

Gage Rowden, M.S.

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Education

Texas Tech University, B.S. in Biology

Sep 2011–May 2016

Texas Tech University, M.S. in Biotechnology

Sep 2016–May 2018

Experience

Lead Technical R&D Scientist, Priogen Corporation — St. Paul, MN

Jan 2024–present

- Designed and optimized data analysis workflows to efficiently process high-throughput datasets.
- Contributed to multiple projects which lead to the development of intellectual property.
- Established and implemented standard operating procedures to enhance consistency and quality.
- Integrated version control across all projects, ensuring reproducibility and streamlined collaboration.
- Designed and outfitted the diagnostic laboratory, optimizing it for high-performance testing and analysis.

Researcher IV, MNPRO, University of Minnesota — St. Paul, MN

Aug 2022–present

- Co-authored 17 manuscripts, including two first-author publications.
- Developed a custom R package and automation scripts to optimize data analysis and processing.
- Led the expansion of laboratory space, improving research capacity and workflow efficiency.
- Designed and implemented a robust accession system for managing large laboratory inventory.
- Provided expert consultation on RT-QuIC and related diagnostic tests for research collaborators.
- Aided in field collection of prion-infected samples, ensuring proper handling and documentation.

Researcher III, MNPRO, University of Minnesota — St. Paul, MN

Aug 2019–Nov 2021

- Oversaw and consulted on the development of the BSL-2 laboratory, ensuring compliance and functionality.
- Developed and refined RT-QuIC techniques for prion disease diagnostics.
- Contributed to multiple published projects, supporting prion research and diagnostics.
- Advised research labs on RT-QuIC implementation, facilitating technology adoption in external institutions.
- Received advanced NIH training to expand in-house RT-QuIC capabilities.
- Established multiple prion clones, including a proprietary clone for diagnostic applications.

Lab Technician III, Dept. of Cell Bio & Biochem, TTUHSC — Lubbock, TX

Aug 2018–Aug 2019

- Investigated the role of nonsense-mediated RNA decay in male gametes.
- Developed an improved sperm head isolation method for forensic applications in rape kit analysis.
- Managed laboratory operations, including maintenance, purchasing, and project coordination.
- Collaborated with department researchers to support diverse biochemical investigations.

Graduate Research Assistant, Dept. of Chemistry, TTU — Lubbock, TX

Jun 2017–May 2018

- Researched cocaine biosynthetic pathways in coca plants, aiming to elucidate key biochemical mechanisms.
- Collaborated with faculty and graduate researchers to drive multiple research initiatives.
- Developed expertise in molecular biology and biochemical techniques, refining analytical skills.
- Presented research findings at conferences, enhancing scientific communication skills.

Graduate Teaching Assistant, Dept. of Biological Sciences, TTU — Lubbock, TX

Aug 2017–Dec 2017

- Maintained microbial cultures (eukaryotic and prokaryotic) for laboratory experiments.
- Led weekly lectures for 33 students, providing structured instruction and guidance.
- Emphasized the importance and ubiquity of microbes in scientific and medical contexts.

- Designed and implemented microbial isolation and identification techniques.

Graduate Teaching Assistant, Dept. of Chemistry, TTU — Lubbock, TX

Jan 2017–May 2018

- Instructed weekly 3-hour general chemistry lab sessions, reinforcing fundamental concepts.
- Managed and educated approximately 140 students, ensuring comprehension of core chemistry techniques.
- Developed strong teaching and communication skills, explaining abstract concepts effectively.

First Author Publications

quicR: An R Library for Streamlined Data Handling of Real-Time Quaking Induced Conversion Assays 2025

Gage R Rowden , Peter A Larsen. [10.2139/ssrn.5188757](https://doi.org/10.2139/ssrn.5188757)

Standardization of data analysis for RT-QuIC-based detection of chronic wasting disease 2023

Gage R Rowden , Catalina Picasso-Risso, Manc Li, Marc D Schwabenlander, Tiffany M Wolf, Peter A Larsen. [10.3390/pathogens12020309](https://doi.org/10.3390/pathogens12020309)

Publications

Prion Partitioning and Persistence in Environmental Waters 2025

E. Anu Li, Diana L Karwan, Stuart Siegfried Lichtenberg, *Gage R Rowden* , Marc D Schwabenlander, Peter A Larsen, Tiffany M Wolf. [10.1021/acs.est.4c11497](https://doi.org/10.1021/acs.est.4c11497)

Chronic wasting disease prions on deer feeders and wildlife visitation to deer feeding areas 2025

Miranda HJ Huang, Steve Demarais, Marc D Schwabenlander, Bronson K Strickland, Kurt C VerCauteren, William T McKinley, *Gage R Rowden* , Corina C Valencia Tibbitts, Sarah C Gresch, Stuart S Lichtenberg, Tiffany M Wolf, Peter A Larsen. [10.1002/jwmg.70000](https://doi.org/10.1002/jwmg.70000)

