

Sabrina K. Spicer
Nashville, TN | sabrina.k.spicer@vanderbilt.edu

Education

Vanderbilt University: *Graduated May '24*

- Doctor of Philosophy in Chemistry

Middle Tennessee State University: *Graduated Cum Laude May '19*

- Bachelor of Science (B.S), Biochemistry
- Minor: Spanish, Psychology
- Honors College Graduate

Work Experience

Research Assistant Professor *August 2024- current*
Vanderbilt University, Communication of Science & Technology, Nashville, Tennessee

- Developed course schedule and materials
- Facilitated class discussions and active student participation during in-class exercises
- Cultivate a positive learning environment where students felt comfortable

Senior Lecturer *January 2024- May 2024*
Vanderbilt University, Communication of Science & Technology, Nashville, Tennessee

- Developed course schedule and materials
- Facilitated class discussions and active student participation during in-class exercises
- Cultivate a positive learning environment where students felt comfortable

Graduate Student Researcher *August 2020- May 2024*
Vanderbilt University, Department of Chemistry, Nashville, Tennessee

- Development of biological assays *in vitro*, microscopy (confocal and high-resolution electron), *in vivo* assessment of infection in a mouse model, chemical isolation of carbohydrates from human breast milk, synthesis of β -amino glycans
- Mentored undergraduates on the Vanderbilt Undergraduate Research Journal
- Facilitated interactive lessons to middle school students in the community through Vanderbilt Student Volunteers for Science (VSVS)

Graduate Teaching Assistant
Vanderbilt University, Department of Chemistry, Nashville, Tennessee

- Lectured Intro to Microbiology course and Organic Chemistry Labs for undergraduates
- Administered and graded exams and lab reports, facilitated discussions

Undergraduate Researcher *Dec 2016-May 2019*
Middle Tennessee State University, Department of Chemistry, Murfreesboro, Tennessee

- Solid-phase synthesis of antimicrobial peptide derivatives
- Utilization of bioassays to interrogate minimum inhibitory concentrations, adjuvant potential, cell permeability, and pharmacokinetics
- Overview of acute *in-vivo* toxicity, fungal burden, and fungal challenge studies in a mouse model of infection

Clinical Research Intern *May 2019-August 2019*
Advanced Neurosciences Institute, Nashville, Tennessee

- Case and patient management of 8 clinical research trails studying multiple sclerosis (MS) treatment candidates.

Honors and Awards

Awards

Lacy-Fischer Interdisciplinary Research Grant, Vanderbilt University	2023
Best Graduate Student Talk, Vanderbilt Institute of Chemical Biology Symposium	2023
Student Representative, American Chemical Society Microbiome Consortium	2022
Poster Presentation Winner, Vanderbilt Institute of Chemical Biology Symposium	2021
Three-Minute Thesis Winner, Kentucky-Tennessee Branch ASM Fall Meeting	2021

Techniques, Software, and Instrumentation

- ChemDraw molecular editing software
- Wolfram Mathematica
- GraphPad prism software
- Graphical analysis
- Excel
- Scaffold proteome software
- Cytokine analysis
- Proteomic and metabolomic analyses
- RNA extractions
- Field emission gun-scanning electron microscopy
- Critical point drying & sputter coat
- Macrophage isolation from human tissue
- NMR analysis
- Mass spectrometry analysis
- Small molecule synthesis
- Sterile technique with BSL-2 organisms
- Human cell culture
- Solid phase, on-bead peptide synthesis
- Small molecule synthesis
- Harem mating of mice
- Tissue necropsy of mice
- Column chromatography
- Biological assay development
- Interdisciplinary team collaboration
- Scientific writing

Publications

Adams CE, **Spicer SK**, Gaddy JA, Townsend SD: Synthesis of a Phosphoethanolamine Cellulose Mimetic and Evaluation of Its Unanticipated Biofilm Modulating Properties. *ACS Infectious Diseases* **2024**.

Stephens VR, Moore RE, **Spicer SK**, Talbert JA, Lu J, Chinni R, Chambers SA, Townsend SD, Manning SD, Rogers LM *et al*: Environmental Toxicant Exposure Paralyzes Human Placental Macrophage Responses to Microbial Threat. *ACS Infectious Diseases* **2023**, 9(12):2401-2408.

