

BAILEY S. ROSE

Ph.D. Vanderbilt University



EDUCATION

2022
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2017



Ph.D., Chemistry

Vanderbilt University

📍 Nashville, TN

- Dissertation: Improving Untargeted Molecular Annotation Using Structurally-Specific Ion Mobility-Mass Spectrometry
- <https://ir.vanderbilt.edu/handle/1803/17403>
- John A. McLean Research Group

2017
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2013



B.S., Chemistry

Belmont University

📍 Nashville, TN

- Mathematics minor
- Magna Cum Laude



RESEARCH EXPERIENCE

2022
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2017



Graduate Research Assistant

McLean Laboratory

📍 Vanderbilt University

- Explored strategies for improving lipid and metabolite identifications in untargeted -omics studies using ion mobility-derived collision cross sections (CCS). Developed standardization and reporting recommendations for CCS values derived from various types of ion mobility measurements and used these recommendations to build databases and implement novel algorithms for obtaining high-confidence molecular identifications. Other projects included LC-MS/MS method optimization for lipidomics and application of lipidomic methodology and data analysis pipelines to various biological systems in collaboration with the Center for Innovative Technology at Vanderbilt.

2017
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2016



Undergraduate Researcher

Spence Laboratory

📍 Belmont University

- Alignment and completion of the optical set up of a cavity ring-down spectroscopy instrument.

2016
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2015

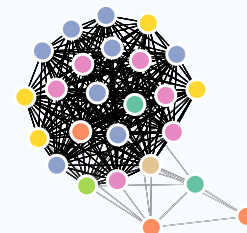


Undergraduate Researcher

Stace Laboratory

📍 Belmont University

- Synthesis and characterization of an enzyme-mimic copper(II) Schiff-base complex. Exploration of the kinetics of its reaction with oxalic acid using spectroscopic methods.



CONTACT

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☎ 0000-0002-5900-7288

🐙 github.com/bsrose25

HIGHLIGHTED SKILLS

Mass spectrometry

Ion mobility

Lipidomics

R

Excel

Liquid chromatography

Shiny

Python

Made with the R package
[pagedown](#).

The source code is available on
github.com/bsrose25/Rose-cv.

Last updated on 2022-05-31.



INDUSTRY EXPERIENCE

2016



Analytical Chemist Summer Intern

Carlisle Construction Materials

📍 Carlisle, PA

- Completed analytical projects relating to production quality control and warranty claims. Developed rheological methods and SOPs for new product lines in development, and trained staff on use and maintenance of the rheometer.



TEACHING EXPERIENCE

2021

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2017



Graduate Teaching Assistant

Vanderbilt Chemistry Department

📍 Nashville, TN

- General Chemistry Lab, Analytical Chemistry Lab, and Capstone Advanced Integrated Lab



PUBLICATIONS

2022



A Collision Cross Section Calibration Strategy for Lipid Measurements in SLIM-based High Resolution Ion Mobility

Rose, B. S.; May, J. C.; Reardon, A. R.; McLean, J. A.

- Journal of the American Society for Mass Spectrometry
- Accepted

2022



Improving confidence in lipidomic annotations by incorporating empirical ion mobility regression analysis and chemical class prediction

Rose, B. S.; May, J. C.; Picache, J. A.; Codreanu, S. G.; Sherrod, S. D.; McLean, J. A.

- Bioinformatics
- DOI: 10.1093/bioinformatics/btac197

2021



High confidence shotgun lipidomics using structurally selective ion mobility-mass spectrometry

Rose, B. S.; Leaptrot, K. L.; Harris, R. A.; Sherrod, S. D.; May, J. C.; McLean, J. A.

