**Susan C. J. Sumner, PhD**
Professor, Nutrition Research Institute
Department of Nutrition, Gillings School of Global Public Health
Department of Pharmacology, UNC School of Medicine
University of North Carolina at Chapel Hill
919-622-4456
susan_sumner@unc.edu

## Overview

I am a professor in both the Department of Nutrition in the Gillings School of Global Public Health and the Department of Pharmacology in the UNC School of Medicine at UNC Chapel Hill. In this role, I teach nutritional biochemistry, mentor students and early career faculty, and conduct transdisciplinary research aimed at revealing how diet, nutrients, natural products, supplements, medications, drugs, and exposures to nanoparticles and environmentally relevant chemicals impact an individual's biochemistry and associate with states of health and wellness. The general theme of my current research program includes using a nutritional pharmacology/toxicology approach to determine nutrients to augment the positive impact of pharmacological treatments and to mitigate adverse responses to exposures.

I am a principal investigator (PI) in the NIH Common Fund Nutrition for Precision Health (NPH) consortium where I direct a $20 million center. My laboratory conducts metabolomics and clinical assay data for integration with genomics, metagenomics, microbiome, dietary assessments, and behavioral, clinical, and physical phenotyping to determine signatures of individuals' responses to dietary intake. I am also a multiple PI in the NIEHS Human Health Exposure Analysis Resource (HHEAR) program and oversee a $10 million dollar center that aims to determine how exposures over a lifetime are related to health outcomes. Through R-level grants as a PI or co-investigator, I have conducted transdisciplinary research in areas of cancer, cardiovascular disease, pregnancy complications, liver injury, kidney disease, eye disease, drug addiction, inflammation and osteoarthritis, and frailty and sarcopenia. These studies have involved the integration of multi-omics data with clinical, epidemiological, and bench level data to reveal biomarkers and gain mechanistic insights to identify pharmacological, nutritional, and microbial targets for development of intervention strategies, and needs in exposure reduction.

Prior to joining UNC Chapel Hill in 2016, I held positions at RTI International for 13 years. I directed the Systems and Translational Sciences group at RTI, served as a PI in the NIH Common Fund Phase 1 metabolomics program, and served as a senior scientist in the NIEHS funded center for nanoparticle research. I was a research scientist at the CIIT Centers for Health Research (previously called the Chemical Industry Institute of Toxicology) for 12 years. While at CIIT, I gained experience in the conduct of *in vitro* and *in vivo* studies, absorption, distribution, metabolism, and excretion (ADME) investigations, investigations of DNA and Hb adducts, and I collaborated in the development of physiologically based (PB) pharmacokinetic (PK) and pharmacodynamic (PD) models.

Throughout my career I have been attentive to ensuring rigor in my research studies, first as a student and trainee carefully recording and documenting studies, then as a Good Laboratory Practice (GLP) study director overseeing ADME, PK, necropsy, pathology assessments, and biomarker studies, and then as the director of laboratories that developed and fine-tuned protocols and quality control procedures for ensuring rigor, traceability, and reproducibility.

Early in my career, I demonstrated an instinctive ability to assemble teams to collaborate on challenging problems. I was provided the opportunity to lead, resource, and inspire researchers

to bring skills together, establish aims, secure funding, and advance science through transdisciplinary research. While at CIIT, these early efforts provided data for development of PB-PK/PD and risk assessment models, which contributed largely to shifting traditional toxicology testing to a modeling paradigm. As a mid-career scientist at RTI, I inspired a team of analytical chemists, biochemists, statisticians, and biostatisticians to create one of the first NIH funded Regional Comprehensive Metabolomics Research Centers. My team developed innovative methods and collaborated with 100s of bench level researchers, epidemiologists, and clinicians to apply metabolomics in mechanistic and biomarker discovery studies. While at RTI, I created the vision for innovative research in the study of nanoparticles during the vulnerable stages of pregnancy and lactation. I led a team of particle physicists, radiochemists, analytical chemists, reproductive and developmental biologists, and mathematical modelers to develop a center as part of the NIEHS Nanomaterials Health Implications Research consortium.

I have extensive involvement in outreach activities, including service as a two-term elected member of the Board of Directors for the Metabolomics Society, an elected Vice-Chair and Chair of the Gordon Conference on Metabolomics and Human Health, and service on NIH, European, and Canadian study panels. I regularly present at national and international conferences on the topic of the exposome in precision medicine, nutrition, and environmental health, and support conferences through serving as a session chair or panel member. I teach a 700-level nutritional biochemistry course, mentor MPH nutrition students conducting practicums, and provide mentorship and training for students, faculty, and professional staff conducting research in my laboratory.

## EDUCATION

Staff Fellow, Spectroscopy, National Institutes of Health, Bethesda, MD, 1986–1989

Ph.D., Physical Chemistry, North Carolina State University, Raleigh, NC, 1986

B.S., Chemistry (minor: Biology), North Carolina State University, Raleigh, NC, 1982

## PROFESSIONAL EXPERIENCE

**December 1, 2016–Date. The University of North Carolina at Chapel Hill**

Professor, Nutrition Research Institute, Department of Nutrition, Gillings School of Global Public Health (2016–date)

Professor, Department of Pharmacology, UNC School of Medicine (2020–date)

Director, Metabolomics and Exposome Laboratory Research Center (2017-date)

Advisory Board, US Performance Center, Charlotte, NC (November 2022–date)

Advisory Board, Core Center for Clinical Research. Thurston Arthritis Research Center, UNC School of Medicine (2021–2023)

Full Member, UNC Lineberger Comprehensive Cancer Center, Cancer Epidemiology Program (2022–date)

PI: NIH Common Fund Nutrition for Precision Health Metabolism and Clinical Assay Center (NPH MCAC) (2022–date)

MPI: NC HHEAR UAL for the NIEHS Human Health Exposure Analysis (HHEAR) Program

(2019–date)

Director: Untargeted Analysis Core for a NIEHS Children's Health Exposure Analysis (CHEAR) Hub (2015–2020)

Director: Untargeted Analysis for a NIEHS Early Childhood and Health Outcome (ECHO) supplement to CHEAR/HHEAR (2017–2023)

Director: Metabolomics and Metabolism Core for a NIDDK Nutrition Obesity Research Center (MMC, NORC, 2017–2023)

PI/PD: NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Center (ERCMRC; 2012–2019)

**2004 to 2016. RTI International, Research Triangle Park (RTP), NC.**

Director, Systems and Translational Sciences (STS) Center (2013–2016)

Senior Scientist 1/Scientist 2, Health Sciences Unit, Science and Engineering (2004–2016)

Senior Scientist 2, Center for Estimating Human Health Risks from Exposure to Nanoparticles (2009–2017)

Director, Untargeted Analysis Core for the Children's Health Exposure Analysis (CHEAR) Hub (2015–2020)

Director, Metabolomics Core for the NCSU Center for Human Health and Environmental (2015–2018)

Director, NCATS funded Metabolomics Core for the N.C. Translational Sciences Institute at UNC-CH (2013–2016)

PI/Director, NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Center (2012–2019)

Adjunct Professor, Nutrition, University of North Carolina at Chapel Hill, (2012–2016)

Adjunct Faculty, Brody School of Medicine, East Carolina University, Greenville (2009–2016)

**2001 to 2004. Paradigm Genetics, Inc., RTP, NC.**

Manager, Contracts Research (2003–2004)

Head, Biochemical Profiling (2002–2004)

Staff Scientist (2001–2002)

**1989 to 2001. Chemical Industry Institute of Toxicology (CIIT), RTP, NC.**

Scientist 3, Center for Integrated Genomics, Department of Chemical Carcinogenesis, and Manager, NMR Facility (1999–2001)

Scientist 2, Department of Cancer Research, NMR Facility Manager (1995–1999)

Scientist 1, Department of Biochemical Toxicology, NMR Facility Manager (1989–1995)

**1987 to 1989. National Institutes of Health, Bethesda, MD.**

Staff Fellow, Laboratory of Chemistry, NHLBI, NIH

**1979 to 1986. North Carolina State University, Raleigh, NC.**

Graduate Student (Physical Chemistry, Specialty in Spectroscopy), Department of Chemistry (1982–1986)

Undergraduate Student, Grader and Teaching Assistant, and Researcher, Department of Chemistry (1979–1982)

Undergraduate Summer Internship, National Science Foundation- Undergraduate Research Program (NSF-URP) Department of Chemistry, Virginia Polytechnical Institute and State University (June–July,1980)

