilin Peptidase PilD. In preparation.
2. **Dade, C. M*.**; Douzi, B.; Cambillau, C.; Ball, G.; Voulhoux, R.; Forest, K. T. The Crystal Structure of CbpD Clarifies Substrate-Specificity Motifs in Chitin-Active Lytic Polysaccharide Monooxygenases. *Acta Crystallographica Section D Structural Biology* **2022**, *78* (8). https://doi.org/10.1107/S2059798322007033
3. **Dade, C.*** Reestablishing the Congressional Office of Technology Assessment. *Journal of Science Policy and Governance* **2019,** *15* (1). https://www.sciencepolicyjournal.org/uploads/5/4/3/4/5434385/dade_jspg_v15.pdf

*** Indicates first author or co-first author**

Invited Talks

1. ASM Microbe (2025): Out of the Lab, Into Conversation: Empowering Change with Civic Science (https://www.youtube.com/watch?v=pzYt8up4CoU&feature=youtu.be)

Posters

1. *Integral Membrane Prepilin Peptidase is a Tractable Antivirulence Target in Pseudomonas aeruginosa.* ASM Microbe (2024)
2. *Inhibiting the Integral Membrane Aspartic Acid Protease PilD: Targeting a lynchpin of*

virulence in Pseudomonas aeruginosa. DiscoverBMB Meeting (ASBMB) (2023)
3. *The Crystal Structure of P. aeruginosa Chitin Binding Protein D*. Pseudomonas Meeting (2022)

Other Publications and Preprints

1. Cabading, J.*; **Dade, C. M.***; Forest, K. T. Catalytic activity of the Prepilin Peptidase PilD is Required for Full *P. aeruginosa* Virulence in a Nematode Infection Model. *BioRxiv* **2025** https://doi.org/10.1101/2025.07.10.664072
2. Hemme, Colin; **Dade, Christopher**; Hall, Austin. Developments in Atrazine Regulation. (Science Note) *SciTech Forefront*, **2023**. https://medium.com/scitech-forefront/developments-in-atrazine-regulation- fc940739a70b
3. **Dade, Christopher***; Roberts, Madeleine; Hanslik, Kendra; Hacha, Brandon; Proter, Connor. Wisconsin Science and Technology Advisors (WisTA) Memo Re: Cybersecurity in Food and Agriculture: An Assessment of Inherent Vulnerabilities, Increasing Risks, and Nascent Policy Responses. For: Wisconsin State Senator. **2022**
4. Roberts, Madeleine; **Dade, Christopher**; Eisenbraun, Emma; Elmendorf, Laura; Whitworth, Isabella. Strengthen America's Green Energy Future through Secondary Sourcing of Rare Earth Elements. (Science Memo) *SciTech Forefront*, **2022**. (https://medium.com/scitech-forefront/strengthen-americas-green- energy-future-through-secondary-sourcing-of-rare-earth-elements-4a97d784112)
5. **6 Catalyst for Science Policy Members**. Opinion: A Tool to Support and Protect Grad Students. *Inside Higher Ed.* **2021.** (https://www.insidehighered.com/advice/2021/11/19/revising-department-handbooks-better-support-grad-students-opinion)
6. **Dade, C***. The Land-Grant Service Corps: Reinvigorating the Land-Grant Mission in the State of Wisconsin. *Sifting and Winnowing: The Ideas Conference Papers* **2021**, IV (https://www.siftingwinnowing.com/the-land-grant-service-corps-reinvigorating-the-land-grant-mission- in-the-state-of-wisconsin/)

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Fellowships, Honors, and Awards

1. Sigma Xi—Full Member 2025

2. Farrington Daniels Ethical Leadership Award 2025
   UW–Madison Department of Chemistry

3. 2024 Brad Fenwick Fellow for the Advancement of Civic Science 2024–2025
   American Society for Microbiology

4. Ira L. Baldwin Distinguished Predoctoral Fellowship 2024–2025
   UW–Madison Department of Bacteriology

5. DoD National Defense Science and Engineering Graduate Research Fellow 2021–2024
   United States Department of Defense

6. Alida and Ronald Anderson Graduate Student Support Fund 2023
   UW–Madison Department of Chemistry

7. WiSCIENCE Public Service Fellow 2022
   Wisconsin Institute for Science Education and Community; UW–Madison
8. 2021 Wisconsin Idea Conference participant
9. 2019 George J. Mitchell Scholar

Grants and Funding

1. NCSL State Science Policy Fellowship Program Planning Grant ($120,000) 2024–2025
   National Council of State Legislators
   Principle Investigator: Dr. Jo Handelsman, Wisconsin Institute for Discovery
   Role: Grant development and writing; project advisor
2. ASBMB 2023 Graduate Student or Postdoctoral Researcher Award ($1000) 2023
   American Society for Biochemistry and Molecular Biology
3. GSFLC Student Research Travel Grant ($500) 2022
   UW–Madison Department of Chemistry

Teaching and Mentorship

Teaching Assistant: University of Wisconsin–Madison
Chemistry 104 (General Chemistry II) Spring 2020
Chemistry 103 (General Chemistry I) Fall 2019

Guest Lecturer: University of Wisconsin–Madison
Microbiology 668 (Microbiology at Atomic Resolution) Spring 2023
AI and Protein Structure Prediction

Research Mentorship

Mentored four undergraduate researchers in molecular cloning, protein expression, and microbial assays; mentees have progressed to Ph.D. programs, industry positions, and advanced undergraduate research roles.