- Shotgun Lipidomics: Methods and Protocols
- DOI: 10.1007/978-1-0716-1410-5_2

- 2021 ● **Resolving Power and Collision Cross Section Measurement Accuracy of a Prototype High-Resolution Ion Mobility Platform Incorporating Structures for Lossless Ion Manipulation**
May, J. C.; Leaptrot, K. L.; Rose, B. S.; Moser, K. L. M.; Deng, L.; Maxon, L.; DeBord, D.; McLean, J. A.
• Journal of the American Society for Mass Spectrometry
• DOI: 10.1021/jasms.1c00056
- 2019 ● **Collision cross section compendium to filter and predict multi-omic compound identities.**
Picache, J. A.; Rose, B. S.; Balinski, A.; Leaptrot, K. L.; Sherrod, S. D.; May, J. C.; McLean, J. A.
• Chemical Science
• DOI: 10.1039/c8sc04396e
- 2018 ● **Untargeted molecular discovery in primary metabolism: collision cross section as a molecular descriptor in ion mobility-mass spectrometry**
Nichols, C. M.; Dodds, J. N.; Rose, B. S.; Picache, J. A.; Morris, C. M.; May, J. C.; Sherrod, S. D.; McLean, J. A.
• Analytical Chemistry
• DOI: 10.1021/acs.analchem.8b04322



PRESENTATIONS

- 2022 ● **Structural Characterization of Previously Unresolved Lipids with HRIM-Mass Spectrometry**
Rose, B. S.; Reardon, A. R.; Leaptrot, K. L.; May, J. C.; McLean, J. A.
• MOBILion Systems Technical Breakfast Seminar at ASMS. Minneapolis, MN
• Invited oral presentation
- 2022 ● **Structural Characterization of Previously Unresolved Lipids with HRIM-Mass Spectrometry**
Rose, B. S.; Reardon, A. R.; Leaptrot, K. L.; May, J. C.; McLean, J. A.
• 70th Annual Conference for the American Society of Mass Spectrometry and Allied Topics. Minneapolis, MN
• Poster presentation
- 2021 ● **Lipid Collision Cross Section Calibration Strategies for High Resolution SLIM-based Traveling Wave Ion Mobility Separations**
Rose, B. S.; Leaptrot, K. L.; Reardon, A. R.; May, J. C.; McLean, J. A.
• 69th Annual Conference for the American Society of Mass Spectrometry and Allied Topics. Philadelphia, PA
• Poster presentation

- 2020 ● **Lipid Isomer Separations via a High Resolution Prototype SLIM-based Ion Mobility Instrument in Support of High Confidence Lipidomics**
 Leaptrot, K. L., Rose, B. S., Wormwood, K. L. M., May, J. C., McLean, J. A.
 • VICB Student Research Symposium. Nashville, TN
 • Poster presentation
- 2020 ● **Collision cross section calibration strategies for a prototype SLIM-based ion mobility instrument**
 Rose, B. S., Leaptrot, K. L., Wormwood, K. L. M., May, J. C., McLean, J. A.
 • Annual Conference for the American Society of Mass Spectrometry and Allied Topics "Reboot"
 • Poster presentation
- 2019 ● **Achieving a Consistent and Unified Community-wide Molecular Database: The Collision Cross Section Compendium**
 Rose, B. S., Picache, J. A., May, J. C., McLean, J. A.
 • 1st Annual Agilent North American Ion Mobility Workshop. Raleigh, NC.
 • Invited oral presentation
- 2019 ● **Integrated multidimensional liquid chromatography-ion mobility-tandem mass spectrometry (LC-IM-MS/MS) workflow for high-confidence annotations in untargeted lipidomics**
 Rose, B. S.; Codreanu, S. G., May, J. C., Sherrod, S. D., McLean, J. A.
 • 67th Annual Conference for the American Society of Mass Spectrometry and Allied Topics. Atlanta, GA.
 • Oral presentation
- 2018 ● **Development of a LC-IM-MS/MS workflow for high confidence lipidomics**
 Rose, B. S.; Codreanu, S. G.; May, J. C., Sherrod, S. D., McLean, J. A.
 • Southeastern Lipid Research Conference. Nashville, TN.
 • Poster presentation



AWARDS AND RECOGNITION

- 2020 ● **ASMS Student Travel Award**
 American Society for Mass Spectrometry
- 2019 ● **Student Travel Award**
 May Institute for Computational Statistics in Mass Spectrometry
- 2018 ● **VICB Research Fellowship**
 Vanderbilt Institute of Chemical Biology

2017



Mitchum E. Warren Fellowship

Vanderbilt Chemistry Department