

# Gabe Nagy, Ph.D.

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## Education and Positions

### **University of Utah**

Assistant Professor of Chemistry  
July 2020 – Present

Salt Lake City, UT USA

### **Pacific Northwest National Laboratory**

Postdoctoral Research Associate, Richard D. Smith Group  
August 2017 – June 2020

Richland, WA USA

### **Indiana University, Ph.D.**

Analytical Chemistry, Nicola L. B. Pohl Group  
August 2012 – July 2017

Bloomington, IN USA

### **Creighton University, B.S.**

Major in Chemistry with Minor in Mathematics  
August 2008 – May 2012

Omaha, NE USA

## Publications

### **University of Utah (independent research):**

47) Nagy, G. "High-Resolution Ion Mobility Separations Coupled to Mass Spectrometry: What's Next?" Invited Perspective Submitted to *Journal of Mass Spectrometry*, 2023.

46) Thurman, H. A.; Wijegunawardena, G.; Bertias, F.; Williamson, D. L.; Wu, H.; Nagy, G.; Jensen, O. N.; Shvartsbrug, A. A. "Comprehensive High-Definition Ion Mobility Separations of Largest Epimeric Peptides." *Submitted to Analytical Chemistry*, 2023.

45) Digal, L.; Samson, S. C.; Stevens, M. A.; Ghorai, A.; Kim, H.; Mifflin, M. C.; Carney, K. R.; Williamson, D. L.; Um, S.; Nagy, G.; Oh, D.; Mendoza, M. C.; Roberts, A. G. "Non-Threaded Isomers of Sungsanpin and Ulleungdin Lasso Peptides Inhibit H1299 Cancer Cell Migration." *ACS Chemical Biology*, 2024, 19, 81–88.

44) Răciuș, O.; Nagy, G. "Implementation of Charged Microdroplet-Based Derivatization of Bile Acids on a Cyclic Ion Mobility Spectrometry-Mass Spectrometry Platform." *Analytical Methods*, 2023, 15, 5577–5581.

43) Williamson, D. L.; Nagy, G. "Two-Dimensional Ion Mobility Spectrometry Approach for Carbohydrate Characterization: Coupling Isotopic Shifts with Collision Cross Section Measurements." *Analytical Chemistry*, 2023, 95, 13992–14000.

42) Naylor, C. N.; Nagy, G. "Permethylation and Metal Adduction: A Toolbox for the Improved Characterization of Glycolipids with Cyclic Ion Mobility Separations Coupled to Mass Spectrometry." *Analytical Chemistry*, 2023, 95, 13725–13732.

41) Habibi, S. C.; Nagy, G. "General Method to Obtain Collision Cross Section Values in Multipass High-Resolution Cyclic Ion Mobility Separations." *Analytical Chemistry*, 2023, 95, 8028–8035.

40) Williamson, D. L.; Trimble, T. K.; Nagy, G. "Hydrogen Deuterium Exchange-Based Mass Distribution Shifts in High-Resolution Cyclic Ion Mobility Separations." *Journal of the American Society for Mass Spectrometry*, 2023, 34, 1024–1034.