Inter-laboratory comparison of real-time quaking-induced conversion (RT-QuIC) for the detection of chronic wasting disease prions in white-tailed deer retropharyngeal lymph nodes 2025

Joseph R Darish, Alyssa W Kaganer, Brenda J Hanley, Krysten L Schuler, Marc D Schwabenlander, Tiffany M Wolf, Md Sohel Ahmed, *Gage R Rowden* , Peter A Larsen, Estela Kobashigawa, Deepanker Tewari, Stuart Lichtenberg, Joel A Pedersen, Shuping Zhang, Srinand Sreevatsan. [10.1177/10406387241285165](https://doi.org/10.1177/10406387241285165)

Prion forensics: a multidisciplinary approach to investigate CWD at an illegal deer carcass disposal site 2024

Marc D Schwabenlander, Jason C Bartz, Michelle Carstensen, Alberto Fameli, Linda Glaser, Roxanne J Larsen, Manc Li, Rachel L Shoemaker, *Gage R Rowden* , Suzanne Stone, W David Walter, Tiffany M Wolf, Peter A Larsen. [10.1080/19336896.2024.2343298](https://doi.org/10.1080/19336896.2024.2343298)

Detection and decontamination of chronic wasting disease prions during venison processing 2024

Marissa Milstein, Sarah C Gresch, Marc D Schwabenlander, Manc Li, Jason C Bartz, Damani N Bryant, Peter R Christenson, Laramie L Lindsey, Nicole Lurndahl, Sang-Hyun Oh, *Gage R Rowden* , Rachel L Shoemaker, Tiffany M Wolf, Peter A Larsen, Stuart S Lichtenberg. [10.1101/2024.07.23.604851](https://doi.org/10.1101/2024.07.23.604851)

Rapid on-site amplification and visual detection of misfolded proteins via microfluidic quaking-induced conversion (Micro-QuIC) 2024

Dong Jun Lee, Peter R Christenson, *Gage R Rowden* , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. [10.1038/s44328-024-00006-x](https://doi.org/10.1038/s44328-024-00006-x)

Visual detection of misfolded alpha-synuclein and prions via capillary-based quaking-induced conversion assay (Cap-QuIC) 2024

Peter R Christenson, Hyeonjeong Jeong, Hyerim Ahn, Manc Li, *Gage R Rowden* , Rachel L Shoemaker, Peter A Larsen, Hye Yoon Park, Sang-Hyun Oh. [10.1038/s44328-024-00003-0](https://doi.org/10.1038/s44328-024-00003-0)

Microfluidic Quaking-Induced Conversion (Micro-QuIC) for Rapid On-Site Amplification and Detection of Misfolded Proteins 2023

Dong Jun Lee, Peter R Christenson, *Gage R Rowden* , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. [10.1101/2023.07.17.549283](https://doi.org/10.1101/2023.07.17.549283)

Nanoparticle-enhanced RT-QuIC (nano-QuIC) diagnostic assay for misfolded proteins 2023

Peter R Christenson, Manc Li, **Gage R Rowden** , Peter A Larsen, Sang-Hyun Oh.
[10.1021/acs.nanolett.3c01001](https://doi.org/10.1021/acs.nanolett.3c01001)

