
Nicholas M. Riley

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NIH F99/K00 Fellow

Joshua J. Coon Lab, University of Wisconsin-Madison

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<http://coonlabs.com/about/team/nick-riley/>

EDUCATION/TRAINING

INSTITUTION	DEGREE	YEAR(s)	FIELD OF STUDY
University of South Carolina	B.S., with Honors from the South Carolina Honors College	2007-2012	Chemistry and Psychology GPA: 3.9
University of Wisconsin-Madison	Ph.D. (advisor: JJ Coon)	2012-2018	Analytical Chemistry
Stanford University	Postdoctoral (mentor: CR Bertozzi)	2018-present	Chemistry/Chemical Biology

A. PERSONAL STATEMENT

In my graduate training in the Coon lab I developed new mass spectrometry instrumentation and methodology to leverage ion-ion reactions and other modes of tandem mass spectrometry for proteomic analyses. Through the introduction of infrared photoactivation concurrent to ion-ion reactions, I significantly improved the efficacy of electron-driven dissociation techniques for high-throughput analyses of peptide and protein cations and anions. I specifically applied these technologies to large-scale characterization of intact proteins and post-translational modifications, namely glycosylation and phosphorylation. In all, my work led to one of the first global characterizations of the glycoproteome via intact glycopeptides, providing new insights into heterogeneity and organization within the glycoproteome, and the technology I helped develop (activated ion electron transfer dissociation) is now on a path toward commercialization, in part, due to my efforts. As a postdoctoral researcher in the Bertozzi group, I am investigating new ways to study and modify cell surfaces in cancer cells to understand tumor progression. Through chemical tools to label and engineer mucin-type proteins and sialosides in the cancer glycocalyx (the collection of cell surface glycoconjugates), I aim to understand the role of glycosylation in cancer metastasis and how to develop new therapeutic strategies based on this knowledge.

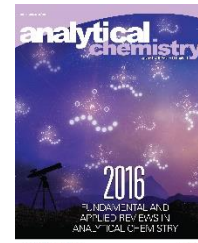
B. SELECTED HONORS AND AWARDS (Full list below)

2016 – 2022	NIH National Cancer Institute Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)
2018	Richard and Joan Hartl Award for Research Excellence in Analytical Chemistry, UW-Madison
2017	FACSS Student Award, Federation of Analytical Chemistry and Spectroscopy Societies
2017	Roger J. Carlson Memorial Award for Research Excellence, Dept. of Chemistry, UW-Madison
2016	Marg Northcott Student Award, Lake Louise Tandem MS Workshop
2015	American Society for Mass Spectrometry (ASMS) Graduate Student Award
2014 – 2016	National Science Foundation (NSF) Graduate Research Fellow
2012	Algernon Sydney Sullivan Award (top undergraduate student), USC
2012	ODK Leader of the Year, Omicron Delta Kappa Honors Society Chi Circle, USC
2011, 2012	American Institute of Chemists Foundation Award, USC
2011	Presidential Volunteer Service Award, Gold Level (250+ hours), Office of President Barack Obama
2011	Wilson-Kibler Bicentennial Leadership Award, USC
2010	Phi Beta Kappa
2009	Jo Anne J. Trow Academic Scholar, Alpha Lambda Delta Honors Society
2007 – 2011	Robert C. McNair Scholar, USC (full tuition scholarship awarded for academic merit)

C. PUBLICATIONS

- (1) Rhoads TW, Rose CM, Bailey DJ, **Riley NM**, Molden RC, Nestler AJ, Merrill AE, Smith LM, Hebert AS, Westphall MS, Pagliarini DJ, Garcia BA, Coon JJ. *Neutron-encoded mass signatures for quantitative top down proteomics*. *Analytical Chemistry*, **2014**, 86(5): 2314-2319. doi: 10.1021/ac403579s
- (2) **Riley NM**, Westphall MS, Coon JJ. *Activated Ion Electron Transfer Dissociation for Improved Fragmentation of Intact Proteins*. *Analytical Chemistry*, **2015**, 87(14): 7109-7116. doi: 10.1021/acs.analchem.5b00881

