

Updated 11/14/2022

Blake R. Rushing, PhD
Assistant Professor, Nutrition Research Institute
Department of Nutrition
University of North Carolina at Chapel Hill

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EDUCATION

Postdoctoral Research Associate	Nutrition Research Institute, Kannapolis, NC (2019-2020)
Postdoctoral Scholar	East Carolina University, Greenville, NC (2018-2019)
PhD, Pharmacology & Toxicology	East Carolina University, Greenville NC (2018) Dissertation: Detoxification mechanisms to protect against aflatoxin B1-mediated carcinogenesis.
BS, Chemistry	Catawba College, Salisbury, NC (2013)

PROFESSIONAL EXPERIENCE

Current

Assistant Professor, Department of Pathology & Laboratory Medicine (joint appointment), School of Medicine, University of North Carolina, NC (2022-present)

Assistant Professor, Department of Nutrition, Nutrition Research Institute, University of North Carolina, NC (2020-present)

Previous

Postdoctoral Research Associate, Department of Nutrition, Nutrition Research Institute, University of North Carolina, Kannapolis, NC (2019-2020)

Postdoctoral Scholar, Department of Microbiology & Immunology, Brody School of Medicine, East Carolina University, Greenville, NC (2018-2019)

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Graduate Research Associate, Department of Pharmacology & Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC (2013-2018)

Intern, Department of Pharmacology & Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC (2012).

Intern, Counterterrorism and Forensic Science Research Unit, Federal Bureau of Investigation, Quantico, VA (2011)

Staff scientist, Catawba Analytical Research Laboratory, Catawba College, Salisbury, NC (2010-2013).

HONORS AND AWARDS

Travel Award - 12th International Conference on Complement Therapeutics in Rhodes, Greece, 2019

Best postdoctoral poster presentation award - 20th Annual Neuroscience Symposium of the East Carolina Chapter of the Society for Neuroscience, 2018

3rd place - NCSOT Poster Competition Award, 2017

ACS Environmental Chemistry Division Certificate of Merit, 2017

Association of Environmental Health Academic Programs (AEHAP) Student Research Competition Award, 2017

SOT's Frank C. Lu student award (Food Safety Specialty Section), 2017

1st place - oral presentation competition at Research and Creative Achievement Week (ECU), 2016

1st place - NCSOT Graduate Student Platform Presentation Competition, 2016

Graduate and Professional Student Senate (GPSS) travel award, 2015-2016

Supplemental Scholarship of the Foundation for Toxicology and Agromedicine, 2014

Whitener Award Recipient, 2013

The Chemistry Prize, 2012

Gamma Sigma Epsilon Chapter Vice President, 2012-2013

American Chemical Society Chapter President, 2012-2013

Alpha Chi Member, 2011-2013

Junior Marshall, 2011-2012

American Chemical Society Treasurer, 2010-2012

President's List, 2009-2013

Dean's List, 2009-2013

Catawba College Honors Program Participant, 2009-2013

First Family Scholarship Recipient, 2009-2013

SELECTED COMMITTEES AND PROFESSIONAL ORGANIZATIONS

Triangle Area Mass Spectrometry (TAMS) Discussion Group, 2015-2019

American Chemical Society, 2017-2018

National Environmental Health Association, 2017-2018

Society of Toxicology, 2017-2018
North Carolina Society of Toxicology, 2016-2018
American Society of Mass Spectrometry, 2016-2017
American Association for Cancer Research, 2020-2022
American Society for Pharmacology and Experimental Therapeutics (ASPET), 2021-2022
American Society of Nutrition, 2021-2022
Metabolomics Society, 2021-2022
Diversity, Equity, and Inclusion Committee for the Nutrition Research Institute 2021-2022
Diversity, Equity, and Inclusion Committee for the UNC Nutrition Department, 2021-2022
Bachelor of Science in Public Health (BSPH) committee, 2021-2022

BIBLIOGRAPHY (*denotes students)

