Emma R. Guiberson, PhD

Assistant Professor of Chemistry
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EDUCATION AND POSITIONS

Assistant Professor, Chemistry — July 24 - Present
Middlebury College, Middlebury, VT
Department of Chemistry
Program of Molecular Biology & Biochemistry

Postdoctoral Scholar, Microbiology and Immunology — September 2022 – July 2024
Stanford University, Palo Alto, CA
Faculty Sponsor: Dr. Justin Sonnenburg

Ph.D., Chemistry — August 2022
Vanderbilt University, Nashville, TN
Advisors: Dr. Richard Caprioli, Dr. Jeffrey Spraggins, Dr. Eric Skaar

B.S., Chemistry and Philosophy — May 2018
University of Notre Dame, Notre Dame, IN

RESEARCH EXPERIENCE

Guiberson Laboratory
Middlebury College — Fall 2024 – Present
Principal Investigator
Project 1: Development of targeted and untargeted mass spectrometry methods for analysis of oral microbial-derived metabolites and media.

- Currently funded via ASMS PUI Research Award
- Primary techniques: liquid chromatography, mass spectrometry

Project 2: Determination of carbohydrate source and co-culture conditions on oral microbial growth and metabolic production.

- Primary techniques: microbial culture, PCR, RNA sequencing

Project 3: Impact of microbial metabolites on gingival inflammation in periodontal disease.

- Currently funded via Vermont Biomedical Research Network
- Primary techniques: cell culture, ELISA, qPCR

Sonnenburg Laboratory
Dr. Justin Sonnenburg, Stanford University — Fall 2022 – Spring 2024
Postdoctoral Scholar
Project: Microbiota-Dependent Metabolomic Changes After Nutritional Intervention During Pregnancy

- Harnessed and updated an untargeted library-based metabolomics pipeline for the detection and identification of microbial-derived metabolites (MDMs) from biological samples using a LC-qTOF
- Established and developed targeted mass spectrometry methods for quantitation and high-level identification of MDMs of interest in biological samples using a triple quadrupole instrument

- Project focused on studying MDM metabolomic changes resulting from a dietary intervention via fecal samples from undernourished pregnant women in Burkina Faso throughout their pregnancy in collaboration with the Gates Foundation

Mass Spectrometry Research Center Fall 2018 –
Dr. Richard Caprioli, Vanderbilt University Summer 2022
Graduate Research Assistant
Dissertation Project: Discovery of Bile Acid-Associated Molecular Changes in the Murine Gastrointestinal Tract during *Clostridioides difficile* Infection

- Project focused on investigating bile acid changes during *Clostridioides difficile* infection in a murine model using both MALDI imaging mass spectrometry applied to gastrointestinal tissue and targeted quantitation using LC-MS/MS
- Developed a sample preparation method for gastrointestinal tissue with intact luminal content for MALDI imaging
- Applied standard microbiology techniques including cell culture, RNA sequencing, qPCR to investigate the impact of bile acid changes on the host

Secondary Project: Spatially-targeted Proteomics for the Analysis of *Staphylococcus aureus* Abscess Formation

- Applied a spatially-targeted LESA-based proteomics workflow (termed microLESA) to investigate the abscess interface during *Staphylococcus aureus* infection in murine kidneys

Naval Nuclear Laboratory- Radiochemistry Summer 2017
Jeff Wetzler, Bechtel Marine Propulsion Corporation and 2018
Research Intern
Project: Optimization of a Portable Liquid Scintillation Counter

- Developed and optimized a portable liquid scintillation counter for deployment in the field after nuclear disasters using tritium standards to measure radioactivity in water sources

Warren Family Drug Development and Discovery Facility Fall 2015 –
Dr. Bruce Melancon, University of Notre Dame Fall 2016
Undergraduate Research Assistant
Project: Full synthesis of AR-42

- Obtained skills in synthesis, recrystallization, purification and spectral analysis procedures
- Ran procedural research on determining optimum conditions for synthesis reactions and contributed to a cataloging project within the group
- Independent research project focused on synthesis of the compound AR-42