- (3) Zhao Y,* **Riley NM**,* Sun L, Hebert AS, Yan X, Westphall MW, Rush MJP, Zhu G, Champion MM, Champion PAD, Coon JJ, Dovichi NJ. *Coupling Capillary Zone Electrophoresis with Electron Transfer Dissociation and Activated Ion Electron Transfer Dissociation for Top-Down Proteomics*. Analytical Chemistry, **2015**, 87(10): 5422-5429. doi: 10.1021/acs.analchem.5b00883. ***authors contributed equally**
- (4) **Riley NM**, Rush MJP, Rose CM, Richards AL, Kwiecien NW, Bailey DJ, Hebert AS, Westphall MS, Coon JJ. *The Negative Mode Proteome with Activated Ion Negative Electron Transfer Dissociation*. Molecular and Cellular Proteomics, **2015**, 14(10): 2644-60. doi: 10.1074/mcp.M115.049726.
****Highlighted in Nature Methods**: <http://www.nature.com/nmeth/journal/v12/n9/full/nmeth.3573.html>**
- (5) Rose CM, Rush MJP, **Riley NM**, Merrill AE, Kwiecien NW, Westphall MS, Coon JJ. *A calibration routine for efficient ETD in large-scale proteomics*. Journal of the American Society of Mass Spectrometry, **2015**, 26(11): 1848-57. doi: 10.1007/s13361-015-1183-1.
- (6) **Riley NM**, Mullen C, Weisbrod CR, Sharma S, Senko MW, Westphall MS, Syka JEP, Coon JJ. *Enhanced Dissociation of Intact Proteins with High Capacity Electron Transfer Dissociation*. Journal of the American Society of Mass Spectrometry, **2016**, 27(3): 520-531. doi: 10.1007/s13361-015-1306-8.
- (7) **Riley NM**, Coon JJ. *Phosphoproteomics in the Age of Rapid and Deep Proteome Profiling*. Analytical Chemistry, **2016**, 88(1): 74–94. doi: 10.1021/acs.analchem.5b04123. ****featured on the journal cover****
- (8) **Riley NM**, Hebert AS, Coon JJ. *Proteomics Moves into the Fast Lane*. Cell Systems, **2016**, 2(3): 142-143. doi: 10.1016/j.cels.2016.03.002.
- (9) Horton JL, Martin OJ, Lai L, **Riley NM**, Richards AL, Vega RB, Leone TC, Pagliarini DJ, Coon JJ, Muoio DM, Bedi KC, Margulies KB, Kelly DP. *Mitochondrial Protein Hyperacetylation in the Failing Heart*. Journal of Clinical Investigation Insights, **2016**, 1(2): e84897. doi:10.1172/jci.insight.84897.
- (10) McIlwain S, Peris D, Sardi M, Moskvina O, Zhan F, Myers K, **Riley NM**, Buzzell A, Parreiras LS, Ong IM, Landick R, Coon JJ, Gasch AP, Sato TK, Hittinger CT. *Genome Sequence and Analysis of a Stress-Tolerant, Wild-Derived Strain of *Saccharomyces cerevisiae* used in Biofuels Research*. G3: Genes | Genomes | Genetics, **2016**, 6(6): 1757-1766. doi: 10.1534/g3.116.029389.
- (11) **Riley NM**, Bern M, Westphall MS, Coon JJ. *A Full-Featured Search Algorithm for Negative Electron Transfer Dissociation*. Journal of Proteome Research, **2016**, 15(8): 2768-2776. doi: 10.1021/acs.jproteome.6b00319
- (12) Weisenhorn EMM, van't Erve TJ, **Riley NM**, Hess JR, Raife TJ, Coon JJ. *Multi-omics Evidence for Inheritance of Energy Pathways in Red Blood Cells*. Molecular and Cellular Proteomics, **2016**, 15(12): 3614-23. doi: 10.1074/mcp.M116.062349.
- (13) Rush MJP, **Riley NM**, Westphall MS, Syka JEP, Coon JJ. *Sulfur Pentafluoride is a Preferred Reagent for Negative Electron Transfer Dissociation*. Journal of the American Society of Mass Spectrometry, **2017**, 28(7): 1324-1332. doi: 10.1007/s13361-017-1600-8.
- (14) **Riley NM**, Westphall MS, Hebert AS, Coon JJ. *Implementation of Activated Ion Electron Transfer Dissociation on a quadrupole-Orbitrap-linear ion trap hybrid mass spectrometer*. Analytical Chemistry, **2017**, 89(12): 6358-6366. doi: 10.1021/acs.analchem.7b00213. ****featured on the journal cover****
****Highlighted on Genome Web**: <https://www.genomeweb.com/proteomics-protein-research/new-mass-spec-fragmentation-technique-could-boost-shotgun-mass-spec>**
- (15) **Riley NM**, Hebert AS, Durnberger G, Stanek F, Mechtler K, Westphall MS, Coon JJ. *Phosphoproteomics with Activated Ion Electron Transfer Dissociation*. Analytical Chemistry, **2017**, 89(12): 6367-6376. doi: 10.1021/acs.analchem.7b00212. ****featured on the journal cover**** ****Highlighted on Genome Web**: <https://www.genomeweb.com/proteomics-protein-research/new-mass-spec-fragmentation-technique-could-boost-shotgun-mass-spec>**