1. **Rushing, B.R.** †; Tilley, S.*†; Molina, S.; Schroder, M.; Sumner, S. Commonalities in Metabolic Reprogramming between Tobacco Use and Oral Cancer. *Int. J. Environ. Res. Public Health* 2022, 19, 10261. <https://doi.org/10.3390/ijerph191610261>
†Authors contributed equally to this work
2. Strom S, McDonald S, Remchak M, Kew K, **Rushing BR**, Houmard J, Tulis D, Pawlak R, Kelley G, Chasan-Taber, Newton E, Isler C, DeVente J, Raper M, May L. 2022. Maternal Aerobic Exercise, But Not Blood DHA, and EPA Concentrations, Influence Infant Body Composition. *Int. J. Environ. Res. Public Health* 2022, 19(14), 8293; <https://doi.org/10.3390/ijerph19148293>
3. Sharma J†, **Rushing BR**†, Hall M, Helke K, McRitchie S, Krupenko N, Sumner S, Krupenko S. 2022. Sex-specific metabolic effects of dietary folate withdrawal in wild type and Aldh111 knockout mice. *Metabolites*. 12(5):454. doi: 10.3390/metabo12050454
†Authors contributed equally to this work
4. Wiggs A*, Molina S, Sumner S, **Rushing BR**. 2022. A Review of Metabolic Targets of Anticancer Nutrients and Nutraceuticals in Triple Negative Breast Cancer. *Nutrients*. 2022 May 10;14(10):1990. doi: 10.3390/nu14101990.
5. Strom, C.J.; McDonald, S.M.; Remchak, M.-M.; Kew, K.A.; **Rushing, B.R.**; Houmard, J.A.; Tulis, D.A.; Pawlak, R.; Kelley, G.A.; Chasan-Taber, L.; Newton, E.; Isler, C.; DeVente, J.; Raper, M.; May, L.E. 2022. The Influence of Maternal Aerobic Exercise, Blood DHA and EPA Concentrations on Maternal Lipid Profiles. *Int. J. Environ. Res. Public Health*. 19, 3550.
6. **Rushing, B.R.**; Schroder, M.; Sumner, S.C.J. Comparison of Lysis and Detachment Sample Preparation Methods for Cultured Triple-Negative Breast

- Cancer Cells Using UHPLC–HRMS-Based Metabolomics. *Metabolites* 2022, 12, 168. <https://doi.org/10.3390/metabo12020168>
7. Murphy, Molly J.*, **Rushing, Blake R.**, Sumner, Susan J., & Hackney. Anthony C. 2022. Dietary Supplements for Athletic Performance in Women: Beta-Alanine, Caffeine, and Nitrate. *International Journal of Sport Nutrition and Exercise Metabolism*. Advance online publication. <https://doi.org/10.1123/ijsnem.2021-0176>. Selected for issue's featured Open Access article.
 8. Walters DM, Al-Khulafi NM, **Rushing BR**, Selim MI. 2022. Respiratory and cardiovascular effects of ambient particulate matter from dust storm and non-dust storm periods in Kuwait. *International Journal of Environmental Science and Technology*. 19, 1071-1074.
 9. Li S, Li Y, **Rushing BR**, Harris SE, McRitchie SL, Jones JC, Dominguez D, Sumner SJ, Dohlman HG. 2022. Multi-omics analysis of multiple glucose-sensing receptor systems in yeast. *Biomolecules*. 12(2). 175.
 10. Li YY[†], **Rushing BR**[†], Schroder M, Sumner S, Kay CD. 2022. Exploring the Contribution of (Poly)phenols to the Dietary Exposome using High Resolution Mass Spectrometry Untargeted Metabolomics. *Mol Nutr Food Res*. doi: 10.1002/mnfr.202100922.
[†]Authors contributed equally to this work
 11. **Rushing BR**, McRitchie S, Arbeeva L, Nelson AE, Azcarate-Peril MA, Li YY, Qian Y*, Pathmasiri W, Sumner SCJ, Loeser RF. 2022. Fecal metabolomics reveals products of dysregulated proteolysis and altered microbial metabolism in obesity-related osteoarthritis. *Osteoarthritis Cartilage*. Jan;30(1):81-91. doi: 10.1016/j.joca.2021.10.006.
 12. Li, S., Li, Y., **Rushing, B. R.**, McRitchie, S. L., Jones, J. C., Sumner, S. J., and Dohlman, H. G. 2021. Multi-omics analysis of glucose-mediated signaling by 2 a moonlighting Gb protein Asc1/RACK1. *PLOS Genetics*. 17(7). e1009640. doi: 10.1371/journal.pgen.1009640. PMID: 34214075; PMCID: PMC8282090
 13. **Rushing BR**, Rohlik D*, Roy S, Skaff DA, Garcia, BL. 2020. Targeting the Initiator Protease of the Classical Pathway of Complement Using Fragment-Based Drug Discovery. *Molecules*. 25(17): 4016.
 14. Polli JR*, **Rushing BR**, Lish L, Lewis L, Selim MI, Pan X. 2020. Quantitative analysis of PAH compounds in DWH crude oil and their effects on *Caenorhabditis elegans* germ cell apoptosis, associated with CYP450s