- 39) Habibi, S. C.; Nagy, G. "Assessing the Use of Host-Guest Chemistry in Conjunction with Cyclic Ion Mobility Separations for the Linkage-Specific Characterization of Human Milk Oligosaccharides." *International Journal of Mass Spectrometry*, 2023, 483, 1–10.
- 38) Williamson, D. L.; Nagy, G. "Isomer and Conformer-Specific Mass Distribution-Based Isotopic Shifts in High-Resolution Cyclic Ion Mobility Separations." *Analytical Chemistry*, 2022, 94, 12890–12898.
- 37) Williamson, D. L.; Nagy, G. "Evaluating the Utility of Temporal Compression in High-Resolution Traveling Wave-Based Cyclic Ion Mobility Separations." *ACS Measurement Science Au*, 2022, 2, 361–369.
- 36) Williamson, D. L.; Bergman, A. E.; Heider, E. C.; Nagy, G. "Experimental Measurements of Relative Mobility Shifts Resulting from Isotopic Substitutions with High-Resolution Cyclic Ion Mobility Separations." *Analytical Chemistry*, 2022, 94, 2988–2995.
- 35) Peterson, T. L.; Nagy, G. "Rapid Cyclic Ion Mobility Separations of Monosaccharide Building Blocks as a First Step toward a High-Throughput Reaction Screening Platform for Carbohydrate Syntheses." *RSC Advances*, 2021, 11, 39742–39747.
- 34) Williamson, D. L.; Bergman, A. E.; Nagy, G. "Investigating the Structure of  $\alpha/\beta$  Carbohydrate Linkage Isomers as a Function of Group I Metal Adduction and Degree of Polymerization as Revealed by Cyclic Ion Mobility Separations." *Journal of the American Society for Mass Spectrometry*, 2021, 32, 2573–2582.
- 33) Peterson, T. L.; Nagy, G. "Toward Sequencing the Human Milk Glycome: High-Resolution Cyclic Ion Mobility Separations of Core Human Milk Oligosaccharide Building Blocks." *Analytical Chemistry*, 2021, 93, 9397–9407.

**Graduate and post-doctoral (mentored research):**

- 32) Hollerbach, A. L.; Conant, C. R.; Nagy, G.; Ibrahim, Y.M. "Implementation of Ion Mobility Spectrometry-Based Separations in Structures for Lossless Ion Manipulations (SLIM)." In *Biomedical Engineering Technologies. Methods in Molecular Biology*, ed. Rasooly, A.; Baker, H., 2022, Vol. 2394. pp. 453–469.
- 31) Harrilal, C. P.; Gandhi, V. D.; Nagy, G.; Chen, X.; Buchanan, M. G.; Wojcik, R.; Conant, C. R.; Donor, M. T.; Ibrahim, Y. M.; Garimella, S. V. B.; Smith, R. D.; Larriba-Andaluz, C. "Measurement and Theory of Gas Phase Ion Mobility Shifts Resulting from Isotopomer Mass Distribution Changes." *Analytical Chemistry*, 2021, 93, 14966–14975.
- 30) Hollerbach, A. L.; Conant, C. R.; Nagy, G.; Monroe, M. E.; Gupta, K.; Donor, M.; Giberson, C. M.; Garimella, S. V. B.; Smith, R. D.; Ibrahim, Y. M. "Dynamic Time-Warping Correction for Shifts in Ultrahigh Resolving Power Ion Mobility Spectrometry and Structures for Lossless Ion Manipulations." *Journal of the American Society for Mass Spectrometry*, 2021, 32, 996–1007.
- 29) Conant, C. R.; Attah, I. K.; Garimella, S. V. B.; Nagy, G.; Bilbao, A.; Smith, R. D.; Ibrahim, Y. M. "Evaluation of Waveform Profiles for Traveling Wave Ion Mobility Separations in Structures for Lossless Ion Manipulations." *Journal of the American Society for Mass Spectrometry*, 2020, 32, 225–236.
- 28) Li, A.; Conant, C. R.; Zheng, X.; Bloodsworth, K. J.; Orton, D. J.; Garimella, S. V. B.; Attah, I. K.; Nagy, G.; Smith, R. D.; Ibrahim, Y. M. "Assessing Collision Cross Section

Calibration Strategies for Traveling Wave-Based Ion Mobility Separations in Structures for Lossless Ion Manipulations.” *Analytical Chemistry*, 2020, 92, 14976–14982.

27) Li, A.; Nagy, G.; Conant, C. R.; Norheim, R. V.; Yong Lee, J.; Giberson, C.; Hollerbach, A. L.; Prabhakaran, V.; Attah, I. K.; Chouinard, C. D.; Prabhakaran, A.; Smith, R. D.; Ibrahim, Y. M.; Garimella, S. V. B. “Ion Mobility Spectrometry with High Ion Utilization Efficiency Using Traveling Wave-Based Structures for Lossless Ion Manipulations.” *Analytical Chemistry*, 2020, 92, 14930–14928.