- (16) Leach III FE, **Riley NM**, Westphall, Coon JJ, Amster IJ. *Negative electron transfer dissociation sequencing of increasingly sulfated glycosaminoglycan oligosaccharides on an Orbitrap mass spectrometer*. Journal of the American Society of Mass Spectrometry, **2017**, 28(9): 1844-1854. doi: 10.1007/s13361-017-1709-9.
- (17) **Riley NM**, Westphall MS, Coon JJ. *Activated Ion Electron Transfer Dissociation Enables Comprehensive Top-Down Protein Fragmentation*. Journal of Proteome Research, **2017**, 16(7): 2653-2659. doi: 10.1021/acs.jproteome.7b00249.
- (18) **Riley NM**, Westphall MS, Coon JJ. *Sequencing Larger Intact Proteins (30-70 kDa) with Activated Ion Electron Transfer Dissociation*. Journal of the American Society of Mass Spectrometry, **2018**, 29(1): 140-149. doi: 10.1007/s13361-017-1808-7
- (19) **Riley NM**, Coon JJ. *The Role of Electron Transfer Dissociation in Modern Proteomics*. Analytical Chemistry, **2018**, 90(1): 40-64. doi: 10.1021/acs.analchem.7b04810.
- (20) Hebert AS, Thoing C, **Riley NM**, Kwiecien NW, Shishkova E, Huguet R, Cardasis HL, Kuehn A, Eliuk S, Zabrouskov V, Westphall MS, McAlister GC, Coon JJ. *Improved Precursor Characterization for Data-Dependent Mass Spectrometry*. Analytical Chemistry, **2018**, 90(3): 2333-2340. doi: 10.1021/acs.analchem.7b04808.
- (21) **Riley NM**, Sikora JW, Seckler HS, Greer JB, Fellers RT, LeDuc RD, Westphall MS, Thomas PM, Kelleher NL, Coon JJ. *The Value of Activated Ion Electron Transfer Dissociation for High-Throughput Top-Down Characterization of Intact Proteins*. Analytical Chemistry. in press. doi: 10.1021/acs.analchem.8b01638.
- (22) Rush MJP, **Riley NM**, Westphall MS, Coon JJ. *Top-Down Characterization of Proteins with Intact Disulfide Bonds Using Activated-Ion Electron Transfer Dissociation*. Analytical Chemistry. in press. doi: 10.1021/acs.analchem.8b01113.
- (23) Myers KS, **Riley NM**, MacGilvray ME, Sato TK, McGee M, Heilberger J, Coon JJ, Gasch AP. *Rerouting PKA signaling regulates sugar and hypoxia responses for anaerobic xylose fermentation in yeast*. under revision.
- (24) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Global glycoproteome analysis reveals site-specific glycan heterogeneity*. submitted.

D. PATENTS

- (1) Coon JJ, **Riley NM**, Westphall MS. **2017**. *Implementation of Continuous Wave Carbon Dioxide Infrared Laser on a Quadrupole-Orbitrap-Linear Ion Trap Hybrid Mass Spectrometer System*. US Patent Application P170182US01, filed March 2017. Patent Pending.