COURSES TAUGHT

Biochemistry of Macromolecules (CHEM 322) Middlebury College

- Taught: Fall 2024, Spring 2025, Fall 2025
- Core biochemistry course for biochemistry majors and pre-med students with a focus on the 4 major macromolecules and scientific communication

Biochemistry Laboratory (CHEM 422) Middlebury College

- Taught: Spring 2025, Spring 2026
- Upper-level biochemistry lab course focused on protein work as well as scientific writing and project design including 2 independent projects

- Completely redesigned the labs in Spring 2025 to better align with modern biochemistry techniques, including protein purification, enzymatic assays, and mass spectrometry

Biochemistry of Metabolism (CHEM 425) Middlebury College
- Taught: Fall 2025
- Redesigned as a project-based and flipped classroom model, students developed interactive metabolic pathways to teach about metabolism

General Chemistry (CHEM 105) Middlebury College
- Taught: Spring 2026
- Second semester offering of brand new 1-semester introductory chemistry sequence

Developing LC-MS/MS Targeted Assays (BIOS 223) Stanford University
- Taught: Fall 2023, Winter 2024
- Fully developed and designed 3-week course for ~15 graduate students, which included a lab component in collaboration with the Stanford University Mass Spectrometry facility

OTHER TEACHING EXPERIENCE

Preparing Future Professors Program Winter 2024
University of San Francisco and Stanford University | *San Francisco, CA*
- Selected for the Stanford Preparing Future Professors program which pairs postdocs and graduate students with faculty at teaching institutions in the surrounding area for mentorship
- Participation in a weekly practicum course to discuss teaching, service and research at a teaching institution led by the program in addition to weekly shadowing of my faculty mentor
- Guest lecture for a Microbiology course at U. San Francisco

Bucknell Aspiring PUI Workshop Sept. 2023
Bucknell University | *Lewisburg, PA*
- One of 14 individuals selected for a 2-day working for aspiring PUI professors sponsored by Bucknell University
- Guest-lectured for General Chemistry course at Bucknell

Certificate in College Teaching Facilitator Fall 2021 – Fall 2022
Center for Teaching | Vanderbilt University | *Nashville, TN*
- Served as an instructor/facilitator for the Certificate in College Teaching (CiCT) program through the Vanderbilt Center for Teaching
- Facilitated the second semester, the practicum, for two semesters as the primary instructor for approximately 20 graduate students and postdocs per semester in the program
- Developed the course, gave continued feedback on materials to students, and regularly met with the CFT staff

Workshop Leader April 2022
Analytical Imaging Mass Spectrometry Course | Vanderbilt University | *Nashville, TN*
- Served as a workshop leader and assistant for the annual AIMS course at Vanderbilt University
- Responsible for both designing and leading a workshop with a hands-on component on “Sample Prep: Fresh frozen staining and autofluorescence”
- Assisted in leading and designing two additional workshops on “Matrix Applications: Manual Spray Coating” and “Data Processing: SCiLS”

- Full workshop included 40 participants, and each workshop was led 4 times for groups of 10 individuals.

Teaching Affiliate Fall 2019 – Fall 2022
Center for Teaching | Vanderbilt University | *Nashville, TN*
- Served as a Teaching Affiliate through the CFT as a representative of the Chemistry Department for 4 years
- Participated in a week of training to discuss inclusive teaching, assessment strategies, and development of our individual courses
- Tailored course to be specific to laboratory courses within the department
- Led a check-in with participants at the end of the semester to gather feedback to improve future TAO sessions
- Adapted the course in 2020 to be taught virtually over 3 days

Co-Instructor Winter 2020
The School for Science and Math at Vanderbilt | Vanderbilt University | *Nashville, TN*
- Served as part of a student team through the Chemical Biology Association of Students (CBAS) to develop a class for the SSMV summer program
- Course focused on natural product discovery and antibiotic resistance in bacteria, including bacterial culture, physiology tests, and tests for antibiotic resistance
- Fully designed the course and experiments, but course was canceled due to COVID-19

