Blake R. Rushing

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**Address**

Work: University of North Carolina-Chapel Hill

Nutrition Research Institute

Department of Nutrition, Gillings School of Public Health

 500 Laureate Way

 Kannapolis, NC 28081

**Education**

 2020-Present Assistant Professor

 University of North Carolina-Chapel Hill

 Department of Nutrition

 2019-2020 Postdoctoral Research Associate

 University of North Carolina-Chapel Hill

 Department of Nutrition

 2018-2019 Postdoctoral Scholar

 East Carolina University

 Department of Microbiology & Immunology

 2013-2018 Doctor of Philosophy

East Carolina University

Major: Pharmacology and Toxicology

Dissertation: Prevention of aflatoxin B1-mediated genotoxicity through adduction to amino acids in a novel food treatment method.

2009-2013 Bachelor of Science with honors

 *summa cum laude*

 Catawba College, Salisbury, NC

 Major: Chemistry; Minor: Biology

 Graduated with honors

## Research Interests Keywords

Nutritional pharmacology, cancer prevention/treatment, food safety, mycotoxins, carcinogenesis, protein-ligand interactions, pharmaco/toxicodynamics, drug discovery, mass spectrometry, metabolomics, *in vitro* culturing/drug screening, complement immunity.

**Academic and Professional Experience**

12/20-Present **Assistant professor, UNC-Chapel Hill, Department of Nutrition, Kannapolis, NC**

* Developing nutritional pharmacology initiative using concepts of pharmacology and metabolomics.
* Investigator in the NIEHS-funded Human Health Exposure Analysis Resource (HHEAR) program as part of the North Carolina HHEAR Hub (MPIs: Du, Fennell, Sumner)
* Example projects include: determining metabolomic signatures and pathway perturbations associated with human disease (e.g., osteoarthritis), nutrient deficiencies in wild type and knockout animal models (e.g., folate), and cellular response to anti-cancer agents.

8/19-12/20 **Postdoctoral Scholar, UNC-Chapel Hill, Department of Nutrition, Kannapolis, NC**

* Mentor: Dr. Susan Sumner, Professor of Nutrition
* Collaborator in multiple studies investigating the role of metabolism/nutrition in human health/disease and therapeutic development.

7/18-7/19 **Postdoctoral Scholar, East Carolina University, Department of Microbiology & Immunology, Greenville, NC**

* Mentor: Dr. Brandon Garcia, Assistant Professor in Microbiology & Immunology
* Led a project to develop a novel, small molecule inhibitor of C1r – one of the initial proteins in the classical pathway of the complement immune system.
* Used a fragment-based drug discovery approach to triage thousands of potentially bioactive small molecule compounds. Screening methods included: surface plasmon resonance (SPR), X-ray crystallography, complement-based ELISA assays, and purified enzyme activity/kinetic assays.
* Gained experience in using bacterial expression vectors for protein production and purification.

4/18-7/18 **Postdoctoral Scholar, East Carolina University, Department of Microbiology & Immunology, Greenville, NC**

* Mentor: Dr. Isabelle Lemasson, Associate Professor in Microbiology & Immunology
* Identified secreted proteins from Human T-cell Leukemia Virus type 1 (HTLV-1) infected lymphocyte cell lines using LC-MS based proteomics
* Developed methods to extract and identify secreted cellular factors. Cultured and collected samples from multiple T-cell lines.

8/13-4/18 **Graduate Research Associate, East Carolina University, Department of Pharmacology & Toxicology, Greenville, NC.**

* Mentor: Dr. Mustafa Selim, Full professor in Pharmacology & Toxicology.
* Used mass spectrometry and *in vitro* hepatocyte culture to investigate methods to detoxify aflatoxin B1 (AFB1)-contaminated foods and prevent initiation of hepatocellular carcinoma (Ph. D. dissertation project).
* Gained experience using organic chemistry to modify the chemical structure of bioactive toxins and measuring differences in genotoxicities/toxicodynamics.
* Collaborated on projects in the ECU mass spectrometry core facility, under Dr. Kimberly Kew and in the lab of Dr. Selim, utilizing various mass spectrometric techniques (LC-MS/MS, nanoLC-TripleTOF, MALDI-MS, GC-MS, LC-TOF) to measure a myriad of biological analytes in many different biological/environmental matrices.

8/12-12/12 **Writing Center Tutor, Catawba College, Salisbury, NC.**

* Employed by Catawba College
* Counseled peers on writing techniques by addressing organizational, transitional, and grammatical techniques.
* Assisted students in developing professional writing habits at all levels of writing.

5/12-7/12 **Intern, Summer Biomedical Research Program, East Carolina University, Department of Pharmacology & Toxicology, Greenville, NC.**

* Mentor: Dr. Jamie DeWitt, Associate Professor in Pharmacology & Toxicology.
* Tested immunotoxic effects of a novel perfluorinated compound (“GenX”).

5/11-7/11 **Intern, Counterterrorism and Forensic Science Research Unit, Federal Bureau of Investigation, Quantico, VA.**

* Mentor: Dr. Christopher Tipple and Brian Eckenrode.
* Used GC-MS to evaluate components of a canine-scent training aid for detected cadavers.
* Used GC-MS to determine volatile chemical profile of soil samples in close proximity to cadavers.

8/10-12/11 **Residence Assistant, Catawba College, Salisbury, NC**.