26) Hollerbach, A. L.; Li, A.; Prabhakaran, A.; Nagy, G.; Harrilal, C. P.; Conant, C. R.; Norheim, R. V.; Schimelfenig, C. E.; Anderson, G. A.; Garimella, S. V. B.; Smith, R. D.; Ibrahim, Y. M. “Ultra-High Resolution Ion Mobility Separations Over Extended Path Lengths and Mobility Ranges Achieved using a Multilevel Structures for Lossless Ion Manipulations (SLIM) Module.” *Analytical Chemistry*, 2020, 92, 7972–7979.

25) Nagy, G.; Attah, I. K.; Conant, C. R.; Liu, W.; Garimella, S. V. B.; Gunawardena, H. P.; Shaw, J. B.; Smith, R. D.; Ibrahim, Y. M. “Rapid and Simultaneous Characterization of Drug Conjugation in Heavy and Light Chains of a Monoclonal Antibody Revealed by High-Resolution Ion Mobility Separations in SLIM.” *Analytical Chemistry*, 2020, 92, 5004–5012.

24) \*Wojcik, R.; \*Nagy, G.; Attah, I. K.; Webb, I. K.; Garimella, S. V. B.; Weitz, K. K.; Hollerbach, A.; Monroe, M. E.; Ligare, M. R.; Nielson, F. F.; Norheim, R. V.; Renslow, R. S.; Metz, T. O.; Ibrahim, Y. M.; Smith, R. D. “SLIM Ultrahigh Resolution Ion Mobility Spectrometry Separations of Isotopologues and Isotopomers Reveal Mobility Shifts due to Mass Distribution Changes.” *Analytical Chemistry*, 2019, 91, 11952–11962. (\* Co-first author).

23) Attah, I. K.; Nagy, G.; Garimella, S. V. B.; Norheim, R. V.; Anderson, G. A.; Ibrahim, Y. M.; Smith, R. D. “Traveling wave-based electrodynamic switch for concurrent dual polarity ion manipulations in Structures for Lossless Ion Manipulations.” *Analytical Chemistry*, 2019, 91, 14712–14718.

22) \*Garimella, S. V. B.; \*Nagy, G.; Ibrahim, Y. I.; Smith, R. D. “Opening New Paths for Biological Applications of Ion Mobility-Mass Spectrometry using Structures for Lossless Ion Manipulations.” *Trends in Analytical Chemistry*, 2019, 116, 300–307. (\*Co-first author).

21) Nagy, G.; Kedia, K.; Attah, I. K.; Garimella, S. V. B.; Ibrahim, Y. M.; Petyuk, V. A.; Smith, R. D. “Separation of  $\beta$ -Amyloid Tryptic Peptide Species with Isomerized and Racemized L-Aspartic Residues with Ion Mobility in Structures for Lossless Ion Manipulations.” *Analytical Chemistry*, 2019, 91, 4374–4380.

20) \*Nagy, G.; \*Veličković, D.; Chu, R. K.; Carrell, A. A.; Weston, D. J.; Ibrahim, Y. M.; Anderton, C. R.; Smith, R. D. “Towards Resolving the Spatial Metabolome with Unambiguous Molecular Annotations in Complex Biological Systems by Coupling Mass Spectrometry Imaging with Structures for Lossless Ion Manipulations.” *Chemical Communications*, 2019, 55, 306–309. (\* Co-first author).

19) Attah, I. K.; Garimella, S. V. B.; Webb, I. K.; Nagy, G.; Norheim, R. V.; Schimelfenig, C. E.; Ibrahim, Y. M.; Smith, R. D. “Dual Polarity Ion Confinement and Mobility Separations.” *Journal of the American Society for Mass Spectrometry*, 2019, 30, 967–976.

18) Wooke, Z.; Nagy, G.; Barnes, L. F.; Pohl, N. L. B. “Development of a Post-Column Liquid Chromatographic Chiral Addition Method for the Separation and Resolution of

Common Mammalian Monosaccharides." *Journal of the American Society for Mass Spectrometry*, 2019, 30, 419–425.