- upregulation. *Science of the Total Environment*. 745:140639. doi: 10.1016/j.scitotenv.2020.140639.
15. Mamillapalli S*, Smith-Joyner A, Forbes L*, McIntyre K, Poppenfuse S*, **Rushing B**, Strom C, Danell A, May L, Kuehn D, Kew K, Ravisankar S. 2020. Screening for Opioid and Stimulant Exposure in Utero via Targeted and Untargeted Metabolomics Analysis of Umbilical Cords. *Ther Drug Monit*. 42(5). 787-794.
 16. Rushing AW, **Rushing BR**, Hoang K, Sanders SV*, Peloponese JM, Polakowski N, Lemasson I. 2019. HTLV-1 basic leucine zipper factor protects cells from oxidative stress by upregulating expression of Heme Oxygenase I. *PLoS Pathogens*. 15(6). e1007922
 17. **Rushing BR**, Selim MI. 2018. Aflatoxin B1: A review on metabolism, toxicity, occurrence in food, occupational exposure, and detoxification methods. *Food and Chemical Toxicology*. 124. 81-100.
 18. **Rushing BR**, Selim MI. 2018. Adduction to arginine detoxifies aflatoxin B1 by eliminating genotoxicity and altering toxicokinetic properties. *Oncotarget*. 9(4): 4559-4570.
 19. **Rushing BR**, Selim MI. 2017. Structure and oxidation of pyrrole adducts formed between aflatoxin B2a and biological amines. *Chem Res Toxicol*. 30(6): 1275-1285.
 20. Starr JM, **Rushing BR**, Selim MI. 2017. Solvent-dependent transformation of aflatoxin B1 in soil. *Mycotoxin Res*. 33(3): 197-205.
 21. **Rushing BR**, Qing H, Franklin JN, McMahan R, Dagnino S, Higgins CP, Strynar MJ, DeWitt JC. 2016. Evaluation of the immunomodulatory effects of 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-propanoate in C57BL/6 mice. *Tox Sci*. 156(1): 179-189.
 22. **Rushing BR**, Selim MI. 2016. Effect of dietary acids on the formation of aflatoxin B2a as a means to detoxify aflatoxin B1. *Food Addit Contam Part A*. 33(9): 1456-1467.
 23. **Rushing B**, Wooten A, Shawky M*, Selim MI. 2016. Comparison of LC–MS and GC–MS for the Analysis of Pharmaceuticals and Personal Care Products in Surface Water and Treated Wastewaters. *Current Trends in Mass Spectrometry, a supplement to LCGC North Am., LCGC Europe, and Spectroscopy*. 14(3): 8-14.
 24. Tipple CA, Caldwell PT, Kile BM, Beussman DJ, **Rushing B**, Natalie MJ, Whitchurch CJ, Grime M, Stockham, Eckenrode BA. 2014. *Comprehensive*

characterization of commercially available canine training aids. *Forensic Sci Int.* 242: 242-254.

