

# Gage Rowden, M.S.

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## Education

Texas Tech University, B.S. in Biology	Sept 2011–May 2016
Texas Tech University, M.S. in Biotechnology	Sept 2016–May 2018

## Experience

<b>Lead Technical R&amp;D Scientist</b> , Priogen Corporation — St. Paul, MN	Jan 2024–present
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- Designed the analysis pipelines for dozens of sample types.
- Contributed to the development of multiple projects which resulted in intellectual property.
- Implemented standard operating procedures
- Instituted version control for every project.
- Designed and outfitted the laboratory from the ground up.

<b>Researcher IV</b> , MNPRO, University of Minnesota — St. Paul, MN	Aug 2022–present
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- Contributed to 17 manuscripts including two first author publications.
- Developed an open-source R package for the analysis of RT-QuIC data.
- Supervised lab space expansion.
- Developed a thorough and detailed accession system for large laboratory inventory.
- Consulted for collaborators on RT-QuIC and its related tests.
- Assisted in field collection of prion infected tissues and environmental samples

<b>Researcher III</b> , MNPRO, University of Minnesota — St. Paul, MN	Aug 2019–Nov 2021
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- Oversaw and consulted on the development of the BSL-2 laboratory at MNPRO.
- Developed RT-QuIC techniques for the diagnosis of prion diseases.
- Worked on several published projects.
- Consulted for research labs to develop their own RT-QuIC foundations.
- Received training by the NIH to grow our own RT-QuIC capabilities.
- Established several prion clones including a proprietary clone for use in prion diagnostics.

<b>Lab Technician III</b> , Dept. of Cell Bio & Biochem, TTUHSC — Lubbock, TX	Aug 2018–Aug 2019
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- Performed essential lab work in understanding nonsense-mediated RNA decay in male gametes.
- Worked on the development of an improved method of sperm head isolation for rape kits.
- Managed all duties including lab maintenance, purchasing, and project direction.
- Operated closely with other researchers in the department to supplement lab investigations.

<b>Graduate Research Assistant</b> , Dept. of Chemistry, TTU — Lubbock, TX	Jun 2017–May 2018
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- Assisted on a project attempting to resolve cocaine biosynthesis in coca plants.
- Collaborated with multiple professors and graduate researchers to complete projects.
- Developed analytical skills and techniques in the fields of molecular biology and biochemistry.
- Attended conferences and gave presentations on research.

<b>Graduate Teaching Assistant</b> , Dept. of Biological Sciences, TTU — Lubbock, TX	Aug 2017–Dec 2017
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- Maintained eukaryotic and prokaryotic microbial cultures for labs.
- Organized 33 students and gave weekly lectures.
- Imparted the importance and ubiquity of microbes in a scientific/medical setting.
- Developed microbial isolation/identification methods.

- Taught 3-hour sections of general chemistry labs per week.
- Organized approximately 140 students and educated on fundamental chemistry techniques.
- Reinforced ability to teach and explain abstract concepts.