17) Chouinard, C. D.; Nagy, G.; Smith, R. D.; Baker, E. S. "Ion Mobility-Mass Spectrometry in Metabolomic, Lipidomic, and Proteomic Analyses." in *Comprehensive Analytical Chemistry: Advances in Ion Mobility-Mass Spectrometry: Fundamentals, Instrumentation and Applications*, ed. Barcelo, D., 2019, Vol. 83, pp. 123–159.

16) Couvillion, S. P.; Zhu, Y.; Nagy, G.; Adkins, J. A.; Ansong, C.; Renslow, R. S.; Piehowski, P. D.; Ibrahim, Y. M.; Kelly, R. T.; Metz, T. O. "New Mass Spectrometry Technologies Contributing Towards Comprehensive and High Throughput Omics Analyses of Single Cells." *Analyst*, 2019, 144, 794–807.

15) Garcellano, R. C.; Moinuddin, S. G. A.; Young, R. P.; Zhou, M.; Bowder, M. E.; Renslow, R. S.; Yesiltepe, Y.; Thomas, D. G.; Colby, S. M.; Chouinard, C. D.; Nagy, G.; Attah, I. K.; Ibrahim, Y. M.; Ma, R.; Franzblau, S. G.; Lewis, N. G.; Aguinaldo, A. M.; Cort, J. R. "Isolation of Tryptanthrin and Reassessment of Evidence for Its Isobaric Isotere Wrightiadione in Plants of the *Wrightia* Genus." *Journal of Natural Products*, 2019, 82, 440–448.

14) Dou, M.; Chouinard, C. D.; Zhu, Y.; Nagy, G.; Liyu, A. V.; Ibrahim, Y. M.; Smith, R. D.; Kelly, R. T. "Nanowell-Mediated Multidimensional Separations Combining NanoLC with SLIM IM-MS for Rapid, High-Peak Capacity Proteomic Analyses." *Analytical and Bioanalytical Chemistry*, 2019, 411, 5363–5372.

13) Nagy, G.; Attah, I. K.; Garimella, S. V. B.; Tang, K.; Ibrahim, Y. M.; Baker, E. S.; Smith, R. D. "Unraveling the Isomeric Heterogeneity of Glycans: Ion Mobility Separations in Structures for Lossless Ion Manipulations." *Chemical Communications*, 2018, 54, 11701–11704.

12) Nagy, G.; Chouinard, C. D.; Attah, I. K.; Webb, I. K.; Garimella, S. V. B.; Ibrahim, Y. M.; Baker, E. S.; Smith, R. D. "Distinguishing Enantiomeric Amino Acids with Chiral Cyclodextrin Adducts and Structures for Lossless Ion Manipulations." *Electrophoresis*, 2018, 39, 3148–3155.

11) \*Chouinard, C. D.; \*Nagy, G.; Webb, I. K.; Garimella, S. V. B.; Baker, E. S.; Ibrahim, Y. M.; Smith, R. D. "Rapid Ion Mobility Separations of Bile Acid Isomers using Cyclodextrin Adducts and Structures for Lossless Ion Manipulations." *Analytical Chemistry*, 2018, 90, 11086–11091. (\* Co-first author).

10) \*Chouinard, C. D.; \*Nagy, G.; Webb, I. K.; Shi, T.; Baker, E. S.; Prost, S. A.; Liu, T.; Ibrahim, Y. M.; Smith, R. D. "Improved Sensitivity and Separations for Phosphopeptides using Online LC Coupled with Structures for Lossless (SLIM) IM-MS." *Analytical Chemistry*, 2018, 90, 10889–10896. (\* Co-first author).

9) \*Nagy, G.; \*Peng, T.; Pohl, N. L. B. "Recent Liquid Chromatographic Approaches and Developments for the Separation and Purification of Carbohydrates." *Analytical Methods*, 2017, 9, 3579–3593. (\*Co-first author).

8) Gaunitz, S.; Nagy, G.; Pohl, N. L. B.; Novotny, M. V. "Recent Advances in the Analysis of Complex Glycoproteins." *Analytical Chemistry*, 2017, 89, 389–413.