**SELECTED CONTINUED EDUCATION**

- Protection of Minors Training. April 2024.
- CITI: Good Clinical Practices for Clinical Trials with Investigational Drugs, Biologics and Devices Course, March 14, 2024
- Center for Faculty Excellence (CFE) and Targeting Equity in Access to Mentoring (TEAM) ADVANCE Faculty Mentor Training, Session 5. Mentee Independence and Revising Mentoring Philosophies. May 16, 2023.
- CFE and TEAM ADVANCE Faculty Mentor Training, Session 4. Promoting Professional Development. April 14, 2023.
- Safe Zone: Veterans. March 1, 2023
- CFE and Team ADVANCE Faculty Mentor Training, Session 3. Providing Feedback and Holding Difficult Conversations. February 24, 2023.
- CFE and TEAM ADVANCE Faculty Mentor Training, Session 2. Effective Communication and Aligning Expectations. February 24, 2023.
- CFE and TEAM ADVANCE Faculty Mentor Training: Session 1. Intersectionality and Equitable Mentoring, January 27, 2023
- Safe Zone: LGBTQ. January 20, 2023
- VIRTUAL Racial Equity & Inclusion Groundwater Training, December 12, 2022
- Equity Advocacy in Holistic Admissions: Application Review Training, December 2, 2022
- Equity Advocacy in Admissions Training, December 1, 2022
- Inclusive Classroom Symposium: Decolonizing Learning Spaces. June 15–17, 2021
- Collaborative Institutional Training Initiative (CITI): Human Research, Group 1 Biomedical Research, July 11, 2021
- Groundwater Training-Building a Practical Understanding of Structural Racism, 2020
- Implicit Bias Training, 2019
- Science and Security Training, 2019
- Three I's (IACUC, IBC and IRB) Conference, 2012
- Institutional Animal Care and Use Committee (IACUC) Training, 2001
- Leading Change, 2012
- Management Dimensions for Effective Leadership, 2011
- Human Subject Research Training, 2011
- Bloodborne Pathogen, Radioactivity, and Safety Training, 2011– current
- One-on-One Executive Coaching for Leadership, 2002–2004 and 2010
- American Red Cross Adult/Child/Infant First Aid, Cardiopulmonary Resuscitation (CPR), automated external defibrillator (AED), renewed 2010
- PBPK and PKPD Models, Hamner Institutes, 2010
- GLP for QA and GLP Study Directors CIIT, 1995–2002, and RTI, 2004–2008
- Leadership Advantage (external consultant), RTI, 2007
- Understanding Computerized System Validation, Info Strength, 2004

- Validation and Control of Bioanalytical Methods, 2000
- Harassment Training, Capitol Associated Industries, Inc., 1998
- The Supervisor and Positive Human Relations, Capitol Associated Industries, Inc., 1998
- Managing Multiple Projects, Objectives, & Deadlines, American Management Association (AMA), 1996
- Criticism/Discipline Skills for Managers, AMA, 1996
- Supervising the Difficult Employee, Capitol Associated Industries, Inc., 1994
- Applications of NMR Spectroscopy in Toxicology, Society of Toxicology (SOT), 1993
- The Newly Appointed Supervisor, Capitol Associated Industries, Inc., 1992
- Writing for Non-scientist Readers, ERG, Inc., 1992
- Effective Presentations, R.J. Kulda, Professional Eloquence, 1991
- Project Management, Applied Management Associates, 1990
- Assertiveness Training, AMA, 1990

## HONORS: SPOTLIGHTS AND AWARDS

Precision nutrition improves health at individual level, expert says. by Rick Woychik. Environmental Health Factor, February 2023. https://factor.niehs.nih.gov/2023/2/feature/4-feature-precision-nutrition.

NIH Will Spend $170 Million for University Research on Precision Nutrition. by Michael T. Nietzel. Forbes Magazine. February 8, 2022. https://www.forbes.com/sites/michaeltnietzel/2022/02/08/nih-will-spend-170-million-for-university-research-on-precision-nutrition/?sh=2ca11de63905

UNC researchers to lead 2 centers for $170M NIH Nutrition for Precision Health Consortium. January 31, 2022. https://sph.unc.edu/sph-news/unc-researchers-to-lead-2-centers-for-170m-nih-nutrition-for-precision-health-consortium/.

North Carolina Research Campus team receives major NIH award for precision nutrition research. January 27, 2022. https://uncnri.org/2022/01/27/north-carolina-research-campus-team-receives-major-nih-award-for-precision-nutrition-research/

NIH Common Fund Highlights: Birthing Biomarkers: Researchers Discover Metabolites associated with Pregnancy Complications (https://commonfund.nih.gov/highlights).

Metabolic Clues could Serve as Early Predictors of Pregnancy Complications and Inform Nutritional Intervention. https://sph.unc.edu/sph-news/metabolic-clues-could-serve-as-early-predictors-of-pregnancy-complications-inform-nutritional-intervention/ June 18, 2021.

Could Nutrient Cocktails play a role in diminishing addiction, reducing adverse effects of substance abuse? https://sph.unc.edu/sph-news/could-nutrient-cocktails-play-a-role-in-diminishing-addiction-reducing-adverse-effects-of-substance-abuse/ May 2021.

Recipient, RTI Awards: Career Author Award, Science and Engineering Performance Award, Outstanding Paper, Highly Cited Author, Highly Published Author, Annual Award for Collaborative Research, President's Award, and Best Paper Award, 2005–2016.

Recipient, Best Paper Award, (for Church, R.J., H. Wu, M. Mosedale, S.J. Sumner, W. Pathmasiri, L. Kurtz, C. L., Pletcher M. T., Eaddy J. S., Pandher K., Singer M., Batheja A., Watkins P. B., Adkins K., Harrill A. H. A systems biology approach utilizing a mouse diversity panel identifies genetic differences influencing isoniazid-induced microvesicular steatosis. *Toxicological Sciences 140*:481–492), 2014.

Recipient, Internal Research and Development (IR&D) Award: Influence of the Physiological State of Obesity on the Distribution of Nanoparticles, RTI, 2010.

Recipient, IR&D Award: Maternal and Child NanoHealth: Distribution of [$^{14}$C]C60 in the Pregnant and Lactating Rat and Effects on Endogenous Metabolism, RTI, 2008.

Recipient, Professional Development Award: Biomarkers, RTI, 2007–2008. Recipient, IR&D Award: Dietary Influences of Phytoestrogens During Pregnancy on Biochemical Mechanisms in Developing Offspring, RTI, 2007.

Recipient, IR&D Award: Dietary Influences of Phthalates During Pregnancy on the Biochemical Mechanisms of the Developing Offspring, RTI, 2006.

## MEMBERSHIPS IN SCHOLARLY AND PROFESSIONAL ORGANIZATIONS

### *Board, Membership, and Chair Positions*

- Elected as Chair of the 2025 Gordon Research Conference (GRC), and served as Vice-Chair for the 2023 GRC on Metabolomics and Health
- Advisory Board, US Performance Center, Charlotte, NC (November 2022–date)
- Advisory Board, Core Center for Clinical Research. Thurston Arthritis Research Center, UNC School of Medicine (2021–2023)
- Planning Committee for the 1st annual MANA conference, Georgia Institute of Technology, Atlanta, GA, November 15-17, 2019
- Elected in 2018 and 2019 by the UNC Faculty to the Financial Exigency and Program Change Committee
- Member, Metabolomics Association of North America: 2019–present
- Chair, Organized Conference: “Defining Precision Nutrition.” North Carolina Research Campus, May 1–2, 2018
- Elected, Board of Directors, Metabolomics Society: 2016–2018
- Elected, Board of Directors, Metabolomics Society: 2014–2016
- Member, Metabolomics Society: 2012–present
- Member of the Precision Medicine Task Group of the Metabolomics Society: 2017–present
- Elected Chair, North Carolina Section of ACS (membership ~ 2,600), 2002
- Past Chair, NC ACS Project SEED Program, 2003
- Member, North Carolina Biotechnology Center (NCBC) Genomics and Bioinformatics Consortium: 2000–2002
- Full Member, Society of Toxicology, Active: 1990–2014
- Member, American Chemical Society; North Carolina Chapter of ACS: 1986–2012

### *Editorial Boards*

Metabolites, 2018–present

Frontiers in Nutrition, 2018–2021

Journal of Personalized Medicine, 2020–present

Associate Editor: Environmental Health Perspectives, 2016–2019

RTI Press, 2010–2014

Editorial Board Member, Journal of Toxicology, 2008–2018

Board Member, Journal of Applied Toxicology, 2007–2018

Editorial Board, Metabolomics: Official Journal of the Metabolomic Society, 2005–present

### *Advisory Activities*

UNC Lineberger Comprehensive Cancer Center, Cancer Epidemiology (2022–date)

Advisor, US Performance Center. Charlotte, NC. 2022–present

Advisory Board, Core Center for Clinical Research. Thurston Arthritis Research Center, UNC School of Medicine. 2021–2023

Off-site faculty, Wake Forest Translational Sciences Center, 2008–2010

Chair, Project SEED, 2003. Project SEED is a program (under the ACS) aimed at providing support to economically disadvantaged high school students in pursuit of scientific careers

Previous adjunct or off-site faculty appointments at Duke University (Chemistry), NCSU (Chemistry), and UNC-CH (Environmental Sciences and Engineering).

Advisor, Acrylamide Monomer Producers Association: 1999–2002

Advisor, Styrene Information and Research Center: 1997–2002

### *Panel Positions and Session Chair*

Precision Nutrition for the National Dairy Council Workshop. December 13, 2023.

Chair. Diet and Nutrition Session. 19th Annual Conference of the Metabolomics Society. Niagara Falls, Canada. June 18-22, 2023.

Discussion Leader, Nutrition and Precision Health. Systems Biology and Integrative Omics for Precision Medicine. Gordon Research Conference on Metabolomics. Lucca, Barga, Italy. March 14, 2023.

Discussion Leader, CGR Power Hour. Systems Biology and Integrative Omics for Precision Medicine. Gordon Research Conference on Metabolomics. Lucca, Barga, Italy. March 13, 2023.

Senior Discussion Leader and Mentorship Panelist: Integrative OMICS and Precision Health. Pre-Gordon Conference on Metabolomics Workshop. Lucca, Barga, Italy. March 12, 2023.

Panel Member: Canada Foundation for Innovation. January 2022.