E. PRESENTATIONS

Oral Presentations

- (1) Hebert AS, Merrill AE, **Riley NM**, Rose CM, Bailey DJ, Westphall MS, Coon JJ. *Multiplex Quantification through Neutron-Encoded Mass Signatures: NeuCode*. The Great Scientific Exchange (SciX) presented by FACSS, September 2013, Milwaukee, WI. (**presenter: NM Riley, invited by: V Ryzhov**)
- (2) **Riley NM**, Coon JJ. *Characterization of Yeast Strains Evolved for Biofuel Production using Quantitative Proteomics*. Great Lakes Bioenergy Research Center Microbial Conversion Seminar, May 2014, Madison, WI.
- (3) **Riley NM**, Scott NE, Rush MJP, Rose CM, Hebert AS, Westphall MS, Coon JJ. *Negative Electron Transfer Dissociation for Glycopeptides from Acinetobacter baumannii: New Methodology for Glycopeptide Anion Analysis*. ASMS Asilomar Conference on Advances in Glycomics and Glycoproteomics: Methods and Applications, October 2014, Pacific Grove, CA. (**Poster Highlight Talk**)

- (4) **Riley NM**, Rush MJP, Rose CM, Richards AL, Bailey DJ, Westphall MS, Coon JJ. *Activated-Ion Techniques for Expanding the Functionality of ETD and NETD*. 12th Uppsala Conference on Electron Capture and Transfer Dissociation, **March 2015**, Lake Arrowhead, CA. **(invited by: RR Julian and JA Loo)**
- (5) **Riley NM**, Rush MJP, Rose CM, Richards AL, Bailey DJ, Westphall MS, Coon JJ. *Activated-Ion Techniques for ETD and NETD*. Thermo Fisher Scientific Research Seminar, **April 2015**, San Jose, CA. **(invited by: JC Schwartz)**
- (6) **Riley NM**, Coon JJ. *Activated-Ion Negative Electron Transfer Dissociation for High-Throughput Glycoproteomics*. NIH Common Fund Glycoscience Program: Principal Investigators Meeting, **July 2015**, Bethesda, MD.
- (7) **Riley NM**, Coon JJ. *Transforming High Resolution Accurate Mass Measurement Using the Orbitrap Mass Analyzer (Keynote Lecture)*. Thermo Fisher Scientific Northeast User's Meeting, **November 2015**, Somerset, NJ. **(invited by: R Klein)**
- (8) **Riley NM**, Kwiecien NW, Westphall MS, Coon JJ. *High-throughput Proteomics with Negative Electron Transfer Dissociation*. Proceedings of the 64th ASMS Conference on Mass Spectrometry and Allied Topics, **June 2016**, San Antonio, TX.
- (9) **Riley NM**, Coon JJ. *Activated-Ion Negative Electron Transfer Dissociation for High-Throughput Glycoproteomics*. NIH Common Fund Glycoscience Program: Principal Investigators Meeting, Year 2, **June 2016**, Bethesda, MD.
- (10) **Riley NM**, Westphall MS, Hebert AS, Coon JJ. *Activated-Ion Electron Transfer Dissociation on an Orbitrap Fusion Lumos Mass Spectrometer*. Lake Louise 29th Workshop on Tandem Mass Spectrometry, **December 2016**, Lake Louise, Alberta, Canada. **(Received Marg Northcott Student Award)**
- (11) **Riley NM**. *Activated Ion Electron Transfer Dissociation for Global Profiling of the Glycoproteome*. UW-Madison Analytical Chemistry Departmental Seminar, **May 2017**, Madison, WI.
- (12) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Thousands of Glycosites via Intact Glycopeptide Analysis using Activated Ion Electron Transfer Dissociation*. Proceedings of the 65th ASMS Conference on Mass Spectrometry and Allied Topics, **June 2017**, Indianapolis, IN.
- (13) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Mapping the Glycoproteome with Activated Ion Electron Transfer Dissociation*. 14th Uppsala Conference on Electron Capture and Transfer Dissociation, **July 2017**, Ithaca, NY. **(Poster abstract selected for oral presentation)**
- (14) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Large-Scale Glycoproteomics with Activated Ion Electron Transfer Dissociation*. 13th Midwest Carbohydrate and Glycobiology Symposium, **September 2017**, Madison, WI. **(Received Outstanding Oral Presentation Award)**
- (15) **Riley NM**, Hebert AS, Kwiecien NW, Westphall MS, Coon JJ. *Mapping the Glycoproteome with Activated Ion Electron Transfer Dissociation*. The Great Scientific Exchange (SciX) presented by FACSS, **October 2017**, Reno, NV. **(Received FACSS Student Award)**
- (16) **Riley NM**. *The Many Uses of Activated Ion Electron Transfer Dissociation for Proteome Analysis*. UW-Madison Analytical Chemistry Departmental Seminar, Special Seminar for Richard and Joan Hartl for Research Excellence Awards, **May 2018**, Madison, WI. **(Received Hartl Award for Research Excellence)**