Workshop Assistant April 2019
Analytical Imaging Mass Spectrometry Course | Vanderbilt University | *Nashville, TN*
- Served as a workshop assistant for the annual AIMS course at Vanderbilt
- Assisted in the design and leading of a workshop on “Small Volumes: Spatially Targeted Analyses”

Graduate Teaching Assistant – Physical Chemistry Laboratory Fall 2018
Vanderbilt University Department of Chemistry | *Nashville, TN*
- Aided in the re-design of Physical Chemistry laboratory course
- Led two lab sections of CHEM 3315 on FT-IR spectroscopy
- Responsible for leading the lab, grading reports with detailed feedback, and writing and grading pre-lab quizzes
- Gave an introductory lecture on the lab at the beginning of the semester to introduce students to the technique of FT-IR spectroscopy

Graduate Teaching Assistant – General Chemistry Laboratory Spring 2019
Vanderbilt University Department of Chemistry | *Nashville, TN*
- Lead instructor for two sections of the General Chemistry laboratory course
- Prepared for ten different labs designed to highlight various chemical concepts, and presented a pre-lab lecture on these concepts each week
- Responsible for grading lab notebooks and lab reports and holding weekly office hours for students

Laboratory Course Development Spring 2017
University of Notre Dame | *Notre Dame, IN*
- Notre Dame Laboratory Instrumentation Giving Hope to Students program
- Designed and developed a full laboratory experiment for high school students utilizing donated lab equipment
- Optimized a donated centrifuge and pH meter for use in a high school, and developed a lab for teaching the concept of acidity

- Wrote a full lab manual for the course for both the teacher and the students with suggested questions, a protocol, and operation instructions

Teaching Assistant Spring 2016
Center for Bright Kids Summer Program | *Golden, CO*
- Served as a teaching assistant for three courses through the Center for Bright Kids (CBK) summer program
- Assisted with a neurobiology course, which included labs such as a brain dissection, and course on the Philosophy of Reality which included moderating various groups discussions and debates
- Taught Formal Logic as a TA for 2 weeks and the primary instructor for the third week

FUNDING

Vermont Biomedical Research Network (VBRN) Pilot Award Spring 2025
- Project: Elucidating Microbial-Derived Metabolic Mechanisms of Periodontal Disease

ASMS Research Award at Primarily Undergraduate Institution Spring 2025
- $20,000 research award from Agilent Technologies

Stanford Mass Spectrometry Training Seed Program for Hands-On Platforms Spring 2023

MSACL Young Investigator Educational Grant Spring 2023

T32 Molecular Basis of Host Parasite Interaction Fall 2022
- Project number 5T32AI007328-35

Graduate School Travel Grant Spring 2022
- Awarded by Vanderbilt Graduate School

Mass Spectrometry & Advances in the Clinical Laboratory (MSACL) Young Investigator Educational Grant Spring 2020

Graduate School Travel Grant Spring 2020

American Society of Mass Spectrometry Student Stipend Spring 2019

Vanderbilt Microbiome Venture Fund Fall 2019
- "Spatially-Targeted Proteomics of Bacterial Proteins in the Human Gut Microbiota" Proposal Funded

PUBLICATIONS

1. **Guiberson ER*,** Wexler AG*, Beavers WN, Washington MK, Shupe JA, Lacey DB, Caprioli RM, Spraggins JM, Skaar EP. "*Clostridioides difficile* infection induces a rapid influx of bile acids into the gut during colonization of the host." *Cell Reports.* **2021.** (36) DOI: 10.1016/j.celrep.2021.109683 *Equal Contributions

2. **Guiberson ER,** Good CJ, Wexler AG, Skaar EP, Spraggins JM, Caprioli RM. "Multimodal Imaging Mass Spectrometry of Murine Gastrointestinal Tract with Retained Luminal Content." *JASMS.* **2022**. (33) 1073-1076. DOI: 10.1021/jasms.1c00360