Panel Member: National Cancer Institute: ZCA1 RPRB-H (J1), NCI Program Project III (P01). Oct 2021.

Panel Member: UK Biobank Workshop on Proteomics and Metabolomics. June 23 and 30, 2021 Virtual.

Panel Member: Metabolomics Meets Exposome. A workshop by the Precision Medicine Task Group of the Metabolomics Society, April 28, 2021.

Session Co-Chair, Global Summit on Regulatory Science 2020 (GSRS20). OMICS, Biomarkers and Precision Medicine. September 28-30, 2020. Virtual.

Session Chair, Metabolome Nutrition and Precision Health at the 2019 Metabolomics and Human Health Gordon Conference. Feb 3-8, 2019. Ventura, Ca.

Session Chair. mQTL: Metabolism and Genetics. International Metabolomics Society Meeting, San Francisco, July 1, 2015

Panel Member: National Institute of Mental Health. ZMH1-ERB-M-02. March 11, 2015.

Panel Member: National Institute of Diabetes and Diabetic Kidney Disease. ZDK1-GRB-N-M1. February 13, 2015.

Invited Expert. NIEHS Exposome Workshop, NIEHS, RTP, NC, January 14 and 15, 2015.
Panel Member: Center for Scientific Review. ZRG1-BCMB-A-51. March 18, 2014.

Panel Member: National Institute of Mental Health. ZMHI-ERB-M-04. March 11, 2014 Panel Member: National Cancer Institute. ZCA-1-SRLB-3-C1. March 3, 2014.

Panel Member, NIEHS Microbiome Review Meeting, July to August 2013.

Panel Member: NIDDK, Bridging Adult and Pediatric Therapeutics, June 19, 2012.

Panel Member: NIDDK, Metabolomics Technology Development for Large-Scale Studies, May 16, 2012.

Session Chair, Personalized Medicine and Environmental Omics, Environmental Omics Conference, Guangzhou, Guangdong Province, China, November 8 to 12, 2011.

Panel Member: NIEHS Superfund Basic Research Program (P42), October 11 and 12, 2011. Panel Member: Bisphenol A Special Study Section, NIEHS, RTP, NC, May 10, 2011.

National Center for Complementary and Alternative Medicine (NCCAM), RTP, NC, March 31, 2011.

Panel Member: P30 Environmental Health Centers, NIEHS, RTP, NC, August 10–12, 2010. Panelist, Personalized Medicine Symposium, sponsored by RTI and the NCBC, the Sheraton

Imperial Hotel and Convention Center, RTP, NC, June 15, 2010.

Panel Member: Early Detection Research Network (EDRN) Biomarker Development, May 10–11, 2010.

Symposium Chair, Incorporating ‘Omics in the Study of Reproduction and Development, SOT 48th Annual Meeting & ToxExpo, March 2009.

Symposium Chair, SOT, Incorporation of ‘Omics in the Study of Reproduction and Development, Baltimore, MD, March 2009.

Biomarkers in Studies of Development and Reproduction/Birth Defects, Centers for Disease Control and Prevention, Atlanta, GA, February 2009.

Session Chair, SOT, Safety Assessment Pharmaceutical—Liver, Kidney, Immune System, SOT Annual Meeting and ToxExpo, Seattle, WA, March 2008.

Panel Member, NCCAM of NIH. RTP, NC. Review of proposals on omics in alternative medicine. Invited Reviewer. December 2007, 2008, and 2009.

Panel Member, NIEHS P50 Environmental Health Centers, RTP, NC, July 2007; Invited Reviewer, July 2007.

Panel Member, NIH Special Emphasis Panel, Environmental Health Centers, May 2007; Invited Reviewer, May 2007.

Panel Member: NIH Special Emphasis Panel on Metabolomics, Watergate Hotel, Washington, DC, February 2007.

Panel Member: Appointed to the NIH Metabolomics Review Panel, December 2006.

Session Chair and Participant, NIH Roadmap Planning Meeting for Preclinical Safety, August 2006.

Session Chair, NIH Roadmap Workshop on Emerging Preclinical Tools, sponsored by NIGMS, NIH, Lister Hill Auditorium, Bethesda, MD, August 2006.

Expert Panel, Development of a Conceptual Framework for an American Gene Environment Study (AGES), led by Francis Collins (Director of National Human Genome Research Institute), December 2004.

Panel Member, NIEHS Development of the Chemical Effects in Biological Systems (CEBS) Object Model Knowledgebase, 2004 to 2005, January 2004.

Chair and Speaker, Opening the 44th Annual Meeting of the American Society of Pharmacognosy (ASP) with a Symposium on Metabolic Profiling (Metabonomics), Chapel Hill, NC, July 12–16, 2003.

Chair and Panel Discussion Leader—Metabolomics, National ASP Meeting, Metabo(n,l)omics Session, July 2003.

Session Chair, Metabolic Profiling: Pathways in Discovery Conference, Applications for Drug Development, Sheraton Imperial Hotel and Convention Center, RTP, NC, 2002.

Panelist, Round Table Discussions on Metabonomics, NIEHS, RTP, NC, October 25, 2001.

Panelist, Biomedical Engineering Society (BMES) Student Tutorial on Genomics, Proteomics, and Bioinformatics, NCBC, RTP, NC, October 4, 2001.

Chair Discussion Section, P450 Knockout Mice, SOT, March 1999.

Chair, NCACS NMR Discussion Group Poster Sessions, RTP, NC, April 1990–1994, 1996, and 1997.

Chair Platform Session, Metabolism of Drugs and Chemicals, SOT, 1995.

Co-Chair, American Chemical Society Regional Meeting Poster Session, McKimmon Center, NCSU, Raleigh, NC, 1993.

Co-Chair, Molecular Dosimetry Carcinogenesis Poster Discussion Session, American Association Cancer Research, May 1992.

## FACULTY ENGAGEMENT COMMITTEES

Gillings Real World Impact Workshop Series: 2023/2024

MPH-Nutrition and Dietetics Program: 2019 – present

Diversity, Equity, and Inclusion Committee: Department of Nutrition. 2019–2021

Diversity, Equity, and Inclusion Committee: Nutrition Research Institute 2020–2021

Financial Exigency and Program Change Committee: 2019–2021

## BIBLIOGRAPHY (Book Chapters, Peer Reviewed Publications, and Monographs)

### *Book Chapters*

1. Pathmasiri, W., Schroder, M., McRitchie, S., and **Sumner, S**. (2022) The Role of The Metabolism/Exposome In Chronic Kidney Disease: Discovery for Precision Nutrition (in press), in Technological Advances in Care of Patients with Kidney Diseases, S.J. Saggi, Editor., Springer Cham. (19 pages).

2. Du X., Smirnov A*., Pluskal T., Jia W., **Sumner S**. (2020) Metabolomics Data Preprocessing Using ADAP and MZmine 2. In: Li S. (eds) Computational Methods and Data Analysis for Metabolomics. Methods in Molecular Biology, vol 2104. pages 25-48, Humana, New York, NY. ISBN 978-1-0716-0238-6 ISBN 978-1-0716-0239-3 (eBook). PMID:3195381.

3. Pathmasiri W., Kay K*., McRitchie S., **Sumner S**. (2020) Analysis of NMR Metabolomics Data. In: Li S. (eds) Computational Methods and Data Analysis for Metabolomics. Methods in Molecular Biology, vol 2104. pages 61-97, Humana, New York, NY. ISBN 978-1-0716-0238-

6 ISBN 978-1-0716-0239-3 (eBook). PMID:31953813.

4. **Sumner, S. C. J**., McRitchie, S., and Pathmasiri, W. (2019) Chapter 10 - Metabolomics for Biomarker Discovery and to Derive Genetic Links to Disease. Edited by Raffaele De Caterina, J. Alfredo Martinez and Martin Kohlmeier, Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition, pages 75-79, 1st Edition, Academic Press (Elsevier), Cambridge, MA, USA. ISBN: 9780128045725 (Hardcover).

5. **Sumner SCJ**, Pathmasiri W, Carlson JE, McRitchie SL, and Fennell TR. (2018) Metabolomics Chapter 5 Molecular and Biochemical Toxicology 5th edition, pages 115-134, (eds R.C. Smart and E. Hodgson) J Wiley and Sons NY, NY. ISBN: 978-1-119-04241-9.

6. Stewart, D., Dhungana, S., Clark, R., Pathmasiri, W., McRitchie, S., & **Sumner, S**. (2015). Omics technologies used in systems biology. In R. C. Fry (Ed.), Systems Biology in Toxicology and Environmental Health: From the Genome to the Epigenome (1st edition). (pp. 57-84). London, UK: Elsevier.

7. Pathmasiri, W., R.W. Snyder, J.P. Burgess, J.A. Popp, T.R. Fennell, and **S.C.J. Sumner** (2011). Biomarkers for the assessment of acetaminophen induced liver injury. (pp. 299–324) Chapter 3 in General, Applied, and Systems Toxicology. Edited by D. Casiano and S.C. Saru. John Wiley & Sons Ltd., Hoboken, NJ. January. DOI: 10.1002/9780470744307.gat219.

8. **Sumner, S**., R. Snyder, J. Burgess, R. Tyl, and T. Fennell. (2010). Omics in reproductive and developmental toxicology. (pp 372-384) Chapter 22 in *Reproductive Toxicology*, Third Edition. Edited by R. Kapp and R. Tyl. September. New York, N.Y., Informa Healthcare.