Poster Presentations

- (1) **Riley NM**, Coughlin EE, Zhang Y, Westphall MS, Coon JJ. *Proteomic Comparison of the Effects of Lignotoxins in Media through Quantitative Mass Spectrometry*. Great Lakes Bioenergy Research Center Annual Meeting, **May 2013**, South Bend, IN.

- (2) **Riley NM**, Potts GK, Rhoads TW, Westphall MS, Coon JJ. *The Phosphopeptide Shootout: A Study of Reproducibility in IMAC Phosphopeptide Enrichment*. Proceedings of the 61st ASMS Conference on Mass Spectrometry and Allied Topics, **June 2013**, Minneapolis, MN.
- (3) **Riley NM**, Rhoads TW, Rabaglia ME, Stapleton DS, Keller MP, Westphall MS, Attie AD, Coon JJ. *Using Parallel Reaction Monitoring to Target Neuropeptide Y from Murine Islets: Investigating the Onset of Type II Diabetes*. Wisconsin Human Proteomics Symposium: Targeted Proteomics and Systems Biology in Health and Disease, **August 2013**, Madison, WI.
- (4) **Riley NM**, Myers KS, Sato TK, Westphall MS, Gasch AP, Coon JJ. *Quantitative Proteomics of Evolved Yeast Strains for Bioethanol Production*. Great Lakes Bioenergy Research Center Annual Meeting, **May 2014**, South Bend, IN.
- (5) **Riley NM**, Rose CM, Rhoads TW, Westphall MS, Coon JJ. *Activated-Ion Electron Transfer Dissociation for the Improved Fragmentation of Intact Protein Cations*. Proceedings of the 62nd ASMS Conference on Mass Spectrometry and Allied Topics, **June 2014**, Baltimore, MD.
- (6) **Riley NM**, Rose CM, Rhoads TW, Westphall MS, Coon JJ. *AI-ETD for the Improved Fragmentation of Intact Proteins*. University of Wisconsin-Madison Metabolism Symposium, **August 2014**, Madison, WI.
- (7) **Riley NM**, Scott NE, Rush MJP, Rose CM, Hebert AS, Westphall MS, Coon JJ. *Negative Electron Transfer Dissociation for Glycopeptides from *Acinetobacter baumannii*: New Methodology for Glycopeptide Anion Analysis*. ASMS Asilomar Conference on Advances in Glycomics and Glycoproteomics: Methods and Applications, **October 2014**, Pacific Grove, CA.
- (8) **Riley NM**, Scott NE, Feldman MF, Westphall MS, Coon JJ. *O-Linked Glycopeptide Analysis via Negative Electron Transfer Dissociation*. Proceedings of the 63rd ASMS Conference on Mass Spectrometry and Allied Topics, **June 2015**, St. Louis, MO.
- (9) **Riley NM**, Rush MJP, Westphall MS, Coon JJ. *New Electron Transfer Dissociation Technologies for Characterizing Post-Translational Modifications*. Wisconsin Human Proteomics Symposium: Post-Translational Modifications in Human Disease, **August 2015**, Madison, WI. ****first place poster****
- (10) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Developing Robust Mass Spectrometry Methods to Access the Glycoproteome*. The First F99 Fellows Meeting (NIH), **January 2017**, Bethesda, MD.
- (11) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *High-Throughput Glycoproteomics with Activated Ion Electron Transfer Dissociation*. Keystone Symposia: Omics Strategies to Study the Proteome, **February 2017**, Breckenridge, CO.
- (12) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *High-Throughput Glycoproteomics with Activated Ion Electron Transfer Dissociation*. UW-Madison Department of Chemistry Graduate Student Faculty Liaison Committee Poster Session, **April 2017**, Madison, WI. ****first place poster****
- (13) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Mapping the Glycoproteome with Activated Ion Electron Transfer Dissociation*. 14th Uppsala Conference on Electron Capture and Transfer Dissociation, **July 2017**, Ithaca, NY.
- (14) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Implementation of Activated Ion Electron Transfer Dissociation on a quadrupole-Orbitrap-linear ion trap hybrid mass spectrometer*. 14th Uppsala Conference on Electron Capture and Transfer Dissociation, **July 2017**, Ithaca, NY.
- (15) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Large-Scale Glycoproteomics with Activated Ion Electron Transfer Dissociation*. 13th Midwest Carbohydrate and Glycobiology Symposium, **September 2017**, Madison, WI.
- (16) **Riley NM**, Hebert AS, Westphall MS, Coon JJ. *Mapping the Glycoproteome with Activated Ion Electron Transfer Dissociation*. 2017 Society for Glycobiology Annual Meeting, **November 2017**, Portland, OR.