PRESENTATIONS/ABSTRACTS

1. Annie Green Howard, Sachin Mhatre, Wei Sha, Don Lloyd-Jones, **Blake Rushing**, Susan McRitchie, Xiuxia Du, Yuanyan Li, Susan Sumner, Kari North, Christy Avery, Penny Gordon-Larsen. *Heterogeneity in obesity in relation to related to hypertension: investigating the role of metabolic pathways* at the annual AHA Epidemiology Lifestyle conference (2023).
2. Mohanraj Krishnan, Annie Green Howard, Heather M Highland, Donald Lloyd-Jones, **Blake Rushing**, Susan Sumner, Kari E North, Penny Gordon-Larsen, Christy L Avery, Misa Graff. *Genome-wide association study of the human metabolome in CARDIA identifies an association of the OPLAH locus with 5-oxo-L-proline in individuals with African ancestry* at the American Society of Human Genetics annual meeting (2022).
3. **Rushing BR**, Pathmasiri W, Seelinger M, Loeser R, Sumner S. *Exposome analysis of stool samples from individuals with obesity-related osteoarthritis* at University of North Carolina-Chapel Hill's Interdisciplinary Nutrition Sciences Symposium (2022).
4. Smirnov A, Hall J, Liao Y, Brumit D, Li Y, **Rushing BR**, McRitchie S, Sumner S, Ponnuru R, Madamwar K, Suresh V, Du X. *ADAP: An Integrated Informatics Pipeline for Untargeted Mass Spectrometry-Based Metabolomics Big Data* at the Metabolomics Association of North America (MANA) annual meeting (2022).
5. Hall J, Smirnov A, Li Y, **Rushing BR**, Liao Y, McRitchie S, Sumner S, Du X. *ADAP-BIG: A platform-independent and graphical software tool for preprocessing large-scale mass-spectrometry based metabolomics and exposomics data* at the American Society of Mass Spectrometry (ASMS) annual meeting (2022).
6. Conway C, Smirnov A, Li Y, **Rushing BR**, McRitchie S, Fennell T, Sumner S, Du X. *Developing a Web Resource for Exposome Research* at the American Society of Mass Spectrometry (ASMS) annual meeting (2022).
7. Li Y[†], **Rushing BR**[†], Sumner S[†]. *Metabolomics, the Exposome, and Precision Health* for the 2022 Nutrigenomics (NGx) course hosted by UNC-Chapel Hill's Nutrition Research Institute. [†]Co-Presenters
8. Kay C, Smirnov A, Li Y, **Rushing BR**, Conway C, Yang Z, Yang J, Sumner S, Du X. *MetaboFood®: A cloud knowledgebase for mass spectrometry-based precision nutrition* for the 2022 annual ASMS meeting.

9. Conway C*, Smirnov A, Li Y, **Rushing BR**, McRitchie S, Fennell T, Sumner S, Du Xiuxia. *A Web Resource for Environmentally Relevant Compounds* for the 2022 annual ASMS meeting.
10. **Rushing BR**[†], Pathmasiri W[†], Li Y-Y*. *Harmonizing untargeted data across platforms* at the HHEAR December 2021 Virtual Steering Committee Meeting.
[†]Co-presenters.
11. **Rushing BR**, Li Y-Y, Schroder M, Coble R, Sumner S. *Using UHPLC High Resolution Mass Spectrometry to Analyze Stool and Seminal Plasma* at the Metabolomics Association of North America (MANA) annual meeting (2021).
12. Conway C, Smirnov A, Li Y, **Rushing BR**, McRitchie S, Fennell T, Sumner S, Du X. *Development of a Knowledgebase of Environmentally Relevant Compounds for Exposomics* at the Metabolomics Association of North America (MANA) annual meeting (2021).
13. Smirnov A, Liao Y, Fahy E, Subramaniam S, Li Y, **Rushing BR**, McRitchie S, Sumner S, Du X. *ADAP-KDB Spectral Knowledgebase: an online resource for searching and prioritizing untargeted metabolomics data* at the Metabolomics Association of North America (MANA) annual meeting (2021).
14. **Rushing BR**. *Mycotoxins: Invisible Threats to Food Safety and Public Health* at UNC Nutrition Research Institute's Appetite for Life series (2021).
15. **Rushing BR**, McRitchie S, Liubov A, Nelson A, Azcarate-Peril MA, Li Y-Y, Qian Y, Sumner S, Loeser R. *Untargeted Fecal Metabolomics to Investigate the Role of the Microbiome and Nutrients in Osteoarthritis* at the American Society of Nutrition (ASN) annual meeting (2021).
16. Hall J, Smirnov A, Li Y, **Rushing BR**, Liao Y, McRitchie S, Sumner S, Du X. *ADAP-BIG: A graphical desktop software tool for preprocessing multi-batch mass spectrometry-based raw untargeted metabolomics data* at the American Society of Mass Spectrometry (ASMS) annual meeting (2021).
17. Conway C, Smirnov A, Li Y, **Rushing BR**, McRitchie S, Fennell T, Sumner S, Du X. *Development of a Library of Environmentally Relevant Compounds for Exposomics* at the American Society of Mass Spectrometry (ASMS) annual meeting (2021).
18. Sharma J, **Rushing BR**, Krupenko N, Sumner S, Krupenko S. *Effect of Folate Diet on Liver Metabolomics in Wild Type and Aldh111 Knockout Mice* at the American Society of Nutrition (ASN) annual meeting (2021).