9. Fennell, T.R., and **Sumner, S.C.J.** (2000). Labelling studies in biochemistry using NMR. In *Encyclopedia of Spectroscopy and Spectrometry.* Edited by J.C. Lindon, G.E. Tranter, andJ.L. Holmes. (pp. 1097-1104). San Diego, CA: Academic Press.

### ***Refereed Articles*** *(*student/trainee, **corresponding author)*

1. Thomas DM, Knight R, Gilbert JA, Cornelis MC, Gantz MG, Burdekin K, Cummiskey K, **Sumner SCJ**, Pathmasiri W, Sazonov E, Gabriel KP, Dooley EE, Green MA, Pfluger A, Kleinberg S. (2024) Transforming Big Data into AI-ready data for nutrition and obesity research. Obesity. 2024;n/a(n/a). doi: https://doi.org/10.1002/oby.23989.

2. Philip N, Yun X, Pi H, Murray S, Hill Z, Fonticella J, Perez P, Zhang C, Pathmasiri W, **Sumner S**, Servinsky L, Jiang H, Huetsch JC, Oldham WM, Visovatti S, Leary PJ, Gharib SA, Brittain E, Simpson CE, Le A, Shimoda LA, Suresh K. Fatty acid metabolism promotes TRPV4 activity in lung microvascular endothelial cells in pulmonary arterial hypertension. (2024) Am J Physiol Lung Cell Mol Physiol. 2024. Epub 2024/01/16. doi: 10.1152/ajplung.00199.2023. PubMed PMID: 38226418.

3. Stingone JA, Geller AM, Hood DB, Makris KC, Mouton CP, States JC, **Sumner SJ**, Wu KL, Rajasekar AK, Consortium MotE. (2023) Community-level exposomics: a population-centered approach to address public health concerns. Exposome. 2023;3(1). doi: 10.1093/exposome/osad009.

4. *Zeitler EM, Li Y, Schroder M, Falk RJ, **Sumner S**. Characterizing the metabolic response of the zebrafish kidney to overfeeding. (2023) Am J Physiol Renal Physiol. 2023;325(4):F491-F502. Epub 2023/08/17. doi: 10.1152/ajprenal.00113.2023. PubMed PMID: 37589050; PMCID: PMC10639026.

5. *Yeum D, Gilbert-Diamond D, Doherty B, Coker M, Stewart D, Kirchner D, McRitchie S, **Sumner S**, Karagas MR, Hoen AG. (2023) Associations of maternal plasma and umbilical

cord plasma metabolomics profiles with birth anthropometric measures. Pediatr Res. 2023;94(1):135-42. Epub 2023/01/11. doi: 10.1038/s41390-022-02449-2. PubMed PMID: 36627359.

6. Rushing BR, *Wiggs A, Molina S, Schroder M, **Sumner S**. Metabolomics Analysis Reveals Novel Targets of Chemosensitizing Polyphenols and Omega-3 Polyunsaturated Fatty Acids in Triple Negative Breast Cancer Cells. Int J Mol Sci. 2023;24(5). Epub 2023/03/12. doi: 10.3390/ijms24054406. PubMed PMID: 36901842; PMCID: PMC10002396.
7. Rushing BR, Thessen AE, Soliman GA, Ramesh A, ***Sumner SCJ**, Consortium MotE. The exposome and nutritional pharmacology and toxicology: a new application for metabolomics. Exposome. 2023;3(1). doi: 10.1093/exposome/osad008.
8. Rushing BR, Molina S, **Sumner S**. Metabolomics Analysis Reveals Altered Metabolic Pathways and Response to Doxorubicin in Drug-Resistant Triple-Negative Breast Cancer Cells. Metabolites. 2023;13(7). Epub 2023/07/29. doi: 10.3390/metabo13070865. PubMed PMID: 37512572; PMCID: PMC10383792.
9. Nieman DC, Sakaguchi CA, Pelleigrini M, Thompson MJ, **Sumner S**, Zhang Q. Healthy lifestyle linked to innate immunity and lipoprotein metabolism: a cross-sectional comparison using untargeted proteomics. Sci Rep. 2023;13(1):16728. Epub 2023/10/05. doi: 10.1038/s41598-023-44068-9. PubMed PMID: 37794065; PMCID: PMC10550951.
10. *Lynch, D,H., Rushing, B., Pathmasiri, W., McRitchie, S., Batchek, D. J., Petersen, C.L., *Gross, D., **Sumner, S**, Batsis, J. A., (2023) Baseline Serum Biomarkers Predict Response to a Weight Loss Intervention in Older Adults with Obesity. Metabolites. 2023 Jul 17;13(7):853. doi: 10.3390/metabo13070853. PMID: 37512560; PMCID: PMC10385260.
11. Li, Y., *Pan K, McRitchie, SL, Harville, EW, ****Sumner, S** (2023) Untargeted metabolomics on first trimester serum implicates metabolic perturbations associated with BMI in development of hypertensive disorders: a discovery study, Front Nutr. 2023 Jul 17;10:1144131. doi: 10.3389/fnut.2023.1144131. PMID: 37528997; PMCID: PMC10388370.
12. Bhayana S, *Zhao, Y, Merchant M, Cummins, T, Dougherty JA, Kamigaki Y, Pathmasiri W, McRitchie S, Mariani LH, **Sumner S**, Klein JB, Li L, Smoyer WE, and The Pediatric Nephrology Research Consortium (2023) Multi-omics Analysis of Plasma Proteomics and Metabolomics of Steroid Resistance in Childhood Nephrotic Syndrome Using a “Patient-Specific” Approach, Kidney International Reports 8:1239-1254, doi: 10.1016/j.ekir.2023.03.015.
13. *Houle E, Li Y, Schroder M, McRitchie SL, Rahil T, Sites CK, ****Sumner, S. J**., Pilsner JR (2023). Exploring the internal exposome of seminal plasma with semen quality and live birth: A Pilot Study. Systems Biology in Reproductive Medicine. 2023 Apr 25:1-14. doi: 10.1080/19396368.2023.2195964. Epub ahead of print. PMID: 37098216.
14. *Fennell EMJ, Aponte-Collazo LJ, Pathmasiri W, Rushing BR, Barker NK, Partridge MC, Li Y-Y, White CA, Greer YE, Herring LE, Lipkowitz S, **Sumner SCJ**, Iwanowicz EJ and Graves LM (2023), Multi-omics analyses reveal ClpP activators disrupt essential mitochondrial pathways in triple-negative breast cancer. Front. Pharmacol. 14:1136317. doi: 10.3389/fphar.2023.1136317.
15. Rushing BR, *Wiggs A, Molina S, Schroder M, **Sumner S**.(2023) Metabolomics Analysis Reveals Novel Targets of Chemosensitizing Polyphenols and Omega-3 Polyunsaturated Fatty Acids in Triple Negative Breast Cancer Cells. International Journal of Molecular Sciences. doi: 10.3390/ijms24054406.

16. *Yeum, D., Gilbert-Diamond, D., *Doherty, B., Coker, M., Stewart, D., Kirchner, D., **Sumner, S.**, Karagas, M., Hoen, A. (2023) Associations of maternal plasma and umbilical cord plasma metabolomics profiles with birth anthropometric measures, Pediatric Research. doi: 10.1038/s41390-022-02449-2. Epub ahead of print. 12 Pages.
17. Rushing BR, *Fogle HM, *Sharma J, You M, McCormac JP, Molina S, **Sumner S**, Krupenko NI, Krupenko SA. (2022) Exploratory Metabolomics Underscores the Folate Enzyme ALDH1L1 as a Regulator of Glycine and Methylation Reactions. Molecules. 2022 Dec 1;27(23):8394. doi: 10.3390/molecules27238394. PMID: 36500483; PMCID: PMC9740053. 16 pages.
18. Bencharit S, Carlson J, Byrd WC, Howard-Williams EL, Seagroves JT, McRitchie S, Buse JB, **Sumner S**. (2022) Salivary Metabolomics of Well and Poorly Controlled Type 1 and Type 2 Diabetes. Int J Dent. 2022 Aug 24;2022:7544864. doi: 10.1155/2022/7544864. PMID: 36059915; PMCID: PMC9433218. 8 pages.
19. Rushing BR, *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 Aug 18;19(16):10261. doi: 10.3390/ijerph191610261. PMID: 36011897; PMCID: PMC9408724. 28 pages.
20. Mortensen NP, Moreno Caffaro M, Davis K, Aravamudhan S, **Sumner SJ**, Fennell TR. Investigation of eight cellulose nanomaterials' impact on Differentiated Caco-2 monolayer integrity and cytotoxicity. Food Chem Toxicol. 2022 Aug;166:113204. doi: 10.1016/j.fct.2022.113204. Epub 2022 Jun 6. PMID: 35679974. 10 pages.
21. *Wiggs A, Molina S, **Sumner SJ**, *Rushing BR. A Review of Metabolic Targets of Anticancer Nutrients and Nutraceuticals in Pre-Clinical Models of Triple-Negative Breast Cancer. Nutrients. 2022 May 10;14(10):1990. doi: 10.3390/nu14101990. PMID: 35631131; PMCID: PMC9146055.13 pages.
22. *Lynch DH, Spangler HB, Franz JR, Krupenevich RL, Kim H, Nissman D, Zhang J, Li YY, **Sumner S**, Batsis JA. Multimodal Diagnostic Approaches to Advance Precision Medicine in Sarcopenia and Frailty. Nutrients. 2022 Mar 26;14(7):1384. 15 pages. doi: 10.3390/nu14071384. PMID: 35405997; PMCID: PMC9003228.
23. *Sharma J, Rushing BR, *Hall MS, Helke KL, McRitchie SL, Krupenko NI, **Sumner SJ**, Krupenko SA. Sex-Specific Metabolic Effects of Dietary Folate Withdrawal in Wild-Type and *Aldh1l1* Knockout Mice. Metabolites. 2022 May 18;12(5):454. 20 pages. doi: 10.3390/metabo12050454. PMID: 35629957; PMCID: PMC9143804.
24. *Long SE, Jacobson MH, Wang Y, Liu M, Afanasyeva Y, **Sumner SJ**, McRitchie S, Kirchner DR, Brubaker SG, Mehta-Lee SS, Kahn LG, Trasande L. Longitudinal associations of pre-pregnancy BMI and gestational weight gain with maternal urinary metabolites: an NYU CHES study. Int J Obes (Lond). 2022 Apr 11. 1-9. doi: 10.1038/s41366-022-01116-0. PMID: 35411100.
25. *Murphy MJ, *Rushing BR, **Sumner SJ**, Hackney AC. Dietary Supplements for Athletic Performance in Women: Beta-Alanine, Caffeine, and Nitrate. Int J Sport Nutr Exerc Metab. 2022 Feb 23: 13 pages. doi: 10.1123/ijsnem. PMID: 35196646.
26. *Rushing BR, Schroder M, **Sumner SCJ**. Comparison of Lysis and Detachment Sample Preparation Methods for Cultured Triple-Negative Breast Cancer Cells Using UHPLC- HRMS-Based Metabolomics. Metabolites. 2022 Feb 10;12(2):168. 20 pages. doi: 10.3390/metabo12020168. PMID: 35208242; PMCID: PMC8879193.
27. *Li YY, *Rushing B, Schroder M, **Sumner S**, Kay CD. Exploring the Contribution of (Poly)phenols to the Dietary Exposome Using High Resolution Mass Spectrometry