- (17) **Riley NM.** *Development of Activated Ion Electron Transfer Dissociation Technologies and Their Application to Proteome Analysis.* UW-Madison Chemistry Departmental Awards Ceremony Poster Session, **April 2018**, Madison, WI.
- (18) **Riley NM,** Mullen C, Westphall MS, Syka JEP, Coon JJ. *Negative Electron Transfer Dissociation on an Orbitrap Fusion Lumos.* Proceedings of the 66th ASMS Conference on Mass Spectrometry and Allied Topics, **June 2018**, San Diego, CA.
- (19) **Riley NM,** Hebert AS, Westphall MS, Coon JJ. *A New Era in Glycoproteomics: Thousands of Glycosites via Intact Glycopeptide Analysis.* Morgridge Institute for Research Scientific Advisory Board Poster Session, **June 2018**, Madison, WI.

F. TEACHING

Graduate Lecturer, Biochemistry 660, Biochemical Techniques, UW-Madison, Fall 2015, Fall 2016, Fall 2017
 Designed and taught three lectures on bioanalytical mass spectrometry to graduate students
 Developed and graded two problem sets to correspond with lectures
 Integrated written and oral feedback from Prof. Marv Wickens, other graduate lecturers, and students for constant improvement in lecture delivery, style, and content

Guest Lecturer, The Data Revolution in Science and Medicine, UW-Madison, Fall 2017
 Designed and taught one lecture on bioanalytical mass spectrometry and how proteomics fits into the landscape of the big data revolution to second year MD-PhD students (School of Medicine and Public Health, SMPH).

Graduate Facilitator, Food, Fasting, and Fitness, UW-Madison, Spring 2018
 Facilitated a "Metabolic Adaptation" active learning module for a first-year medical student course (SMPH).
 Worked with a faculty leader, lead discussion about introductory material, and guided student learning through an online module that the students completed in a medium group setting with approx. 6 students per group.

Teaching Assistant, Chemistry Department, UW-Madison
 CHEM 329, Analytical Chemistry for Majors, approx. 20 hours per week, Spring 2014
 CHEM 104, General Chemistry II, approx. 25 hours per week, Fall 2012
 Chemistry Tutor, CHEM 104, approx. 2 hours per week, Spring 2014