3. **Guiberson ER*,** Weiss A*, Ryan DJ, Monteith AJ, Sharman K, Gutierrez DB, Perry WJ, Caprioli RM, Skaar EP, Spraggins JM. "Spatially-targeted proteomics of the host-pathogen interface during staphylococcal abscess formation." *ACS Infect. Dis.* **2021.** (7) 101-113. DOI: 10.1021/acsinfecdis.0c00647

4. Han S, **Guiberson ER**, Li, Y, Sonnenburg JL. High-throughput identification of gut microbiome-dependent metabolites. *Nat Protoc* 19, 2180–2205 (2024). DOI: 10.1038/s41596-024-00980-6

5. Sharman K, Patterson NH, Weiss A, Neumann EK, **Guiberson ER**, Gutierrez DB, Spraggins JM, Van de Plas R, Skaar EP, Caprioli RM. "Analyzing High-Dimensional Spatially Targeted Proteomics Data to Investigate *Staphylococcus aureus* Infection." *J. Proteome Res.* **2022.** DOI: 10.1021/acs.jproteome.2c00206

6. Rivera ES, Jones MA, **Guiberson ER**, & Norris JL (2020). Fundamentals of Mass Spectrometry-Based Metabolomics. In G. Sindona, J. H. Banoub & M. L. Di Gioia (Eds.), Toxic Chemical and Biological Agents: Detection, Diagnosis and Health Concerns (pp. 61-81). Springer. DOI: 10.1007/978-94-024-2041-8_4

7. Voogdt CGP, Tripathi S, Bassler SO, McKeithen-Mead SA, **Guiberson ER**, *et. al*. "Randomly barcoded transposon libraries for gut commensals II: exploiting libraries for functional genetics." *Cell Reports.* **2024.** (43) DOI: 10.1016/j.celrep.2023.113519

8. Shriver AL, Sun J, Culver R, Violette A, Wynter C, Drescher SP, Sekhon PK, Nieckarz M, Friess L, Carlson HK, Wong D, Higginbottom S, Waglerz M, WAng W, Knapp BD, **Guiberson ER**, *et. al*. "Genome-scale resources in the infant gut symbiont *Bifidobacterium breve* reveal genetic determinants of colonization and host-microbe interactions." *Cell.* **2025.** (188) DOI:10.1016/j.cell.2025.02.010

9. Nicholson MR, Ma S, Strickland BA, Cecala M, Zhang L, Reasoner S, **Guiberson ER,** *et. al*. "The Gut Microbiome and Butyrate Differentiate *Clostridioides difficile* Colonization and Infection in Children." *Journal of Infectious Disease.* **2025.** DOI: 10.1093/infdis/jiaf631

10. Lawler CB*, Dolan J*, Wu Y*, Danielewicz M, Chien A, Leib, R, **Guiberson ER**. "Metabolic Characterization of Complex Bacterial Media". *In Preparation.* *Indicates student author

STUDENTS MENTORED

Thesis Students

Pearl Dlamini[*#] (Honors, Molecular Biology and Biochemistry) 2025
Thesis: "Optimizing Growth Conditions for *Rothia dentocariosa* to investigate its metabolic signatures in various sugar sources"

Josie Dolan[*#] (Biochemistry) 2026
Thesis: "Establishing an Untargeted Metabolomics Sugar Detection Method"

Owen White* (Biochemistry) 2026
Thesis: "The impact of microbial-derived metabolites on the progression of periodontal disease"

Research Students

Current		Previous	
Farren Stainton	Winter 26 - Present	Roxy Alvarado*[c]	2024-2025
Dahlia Saifee	Winter 26 – Present	Penny Ly*[c]	2024-2025
Analiese Wood	Winter 26 – Present		
Niamh Ward-Malloy*[#c]	Summer 25 - Present		
Aashna Banerjee[#]	Spring 25 – Present		
Yuhang Wu	Spring 25 – Present		

Caroline Lawler Winter 25 – Present

*Awarded Senior Research Project Supplement Grant
#Awarded Academic Travel Fund Grant
[c] Research Credit

AWARDS

Midd.data Mini Grant — Fall 2024

ASMS Postdoctoral Career Development Award — Summer 2023
- $5,000 grant awarded

VICB Richard Armstrong Prize for Research Excellence in Chemical Biology Research — Summer 2022
- Awarded to a graduate student who has conducted exceptional research in chemical biology