* Employed by Catawba College
* Developed and maintained social community between residents of Catawba College of various ages for three semesters.
* Upheld college rules and regulations to ensure safety among fellow students.
* Aided in conflict resolution to facilitate a smoother transition into campus living for residents.

8/10-5/13 **Staff scientist, Catawba Analytical Research Laboratory, Catawba College, Salisbury, NC.**

* Mentor: Dr. Mark Sabo, Full Professor in Chemistry.
* Employed various analytical techniques (primarily liquid chromatography) to analyze commercial products for various local companies.

**Publications**

1. 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.
2. **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
3. 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.
4. 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.
5. 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.
6. 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

1. **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.
2. 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
3. **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.
4. 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.
5. 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.
6. Rushing AW, **Rushing BR,** Hoang K, Sanders SV, Peloponese JM, Polakowsi 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
7. **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.
8. **Rushing BR,** Selim MI. 2018. Adduction to arginine detoxifies aflatoxin B1 by eliminating genotoxicity and altering toxicokinetic properties. Oncotarget. 9(4): 4559-4570.
9. **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.
10. Starr JM, **Rushing BR**, Selim MI. 2017. Solvent-dependent transformation of aflatoxin B1 in soil. Mycotoxin Res. 33(3): 197-205.
11. **Rushing BR,** Qing H, Franklin JN, McMahen 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.
12. **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.
13. **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.
14. 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. 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.
2. 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.
3. **Rushing BR\*,** Pathmasiri W\*, Li Y-Y\*. Harmo*nizing untargeted data across platforms* at the HHEAR December 2021 Virtual Steering Committee Meeting. \*Co-presenters.
4. **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 annual meeting (2021).
5. **Rushing BR.** *Mycotoxins: Invisible Threats to Food Safety and Public Health* at UNC Nutrition Research Institute’s Appetite for Life series (2021).
6. **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).
7. Sharma J, **Rushing BR**, Krupenko N, Sumner S, Krupenko S. *Effect of Folate Diet on Liver Metabolomics in Wild Type and Aldh1l1 Knockout Mice* at the American Society of Nutrition (ASN) annual meeting (2021).
8. **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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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
14. **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).
15. **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).
16. **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).
17. **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).
18. 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).
19. **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).
20. **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).
21. **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).
22. 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).
23. **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).
24. 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).
25. **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).
26. **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).
27. **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).
28. 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).
29. **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).
30. **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).
31. **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).
32. **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).
33. **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).
34. **Rushing BR**, Selim MI. *Safer food through chemistry* at East Carolina University’s 3-minute thesis competition in Greenville, NC (2016).
35. **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).
36. **Rushing BR**, Selim MI. *Structural Characterization and Mutagenicity of the Aflatoxin B2a-Amino Acid Adduct as a Potential Detoxification Product* at Research and Creative Achievement Week at East Carolina University in Greenville, NC (2016).
37. **Rushing BR**, Selim MI. *Structural Characterization and Mutagenicity of the Aflatoxin B2a-Amino Acid Adduct as a Potential Detoxification Product* at the American Society of Mass Spectrometry annual meeting in San Antonio, TX (2016).
38. **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).
39. **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)
40. **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).
41. **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).
42. **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).
43. **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).

## Invited Speaker

**Rushing BR\*,** Yuan Li\*. *Data Analysis Workflow: UHPLC-HRMS Untargeted Analysis of the Internal Exposome*. Research Triangle International (2021). \*Co-presenters.

**Rushing BR,** Selim MI. *Comparison of LC–MS and GC–MS Analysis of Pharmaceuticals and Personal Care Products in Surface Water and Treated Wastewaters* through LCGC (2015).

**Awards and Honors**

* **Postdoctoral 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
* **Graduate Awards**
	+ 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
	+ Finalist for 3-minute thesis competition (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
* **Undergraduate Awards, Memberships, and Positions**
	+ 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

## 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** |
| 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 | - |
| Jessica Bowser, PhD | Pathology | 2021 | Metabolomics, cancer | Assistant Professor | - |
| Cyrus Vaziri, PhD | Pathology | 2021 | Metabolomics, cancer | Professor | - |
| Wimal Pathmasiri, PhD | Nutrition | 2021 | Metabolomics harmonization | Assistant Professor | - |
| Sabrina Molina, BS | Biology | 2021 | Metabolomics, cancer, exposome | Intern | Research Assistant |
| Annie Green Howard, PhD | Nutrition | 2020 | Metabolomics and pathway analysis | Associate Professor | - |
| Alleigh Wiggs, BS | Nutrition | 2020 | Metabolism and Breast Cancer | BSPH Candidate | **-** |
| Molly Jean Murphy, MPH | Nutrition | 2020 | Performance Nutrition | RD Candidate | Eating Disorder Specialist |
| Spencer Tilley, BS | Nutrition | 2020 | Metabolism, Cancer, Tobacco Use | BSPH Candidate | **-** |
| 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 SchoolUNC |
| 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 Technician for the Sumner Lab. 2022.

## Peer Review Service

* Manuscript Reviewer
	+ 2017 Oncotarget
	+ 2017 PLoS One
	+ 2018 Cellular Physiology and Biochemistry
	+ 2018 World Journal of Surgical Oncology
	+ 2019 Trends in Food Science & Technology
	+ 2019 Scientific Reports
* Grant Reviewer
	+ 2018 Graduate Women in Science – Cancer Section
	+ 2022 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)
* Vendor experience (including software for operation and data analysis): Agilent, Bruker, AB Sciex, Thermo Scientific.

**Workshops/Short Courses/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