7) Peng, T.; Nagy, G.; Trinidad, J. C.; Jackson, J. M.; Pohl, N. L. B. "A High-Throughput Mass-Spectrometry-Based Assay for Identifying the Biochemical Functions of Putative Glycosidases." *ChemBioChem*, 2017, 18, 2306–2311.

- 6) Schenk, J.; Nagy, G.; Pohl, N. L. B.; Leghissa, A.; Smuts, J.; Schug, K. A. "Identification and Deconvolution of Carbohydrates using Gas Chromatography-Vacuum Ultraviolet Spectroscopy." *Journal of Chromatography A*, 2017, 1513, 210–221.
- 5) \*Nagy, G.; \*Peng, T.; Kabotso, D. E. K.; Novotny, M. V.; Pohl, N. L. B. "Protocol for the Purification of Protected Carbohydrates: Toward Coupling Automated Synthesis to Alternate-Pump Recycling High-Performance Liquid Chromatography." *Chemical Communications*, 2016, 52, 13253–13256. (\* Co-first author).
- 4) \*Nagy, G.; \*Peng, T.; Pohl, N. L. B. "General Label-Free Mass Spectrometry-Based Assay to Identify Glycosidase Substrate Competence." *Analytical Chemistry*, 2016, 88, 7183–7190. (\* Co-first author).
- 3) Gaye, M. M.; Nagy, G.; Clemmer, D. E.; Pohl, N. L. B. "Multidimensional Analysis of 16 Glucose Isomers by Ion Mobility Spectrometry." *Analytical Chemistry*, 2016, 88, 2335–2344.
- 2) Nagy, G.; Pohl, N. L. B. "Monosaccharide Identification as a First Step Toward *de novo* Carbohydrate Sequencing: Mass Spectrometry Strategy for the Identification and Differentiation of Diastereomeric and Enantiomeric Pentose Isomers." *Analytical Chemistry*, 2015, 87, 4566–4571.
- 1) Nagy, G.; Pohl, N. L. B. "Complete Hexose Identification with Mass Spectrometry." *Journal of the American Society for Mass Spectrometry*, 2015, 26, 677–685.

## **Presentations**

### **University of Utah (independent research):**

- 36) "Developing a Bioanalytical Toolbox for Human Milk Oligosaccharide Characterization." Invited presentation at Society for Glycobiology Conference, Kona, HI, 5 November 2023.
- 35) "Developing a Bioanalytical Toolbox for Human Milk Oligosaccharide Characterization." Invited presentation at SciX Conference, Sparks, NV, 9 October 2023.
- 34) "Developing a Bioanalytical Toolbox for Human Milk Oligosaccharide Characterization." Invited seminar presented at Boise State University, Boise, ID, 29 September 2023.
- 33) "What Can Ion Mobility Spectrometry Do For You." Presentation at Waters Select Series On Tour, Salt Lake City, UT 23 August 2023.
- 32) "A New Dimension in High-Resolution Ion Mobility Separations: Mass Distribution-Based Isotopic Shifts." Invited Presentation at Pittcon, Philadelphia, PA 22 March 2023.
- 31) "High-Resolution Cyclic Ion Mobility Separations of Isotopologues and Isotopomers." Invited presentation at Western Regional American Chemical Society Meeting, Las Vegas, NV 22 October 2022.
- 30) "Structurally Specific Mass Distribution-Based Isotopic Shifts in High-Resolution Cyclic Ion Mobility Separations Coupled to Mass Spectrometry." Invited presentation at SciX Conference, Cincinnati, OH, 3 October 2022.
- 29) Keynote speaker at Waters Corporation's Early Career Summit, Milford, MA, 19 July 2022.

28) "Exploring the Utility of Temporal Peak Compression in Cyclic Ion Mobility Spectrometry-Mass Spectrometry-Based Separations." Oral presentation at 70<sup>th</sup> American Society for Mass Spectrometry Conference, Minneapolis, MN, 9 June 2022.

27) "Mass Distribution-Based Isotopic Shifts in High-Resolution Cyclic Ion Mobility Separations." Presentation at the Ion Mobility Spectrometry Workshop at 70<sup>th</sup> American Society for Mass Spectrometry Conference, Minneapolis, MN, 8 June 2022.