Mentored 4 junior graduate students in the Forest Lab.

Mentored 3 first year Ph.D. students in the Chemistry program from Fall 2021–Spring 2023 as part of the Chemistry department Catalyst Program to assist them with adjusting to graduate school, navigating the group rotation and joining process, and balancing coursework, research, and teaching expectations.

Academic Service

Associate Editor November 2023–Present
Journal for Science Policy and Governance

Faculty Search Committee Student Panel Member Spring 2022
UW–Madison Department of Bacteriology

McElvain Chemical Biology Seminar Co-organizer 2021–2022

UW–Madison Department of Chemistry

College of Letters and Science Dean Search and Screen Committee Member 2019–2020
UW–Madison College of Letters and Science

College of Arts and Science Dean Search Committee Member 2017
University of Missouri College of Arts and Science

Research Experience

Postdoctoral Research Associate; University of Nebraska–Lincoln
Buan Lab; Department of Biochemistry May 2025–Present

- Characterization of multienzyme complexes essential for methanogenesis in *Methanosarcina acetivorans*
- Engineering *M. acetivorans* for novel industrial applications
- Structural characterization of methanogen archaealla

Research Assistant; University of Wisconsin–Madison
Forest Lab; Department of Bacteriology November 2019–August 2025

- Characterization of the integral membrane aspartic acid prepilin peptidase PilD from *Pseudomonas aeruginosa* as a novel antivirulence target using biochemical, genetic, computational, and structural methods
- Structural determination of the *P. aeruginosa* virulence factor chitin binding protein D (CbpD)
- Investigation of the mechanism of S-pilin production in *Neisseria gonorrhea*
- Structural determination of Type 2 Secretion System substrates and chromosomal β-lactamase

DAAD RISE Intern; Leibniz Institute for Plant Biochemistry, Halle (Saale), Germany Bioactives Group, Dr. Serge Fobofou May 23–August 5, 2016

- Secondary metabolite profiling in *Hypericum polyphyllum* for novel dementia therapy development using chromatography and NMR for compound isolation and identification

Undergraduate Research Assistant; University of Missouri
Tanner Lab; Department of Biochemistry August 2014–May 2018

- Substrate-channeling characterization in the bi-functional *Sinorhizobium meliloti* enzyme proline utilization (PutA) using protein crystallography and *in crystallo* enzymology

Science Communication and Public Engagement

Selected science communication, public engagement, and policy leadership roles available upon request. Highlights include co-leading the Wisconsin STEP Fellowship development effort, serving as Co-President of UW–Madison's graduate science policy group (CaSP), and delivering science advocacy training and events connecting researchers with policymakers.

Professional Memberships

- American Society for Microbiology (2024–Present)
- American Society for Biochemistry and Molecular Biology (2020–Present)
- American Crystallographic Association (2020–Present)
- American Association for the Advancement of Science (2019–Present)
- National Science Policy Network (2019–Present)
- American Chemical Society (2017–Present)

Skills

Technical: Biosafety Level 2 (BSL-2) lab experience, familiar with microbial safety protocols and compliance frameworks for pathogen research, molecular cloning and plasmid design, protein expression in *Pseudomonas aeruginosa* and *E. coli*, membrane protein characterization, protein purification (IMAC, SEC, IEC), cell-free protein synthesis, PCR, FRET assay development, motility and secretion assays, HPLC, Small molecule 1D and 2D NMR

Structural Biology and Computational: X-ray crystallography, structure refinement (Phenix, Coot), protein structure prediction and modeling (AlphaFold, FoldTree), molecular dynamics simulations (GROMACS), PyMOL, Chimera, *in crystallo* enzymology, Tableau, Prism

Writing and Communication: grant writing, academic writing, policy memos, stakeholder interviews, editing, video production, public speaking

Leadership and Project Management: project design, event planning, committee service, mentorship, program evaluation

References

Dr. Nicole Buan
Professor, Institute of Agriculture and Natural Resources, University of Nebraska–Lincoln
Email: nbuan@unl.edu | Phone: (402)-472-7413
Postdoctoral Advisor

Dr. Katrina T. Forest
EB Fred Professor, Department of Bacteriology, University of Wisconsin–Madison
Email: forest@bact.wisc.edu | Phone: (608) 265-3566
Ph.D. advisor and research mentor

Dr. Samuel H. Gellman
Ralph F. Hirschmann Professor, Department of Chemistry, University of Wisconsin–Madison
Email: gellman@chem.wisc.edu | Phone: (608) 262–3303
Ph.D. committee member and collaborator