Untargeted Metabolomics. Mol Nutr Food Res. 2022 Feb 2:e2100922. 10 pages. doi: 10.1002/mnfr.202100922. PMID: 35106906.

28. Karagas, M.R., McRitchie, S., Hoen, A.G., *Takigawa, C., Jackson, B., Baker, E.R., Madan, J., **Sumner**, **S.J**., Pathmasiri, W. (2022) Alterations in Microbial-Associated Fecal Metabolites in Relation to Arsenic Exposure Among Infants, Exposure and Health. Published 02/02/2022, 9 pages. DOI: https://doi.org/10.1007/s12403-022-00468-2.
29. *Li S, *Li Y, *Rushing BR, Harris SE, McRitchie SL, Dominguez D, **Sumner SJ****, Dohlman HG. Multi-Omics Analysis of Multiple Glucose-Sensing Receptor Systems in Yeast. Biomolecules. 2022 Jan 21;12(2):175. 26 pages. doi: 10.3390/biom12020175. PMID: 35204676; PMCID: PMC8961648.
30. *Rushing BR, McRitchie S, Arbeeva L, Nelson AE, Azcarate-Peril MA, Li YY, *Qian Y, Pathmasiri W, **Sumner SCJ****, Loeser RF. Fecal metabolomics reveals products of dysregulated proteolysis and altered microbial metabolism in obesity-related osteoarthritis. Osteoarthritis Cartilage. 2022 Jan;30(1):81-91. doi: 10.1016/j.joca.2021.10.006. PMID: 34718137; PMCID: PMC8712415.
31. *Doherty BT, McRitchie SL, Pathmasiri WW, Stewart DA, Kirchner D, Anderson KA, Gui J, Madan JC, Hoen AG, **Sumner SJ**, Karagas MR, Romano ME. Chemical exposures assessed via silicone wristbands and endogenous plasma metabolomics during pregnancy. J Expo Sci Environ Epidemiol. 2022 Mar;32(2):259-267. doi: 10.1038/s41370-021-00394-6. PMID: 34702988; PMCID: PMC8930423.
32. Mortensen NP, Pathmasiri W, Snyder RW, Caffaro MM, Watson SL, Patel PR, Beeravalli L, Prattipati S, Aravamudhan S, **Sumner SJ**, Fennell TR. Oral administration of TiO2 nanoparticles during early life impacts cardiac and neurobehavioral performance and metabolite profile in an age- and sex-related manner. Part Fibre Toxicol. 2022 Jan 5;19(3): 1-18. PMID: 34986857; PMCID: PMC8728993.
33. Anklam E, Bahl MI, Ball R, Beger RD, Cohen J, Fitzpatrick S, Girard P, Halamoda-Kenzaoui B, Hinton D, Hirose A, Hoeveler A, Honma M, Hugas M, Ishida S, Kass GE, Kojima H, Krefting I, Liachenko S, Liu Y, Masters S, Marx U, McCarthy T, Mercer T, Patri A, Pelaez C, Pirmohamed M, Platz S, Ribeiro AJ, Rodricks JV, Rusyn I, Salek RM, Schoonjans R, Silva P, Svendsen CN, **Sumner S**, Sung K, Tagle D, Tong L, Tong W, Eijnden-van-Raaij JVD, Vary N, Wang T, Waterton J, Wang M, Wen H, Wishart D, Yuan Y, Slikker W Jr. Emerging technologies and their impact on regulatory science. Exp Biol Med (Maywood). 2022 Jan;247(1):1-75. doi: 10.1177/15353702211052280. PMID: 34783606; PMCID: PMC8749227.
34. Hoen AG, Coker MO, Madan JC, Pathmasiri W, McRitchie S, Dade EF, *Doherty BT, **Sumner S**, Karagas MR. Association of Cesarean Delivery and Formula Supplementation with the Stool Metabolome of 6-Week-Old Infants. Metabolites. 2021 Oct 13;11(10):702. 16 pages. doi: 10.3390/metabo11100702. PMID: 34677417; PMCID: PMC8540440.
35. *Li S, *Li Y, *Rushing BR, Harris SE, McRitchie SL, Jones JC, Dominguez D, **Sumner SJ****, Dohlman HG. Multi-omics analysis of glucose-mediated signaling by a moonlighting Gβ protein Asc1/RACK1. PLoS Genet. 2021 Jul 2;17(7):e1009640. 30 pages. doi: 10.1371/journal.pgen.1009640. PMID: 34214075; PMCID: PMC8282090.
36. Mortensen NP, Snyder RW, Pathmasiri W, Moreno Caffaro M, **Sumner SJ**, Fennell TR. Intravenous administration of three multiwalled carbon nanotubes to female rats and their effect on urinary biochemical profile. (2022)J Appl Toxicol. Mar;42(3):409-422. doi: 10.1002/jat.4226. Epub 2021 Sep 27. PMID: 34569639.

37. *Wiggs AG, Chandler JK, Aktas A, **Sumner SJ**, Stewart DA. The Effects of Diet and Exercise on Endogenous Estrogens and Subsequent Breast Cancer Risk in Postmenopausal Women. Front Endocrinol (Lausanne). 2021 Sep 20;12:732255. doi: 10.3389/fendo.2021.732255. PMID: 34616366; PMCID: PMC8489575.16 pgs.
38. Loeser RF, Arbeeva L, Kelley K, Fodor AA, Sun S, Ulici V, Longobardi L, Cui Y, Stewart DA, **Sumner SJ**, Azcarate-Peril MA, Sartor RB, Carroll IM, Renner JB, Jordan JM, Nelson AE. Association of Increased Serum Lipopolysaccharide but not Microbial Dysbiosis with Obesity-related Osteoarthritis. Arthritis Rheumatol. 2022 Feb. 74(2):227-36. 2021 Aug 23. doi: 10.1002/art.41955. Epub ahead of print. PMID: 34423918.
39. Krupenko, N. I., *Sharma, J., Pediaditakis, P., Strickland, K. C., *Helke, K. L., **Sumner, S**., and Krupenko, S. A. (2021) Knockout of putative tumor suppressor Aldh1l1 in mice repro-grams metabolism to accelerate growth of tumors in a diethyl-nitrosamine (DEN) model of liver carcinogenesis. Cancers (Basel). 2021 Jun 28;13(13):3219. 23 pages. doi: 10.3390/cancers13133219. PMID: 34203215; PMCID: PMC8268287.
40. *Nguyen QP, Karagas MR, Madan JC, Dade E, Palys TJ, Morrison HG, Pathmasiri WW, McRitche S, **Sumner SJ**, Frost HR, Hoen AG. Associations between the gut microbiome and metabolome in early life. BMC Microbiol. 2021 Aug 28;21(1):238. 19 pages. doi: 10.1186/s12866-021-02282-3. PMID: 34454437; PMCID: PMC8400760.
41. *Coleman, M.F., O'Flanagan, C.H., Pfeil, A.J., Chen, X., Pearce, J.B., **Sumner, S**., Krupenko, S. A., Hursting, S.D. (2021) Metabolic Response of Triple-Negative Breast Cancer to Folate Restriction. Nutrients 13, no. 5: 1637. 19 pages. https://doi.org/10.3390/nu13051637.
42. *Ghanbari, R., *Li, Y-Y., Pathmasiri, W., McRitchie, S., Etemadi, A., Pollock, J.D., Poustchi, H., Rahimi-Movaghar, A., Amin-Esmaeili, M., Roshandel, G., Shayanrad, A., Abaei, B., Malekzadeh, R., and **Sumner, S.C.J**.** (2021) Metabolomics Reveals Biomarkers of Opioid Use Disorder. Transl Psychiatry, 2021. 11: 103. p. 1-10. January 2021. PMID: 33542199.
43. Harville, E.W., *Li, Y-Y., *Pan, K., McRitchie, S., Pathmasiri, W., and **Sumner, S.C.J**. (2021) Untargeted Analysis of First Trimester Serum to Reveal Biomarkers of Pregnancy Complications: A case-control study. Scientific Reports. Sci Rep, 2021. 11(1): p. 3468. 12 pages. February 2021. PMID: 33568690.
44. Mortensen NP, Moreno Caffaro M, Aravamudhan S, Beeravalli L, Prattipati S, Snyder RW, Watson SL, Patel PR, Weber FX, Montgomery SA, **Sumner SJ**. (2021) Simulated Gastric Digestion and In Vivo Intestinal Uptake of Orally Administered CuO Nanoparticles and TiO2 E171 in Male and Female Rat Pups. Nanomaterials. Jun;11(6):1487. 18 pages.
45. *Redfern, L. K., Jayasundara, N., Singleton, D. R., Di Giulio, R. T., Carlson, J., **Sumner, S. J**., and Gunsch, C. K. (2021) The role of gut microbial community and metabolomic shifts in adaptive resistance of Atlantic killifish (Fundulus heteroclitus) to polycyclic aromatic hydrocarbons. Science of The Total Environment, 776:145955. 9 pages. doi: 10.1016/j.scitotenv.2021.145955. Epub 2021 Feb 19. PMID: 33647645.
46. *Ghanbari, R., Teimoori, A., Sadeghi, A., Mohamadkhani, A., Rezasoltani, S., Asadi, E., Jouyban, A., and **Sumner, S.C.J**. (2020) Existing antiviral options against SARS-CoV-2 replication in COVID-19 patients. Future Microbiology, 15(18): p. 1747–1758. doi: 10.2217/fmb-2020-0120. Epub 2021 Jan 6. (December 2020). PMID: 33404263.
47. *Li, Y. Y., *Ghanbari, R., Pathmasiri, W., McRitchie, S., Poustchi, H., Shayanrad, A., Roshandel, G., Etemadi, A., Pollock, J. D., Malekzadeh, R., and **Sumner, S.C.J**.**