26) "Pushing the Boundaries for Isomeric Separations with Cyclic Ion Mobility Spectrometry Coupled to Mass Spectrometry." Invited seminar presented at Florida Institute of Technology (Virtual), 31 March 2022.

25) "Cyclic Ion Mobility Separations of Isotopologues and Isotopomers." Oral presentation at the 2022 Lake Arrowhead Conference on Ion Chemistry and Mass Spectrometry, 15 January 2022.

24) "High-Resolution Cyclic Ion Mobility Separations of Core Human Milk Oligosaccharide Building Block Isomers." Oral presentation at 69<sup>th</sup> American Society for Mass Spectrometry Conference, Philadelphia, PA, 1 November 2021.

23) "High-Resolution Cyclic Ion Mobility Separations of Isotopologues and Isotopomers." Flash talk presented at Waters Cyclic IMS User Meeting (Virtual), 12 October 2021.

22) "Characterization of Human Milk Oligosaccharide Building Block Isomers with Cyclic Ion Mobility Separations and Mass Spectrometry." Invited seminar presented at Brigham Young University, Provo, UT, 23 September 2021.

21) Indiana University Career Development Symposium (Virtual), Invited seminar, 13 September 2021

20) "Towards *de novo* sequencing of the human milk glycome: High-resolution cyclic ion mobility separations." Oral presentation at Rocky Mountain Regional American Chemical Society Meeting (Virtual), 12 November 2020.

#### **Graduate and post-doctoral (mentored research):**

19) "Rapid Characterization of Drug Conjugation in a Monoclonal Antibody by High-Resolution Ion Mobility Separations in Structures for Lossless Ion Manipulations." Poster presentation at 68<sup>th</sup> American Society for Mass Spectrometry Conference (Virtual, Summer 2020).

18) "When Conventional Approaches Fall Short: Developing Analytical Strategies for Resolving Isomeric Biomolecules." Faculty interview at Notre Dame University, South Bend, IN, 27 January 2020.

17) "When Conventional Approaches Fall Short: Developing Analytical Strategies for Resolving Isomeric Biomolecules." Faculty interview at the University of Vermont, Burlington, VT, 12 December 2019.

16) "When Conventional Approaches Fall Short: Developing Analytical Strategies for Resolving Isomeric Biomolecules." Faculty interview at the University of Utah, Salt Lake City, UT, 13 November 2019.

15) "Developing New Approaches for the Better Characterization of Isomeric Peptides: Ion Mobility Separations Enabled by Structures for Lossless Ion Manipulations." Invited presentation at SciX Conference, Palm Springs, CA, 15 October 2019.