University 101 Program, Division of Student Affairs and Academic Support, USC, 2009-2011
Peer Leader, UNIV 101, The Student in University, Fall 2009, Fall 2010
 Designed and implemented lesson plans, managed student issues, graded papers and projects, and provided feedback on student presentations; worked as a team with co-instructor, serving as a mentor to 25 freshmen and fostering leadership development in first-year students, approx. 4 hours per week
Peer Leader Captain, EDLP 520 (School of Education Course), The Teacher as Manager, Fall 2011
 Co-instructed a 3-hour credit education school course that taught classroom leadership skills; designed and implemented lesson plans, facilitated discussion among Peer Leaders about how to grow in their mentor and leadership skills, assigned and responded to bi-weekly journals, approx. 5 hours per week

Community Tutor and Mentor, Waverly After School Program, Columbia, SC, 2007-2012
 Tutored middle school and high school students in math and science subjects, approx. 3 hours per week

Neuroscience and Chemistry Lead, Carolina Science Outreach, Columbia, SC, 2011-2012
 Designed, constructed, and presented educational programs for audiences ranging from K-12 students to adult community groups, approx. 2 hours per week

G. LEADERSHIP AND SERVICE

Wisconsin Alumni Research Foundation (WARF) Ambassador, UW-Madison, 2015-2017
 Spend 10 hours per month promoting awareness of WARF across campus and WARF's engagement with campus researchers through departmental seminars, informal contacts, and more. Received training in WARF's technology transfer process and learned how to access resources offered by WARF and other campus organizations designed to support technology development and entrepreneurial activity.

John L. Schrag Fund Committee, UW-Madison, 2016-2017

Co-Founder, Co-President; Recruited and lead a team of graduate students in planning division- and department-wide events that recognize excellence and encourage engagement amongst graduate students, post-doctoral researchers, and faculty. Funds provided through the John L. Schrag Memorial Fund.

Graduate Student Faculty Liaison Committee (GSFLC), UW-Madison, 2013-2015 (two-year term)

Analytical Division graduate student representative, and organizer and co-chair of annual GSFLC Chemistry Department Poster Session for both 2014 and 2015.

Wisconsin Science Festival and Saturday Science, UW-Madison, 2015-2018

Volunteer for the annual statewide festival that celebrates curiosity and creativity for visitors of all ages. Periodically volunteer at Science Saturday events (first Saturday of each month), which have a similar theme to the annual festival of engaging the public with science outreach.

Junior Science Café, UW-Madison and Morgridge Institute, 2017-2018

Recurring event that gets middle school and high school students and scientists together in a casual environment so that students can learn about science career options.

Chemistry Opportunities (CHOPs) at UW-Madison, 2015

Volunteer and Poster Presenter for event that introduces highly qualified prospective students to the UW-Madison Chemistry Department to explore the chemistry graduate program, with a focus on low-income, minority, and first-generation college students.

Published Essay in *Exploring Leadership: For College Students Who Want to Make a Difference*, 2013

Riley, Nicholas M. "*The Relational Leadership Model: Student Essay on Empathy.*" *Exploring Leadership: For College Students Who Want to Make a Difference*. By Susan R. Komives, Nance Lucas, and Timothy R. McMahon. 3rd ed. San Francisco: Jossey-Bass, 2013. 122.

University Ambassador Program, USC, 2008-2012

President (2011-2012), **Captain of Mentor Program** (2010-2011), **Presidential Ambassador** (2010-2012)

Volunteer 5-10 hours per week to give tours of campus to prospective students, answer phones and requests at the university visitor center, participate in athletic recruitment, and work special university events.

Leadership Scholars, USC, 2011-2012

Awarded funding to design, create, and execute a program that directly benefits the USC and Columbia communities – highlighted the struggles and circumstances that can lead to homelessness in Columbia by focusing on awareness efforts while providing a free dinner event for the homeless population

Pillars for Carolina, USC, 2010-2012

Co-Founder (2010-2011), **Director of Foundations** (2010-2011)

Designed, structured, and implemented a new extended orientation program to promote leadership and service in the incoming freshman class, giving them the tools to best succeed when they get to campus.