19. **Rushing BR**, McRitchie S, Liubov A, Nelson A, Azcarate-Peril MA, Li Y-Y, Qian Y, Pathmasiri W, Sumner S, Loeser R. *The Internal Exposome Reveals Mechanisms of Increased Intestinal Permeability in Osteoarthritis* at the Metabolomics Online 2021 annual meeting.
20. Li, Y. Y., **Rushing, B.**, Xiuxia Du, Timothy Fennell, Kay, C., and Sumner, S.J. (2021) *The Dietary Exposome and Nutritional Intervention* in Metabolomics 2021 Online, June 22 - 24, 2021.
21. Smirnov, A., Li, Y., **Rushing, B.**, Liao, E., Hall, J., McRitchie, S., Sumner, S., and Du, X. (2021) *ADAP-BIG: A Platform-Independent and Scalable Software Tool for Preprocessing Large-Scale Mass Spectrometry-based Metabolomics and Exposomics Data* in Metabolomics Online 2021. June 22 - 24, 2021.
22. Kay, C., Smirnov, A., Li, Y., **Rushing, B.**, Yang, Z., Conway, C., Yang, J., Sumner, S., and Du, X. (2021) *MetaboFood-KDB: A Cloud Knowledgebase for Searching Metabolomics and Exposomics Data for Nutritionally Relevant Compounds* in Metabolomics Online 2021. June 22 - 24, 2021.
23. McRitchie, S., Du, X., Kay, C., Li, Y., Pathmasiri, W., **Rushing, B.**, Smirnov, A., Sumner, S., and Fennell, T. (2021) *Exposome Research Informs Precision Medicine and Precision Nutrition* in Metabolomics 2021 Online, June 22 - 24, 2021.
24. Yuan-Yuan Li, Reza Ghanbari, Wimal Pathmasiri, **Blake Rushing**, Susan McRitchie, Hossein Poustchi, Amaneh Shayanard, Gholamerza Roshandel, Arash Etemadi, Jonathan Pollock, Reza Malekzadeh, and Susan Sumner (2021) (Presenter: Sumner): *Exposome Research Informs the Development of a Nutrient Cocktail to Mitigate Against Addiction* in Metabolomics 2021 Online, June 22 - 24, 2021
25. **Rushing BR**, Li Y-Y. *Applications of Untargeted Metabolomics in Two Matrices: Developing a Stool Reference Material and Analysis of Seminal Plasma* at the HHEAR Grantee Meeting (2021).
26. **Rushing BR**, McRitchie S, Liubov A, Nelson A, Azcarate-Peril MA, Li Y-Y, Qian Y, Pathmasiri W, Sumner S, Loeser R. *Fecal Metabolomics Reveals Products of Dysregulated Proteolysis and Altered Microbial Metabolism in Obesity-Related Osteoarthritis* at University of North Carolina-Chapel Hill's Interdisciplinary Nutrition Sciences Symposium (2021).
27. **Rushing BR**, McRitchie S, Li Y, Qian Y, Sumner S, Loeser R. *Untargeted Metabolomics to Investigate the Role of the Microbiome in Osteoarthritis* at the Metabolomics Association of North America (MANA) annual meeting (2020).