- Assessment of Real-Time Quaking-Induced Conversion (RT-QulC) Assay, Immunohistochemistry and ELISA for Detection of Chronic Wasting Disease under Field Conditions in White-Tailed Deer: A Bayesian Approach** 2022
Catalina Picasso-Risso, Marc D Schwabenlander, **Gage R Rowden** , Michelle Carstensen, Jason C Bartz, Peter A Larsen, Tiffany M Wolf. [10.3390/pathogens11050489](https://doi.org/10.3390/pathogens11050489)
- A field-deployable diagnostic assay for the visual detection of misfolded prions** 2022
Peter R Christenson, Manc Li, **Gage R Rowden** , Marc D Schwabenlander, Tiffany M Wolf, Sang-Hyun Oh, Peter A Larsen. [10.1038/s41598-022-16323-y](https://doi.org/10.1038/s41598-022-16323-y)
- Sensitive detection of chronic wasting disease prions recovered from environmentally relevant surfaces** 2022
Qi Yuan, **Gage R Rowden** , Tiffany M Wolf, Marc D Schwabenlander, Peter A Larsen, Shannon L Bartelt-Hunt, Jason C Bartz. [10.1016/j.envint.2022.107347](https://doi.org/10.1016/j.envint.2022.107347)
- Elucidation of tropane alkaloid biosynthesis in Erythroxylum coca using a microbial pathway discovery platform** 2022
Benjamin G Chavez, Prashanth Srinivasan, Kayla Glockzin, Neill Kim, Olga Montero Estrada, Jan Jirschtzka, **Gage R Rowden** , Jonathan Shao, Lyndel Meinhardt, Christina D Smolke, John C D'auria. [10.1073/pnas.221537211](https://doi.org/10.1073/pnas.221537211)
- Comparison of chronic wasting disease detection methods and procedures: implications for free-ranging white-tailed deer (*Odocoileus virginianus*) surveillance and management** 2022
Marc D Schwabenlander, **Gage R Rowden** , Manc Li, Kelsie LaSharr, Erik C Hildebrand, Suzanne Stone, Davis M Seelig, Chris S Jennelle, Louis Cornicelli, Tiffany M Wolf, Michelle Carstensen, Peter A Larsen. [10.7589/JWD-D-21-00033](https://doi.org/10.7589/JWD-D-21-00033)
- RT-QulC detection of CWD prion seeding activity in white-tailed deer muscle tissues** 2021
Manc Li, Marc D Schwabenlander, **Gage R Rowden** , Jeremy M Scheffers, Christopher S Jennelle, Michelle Carstensen, Davis Seelig, Peter A Larsen. [10.1038/s41598-021-96127-8](https://doi.org/10.1038/s41598-021-96127-8)
- Morphometric and genetic variation in 8 breeds of Ethiopian camels (*Camelus dromedarius*)** 2018
Yoseph W Legesse, Christopher D Dunn, Matthew R Mauldin, Nicta Ordonez-Garza, **Gage R Rowden** , Yoseph Mekasha Gebre, Mohammed Y Kurtu, Seid Mohammed Ali, Wondmagegne D Whibesilassie, Michael Ballou, Melaku Tefera, Gad Perry, Robert D Bradley. [10.1093/jas/sky351](https://doi.org/10.1093/jas/sky351)

Patents

- Methods and materials for detecting misfolded polypeptides** Filed: April 15, 2022
Peter C Christenson, **Gage R Rowden** , Sang-Hyun Oh, Peter A Larsen, Manc Li Issued: in review
U.S. Patent 18,286,682

Software

- quicR: An R Library for Streamlined Data Handling of Real-Time Quaking Induced Conversion Assays** github.com/gage1145/quicR
- Developed an R package for the extraction, manipulation, and analysis of RT-QulC data.
 - Tools Used: R

Presentations

- Introduction to R** 2025
Gage R Rowden . MNPRO Lab Forum, Saint Paul, MN
- Introduction to quicR** 2025
Gage R Rowden . MNPRO Lab Forum, Saint Paul, MN
- Introduction to Git & Github** 2024
Gage R Rowden . MNPRO Lab Forum, Saint Paul, MN
- Increased Sensitivity of RT-QulC Using Micro-filtration** 2023
Gage R Rowden , Manc Li, Marc D Schwabenlander, Peter A Larsen. Chronic Wasting Disease

Conference, Denver, CO

Standardization of Data Analysis for RT-QuIC-based Detection of Chronic Wasting Disease <i>Gage R Rowden</i> , Catalina Picasso-Risso, Mancini Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Prion, Göttingen, Germany	2022
Standardization of Data Analysis for RT-QuIC-based Detection of Chronic Wasting Disease <i>Gage R Rowden</i> , Catalina Picasso-Risso, Mancini Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Wildlife Disease Association Conference, Madison, WI	2022
RT-QuIC as a Diagnostic Tool <i>Gage R Rowden</i> . Saint Paul, MN	2020
Finding the Oxidases Involved in the First Ring Closure of Tropane & Granatane Biosynthesis <i>Gage R Rowden</i> , John C D'Auria. Thesis Defense, Lubbock, TX	2018
Finding the Oxidases Involved in the First Ring Closure of Tropane & Granatane Biosynthesis <i>Gage R Rowden</i> , John C D'Auria. Biotechnology Research Symposium, Lubbock, TX	2017
Red/Green Colorblindness <i>Gage R Rowden</i> . Biotechnology Research Symposium, Lubbock, TX	2016
Functional Amyloids: A Link Between Yeast Reproduction and Mammalian Fertilization <i>Gage R Rowden</i> , Gail A Cornwall. Texas Tech Association of Biologists Symposium, Lubbock, TX	2015

Skills

Computational Skills

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| • R & Tidyverse | • Shiny | • GitHub Actions |
| • R package development | • Python | • Bioinformatics |
| • Data visualization | • L ^A T _E X | |
| • Quarto | • Git & GitHub | |

Molecular Biology & Biochemistry

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| • Recombinant DNA technology | • Western blotting | • Cell line maintenance |
| • DNA cloning | • Liquid chromatography | • Bacterial culturing |
| • DNA sequencing | • Gas chromatography | • Biosafety Level 2 |
| • PCR techniques | • Mass spectrometry | • Biosafety Level 3 |
| • Protein expression/purification | • RT-QuIC | |
| • Protein characterization | • Prion research | |

Additional Skills

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| • Scientific writing & publishing | • Research ethics | • Teaching |
| • Project management | • Public speaking | |