(2020) Untargeted Metabolomics: Biochemical Perturbations in Golestan Cohort Study Opium Users Inform Intervention Strategies. Front Nutr, 7, 584585. 14 pages. doi: 10.3389/fnut.2020.584585. eCollection 2020. (December 2020) PMID: 33415121.

48. Brier, M. E., *Gooding, J. R., Harrington, J. M., Burgess, J. P., McRitchie, S. L., Zhang, X., Rovin, B. H., Klein, J. B., Himmelfarb, J., **Sumner, S.J**., and Merchant, M. L. (2020) Serum trace metal association with response to erythropoiesis stimulating agents in incident and prevalent hemodialysis patients. Sci Rep, 10(1), p. 20202. 13 pages. doi: 10.1038/s41598-020-77311-8. (November 2020) PMID: 33214633.
49. Krupenko, N.I., *Sharma, J., Pediaditakis, P., Helke, K.L., *Hall, M.S., Du, X., **Sumner, S**., and Krupenko, S.A (2020) Aldh1/2 knockout mouse metabolomics links the loss of mitochondrial folate enzyme to deregulation of a lipid metabolism observed in rare human disorder. Hum Genomics. 2020 Nov 9;14(1):41. 15 pages. doi: 10.1186/s40246-020-00291- 3. PMID: 33168096.
50. Mortensen, N., Moreno, M., Patel, P., Snyder, R. Watson, S., Aravamudhan, Montgomery, S. A., Lefever, T., **Sumner, S. J**., Fennell, T.R. (2020) Biodistribution, Cardiac and Neurobehavioral Assessments, and Neurotransmitter Quantification in Juvenile Rats following Oral Administration of Aluminum Oxide Nanoparticles, Journal of Applied Toxicology, 2021 Aug;41(8):1316-29. December 2. doi: 10.1002/jat.4122 PMID: 33269475.
51. *Xue, J., *Hutchins, E.K., *Elnagheeb, M., Li, Y., Valdar, W., McRitchie, S., **Sumner, S**., Ideraabdullah, F.Y. (2020) Maternal Liver Metabolic Response to Chronic Vitamin D Deficiency Is Determined by Mouse Strain Genetic Background. Current Developments in Nutrition, Volume 4, Issue 8, 1-14. August 2020. doi: 10.1093/cdn/nzaa106.PMID: 32851199.
52. *Sharma, J, Krupenko, N.I., **Sumner, S**., Hejke, K.L., Krupenko, S.A (2020) Effects of Aldh1l2 Knockout on the Metabolic Profile of Mouse Liver. The FASEB Journal. 34(S1), pp.1-1. Biochemistry and Molecular Biology. April 21, 2020. https://doi.org/10.1096/fasebj.2020.34.s1.06482
53. *Li, Y.-Y., Douillet, C., *Huang, M, Beck, R., **Sumner, SCJ****, Styblo, M. (2020) Exposure to inorganic arsenic and its methylated metabolites alters metabolomics profiles in INS-1 832/13 insulinoma cells and isolated pancreatic islets, Arch Toxicol. 94(6):1955-72. 2020 Apr 10. doi: 10.1007/s00204-020-02729-y. [Epub ahead of print] PMID: 32277266.
54. Mortensen NP, Caffaro MM, Patel PR, Uddin J, Aravamudhan S, **Sumner SJ**, Fennell TR (2020) Investigation of Twenty Metal, Metal Oxide, and Metal Sulfide Nanoparticles' Impact on Differentiated Caco-2 Monolayer Integrity. NanoImpact. Jan;17:100212. 26 pages. doi: 10.1016/j.impact.2020.100212. Epub 2020 Feb 13.
55. Krupenko NI, *Sharma J, Pediaditakis P, Fekry B, Helke KL, Du X, **Sumner S**, Krupeko SA (2019). Cytosolic 10-formyltetrahydrofolate dehydrogenase regulates glycine metabolism in mouse liver. Oct. 2019. Scientific Reports, 17;9(1):1-2. Article number: 14937, doi.org/10.1038/s41598-019-51397-1.
56. CHEAR Metabolomics Analysis Team, Mazzella M, **Sumner SJ**, Gao S, Su L, Diao N, Mostofa G, Qamruzzaman Q, Pathmasiri W, Christiani DC, Fennell T, Gennings C (2019). Quantitative methods for metabolomic analyses evaluated in the Children's Health Exposure Analysis Resource (CHEAR). J Expo Sci Environ Epidemiol. 30(1):16-27. 2019 Sep 23. doi: 10.1038/s41370-019-0162-1. PMID: 31548623.
57. *Carter RA, *Pan K, Harville EW, McRitchie S, **Sumner S** (2019). Metabolomics to reveal biomarkers and pathways of preterm birth: A systematic review and

epidemiologic perspective. Metabolomics, 15(9):1-27. doi.org/10.1007/s11306-019-1587-1. September. PMID: 31506796.