Moore RE, **Spicer SK**, Talbert JA, Manning SD, Townsend SD, Gaddy JA: Anti-biofilm Activity of Human Milk Oligosaccharides in Clinical Strains of *Streptococcus agalactiae* with Diverse Capsular and Sequence Types. *ChemBioChem* **2023**, 24(6):e202200643.

Moore RE, **Spicer SK**, Lu J, Chambers SA, Noble KN, Lochner J, Christofferson RC, Vasco KA, Manning SD, Townsend SD *et al*: The Utility of Human Milk Oligosaccharides against Group B *Streptococcus* Infections of Reproductive Tissues and Cognate Adverse Pregnancy Outcomes. *ACS Central Science* **2023**, 9(9):1737-1749.

Korir ML, Doster RS, Lu J, Guevara MA, **Spicer SK**, Moore RE, Francis JD, Rogers LM, Haley KP, Blackman A *et al*: *Streptococcus agalactiae* cadD alleviates metal stress and promotes intracellular survival in macrophages and ascending infection during pregnancy. *Nature Communications* **2022**, 13(1):5392.

Lu J, Moore Rebecca E, **Spicer Sabrina K**, Doster Ryan S, Guevara Miriam A, Francis Jamisha D, Noble Kristen N, Rogers Lisa M, Talbert Julie A, Korir Michelle L *et al*: *Streptococcus*

agalactiae npx Is Required for Survival in Human Placental Macrophages and Full Virulence in a Model of Ascending Vaginal Infection during Pregnancy. *mBio* **2022**, 13(6):e02870-02822.

Spicer SK, Gaddy JA, Townsend SD: Recent advances on human milk oligosaccharide antimicrobial activity. *Current Opinion in Chemical Biology* **2022**, 71:102202.

Talbert JA, Lu J, **Spicer SK**, Moore RE, Townsend SD, Gaddy JA: Ameliorating adverse perinatal outcomes with Lactoferrin: An intriguing chemotherapeutic intervention. *Bioorganic & Medicinal Chemistry* **2022**, 74:117037.

Spicer SK, Moore RE, Lu J, Guevara MA, Marshall DR, Manning SD, Damo SM, Townsend SD, Gaddy JA: Antibiofilm Activity of Human Milk Oligosaccharides against Multidrug Resistant and Susceptible Isolates of *Acinetobacter baumannii*. *ACS Infectious Diseases* **2021**, 7(12):3254-3263.

Nguyen JM, Moore RE, **Spicer SK**, Gaddy JA, Townsend SD: Synthetic Phosphoethanolamine Cellobiose Promotes *Escherichia coli* Biofilm Formation and Congo Red Binding. *ChemBioChem* **2021**, 22(15):2540-2545.

Noble K, Lu J, Guevara MA, Doster RS, Chambers SA, Rogers LM, Moore RE, **Spicer SK**, Eastman AJ, Francis JD *et al*: Group B Streptococcus cpsE Is Required for Serotype V Capsule Production and Aids in Biofilm Formation and Ascending Infection of the Reproductive Tract during Pregnancy. *ACS Infectious Diseases* **2021**, 7(9):2686-2696.

Lu J, Guevara MA, Francis JD, **Spicer SK**, Moore RE, Chambers SA, Craft KM, Manning SD, Townsend SD, Gaddy JA: Analysis of Susceptibility to the Antimicrobial and Anti-Biofilm Activity of Human Milk Lactoferrin in Clinical Strains of *Streptococcus agalactiae* With Diverse Capsular and Sequence Types. *Frontiers in Cellular and Infection Microbiology* **2021**, 11.

Avery TM, Boone RL, Lu J, **Spicer SK**, Guevara MA, Moore RE, Chambers SA, Manning SD, Dent L, Marshall D *et al*: Analysis of Antimicrobial and Antibiofilm Activity of Human Milk Lactoferrin Compared to Bovine Lactoferrin against Multidrug Resistant and Susceptible *Acinetobacter baumannii* Clinical Isolates. *ACS Infectious Diseases* **2021**, 7(8):2116-2126.

Spicer SK, Subramani A, Aguila AL, Green RM, McClelland EE, Bicker KL: Toward a clinical antifungal peptoid: Investigations into the therapeutic potential of AEC5. *Biopolymers* **2019**, 110(6):e23276.