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

- Established a Django framework laboratory information management system for storing and reporting client data.
- 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**

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

Gage R Rowden , Catalina Picasso-Risso, Manci Li, Marc D Schwabenlander, Tiffany M Wolf, Peter A Larsen. **10.3390/pathogens12020309**

Publications

RT-QuIC optimization for prion detection in soils **2025**

Madeline K Grunklee, Stuart S Lichtenberg, ***Gage R Rowden*** , Diana L Karwan, E Anu Li, Marc D Schwabenlander, Tiffany M Wolf. **10.1016/j.mex.2025.103380**

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**

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**

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**

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, Manci Li, Rachel L Shoemaker, ***Gage R Rowden*** , Suzanne Stone, W David Walter, Tiffany M Wolf, Peter A Larsen. **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, Manci 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**

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**

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, Manci Li, ***Gage R Rowden*** , Rachel L Shoemaker, Peter A Larsen, Hye Yoon Park, Sang-Hyun Oh. **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**

Nanoparticle-enhanced RT-QuIC (nano-QuIC) diagnostic assay for misfolded proteins **2023**
Peter R Christenson, Manci Li, ***Gage R Rowden*** , Peter A Larsen, Sang-Hyun Oh. **10.1021/acs.nanolett.3c01001**

Assessment of Real-Time Quaking-Induced Conversion (RT-QuIC) 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**

A field-deployable diagnostic assay for the visual detection of misfolded prions **2022**
Peter R Christenson, Manci Li, ***Gage R Rowden*** , Marc D Schwabenlander, Tiffany M Wolf, Sang-Hyun Oh, Peter A Larsen. **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**

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 Jirschitzka, ***Gage R Rowden*** , Jonathan Shao, Lyndel Meinhardt, Christina D Smolke, John C D'auria. **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*** , Manci 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**

RT-QuIC detection of CWD prion seeding activity in white-tailed deer muscle tissues **2021**
Manci Li, Marc D Schwabenlander, ***Gage R Rowden*** , Jeremy M Schefers, Christopher S Jennelle, Michelle Carstensen, Davis Seelig, Peter A Larsen. **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, Nicte 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**

Patents

Methods and materials for detecting misfolded polypeptides **Filed:** April 15, 2022
Issued: in review
Peter C Christenson, ***Gage R Rowden*** , Sang-Hyun Oh, Peter A Larsen, Manci Li
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-QuIC data.
- Tools Used: R

PriLIMS: A Priogen Laboratory Information Management System **proprietary**
- Designed and implemented a Django framework LIMS for Priogen Corp.
- Tools Used: Python, Django, AWS, Bash

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-QuIC Using Micro-filtration **2023**
Gage R Rowden , Manci 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 **2022**
Gage R Rowden , Catalina Picasso-Risso, Manci Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Prion, Göttingen, Germany

Standardization of Data Analysis for RT-QuIC-based Detection of Chronic Wasting Disease **2022**
Gage R Rowden , Catalina Picasso-Risso, Manci Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Wildlife Disease Association Conference, Madison, WI

RT-QuIC as a Diagnostic Tool **2020**
Gage R Rowden . Saint Paul, MN

Finding the Oxidases Involved in the First Ring Closure of Tropane & Granatane Biosynthesis **2018**
Gage R Rowden , John C D'Auria. Thesis Defense, Lubbock, TX

Finding the Oxidases Involved in the First Ring Closure of Tropane & Granatane Biosynthesis **2017**
Gage R Rowden , John C D'Auria. Biotechnology Research Sympsium, Lubbock, TX

Red/Green Colorblindness **2016**
Gage R Rowden . Biotechnology Research Symposium, Lubbock, TX

Functional Amyloids: A Link Between Yeast Reproduction and Mammalian Fertilization **2015**
Gage R Rowden , Gail A Cornwall. Texas Tech Association of Biologists Symposium, Lubbock, TX

Skills

Computational Skills

- Amazon Web Services
- R & Tidyverse
- R package development
- Quarto
- Shiny
- Python
- Django
- Bash
- Data visualization
- LaTeX
- Git & GitHub
- GitHub Actions
- Bioinformatics

Molecular Biology & Biochemistry

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

Additional Skills

- Scientific writing & publishing
- Project management
- Research ethics
- Public speaking
- Teaching