Outstanding Individual Research Proposal — Spring 2022

Outstanding Chemistry Forum Presentation Award — Spring 2021

Department of Chemistry and Biochemistry Leadership Award, U. Notre Dame — Spring 2018
- Awarded to a senior student in the department for outstanding and lasting contributions to the department and student experience

PEDAGOGICAL TRAINING

Undergraduate Research Assistant — Spring 2017 – Spring 2018
Center for STEM Education **|** University of Notre Dame | *Notre Dame, IN*
- Research evaluating the impact of active learning strategies on class test scores in K-12 STEM education courses
- Utilized qualitative evaluation techniques of recordings of STEM teachers in the classroom.

Certificate in College Teaching — Completed Spring 2020
Center for Teaching | Vanderbilt University | *Nashville, TN*

CIRTL@ Stanford Teaching Certificate — Completed Spring 2024
Center for Teaching and Learning | Stanford University | *Palo Alto, CA*

Higher Education and Society — Spring 2024
EDU 355 Course taught by Patti Gumport | Stanford University | *Palo Alto, CA*

Course Design Institute — Spring 2024
Center for Teaching and Learning | Stanford University | *Palo Alto, CA*

TEACH Conference — May 2023
Teaching Commons | Stanford University | *Palo Alto, CA*

IDEAL Pedagogy Course — Completed July 2023
Center for Teaching and Learning | Stanford University | *Online*

SERVICE

Middlebury STEM Pedagogy Co-Coordinator — Spring 2026 - Present
Middlebury Goldwater Review Committee — September 2025 - Present
CTLR Advisory Committee — August 2025 - Present
LA Posse MiddSip Instructor- Microbiology — July 2025
MSACL Attendee Engagement Committee Founder — Sept. 2024- Sept. 2025
Oral Session Chair (Microbes and the Microbiome) for ASMS 2024 — January 2024 – June 2024
Co-Chair for Department of Microbiology & Immunology Seminar Series — July 2023 - June 2024t
Females in Mass Spectrometry (FeMS) Events Committee — July 2023 – Present

Reviewer for *Journal of the American Society for Mass Spectrometry* — June 2023 – Present
Sonnenburg Lab DEI Committee — Spring 2023 – Present
MSACL Metabolomics Session Co-Chair — April 2023
Guest Lecturer for AP Chemistry Class, *Air Academy High School* — September 2022
Chemistry Forum Committee — Fall 2019 – Spring 2021
- **Chair, 2020-2021**

President, *Graduate School Honor Council* — Summer 2020 – 2021

Vice President, *Graduate School Honor Council* — Summer 2019 – 2020

Vanderbilt Chemistry Department Recruitment Grad Student Representative — Spring 2019 – Spring 2022

Communications in Science Conference, *Atlanta* — Spring 2019
- Selective conference focusing on developing scientific communications skills, accompanying financial award for travel

Departmental Representative, *Graduate Student Council* — Fall 2018 – Spring 2019
Undergraduate Representative for Recruitment Weekend, *ND Chemistry Department* — Spring 2018
Guest Speaker for STEM Club, *Discovery Canyon Middle School* — March 2017
Notre Dame Chemistry and Biochemistry Mentoring Program — Fall 2016 – Spring 2018
- **Program Head, 2017-2018**

Thesis Committees

Andrew Planting	Winter 2025
Taylor Han	Spring 2025
Isabel Pentony	Spring 2026
Annabel Clooney	Spring 2026
Mishal Lelani	Spring 2026

PRESENTATIONS

ORAL PRESENTATIONS

Invited: Bile Acid-Associated Changes in the Murine Gastrointestinal Tract during *Clostridioides difficile Infection* — Feb. 20253
M2P2 Dartmouth Retreat, Lake Morey, VT

Microbiota-Dependent Metabolomic Changes After Nutritional Intervention During Pregnancy — April 2023
Mass Spectrometry & Advances in the Clinical Laboratory, Monterrey, CA