- 14) "Addressing Challenging Biological Applications with Ultrahigh Resolution Ion Mobility Separations in Structures for Lossless Ion Manipulations." Poster presentation at Waters Corporation's Young Investigator's Summit, Beverly, MA, 6 August 2019.
- 13) "Resolving the Isomeric Heterogeneity of the Glycome: Ultrahigh-Resolution Ion Mobility Separations in Structures for Lossless Ion Manipulations." Poster presentation at 67<sup>th</sup> American Society for Mass Spectrometry Conference, Atlanta, GA, 5 June 2019.
- 12) "Development of Analytical Techniques for Unraveling the Isomeric Heterogeneity of Glycans." Invited seminar presented at Creighton University, Omaha, NE, 20 September 2018.
- 11) "High-Resolution SLIM IM-MS-Based Enantioseparations." Oral presentation at 2018 Post-Graduate Symposium, Pacific Northwest National Laboratory, Richland, WA, 21 June 2018.
- 10) "High-Resolution Enantiomeric Separations on a SLIM-IM MS Platform." Oral presentation at 66<sup>th</sup> American Society for Mass Spectrometry Conference, San Diego, CA, 5 June 2018.
- 9) "From Computation to Mass Spectrometry: Relative Free Energy Differences amongst Anomeric Pairs of Carbohydrate Derivatives." Poster presentation at 65<sup>th</sup> American Society for Mass Spectrometry Conference, Indianapolis, IN, 6 June 2017.
- 8) Methodology towards the Purification and Analysis of Glycopolymers." Poster presentation at American Society for Biochemistry and Molecular Biology, Chicago, IL, 24 April 2017.
- 7) "Toward Carbohydrate Sequencing: Mass Spectrometry and Ion Mobility-Mass Spectrometry-Based Approaches." Oral presentation at Quantitative & Chemical Biology Graduate Training Program Evenings, Indiana University, 2 November 2016.
- 6) "Purification of Synthetic Protected Carbohydrates: An Alternate-Pump Recycling High-Performance Liquid Chromatography-Based Approach." Poster presentation at Turkey Run Analytical Conference, Marshall, IN, 28 October 2016.
- 5) "Mass Spectrometry-Based Glycosidase Assay: A General Label-Free Chiral Dopant Approach." Poster presentation at Turkey Run Analytical Conference, Marshall, IN, 2 October 2015.
- 4) "Towards *de novo* Oligosaccharide Sequencing." Poster presentation at 63<sup>rd</sup> American Society for Mass Spectrometry Conference, St. Louis, MO, 3 June 2015.
- 3) "Mass Spectrometry-Based Methodology for Complete Hexose Identification." Poster presentation at Turkey Run Analytical Conference, Marshall, IN, 14 November 2014.
- 2) "Use of Mass Spectrometry for Chiral Separation of Monosaccharides." Poster presentation at Turkey Run Analytical Conference, Marshall, IN, 27 September 2013.
- 1) "Study of Carbohydrate-Protein Interactions using New Cross-Linking Agents and Target Identification through Mass Spectrometry." Poster presentation at 246<sup>th</sup> American Chemical Society Conference, Indianapolis, IN, 8 September 2013.

## **Contributed Presentations**

- 10) "Identifying Glycolipid Isomers with Cyclic Ion Mobility Separations." Oral presentation by Cameron N. Naylor at 2024 Lake Arrowhead Conference on Mass Spectrometry, 13 January 2024.
- 9) "Isolating Contributions from Moments of Inertia in High- Resolution Ion Mobility Spectrometry-Based Isotopic Shifts." Poster presentation by David L. Williamson at 2024 Lake Arrowhead Conference on Mass Spectrometry, 12 January 2024.
- 8) "Labeling Strategies for Inducing Mass Distribution Shifts in High-Resolution Cyclic Ion Mobility Separations Coupled to Mass Spectrometry." Poster presentation by David L. Williamson at 71<sup>st</sup> American Society for Mass Spectrometry Conference, Houston, TX 5 June 2023.
- 7) "Ion Mobility Separations of Largest Peptide Epimers and Intact Proteoforms with Variant PTM Localizations." Poster presentation by Gayani Wijegunawardena (Wichita State University) at 71<sup>st</sup> American Society for Mass Spectrometry Conference, Houston, TX 5 June 2023.
- 6) "Hydrazide Derivatization in Conjunction with Cyclic Ion Mobility-Based Collision Cross Section Measurements for the Improved Characterization of Human Milk Oligosaccharides." Oral presentation by Sanaz C. Habibi at 71<sup>st</sup> American Society for Mass Spectrometry Conference, Houston, TX 5 June 2023.
- 5) "Coupling Microdroplet-Based Derivatizations with Cyclic Ion Mobility Separations." Oral presentation by Olavs Racin at University of Utah, Department of Chemistry, Graduate Research Symposium, 21 March 2023.
- 4) "Utilizing Hydrogen-Deuterium Exchange to Induce Mass Distribution Shifts in Cyclic Ion Mobility Spectrometry." Oral presentation by David L. Williamson at 2023 Lake Arrowhead Conference on Ion Chemistry and Mass Spectrometry, 14 January 2022.
- 3) "Unraveling the Effect of Isotopic Substitutions on Relative Mobility Shifts as Revealed by High-Resolution Cyclic Ion Mobility Separations." Oral presentation by David L. Williamson at 70<sup>th</sup> American Society for Mass Spectrometry Conference, Minneapolis, MN 7 June 2022.
- 2) "Coupling Host-Guest Chemistry with Cyclic Ion Mobility Separations for Linkage-Specific Identification of Human Milk Oligosaccharides." Poster presentation by Sanaz C. Habibi at 70<sup>th</sup> American Society for Mass Spectrometry Conference, Minneapolis, MN, 7 June 2022.
- 1) "Unraveling the Effect of Isotopic Substitutions on Relative Mobility Shifts." Oral presentation by David L. Williamson at University of Utah, Department of Chemistry, Graduate Research Symposium, 23 February 2022.

