

Charles M. Bridges, M.S., Ph.D.

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Professional Summary

Results-driven molecular biologist with expertise in microbiology, virology, molecular biology and biochemistry. Demonstrated ability to direct laboratory operations, lead cross-functional teams and deliver innovative solutions that accelerate research outcomes. Skilled in assay development, project execution and data analysis. Strong communicator experienced in managing interdisciplinary projects, data-driven decision-making and client consultation.

Core Competencies

Laboratory operations: Establish budget forecast, equipment procurement, safety compliance, team mentorship, project development, project management

Microbiology: Aerobic/anaerobic culture, staining, transformation, mutagenesis

Molecular biology: Nucleic acid preparation, plasmid design, molecular cloning, CRISPRi

Virology: Growth & purification of viral particles, structural analyses

Biochemistry: Ultracentrifugation, protein expression & purification, liquid chromatography (LC)

Synthetic biology: genetic circuit design, chemical & light induction

Genomics: Bacterial & viral genome assembly, annotation, comparative genomics

Microscopy: Fluorescence microscopy, transmission electron microscopy (TEM)

Bioinformatics: Unix/Linux, High Performance Computation (HPC), Bash, Python, R languages

Engineering: Microfluidic device design & fabrication

Artificial Intelligence (AI): Large Language Model (LLM) training

Professional Experience

Large Language Model Training Fellow	<i>Handshake AI</i>	August 2025 - Present
Founder & Principal Consultant	<i>Strategic Molecular Solutions</i>	March 2025 - Present
Postdoctoral Research Associate	<i>University of Connecticut</i>	July 2021 - Present
Adjunct Faculty Instructor, Virology	<i>University of Connecticut</i>	January - May 2024

Education

Ph.D., Molecular and Cell Biology,	<i>University of Connecticut, Storrs</i>	August 2021
M.S., Microbiology	<i>University of Connecticut, Storrs</i>	May 2013
B.S., Molecular and Cell Biology	<i>University of Connecticut, Storrs</i>	May 2011

Advanced Training

National Center for CryoEM Access and Training (NCCAT)	April 2025
BV-BRC, Argonne National Laboratory	February 2025

Selected Publications

- Juliana R. Cortines, Charles M. Bridges et. al. (2024). Transition metals and oxidation reactions trigger stargate opening during the initial stages of the replicative cycle of the giant Tupanvirus.
- Justin C. Leavitt, [..], Charles M. Bridges, et. al. (2023). Bacteriophage P22 SieA mediated superinfection exclusion.
- Christopher J. Hawxhurst*, Jamie L. Micciulla*, Charles M. Bridges, et. al. (2023). Soil protists can actively redistribute beneficial bacteria along *Medicago truncatula* roots.
- Charles M. Bridges & Daniel J. Gage. (2021). Draft genome sequences of *Dysgonomonas* sp. strains GY75 and GY617, isolated from the hindgut of *Reticulitermes flavipes*.
- Charles M. Bridges, et. al. (2021). Draft genome sequences of *Dysgonomonas* sp. strains BGC7 and HGC4, isolated from the hindgut of a lower termite.
- Charles M. Bridges & Daniel J. Gage. (2021). Development and application of aerobic, chemically defined media for *Dysgonomonas*.
- Azady Pirhanov, Charles M. Bridges, et. al. (2021). Optogenetics in *Sinorhizobium meliloti* enables spatial control of exopolysaccharide production and biofilm structure.

Selected Presentations

<i>Selected Speaker</i> , XXVIII Biennial Conference on Phage/Virus Assembly	June 2023
<i>Selected Speaker</i> , Pioneer Valley Microbiology Symposium	January 2020
<i>Invited Speaker</i> , Nat. Sci. Dept. Science Colloquium, Castleton University	October 2019

Mentorship & Community Engagement

Established mentoring relationships with numerous graduate and undergraduate researchers, fostering scientific training, technical expertise and career development. Participated in numerous STEM outreach programs to engage public audiences and inspire future scientists in K-12 education.

Fellowships, Honors & Awards

UConn Connects David T. Ouimette Outstanding Mentor Award	September 2023
<i>Best Talk</i> , Pioneer Valley Microbiology Symposium	January 2020
Antonio and Marjorie Romano Graduate Education Fellowship	April 2018

Professional Affiliations

International Society for Viruses of Microorganisms	2022 - present
American Society for Virology	2022 - present
International Society of Protistologists	2019 - present
American Society for Microbiology	2011 – present