Pregnancy and the Microbiome: A Metabolomics Approach — April 2023
CZ Biohub Inter-lab Confab Lightning Talk, San Francisco, CA

Clostridioides difficile Infection Causes a Rapid Influx of Bile Acids in the Murine Gastrointestinal Tract — Aug. 2022
Chemical Biology Association of Students Symposium, Armstrong Prize Seminar, Nashville, TN

Clostridioides difficile Infection Causes a Rapid Influx of Bile Acids in the Murine Gastrointestinal Tract — Mar. 2022
Chemical Biology Association of Students Seminar, Nashville, TN

Clostridioides difficile Infection Causes a Rapid Influx of Bile Acids in the Murine Gastrointestinal Tract — Nov. 2021
American Society for Mass Spectrometry Annual Conference, Philadelphia, PA

C. difficile Infection Causes a Rapid Influx of Bile Acids in the Murine GI Tract — Sep. 2021
Mass Spectrometry & Advances in the Clinical Laboratory EU, Virtual

Discovery of Bile Acid-Associated Molecular Changes in Murine GI Tract during *C. difficile* Infection — June 2021
Just Another Chemistry Webinar Series, Virtual

Discovery of Bile Acid-Associated Molecular Changes in Murine GI Tract during *C. difficile* Infection — Jan. 2021
Chemistry Forum Seminar, Vanderbilt University, Nashville, TN
- *o* Awarded "Outstanding Chemistry Forum Presentation" from Chemistry Department

Spatially-Targeted Proteomics for Analysis of Host-Pathogen Interactions in *Staphylococcus aureus* — Dec. 2020
Lightning talk for Imaging Mass Spectrometry Society International Poster Gala, Virtual

Spatially-targeted Proteomics for Analysis of *Staphylococcus aureus* Abscess Formation — July 2020
Mass Spectrometry & Advances in the Clinical Laboratory, Palm Springs, CA

Spatially-targeted Proteomics for Analysis of *Staphylococcus aureus* Abscess Formation — June 2020
American Society for Mass Spectrometry Annual Conference, Houston, TX

Imaging Mass Spectrometry of the *Clostridioides difficile* Infected Gastrointestinal Tract — Oct. 2019
NATO Advanced Study Institute G5535, Cetraro, Italy

STUDENT POSTERS

The impact of microbial-derived metabolites on the progression of periodontal disease - Owen White — February 2026
M2P2 Dartmouth Retreat, Lake Morey, VT

Investigating the Microbial Driven Inflammatory Response in Human Gingival Epithelial Cells - Niamh Ward-Malloy — February 2026
M2P2 Dartmouth Retreat, Lake Morey, VT

Metabolic Changes from Pollinator Interactions and Dietary Implications –Josie Dolan — September 2025
Mass Spectrometry & Advances in the Clinical Laboratory, Montreal, Canada

Investigating Oral Microbial Growth under Aerobic and Anaerobic Conditions Using DNA Sequencing – Aashna Banerjee — July 2025
Summer Research Symposium, Middlebury, VT

Metabolic Changes from Pollination in Squash Flower Nectar – Josie Dolan — July 2025
Summer Research Symposium, Middlebury, VT

Metabolic Characterization of Common Bacterial Growth Media – Caroline Lawler — July 2025
Summer Research Symposium, Middlebury, VT

Investigating the Microbial Driven Inflammatory Response in Human Gingival Epithelial Cells – Niamh Ward-Malloy — July 2025
Summer Research Symposium, Middlebury, VT

Identifying Metabolic Signatures of Rothia dentocariosa resulting from various sugar sources – Pearl Dlamini — April 2025

Spring Student Symposium, Middlebury, VT

Investigating Oral Microbial Growth under Aerobic and Anaerobic Conditions using RNA Sequencing – Aashna Banerjee and Roxy Alvarado — April 2025
Spring Student Symposium, Middlebury, VT

Metabolic Characterization of Common Bacterial Growth Media – Caroline Lawler — April 2025
Spring Student Symposium, Middlebury, VT