Honors Council, South Carolina Honors College, 2007-2012

President (2009-2011), **Vice President** (2008-2009)

Provided academic, social and service programming for the students and staff of the SC Honors College

Orientation Leader and Team Leader, USC, 2008-2010 (Paid Position)

President (2009-2010), **Vice President** (2010)

Facilitated orientation sessions during the summer months, giving incoming freshmen and their parents information about USC; as Team Leader, trained and managed new cohort of Orientation Leaders

Resident Mentor (Honors College Residence Hall), USC, 2008-2009 and 2011-2012 (Paid Position)

Planned and executed several programs every month to keep residents engaged, informed, and active with one another and promote success in all realms of their student life; guide and counsel Honors students on academic and personal matters; all freshmen and sophomore students

Men's Club Rugby, USC, 2008-2012

Team Captain (2011-2012), **Public Relations Officer** (2010-2012) **South Carolina Rugby 2010 Palmetto All-Stars A-side** (2010)

H. PROFESSIONAL DEVELOPMENT AND AFFILIATIONS

American Society for Mass Spectrometry, 2013-present
American Chemical Society, 2013-present
US Human Proteome Organization, 2015-present
Society for Glycobiology, 2017-present

Outstanding First Year Student Advocate Selection Committee, USC, 2011-2012 [**Chair 2011**]
South Carolina Honors College Dean Search Committee, USC, 2010-2011
University 101 Peer Leader Program Review Program, USC, 2010
University President's Student Advisory Council, USC, 2010-2012
South Carolina Honors College Faculty and Student Policy Committee, USC, 2009-2011
Historical Horseshoe Restoration Committee, USC, 2008-2012

I. HONORS AND AWARDS FULL LIST

Undergraduate

2007 – 2011 Robert C. McNair Scholar, USC (full tuition scholarship awarded for academic merit)
2007 – 2011 Robert C. Byrd Academic Scholar
2007 – 2011 Jamie and Cory Foundation Academic Scholar
2008 – 2010 Magellan Undergraduate Research Grant, USC
2009 Jo Anne J. Trow Academic Scholar, Alpha Lambda Delta Honors Society
2009 Outstanding Freshman Advocate, USC (first undergraduate to win the award)
2009 University of South Carolina Homecoming King
2009 – 2010 Cultural Ambassadorial Scholar, Rotary International
2010 Phi Beta Kappa
2010 Rising Senior Award, Dept. of Chemistry and Biochemistry, USC
2011 Wilson-Kibler Bicentennial Leadership Award, USC
2011 Student Body President's Award, USC
2011 Presidential Volunteer Service Award, Gold Level (250+ hours), Office of President Barack Obama
2011, 2012 American Institute of Chemists Foundation Award, USC
2012 Outstanding Senior Award, USC
2012 ODK Leader of the Year, Omicron Delta Kappa Honors Society Chi Circle, USC
2012 Joseph H. Gibbons Outstanding Senior Award, Omicron Delta Kappa Honors Society
2012 **Algernon Sydney Sullivan Award** (top undergraduate student), USC

Graduate

2012 Louise McBee Graduate Fellowship, Alpha Lambda Delta Honors Society
2012 Pei Wang Graduate Fellowship, Department of Chemistry, UW-Madison
2014 – 2016 **National Science Foundation (NSF) Graduate Research Fellow**
2014 Asilomar Conference Travel Grant, ASMS
2014 Richard A. Schaeffer ASMS Travel Award
2015 American Society for Mass Spectrometry (ASMS) Graduate Student Award
2015 1st Place in Poster Competition, Human Proteomics Symposium
2016 – 2022 **NIH National Cancer Institute Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)**
2016 Marg Northcott Student Award, Lake Louise Tandem MS Workshop
2017 Graduate Student Travel Award, Dept. of Chemistry, UW-Madison
2017 1st Place in Poster Competition, Dept. of Chemistry Poster Session, UW-Madison
2017 Roger J. Carlson Memorial Award for Research Excellence, Dept. of Chemistry, UW-Madison
2017 Dept. of Biomolecular Chemistry Travel Award, UW-Madison
2017 FACSS Student Award, Federation of Analytical Chemistry and Spectroscopy Societies
2017 Outstanding Oral Presentation Award, Midwest Carbohydrate and Glycobiology Symposium
2017 Society for Glycobiology Travel Award
2018 Richard and Joan Hartl Award for Research Excellence in Analytical Chemistry, UW-Madison
2018 Student Research Grants Competition Conference Award, Graduate School, UW-Madison