28. **Rushing BR**, Rohlik D, Garcia BL. *Fragment based discovery of novel small molecules which bind and inhibit C1r* at the 12th International Conference on Complement Therapeutics in Rhodes, Greece (2019).
29. Ryan Garrigues, Charles Booth, Denise Rohlik, **Blake Rushing**, and Brandon Garcia. *Structure-Function Relationships of Borrelial Classical Pathway-specific Complement Inhibitors* at the 12th International Conference on Complement Therapeutics in Rhodes, Greece (2019).
30. **Rushing BR**, Rohlik D, Garcia BL. *Small molecule screening reveals novel inhibitors of the classical pathway of the complement system* at Research and Creative Achievement Week at East Carolina University in Greenville, NC (2019).
31. **Rushing BR**, Garcia BL. *Keeping the brain classy with complement* at the 3-minute research presentation for the postdoctoral scholar association's "Meet and Greet" with ECU's Vice Chancellor in Greenville, NC (2019).
32. **Rushing BR**, Rohlik D, Garrigues RJ, Garcia BL. *Development of small molecule inhibitors of the classical pathway of complement* at the East Carolina Chapter of the Society for Neuroscience annual meeting in Greenville, NC (2018).
33. Strom CJ, Kew KA, **Rushing BR**, May LE, Isler C, Newton E. *Maternal aerobic exercise and DHA levels during pregnancy influences infant heart outcomes* at the American College of Sports Medicine annual meeting in Minneapolis, MN (2018).
34. **Rushing BR**, Selim MI. *Proteomic and metabolomic approaches to evaluating the safety of a novel detoxification product of aflatoxin B1*. At the North Carolina Society of Toxicology (NCSOT) Fall meeting at the National Institute of Environmental Health Sciences (NIEHS) in Durham, NC (2017).
35. Forbes LA, Mamillapalli S, **Rushing BR**, Smith-Joyner AM, Strom CJ, Kuehn D, Kew K, Ravisankar S. *Quantitative Method for Drugs of Abuse in Umbilical Cords using Liquid Chromatography/Mass Spectrometry* at Mayo Clinic (2017).
36. **Rushing BR**, Selim MI. *Using Proteomics to Investigate Protection Against Aflatoxicosis in Human Hepatocytes* at the Triangle Area Mass Spectrometry meeting in Durham, NC (2017).
37. **Rushing BR**, Selim MI. *Protective toxicokinetic and toxicodynamic changes associated with aflatoxin B1 detoxification* at the American Chemical Society annual meeting in Washington D.C. (2017).

38. **Rushing BR**, Wooten AR, Selim MI. *Preliminary investigation of seasonal changes in pesticides and PPCPs in surface water in eastern North Carolina* at the American Chemical Society annual meeting in Washington D.C. (2017).
39. Pan X, Poll J, **Rushing BR**, Selim MI, Zhang B. *PAH compounds identified in crude oil utilizing GCMS induce germ cell apoptosis in Caenorhabditis elegans* at the American Chemical Society annual meeting in Washington D.C. (2017).
40. **Rushing BR**, Selim MI. *Development of a novel treatment method to reduce the global burden of aflatoxin B₁* at the National Environmental Health Association annual meeting in Grand Rapids, MI (2017).
41. **Rushing BR**, Selim MI. *Aflatoxin B₁ Reacts With Dietary Amines To Form A Novel Pyrrole Adduct With Reduced Genotoxicity* at the Society of Toxicology annual meeting in Baltimore, MD (2017).
42. **Rushing BR**, Selim MI. *Chemical modifications made by dietary compounds prevent genotoxic actions of aflatoxin B₁* at Research and Creative Achievement Week at East Carolina University in Greenville, NC (2017).
43. **Rushing BR**, Selim MI. *Development of a novel treatment method to reduce the global burden of aflatoxin B₁* at the National Environmental Health Association annual meeting in Grand Rapids, MI (2017).
44. **Rushing BR**, Selim MI. *Identification of a novel aflatoxin-amino acid adduct and its potential as a detoxification product using high resolution and tandem mass spectrometry* at the Triangle Area Mass Spectrometry (TAMS) meeting in Durham, NC (2017).
45. **Rushing BR**, Selim MI. *Safer food through chemistry* at East Carolina University's 3-minute thesis competition in Greenville, NC (2016).
46. **Rushing BR**, Selim MI. *Protecting against aflatoxin B₁ mutagenicity using dietary compounds* at the North Carolina Society of Toxicology (NCSOT) Fall meeting at the National Institute of Environmental Health Sciences (NIEHS) in Durham, NC (2016).
47. **Rushing BR**, Selim MI. *Structural Characterization and Mutagenicity of the Aflatoxin B_{2a}-Amino Acid Adduct as a Potential Detoxification Product* at Research and Creative Achievement Week at East Carolina University in Greenville, NC (2016).
48. **Rushing BR**, Selim MI. *Structural Characterization and Mutagenicity of the Aflatoxin B_{2a}-Amino Acid Adduct as a Potential Detoxification Product* at the

American Society of Mass Spectrometry annual meeting in San Antonio, TX (2016).