Investigating Oral Microbial Growth and Metabolism in Various Sugars Under Aerobic and Anaerobic Conditions – Penny Ly — April 2025
Spring Student Symposium, Middlebury, VT

Development of targeted quantitative LC-MS/MS assays for microbial-derived metabolites in biological samples – Yuhang Wu — April 2025
Spring Student Symposium, Middlebury, VT

Metabolic Characterization of Common Bacterial Growth Media – Work by Caroline Lawler, presented by collaborator — June 2025
American Society for Mass Spectrometry, Baltimore, MD

Identifying metabolic signatures of *Rothia dentocariosa* resulting from various sugar sources – Pearl Dlamini — March 2025
New England Science Symposium, Boston, MA

Investigating Oral Microbial Growth in Various Sugar Sources Under Aerobic and Anaerobic Conditions - Penny Ly — Feb. 2025
M2P2 Dartmouth Retreat, Lake Morey, VT

POSTERS

Metabolic Characterization of Common Bacterial Growth Media — Sept 2025
Mass Spectrometry & Advances in the Clinical Laboratory, Montreal, Canada

Changes in Infant Health-Related Metabolites During Pregnancy After a Nutritional Intervention — Mar. 2024
Mass Spectrometry & Advances in the Clinical Laboratory, Monterrey, CA

Microbiota-Dependent Metabolomic Changes After Nutritional Intervention During Pregnancy — June 2023
American Society for Mass Spectrometry Annual Conference, Houston, TX

Microbiota-Dependent Metabolomic Changes After Nutritional Intervention During Pregnancy — April 2023
CZ Biohub Inter-lab Confab, San Francisco, CA

C. difficile Infection Causes a Rapid Influx of Bile Acids in the Murine GI Tract — July 2022
Gordon Research Conference, Microbial Toxins and Pathogenesis, Southbridge, MA

C. difficile Infection Causes a Rapid Influx of Bile Acids in the Murine GI Tract — July 2022
Gordon Research Seminar, Microbial Toxins and Pathogenesis, Southbridge, MA

C. difficile Infection Causes a Rapid Influx of Bile Acids in the Murine GI Tract — April 2022
Vanderbilt Institute for Infection, Immunology and Inflammation Symposium, Nashville

Mapping Molecular Interactions in the *C. difficile* Infected Gastrointestinal Tract Using Multimodal IMS — Oct. 2021
Imaging Mass Spectrometry Society, Colorado Springs, CO

Spatially-targeted Proteomics for Analysis of *Staphylococcus aureus* Abscess Formation — Aug. 2020
VICB Student Research Symposium, Nashville, TN

Spatially-targeted proteomics for the analysis of *Staphylococcus aureus* Abscess Formation — June 2020
Vanderbilt Institute of Infection, Immunology and Inflammation Symposium (VI4), Nashville, TN

Mapping Bile Acids in the *Clostridioides difficile* Infected GI Tract Using Multimodal IMS — Mar. 2020
Digestive Disease Research Center Retreat, Nashville, TN

Mapping Molecular Interactions in the *C. difficile* Infected Gastrointestinal Tract Using Multimodal IMS — Oct. 2019
NATO Advanced Study Institute G5535, Cetraro, Italy

Using Multimodal IMS to Map Molecular Interactions in the *C. difficile* Infected Gastrointestinal Tract — Aug. 2019
VICB Student Research Symposium, Nashville, TN

Mapping Molecular Interactions in the *C. difficile* Infected GI Tract Using Multimodal IMS — June 2019
American Society for Mass Spectrometry Annual Conference, Atlanta, GA

Mapping Molecular Interactions in the *C. difficile* Infected Gastrointestinal Tract Using Multimodal IMS — April 2019
Vanderbilt Institute of Infection, Immunology and Inflammation Annual Symposium, Nashville, TN

PROFESSIONAL MEMBERSHIPS

American Society of Mass Spectrometry	2019 – Present
American Society for Microbiology	2021 – Present
Imaging Mass Spectrometry Society	2021 – Present
American Chemical Society	2023 – Present