## Publications

<b>quicR: An R Library for Streamlined Data Handling of Real-Time Quaking Induced Conversion Assays</b>	2025
<i>Gage R Rowden</i> , Peter A Larsen. <a href="#">in review</a>	
<b>Prion Partitioning and Persistence in Environmental Waters</b>	2025
E. Anu Li, Diana L Karwan, Stuart Siegfried Lichtenberg, <i>Gage R Rowden</i> , Marc D Schwabenlander, Peter A Larsen, Tiffany M Wolf. <a href="#">10.1021/acs.est.4c11497</a>	
<b>Chronic wasting disease prions on deer feeders and wildlife visitation to deer feeding areas</b>	2025
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. <a href="#">10.1002/jwmg.70000</a>	
<b>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</b>	2025
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. <a href="#">10.1177/10406387241285165</a>	
<b>Prion forensics: a multidisciplinary approach to investigate CWD at an illegal deer carcass disposal site</b>	2024
Marc D Schwabenlander, Jason C Bartz, Michelle Carstensen, Alberto Fameli, Linda Glaser, Roxanne J Larsen, Manci Li, Rachel L Shoemaker, <i>Gage R Rowden</i> , Suzanne Stone, W David Walter, Tiffany M Wolf, Peter A Larsen. <a href="#">10.1080/19336896.2024.2343298</a>	
<b>Detection and decontamination of chronic wasting disease prions during venison processing</b>	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, <i>Gage R Rowden</i> , Rachel L Shoemaker, Tiffany M Wolf, Peter A Larsen, Stuart S Lichtenberg. <a href="#">10.1101/2024.07.23.604851</a>	
<b>Rapid on-site amplification and visual detection of misfolded proteins via microfluidic quaking-induced conversion (Micro-QuIC)</b>	2024
Dong Jun Lee, Peter R Christenson, <i>Gage R Rowden</i> , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. <a href="#">10.1038/s44328-024-00006-x</a>	
<b>Visual detection of misfolded alpha-synuclein and prions via capillary-based quaking-induced conversion assay (Cap-QuIC)</b>	2024
Peter R Christenson, Hyeonjeong Jeong, Hyerim Ahn, Manci Li, <i>Gage R Rowden</i> , Rachel L Shoemaker, Peter A Larsen, Hye Yoon Park, Sang-Hyun Oh. <a href="#">10.1038/s44328-024-00003-0</a>	
<b>Standardization of data analysis for RT-QuIC-based detection of chronic wasting disease</b>	2023
<i>Gage R Rowden</i> , Catalina Picasso-Risso, Manci Li, Marc D Schwabenlander, Tiffany M Wolf, Peter A Larsen. <a href="#">10.3390/pathogens12020309</a>	
<b>Microfluidic Quaking-Induced Conversion (Micro-QuIC) for Rapid On-Site Amplification and Detection of Misfolded Proteins</b>	2023
Dong Jun Lee, Peter R Christenson, <i>Gage R Rowden</i> , Nathan C Lindquist, Peter A Larsen, Sang-Hyun Oh. <a href="#">10.1101/2023.07.17.549283</a>	
<b>Nanoparticle-enhanced RT-QuIC (nano-QuIC) diagnostic assay for misfolded proteins</b>	2023
Peter R Christenson, Manci Li, <i>Gage R Rowden</i> , Peter A Larsen, Sang-Hyun Oh. <a href="#">10.1021/acs.nanolett.3c01001</a>	
<b>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</b>	2022

Catalina Picasso-Risso, Marc D Schwabenlander, <i>Gage R Rowden</i> , Michelle Carstensen, Jason C Bartz, Peter A Larsen, Tiffany M Wolf. <a href="#">10.3390/pathogens11050489</a>	
<b>A field-deployable diagnostic assay for the visual detection of misfolded prions</b>	2022
Peter R Christenson, Manc Li, <i>Gage R Rowden</i> , Marc D Schwabenlander, Tiffany M Wolf, Sang-Hyun Oh, Peter A Larsen. <a href="#">10.1038/s41598-022-16323-y</a>	
<b>Sensitive detection of chronic wasting disease prions recovered from environmentally relevant surfaces</b>	2022
Qi Yuan, <i>Gage R Rowden</i> , Tiffany M Wolf, Marc D Schwabenlander, Peter A Larsen, Shannon L Bartelt-Hunt, Jason C Bartz. <a href="#">10.1016/j.envint.2022.107347</a>	
<b>Elucidation of tropane alkaloid biosynthesis in Erythroxylum coca using a microbial pathway discovery platform</b>	2022
Benjamin G Chavez, Prashanth Srinivasan, Kayla Glockzin, Neill Kim, Olga Montero Estrada, Jan Jirschitzka, <i>Gage R Rowden</i> , Jonathan Shao, Lyndel Meinhardt, Christina D Smolke, John C D'auria. <a href="#">10.1073/pnas.221537211</a>	
<b>Comparison of chronic wasting disease detection methods and procedures: implications for free-ranging white-tailed deer (Odocoileus virginianus) surveillance and management</b>	2022
Marc D Schwabenlander, <i>Gage R Rowden</i> , 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. <a href="#">10.7589/JWD-D-21-00033</a>	
<b>RT-QuIC detection of CWD prion seeding activity in white-tailed deer muscle tissues</b>	2021
Manc Li, Marc D Schwabenlander, <i>Gage R Rowden</i> , Jeremy M Schefers, Christopher S Jennelle, Michelle Carstensen, Davis Seelig, Peter A Larsen. <a href="#">10.1038/s41598-021-96127-8</a>	
<b>Morphometric and genetic variation in 8 breeds of Ethiopian camels (Camelus dromedarius)</b>	2018
Yoseph W Legesse, Christopher D Dunn, Matthew R Mauldin, Nigte Ordonez-Garza, <i>Gage R Rowden</i> , Yoseph Mekasha Gebre, Mohammed Y Kurtu, Seid Mohammed Ali, Wondmagegne D Whibesilassie, Michael Ballou, Melaku Tefera, Gad Perry, Robert D Bradley. <a href="#">10.1093/jas/sky351</a>	