## **Funding**

### **Current Support:**

R35 MIRA: "A bioanalytical research program to unravel the human milk glycome"  
Agency: NIH/NIGMS R35 MIRA  
Award Period: 21 September 2022 – 31 August 2027  
Total Amount (Direct + Indirect): \$1,855,743

ACS PRF: "Unraveling how Changes in the Natural Isotopic Envelope Affect Mass Distribution-Based Shifts in the Gas-Phase Ion Mobility Separations of Quinoline Derivatives"



Award Period: 1 September 2023 – 31 August 2025  
Total Amount (Direct + Indirect): \$110,000

**Past Support:**

Subaward from Miklos Guttman: Hybrid structural mass spectrometry for rapid-site specific glycan structural elucidation (5R01GM127579-04)  
Agency: NIH/NIGMS  
Award Period: 1 July 2021 – 30 June 2022  
Subaward Amount to My Lab: \$28,919

**Awards**

Pacific Northwest National Laboratory, Postdoctoral Recognition Award, 2019.

Indiana University, Department of Chemistry, Marvin Carmack Fellowship, Fall 2016.

Indiana University, Department of Chemistry, Associate Instructor Teaching Award, 2014.

**Teaching**

CHEM 3000: Quantitative Analysis  
Spring, 2023

CHEM 7725: Mass Spectrometry  
Fall B, 2022

CHEM 7720: Separations  
Spring B, 2022

CHEM 5350: Research Ethics  
Spring A, 2022

CHEM 7725: Mass Spectrometry  
Fall B, 2021

CHEM 5350/7350: Research Ethics  
Spring A, 2021

CHEM 7590: Advanced Topics in Analytical Chemistry (Mass Spectrometry)  
Fall B, 2020

**Service**

**University of Utah:**

Department of Chemistry Faculty Search Committee (Fall 2023)

Department of Chemistry Seminar and Colloquium Committee (2020–Present).

Department of Chemistry, Graduate Admissions Committee (2020–Present).

Technical Support Committee for Mass Spectrometry (2021–Present)

Facilitator for Bioscience Capstone Program (Spring 2022)

**Professional and Community:**

Session Chair at SciX 2023 Conference: “Early Career Researchers in Mass Spectrometry.”

Organizer of Mass Spectrometry Sessions at SciX 2023 Conference

Session Chair at 71<sup>st</sup> American Society for Mass Spectrometry 2023 Conference: “Fundamentals Beyond Mass Analysis: Structural Characterization of Isomers.”

Organized Symposia at Pittcon 2023 Conference: “Tackling the Resolution of Biologically-Relevant Isomers: Advances in Ion Mobility Separations Coupled to Mass Spectrometry.”

Females in Mass Spectrometry (FeMS), a community-led initiative to create a network of support for women in the field of mass spectrometry (2020–2022).

Role: mentor

Journal reviewer for: Analytical Chemistry, Journal of the American Society for Mass Spectrometry, Journal of Separation Science, ACS Infectious Diseases, Electrophoresis, Journal of Physical Chemistry

**Lab Personnel**

URL: <https://www.nagylab.com>

**Current members:**

David Williamson (graduate student, 4th year)

Sanaz Habibi (graduate student, 3rd year)

Olavs Racin (graduate student, 2nd year)

Cameron Naylor (postdoctoral researcher)

**Previous members:**

Tyler Peterson (M.S., Fall 2021)

Addison Bergman (REU student, Summer 2021)

Haisley Windsor (REU student, Summer 2023)

**Affiliations**

American Society for Mass Spectrometry