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.
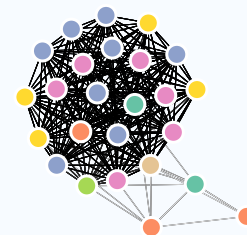
2016
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2015

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.

View this CV online at _https://github.com/bsrose25/Rose_cv/cv.html

CONTACT

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in linkedin.com/in/bailey-s-rose

🪪 0000-0002-5900-7288

HIGHLIGHTED SKILLS

| Ion mobility |
| Lipidomics |
| R |
| Excel |
| Liquid chromatography |
| Shiny |
| Python |

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