58. Anzmann AF, Pinto S, Busa V, Carlson J, McRitchie S, **Sumner S**, Pandey A, Vernon HJ (2019). Multi-omics studies in cellular models of methylmalonic acidemia and propionic acidemia reveal dysregulation of serine metabolism. Biochimica et Biophysica Acta (BBA)- Molecular Basis of Disease 1865(12). December. 11 pages. doi.org/10.1016/j.bbadis.2019.165538. PMID: 31449969.
59. *Gooding JR, Agrawal S, Burgess J, McRitchie S, Acuff Z, Merchant ML, Klein JB, Smoyer WE, **Sumner S****, and The Midwest Pediatric Nephrology Consortium (2019). Predicting and Defining Steroid Resistance in Pediatric Nephrotic Syndrome using Plasma Metabolomics. Kidney International Reports. 5, 81-93. doi.org/10.1016/j.ekir.2019.09.010 (Published online Sept. 2019).
60. *Agrawal S, Merchant ML, Kino J, Li M, Wilkey DW, Gaweda AE, Brier ME, Chanley MA, Gooding JR*, **Sumner S**, Klein JB, Smoyer WE, and The Midwest Pediatric Nephrology Consortium (2019). Predicting and Defining Steroid Resistance in Pediatric Nephrotic Syndrome using Plasma Proteomics Kidney International Reports. 5, 66-80. doi.org/10.1016/j.ekir.2019.09.009 (Published online Sept. 2019).
61. *Gooding J, Cao L, Ahmed F, Mwiza J, Fernander M, Whitaker C, Acuff Z, McRitchie S, **Sumner S**, Ongeri E (2019). LC-MS-based metabolomics analysis to identify meprin β- associated changes in kidney tissue from mice with STZ-induced type 1diabetes and diabetic kidney injury. Renal Physiology. F1034–F1046. August. doi.org/10.1152/ajprenal.00166.2019.
62. Sarret C, Ashkavand*, Paules E*, Dorboz I, Pediadidakis P, **Sumner S**, Eymard-Pierre E, Francannet C, Krupenko NI, Boespflug-Tanguy O, Krupenko SA (2019). Deleterious mutations in ALDH1L2 as a novel cause for neuro-ichthyotic syndrome. npj Genomic Medicine 4:17. p1-9. July. doi.org/10.1038/s41525-019-0092-9. PMID: 31341639 PMCID: PMC6650503.
63. *Li YY, Stewart DA, Ye XM, Yin LH, Pathmasiri W, McRitchie SL, Fennell TR, Cheung HY, **Sumner SJ**** (2019). A metabolomics approach to investigate kukoamine B - a potent natural product with anti-diabetic properties. Frontiers in Pharmacology, section Ethnopharmacology. Vol 9:Article 1575. 16 pages. doi.org/10.3389/fphar.2018.01575.
64. *Gooding J, Cao L, Whitaker C, Mwiza JM, Fernander M, Ahmed F, Acuff Z, McRitchie S, **Sumner S**, Ongeri EM (2019) Meprin β metalloproteases associated with differential metabolite profiles in the plasma and urine of mice with type 1 diabetes and diabetic nephropathy. BMC Nephrol. 2019 Apr 25;20(1):141. 18 pages. doi: 10.1186/s12882-019- 1313-2.
65. Schulfer AF, Schluter J, Zhang Y, Brown Q, Pathmasiri W, McRitchie S, **Sumner S**, Li H, Xavier JB, Blaser MJ (2019). The impact of early-life sub-therapeutic antibiotic treatment (STAT) on excessive weight is robust despite transfer of intestinal microbes. The ISME Journal. 13:1280–1292. doi.org/10.1038/s41396-019-0349-4.
66. Hemnes AR, Luther JM, Rhodes CJ, Burgess JP, Carlson J, Fan R, Fessel JP, Fortune N, Gerszten RE, Halliday SJ, Hekmat R, Howard L, Newman JH, Niswender KD, Pugh ME, Robbins IM, Sheng Q, Shibao CA, Shyr Y, **Sumner S**, Talati M, Wharton J, Wilkins MR, Ye F, Yu C, West J, Brittain EL (2019) “Human PAH is characterized by a pattern of lipid- related insulin resistance” JCI Insight 4(1):e123611. doi.org/10.1172/jci.insight.123611.
67. Winnike JH, Stewart DA, Pathmasiri WW, McRitchie SL, **Sumner SJ**** (2018). Stable isotope-resolved metabolomic differences between hormone-responsive and triple-

negative breast cancer cell lines. International Journal of Breast Cancer, Vol 2018, Article ID 2063540, 13 pages, https://doi.org/10.1155/2018/2063540.

68. Zhang X, Li J, Krautramer KA, Badri M, Battaglia T, Borbet TC, Koh H, Ng S, Sibley RA, Li Y, Pathmasiri W, Jindal S, Shields-Cutler RR, Hillmann B, Al-Ghalith GA, Ruiz VE, Livanos A, Wout A, Nagalingam N, Rogers AB, **Sumner SJ**, Knights D, Denu JM, Li H, Ruggles KV, Bonnneau R, Williamson AR, Rauch M, Blaser MJ (2018). Antibiotic-induced acceleration of type 1 diabetes alters maturation of innate intestinal immunity. eLife 7:e37816. pages 1-37. https://doi.org/10.7554/eLife.37816.001.
69. Sun X, Stewart DA, Sandhu R, Kirk EL, Pathmasiri WW, McRitchie SL, Clark R, Troester MA, **Sumner S**** (2018). Correlated metabolomic, genomic, and histologic phenotypes in histologically normal breast tissue. PLOS One 13(4):e0193792. pages 1-11. doi: 10.1371/journal.pone.0193792.
70. *Ewald DR, **Sumner SCJ**** (2018). Human Microbiota, Blood Group Antigens, and Disease. WIREs Systems Biology and Medicine 10(3):e1413. pages 1-68. doi: 10.1002/wsbm.1413 (2018 top downloaded paper: http://wires.wiley.com/WileyCDA/WiresCollection/id-24.html).
71. Chou H, Pathmasiri W, Deese-Spruill J, **Sumner SJ**, Jima D, Funkk D, Jackson J, Sweeney B Buchwalter D (2018). The Good, the Bad and the Lethal: Gene Expression and Metabolomics Reveal Physiological Mechanisms Underlying Chronic Thermal Effects in Mayfly Larvae (Neocloeon triangulifer). Frontiers in Ecology and Evolution 6 (March 23, 2018) Article 27. 1-11.
72. *Rock KD, Horman B, Phillips AL, McRitchie SL, Watson S, Deese-Spruill J, Jima D, **Sumner S**, Stapleton H, Patisaul H (2018). Molecular Effects of Developmental FM 550 Exposure in Wistar Rat Placenta and Fetal Forebrain. Endocrine Connections 7(2): 305- 324. doi: 10.1530/EC-17-0373.
73. *Ghanbari R, **Sumner S**** (2018). Using Metabolomics to Investigate Biomarkers of Drug Addiction. Trends in Molecular Medicine 24(2):197-205. doi: 10.1016/j.molmed.2017.12.005.
74. Brim H, Yooseph S, Lee E, Zaki S, Abbas M, Laiyemo AO, Varma S, Torralba M., Dowd SE, Nelson KE, Pathmasiri W, **Sumner S**, de Vos W, Liang Q, Yu J, Zoetendal E, Ashktorab H (2017). A Microbiomic and Metabolomics Analysis in African Americans with Colonic Lesions Reveals Streptococcus sp. VT162 as a Marker of Neoplastic Transformation. Genes 8(11):e314. 16 pages. doi:10.3390/genes8110314 PMID: 29120399.
75. *Johnson-Weaver BT, McRitchie S, Mercier KA, Pathmasiri W, **Sumner SJ**, Chan C, Germolec D, Kulis M, Burks AW, Staats HF (2017). Effect of endotoxin and alum adjuvant vaccine on peanut allergy. Journal of Allergy and Clinical Immunology 141(2), 791-794. doi: 10.1016/j.jaci.2017.07.043 PMID: 28927819.
76. *Myers O, **Sumner S**, Li S, Barnes S, Du X (2017). A Detailed Investigation and Comparison of the XCMS and MZmine 2 Chromatogram Construction and Chromatographic Peak Detection Methods for Preprocessing Mass Spectrometry Metabolomics Data. Analytical Chemistry 89(17): p. 8689-8695 doi: 10.1021/acs.analchem.7b01069 PMID: 28752757.
77. *Myers O, **Sumner S**, Li S, Barnes S, Du X (2017). One Step Forward for Reducing False Positive and False Negative Compound Identifications from Mass Spectrometry Metabolomics Data: New Algorithms for Constructing Extracted Ion Chromatograms and Detecting Chromatographic Peaks. Analytical Chemistry 89(17):8696-8703 doi: 10.1021/acs.analchem.7b00947 PMID: 28752754.

78. Chou H, Pathmasiri W, Deese-Spruill J, **Sumner S**, Buchwalter DB (2017). Metabolomics reveal physiological changes in mayfly larvae (Neocloeon triangulifer) at ecological upper thermal limits. Journal of Insect Physiology 101:107-112 doi.org/10.1016/j.jinsphys.2017.07.008.
79. Grego S, Dougherty ER, Alexander FJ, Auerbach SS, Berridge BR, Bittner ML, Casey W, Cooley PC, Dash A, Ferguson SS, Fennell TR, Hawkins BT, Hickey AJ, Kleensang A, Liebman MN, Martin F, Maull EA, Paragas J, Oiao G, Ramaiahgari S, **Sumner SJ**, Yoon M (2017). Systems Biology for Organotypic Cell Cultures. ALTEX 34(2), p. 301-310 doi: 10.14573/altex.1608221.
80. Audet GN, Dineen SM, Stewart DA, Plamper ML, Pathmasiri WW, McRitchie SL, **Sumner SJ**, Leon LR (2017). Pre-treatment with indomethacin results in increased heat stroke severity during recovery in a rodent model of heat stroke. Journal of Applied Physiology doi: 10.1152/japplphysiol.00242.2017.
81. *Laine J., Bailey K., Olshan A., Smeester L., Drobná Z., Stỳblo M., Douillet, C, García-Vargas G., Rubio-Andrade M., Pathmasiri W., McRitchie S., **Sumner SJ**., Fry R. (2017) Neonatal Metabolomic Profiles Related to Prenatal Arsenic Exposure. Environ Sci Technol. 2017 Jan 3;51(1): p. 625-633. doi: 10.1021/acs.est.6b04374. Epub 2016 Dec 20.
82. Saggi, S.J., Mercier, K., Gooding, J.R., Friedman, E., Vyas, U., Ranganathan, N., Rangnathan,P., McRitchie, S., **Sumner, S**** (2017) Metabolic profiling of a chronic kidney disease cohort reveals metabolic phenotype more likely to benefit from probiotic treatment. Int J Probiotics Prebiotics 12(1):43-54 epub August 21, 2017.
83. *Quinnies KM, Harris EP, Snyder RW, **Sumner SS****, Rissman EF (2017). Direct and Transgenerational Effects of Low Doses of Perinatal Di-(2-Ethylhexyl) Phthalate (DEHP) on Social Behaviors in Mice. PLoS ONE 12(2):e0171977. 19 pages. doi: 10.1371/journal.pone.0171977.
84. McClenathan BM, Stewart DA, Spooner CE, Pathmasiri WW, Burgess JP, McRitchie SL, Choi YS, **Sumner SC** (2017) Metabolites as biomarkers of adverse reactions following vaccination: A pilot study using nuclear magnetic resonance metabolomics. Vaccine. 2017 Mar 1;35(9):1238-1245. doi: 10.1016/j.vaccine.2017.01.056. Epub 2017 Feb 3. PMID: 28169076.
85. Szabo, D. T., Pathmasiri, W., **Sumner, S**., & Birnbaum, L. S. (2016). Different serum metabolomics profiles in neonatal mice following oral brominated flame retardant exposures to hexabormocyclododecane (HBCD) alpha, gamma, and commercial mixture. Environmental Health Perspectives 125(4):651-59. doi:10.1289/EHP242.
86. Livanos, AE., Greiner, T.U., Vangay, P., Pathmasiri, W., Stewart, D., McRitchie, S., Li, H., Chung, J., Sohn, J., Kim, S., Gao, Z., Barber, C., Kim, J., Ng, S., Rogers, A.B, **Sumner, S**., Zhang, X-S., Cadwell, K., Knights, D., Alekseyenko, A., Bäckhed, F., and Blaser, M.J (2016). Antibiotic-mediated gut microbiome perturbation accelerates development of type 1 diabetes in mice. Nature Microbiology, 1(11):1-3. Article number:16140; doi:10.1038/nmicrobiol.2016.140.
87. Fennell T.R., Mortensen N.P., Levine K., Black S.L., Snyder R.W., Holland N.A., Poitras E., Harrington J., Pathmasiri W., Wingard C.J., **Sumner SJ**** (2016). Disposition of Intravenously or Orally Administered Silver Nanoparticles in Pregnant Dams and the Effect on the Biochemical Profile in Urine. Journal of Applied Toxicology. 37(5):530-44. Oct 3.DOI: 10.1002/jat.3387. PMID 27696470.