## Patents

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

## Software

<b>quicR: An R Library for Streamlined Data Handling of Real-Time Quaking Induced Conversion Assays</b>	<a href="https://github.com/gage1145/quicR">github.com/gage1145/quicR</a>
<ul style="list-style-type: none"> <li>Developed an R package for the extraction, manipulation, and analysis of RT-QuIC data.</li> <li>Tools Used: R</li> </ul>	

## Presentations

<b>Introduction to quicR</b>	2025
<i>Gage R Rowden</i> . MNPRO Lab Forum, Saint Paul, MN	
<b>Introduction to Git &amp; Github</b>	2024
<i>Gage R Rowden</i> . MNPRO Lab Forum, Saint Paul, MN	
<b>Increased Sensitivity of RT-QuIC Using Micro-filtration</b>	2023
<i>Gage R Rowden</i> , Manc Li, Marc D Schwabenlander, Peter A Larsen. Chronic Wasting Disease Conference, Denver, CO	
<b>Standardization of Data Analysis for RT-QuIC-based Detection of Chronic Wasting Disease</b>	2022
<i>Gage R Rowden</i> , Catalina Picasso-Risso, Manc Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Prion, Göttingen, Germany	
<b>Standardization of Data Analysis for RT-QuIC-based Detection of Chronic Wasting Disease</b>	2022
<i>Gage R Rowden</i> , Catalina Picasso-Risso, Manc Li, Marc D Schwabenlander, Tiffany Wolf, Peter A Larsen. Wildlife Disease Association Conference, Madison, WI	

<b>RT-QuIC as a Diagnostic Tool</b> <i>Gage R Rowden</i> . Saint Paul, MN	2020
<b>Finding the Oxidases Involved in the First Ring Closure of Tropane &amp; Granatane Biosynthesis</b> <i>Gage R Rowden</i> , John C D'Auria. Thesis Defense, Lubbock, TX	2018
<b>Finding the Oxidases Involved in the First Ring Closure of Tropane &amp; Granatane Biosynthesis</b> <i>Gage R Rowden</i> , John C D'Auria. Biotechnology Research Symposium, Lubbock, TX	2017
<b>Red/Green Colorblindness</b> <i>Gage R Rowden</i> . Biotechnology Research Symposium, Lubbock, TX	2016
<b>Functional Amyloids: A Link Between Yeast Reproduction and Mammalian Fertilization</b> <i>Gage R Rowden</i> , Gail A Cornwall. Texas Tech Association of Biologists Symposium, Lubbock, TX	2015

## Skills

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| • RT-QuIC               | • Protein expression/purification | • Mass spectrometry    |
| • R & Tidyverse         | • Protein characterization        | • DNA cloning          |
| • R package development | • BSL-2 & BSL-3                   | • DNA sequencing       |
| • Python                | • Prion research                  | • PCR techniques       |
| • $\LaTeX$              | • Cell culturing                  | • Microscopy technique |
| • Git & Github          |                                   |                        |