49. **Rushing BR**, Wooten AR, Shawky MB, Selim MI. *Comparison of LC–MS and GC–MS Analysis of Pharmaceuticals and Personal Care Products in Surface Water and Treated Wastewaters* at the American Society of Mass Spectrometry annual meeting in San Antonio, TX (2016).
50. **Rushing BR**, Selim MI. *The Role and Mechanism of Dietary Proteins in the Detoxification of Aflatoxin B₁, a Potent Hepatocarcinogen and Common Food Contaminant* at Research and Creative Achievement Week at East Carolina University in Greenville, NC (2015)
51. **Rushing BR**, Selim MI. *Emerging New Contaminants and their Metabolites in Surface and Wastewaters in Eastern North Carolina* at the Pittcon annual meeting in New Orleans, LA (2015).
52. **Rushing BR**, DeWitt, JC. *Immunotoxic effects of undecafluoro-2-methyl-3-oxahexanoic acid in mouse models*. At the American Chemical Society annual meeting in New Orleans, LA (2013).
53. **Rushing BR**, Miderski CA. *Effects of Oxide Layer Thickness on Wavelengths Reflected from Anodized Niobium Using AFM* at Catawba College's Interdisciplinary Research Symposium in Salisbury, NC (2012).
54. **Rushing BR**, DeWitt, JC. *Immunotoxic Effects of Undecafluoro-2-methyl-2-oxahexanoic Acid in Mouse Models* at the Brody School of Medicine at East Carolina University's Summer Biomedical Research Program (SBRP) poster session in Greenville, NC (2012).

TEACHING EXPERIENCE

- Co-Instructor; Nutritional Biochemistry (NUTR 714), Spring 2022
- Lecturer and Assistant; Nutritional Biochemistry (NUTR 714), Spring 2021
 - NUTR714 is taught to ~ 40 MPH-RD candidates and covers biochemical concepts of macro and micronutrients including metabolism, chemical structures, applications in health and disease, and health disparities.
- Lecturer in Principles of Toxicology (PHAR 7680)
 - "Toxicology of solvents and vapors" at East Carolina University, 2017.
- Lecturer in Pharmacology and Pharmacotherapeutics (PADP 6500)
 - "Pharmacology of anticoagulants and hematopoietic drugs" at East Carolina University, 2016-2018.

- Lecturer in Physiological Proteogenomics (PHLY 7704)
 - “Applications of mass spectrometry in biomedical science” and “Applications of liquid and gas chromatography in biomedical sciences” at East Carolina University, 2014-2016.

- Lecturer in Advanced Research Techniques (PHAR 7670)
 - “Principles of chromatography and mass spectrometry” at East Carolina University, 2014-2016.

- Lecturer in Cytometric Techniques (MCBI 7430)
 - “Analytical sample preparation techniques for analysis of biological molecules” at East Carolina University, 2014.

- Tutor for Biochemistry I (BIOC 7301)
 - Covered topics such as protein composition and structure, carbohydrates and glucoconjugates, cellular transport, glycolysis/TCA cycle/oxidative phosphorylation, enzyme kinetics, gluconeogenesis, and lipid metabolism. 2015-2016

- Small group leader for Pharmacology and Pharmacotherapeutics (PADP 6500)
 - Led several discussion-based exercises for a small group of 9-12 students in the physician’s assistant program. Students were given a case study in advance detailing patients who exhibited certain symptoms and were challenged to diagnose and prescribe pharmacological agents to these patients. 2016

Co-Mentoring with Primary Faculty

Name and degree when trained	Field	Start Year	Training Topic	Position at time of training	Current Position
Grace Fu	Nutrition	2022	Metabolomics, cancer	Undergraduate	-
Rodrigo Guillen, PhD	Pathology	2021	Metabolomics, cancer	Postdoc	-
Deepika Jayaprakash, BS	Oral & Craniofacial Biomedicine	2021	Metabolomics, cancer	Graduate student	-
Gaith Droby, BS	Genetics and Molecular Biology	2021	Metabolomics, cancer	Graduate student	-
Wimal Pathmasiri, PhD	Nutrition	2021	Metabolomics harmonization	Assistant Professor	-

