

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.

- 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 <i>Gage R Rowden</i> , Peter A Larsen. 10.2139/ssrn.5188757	2025
Standardization of data analysis for RT-QuIC-based detection of chronic wasting disease <i>Gage R Rowden</i> , Catalina Picasso-Risso, Manc Li, Marc D Schwabenlander, Tiffany M Wolf, Peter A Larsen. 10.3390/pathogens12020309	2023

Publications

Prion Partitioning and Persistence in Environmental Waters E. Anu Li, Diana L Karwan, Stuart Siegfried Lichtenberg, <i>Gage R Rowden</i> , Marc D Schwabenlander, Peter A Larsen, Tiffany M Wolf. 10.1021/acs.est.4c11497	2025
Chronic wasting disease prions on deer feeders and wildlife visitation to deer feeding areas Miranda HJ Huang, Steve Demarais, Marc D Schwabenlander, Bronson K Strickland, Kurt C VerCauteren, William T McKinley, <i>Gage R Rowden</i> , Corina C Valencia Tibbitts, Sarah C Gresch, Stuart S Lichtenberg, Tiffany M Wolf, Peter A Larsen. 10.1002/jwmg.70000	2025
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 Joseph R Darish, Alyssa W Kaganer, Brenda J Hanley, Krysten L Schuler, Marc D Schwabenlander, Tiffany M Wolf, Md Sohel Ahmed, <i>Gage R Rowden</i> , Peter A Larsen, Estela Kobashigawa, Deepanker Tewari, Stuart Lichtenberg, Joel A Pedersen, Shuping Zhang, Srinand Sreevatsan. 10.1177/10406387241285165	2025
Prion forensics: a multidisciplinary approach to investigate CWD at an illegal deer carcass disposal site Marc D Schwabenlander, Jason C Bartz, Michelle Carstensen, Alberto Fameli, Linda Glaser, Roxanne J Larsen, Manc Li, Rachel L Shoemaker, <i>Gage R Rowden</i> , Suzanne Stone, W David Walter, Tiffany M Wolf, Peter A Larsen. 10.1080/19336896.2024.2343298	2024
Detection and decontamination of chronic wasting disease prions during venison processing 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, <i>Gage R Rowden</i> , Rachel L Shoemaker, Tiffany M Wolf, Peter A Larsen, Stuart S Lichtenberg. 10.1101/2024.07.23.604851	2024
Rapid on-site amplification and visual detection of misfolded proteins via microfluidic quaking-induced conversion (Micro-QuIC) Dong Jun Lee, Peter R Christenson, <i>Gage R Rowden</i> , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. 10.1038/s44328-024-00006-x	2024
Visual detection of misfolded alpha-synuclein and prions via capillary-based quaking-induced conversion assay (Cap-QuIC) Peter R Christenson, Hyeonjeong Jeong, Hyerim Ahn, Manc Li, <i>Gage R Rowden</i> , Rachel L Shoemaker, Peter A Larsen, Hye Yoon Park, Sang-Hyun Oh. 10.1038/s44328-024-00003-0	2024
Microfluidic Quaking-Induced Conversion (Micro-QuIC) for Rapid On-Site Amplification and Detection of Misfolded Proteins Dong Jun Lee, Peter R Christenson, <i>Gage R Rowden</i> , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. 10.1101/2023.07.17.549283	2023
Nanoparticle-enhanced RT-QuIC (nano-QuIC) diagnostic assay for misfolded proteins Peter R Christenson, Manc Li, <i>Gage R Rowden</i> , Peter A Larsen, Sang-Hyun Oh. 10.1021/acs.nanolett.3c01001	2023
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 Catalina Picasso-Risso, Marc D Schwabenlander, <i>Gage R Rowden</i> , Michelle Carstensen, Jason C Bartz, Peter A Larsen, Tiffany M Wolf. 10.3390/pathogens11050489	2022

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	
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 , 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	
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, Nite Ordenez-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
Peter C Christenson, Gage R Rowden , Sang-Hyun Oh, Peter A Larsen, Manc Li	Issued: in review
<i>U.S. Patent 18,286,682</i>	

Software

quicR: An R Library for Streamlined Data Handling of Real-Time Quaking Induced Conversion Assays	github.com/gage1145/quicR
<ul style="list-style-type: none"> Developed an R package for the extraction, manipulation, and analysis of RT-QuIC 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-QuIC 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	2022
Gage R Rowden , Catalina Picasso-Risso, Manc 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, Manc Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Wildlife Disease Association Conference, Madison, WI	

RT-QulC 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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| <ul style="list-style-type: none"> • R & Tidyverse • R package development • Data visualization • Quarto | <ul style="list-style-type: none"> • Shiny • Python • \LaTeX | <ul style="list-style-type: none"> • Git & GitHub • GitHub Actions • Bioinformatics |
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Molecular Biology & Biochemistry

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| <ul style="list-style-type: none"> • Recombinant DNA technology • DNA cloning • DNA sequencing • PCR techniques • Protein expression/purification • Protein characterization | <ul style="list-style-type: none"> • Western blotting • Liquid chromatography • Gas chromatography • Mass spectrometry • RT-QulC • Prion research | <ul style="list-style-type: none"> • Cell line maintenance • Bacterial culturing • Biosafety Level 2 • Biosafety Level 3 |
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Additional Skills

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| <ul style="list-style-type: none"> • Scientific writing & publishing • Project management | <ul style="list-style-type: none"> • Research ethics • Public speaking | <ul style="list-style-type: none"> • Teaching |
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