Sabrina Molina, BS	Biology	2021	Metabolomics, cancer, exposome	Intern	Research Assistant
Annie Green Howard, PhD	Biostatistics	2020	Metabolomics and pathway analysis	Associate Professor	-
Alleigh Wiggs, BS	Nutrition	2020	Metabolism and Breast Cancer	BSPH Candidate	Medical Student (UNC-Chapel Hill)
Molly Jean Murphy, MPH	Nutrition	2020	Performance Nutrition	RD Candidate	Eating Disorder Specialist
Spencer Tilley, BS	Nutrition	2020	Metabolism, Cancer, Tobacco Use	BSPH Candidate	Masters student (UNC-Charlotte)
Yunzhi Qian, MS	Biostatistics	2020	Biostatistics & Metabolomics	Graduate Student	-
Madison Schroder, BS	Chemistry	2020	Exposome	Research Assistant	-
Rachel Coble, BS	Chemistry	2020	One Carbon Metabolism	Research Assistant	-
Justin Chandler, TBS	Biology	2019	Metabolism and Precision Nutrition	Student Intern	-
Herman Freeman, BS	Biology	2019	Metabolism and Precision Nutrition	Intern	Medical School UNC
Denise Rohlik, BS	Microbiology	2018	Complement immunity and drug development	Graduate Student	-
Charles Booth, BS	Microbiology	2018	Complement immunity	Graduate Student	-
Hunter Dail	Toxicology	2017	Environmental Contaminant Analysis	High school student	Undergraduate
Denise Ramirez	Chemistry	2017	Analysis of saliva in smokers	Undergraduate ECU	-
Cody Strom, BS	Chemistry	2017	Analysis of vitamin B12 in infant blood	Graduate student	-
Swathi Mamillapalli, BS	Chemistry	2017	Analysis of saliva in smokers	Graduate Student	Clinical Research Associate at University of Iowa
Annalisa Smith-Joyner, BS	Chemistry	2017	Analysis of saliva in smokers	Graduate Student	-
Vidya Venkataganesan	Toxicology	2016	Environmental Contaminant Analysis	High school student	Undergraduate

Marcus Shawky	Toxicology	2014	Environmental Contaminant Analysis	High school student	Undergraduate
Ahmed Aldhafiri	Pharmacology/ Toxicology	2014	Endocannabinoid Analysis	Graduate Student	Assistant Professor
Yasir Mohammed	Pharmacology/ Toxicology	2014	Polyphenol Analysis	Graduate student	Postdoctoral Research Fellow at University of Maryland

ADDITIONAL SERVICE AND OUTREACH

- Graduate Student Assistant for the Summer Biomedical Research Program (SBRP), 2014-2017.
- Brody Graduate Association (BGA) Department of Pharmacology & Toxicology Representative. Fall 2014-Spring 2015.
- BGA Philanthropy Committee member. Fall 2014-Spring 2015.
- Search committee member to hire a Research Technicians for the Sumner Lab. 2022.

PEER REVIEW SERVICE

- Manuscript Reviewer
 - Oncotarget
 - PLoS One
 - Cellular Physiology and Biochemistry
 - World Journal of Surgical Oncology
 - Trends in Food Science & Technology
 - Scientific Reports
 - Addiction Neuroscience
- Grant Reviewer
 - Graduate Women in Science – Cancer Section
 - UNC Nutrition Obesity Research Center (NORC) Pilot & Feasibility Program

ANALYTICAL INSTRUMENTATION EXPERIENCE

Experience with the following analytical instruments:

- Gas chromatography (GC) coupled to a quadrupole mass spectrometer (MS).
- Liquid chromatography (LC) coupled to the following detectors: ultraviolet spectrophotometer, triple quadrupole mass spectrometer (MS/MS aka Tandem MS), quadrupole-time of flight mass spectrometer (QTOF), time of flight mass spectrometer (TOF), triple time of flight mass spectrometer (TripleTOF), Q-Exactive Orbitrap.
- Matrix assisted laser desorption ionization (MALDI) coupled to TOF/TOF.
- Nuclear Magnetic Resonance (NMR)

Updated 11/14/2022

- Vendor experience (including software for operation and data analysis): Agilent, Bruker, AB Sciex, Thermo Scientific.

SELECTED CONTINUING EDUCATION

- NIH Career Symposium 2020 (May 4-8th, 2020)
 - Faculty Careers: An Introduction to Academia
 - Industry Research & Development Careers
 - Science Admin Careers
 - Industry: Non-Bench Careers
 - Informational Interviews: What? How? Why?
- MetaCore
 - Using MetaCore to investigate targets identified in phenotypic screening assays (April 23rd, 2020)
- Inclusive Classroom Symposium: Decolonizing Learning Spaces. June 15-17, 2021
- Groundwater Training-Building a Practical Understanding of Structural Racism, 2020
- ARTivism: Using arts-based scholarship to interrogate and dismantle racism, Feb 24th, 2021