88. Ewald*, R and **Sumner, S.J**.** (2016). Blood Type Biochemistry and Human Disease Wiley Interdisciplinary Reviews. Systems biology and medicine. Nov;8(6):517-535. doi: 10.1002/wsbm.1355. Epub 2016 Sep 7.

89. Dhungana, S., Carlson, J.E., Pathmasiri, W., McRitchie, S., Davis, M., **Sumner, S**, and Appt, Sue. (2016). Impact of Western Diet on the Ovarian and Serum Metabolome. Journal of Maturitas. Oct; 92:134-42. doi: 10.1016/j.maturitas.2016.07.008. Epub 2016 Jul 14. PMID: 27621251.

90. Stewart, DA, Winnike, JH, McRitchie, SL, Clark, RF, Pathmasiri, WW, and **Sumner, SJ**** Metabolomics Analysis of Hormone-Responsive and Triple-Negative Breast Cancer Cell Responses to Paclitaxel Identify Key Metabolic Differences. (2016). Journal of Proteome Research, Sep 2;15(9):3225-40. PMID: 2744733.

91. Dennis, K. K., Auerbach, S. S., Balshaw, D. M., Cui, Y., Fallin, M. D., Smith, M. T., Spira, A., **Sumner, S**., and Miller, G. (2016). The importance of the biological impact of exposure to the concept of the exposome. Environmental Health Perspectives. 2016 Oct;124(10):1504-1510. DOI:10.1289/EHP140. PMID: 27258438.

92. Mercier K., McRitchie S, Pathmasiri W., Novokhatny A., Koralkar R., Askenazi D., Brophy P.D., **Sumner, S**. (2016) Preterm Neonatal Urinary Renal Developmental and Acute Kidney Injury Metabolomic Profiling: An Exploratory Study. Pediatric Nephrology. 32(1):151-61. PMID: 27435284, DOI: 10.1007/s00467-016-3439-9.

93. Gelaye B, **Sumner S**, McRitchie S, Carlson JE, Ananth CV, Enquobahrie DA, Chunfang Q, Sorensen TK, Williams MA (2016). Maternal Early Pregnancy Serum Metabolomics Profile and Abnormal Vaginal Bleeding as Predictors of Placental Abruption: A Prospective Study. PlosOne 11(6):e0156755. 11 pages. doi:10.1371/journal.pone.0156755. PMID: 27300725.

94. Mortensen NP, Mercier KA, McRitchie S, Cavallo* T, Pathmasiri W, Stewart D, and **Sumner S**** (2016). Microfluidics Meets Metabolomics to Reveal the Impact of Campylobacter jejuni Infection on Biochemical Pathways. Biomedical Microdevices 18(3):51. 11 pages. doi: 10.1007/s10544-016-0076-9. PMID: 27231016.

95. Wang, W., Liang, S., Gao, J., Sun, C., Wang, J., Xia, W, **Sumner, S. J**., Zhang, F., Sun, C., and Wu, L. (2016). Potential serum biomarkers from metabolomics study of autism potential serum biomarkers from metabolomics study of autism. Journal of Psychiatry and Neuroscience, 41(1), 27–37. PMID: 26395811, PMCID: PMC4688025.

96. Sandlers, Y., Mercier, K., Pathmasiri, W., Carlson, J., McRitchie, S., **Sumner, S**., and Vernon, H.J. (2016). Metabolomics reveals new mechanisms for pathogenesis in Barth syndrome and introduces novel roles for cardiolipin in cellular function. PLoS ONE, 11(3), e0151802. PMID: 27015085. 11 pages. DOI: 10.137/journal.pone.0151802.

97. Loeser, L. R., Jr., Pathmasiri, W., **Sumner, S**., McRitchie, S., Beavers, D., Saxena, P., Nicklas, B.J., Guermazi, A., Hunter, D.J., Messier, S.P. (2016) Association of urinary metabolites with radiographic progression of knee osteoarthritis in overweight and obese adults. Osteoarthritis Cartilage, Aug;24(8):1479-86. DOI: 10.1016/j.joca.2016.03.011. PMID: 27012755.

98. Harrington, J. M., Young, D. J., Fry, R. C., **Sumner, S. J**., & Levine, K. E. (2016). Validation of a metallomics analysis of placenta tissue by inductively-coupled plasma mass spectrometry. Biological Trace Element Research, 169(2), 164–173.

99. Beger RD, Dunn W, Schmidt MA, Gross SS, Kirwan JA, Cascante M, Brennan L, Wishart DS, Oresic M, Hankemeier T, Broadhurst DI, Lane AN, Suhre K, Kastenmüller G, **Sumner SJ**, Thiele I, Fiehn O, Kaddurah-Daouk R; for "Precision Medicine and Pharmacometabolomics Task Group"-Metabolomics Society Initiative. Metabolomics

enables precision medicine: "A White Paper, Community Perspective". Metabolomics. 2016;12(10):149. 15 pages. doi: 10.1007/s11306-016-1094-6. Epub 2016 Sep 2. PMID: 27642271; PMCID: PMC5009152.

100. Sumner, L. W., Styczynski, M., McLean, J., Fiehn, O., Jander, G., Liao, J., **Sumner, S**., Britz-McKibbin, Welti, R., Jones, AD, Dorrestein, PC, Bearden, D., and Kaddurah-Daouk, R. (2015). Introducing the USA Plant, Algae, and Microbial Metabolomics Research Coordination Network (PAMM-NET). Metabolomics, 11(1), 3–5.

101. Holland, N. A., Becak, D. P., Shannahan, J. H., Brown, J. M., Carratt, S. A., Winkle, L., Pinkerton, K. E., Wang, C. M., Munusamy, P., Baer, D. R., **Sumner, S. J**., Fennell, T. R., Lust, R. M., and Wingard, C. J. (2015). Cardiac ischemia reperfusion injury following instillation of 20 nm citrate-capped nanosilver. Journal of Nanomedicine and Nanotechnology, S6-006. 28 pages. doi:10.4172/2157-7439.S6-006. PMID: 26966636.

102. Sud, M., Fahy, E., Cotter, B., Azam, K., Vadivelu, I., Burant, C. F., Edison, A., Fiehn, O., Higashi, R., Nair, K. S., **Sumner, S**., & Subramaniam, S. (2016). Metabolomics Workbench: An international repository for metabolomics data and metadata, metabolite standards, protocols, tutorials and training, and analysis tools. Nucleic Acids Research, 44(D1), D463– 70.

103. Snyder, R. W., Fennell, T. R., Wingard, C. J., Mortensen, N. P., Holland, N. A., Shannahan, J. H., Pathmasiri, W., Lewin, A., and **Sumner, S. C**.** (2015). Distribution and biomarker of carbon-14 labeled fullerene C60 ([14C(U)]C60) in pregnant and lactating rats and their offspring after maternal intravenous exposure. Journal of Applied Toxicology, 35(12), 1438–1451. doi: 10.1002/jat.3177. PMID: 26081520.

104. Milner, J., Rebeles, J., Dhungana, S., Stewart, D. A., **Sumner, S. C**., Meyers, M. H., Mancuso, P., and Beck, M.A. (2015). Obesity increases mortality and modulates the lung metabolome during pandemic H1N1 influenza virus infection in mice. Journal of Immunology, 194(10), 4846–4859. doi: 10.4049/jimmunol.1402295. Epub 2015 Apr 10.

105. **Sumner, S. C**.**., Snyder, R. W., Wingard, C., Mortensen, N. P., Holland, N. A., Shannahan, J. H., Dhungana, S., Pathmasiri, W., Han, L., Lewin, A.H., and Fennell, T.R. (2015). Distribution and biomarkers of carbon-14 labeled fullerene C60 ([14C(U)]C60) in female rats and mice for up to 30 days after intravenous exposure. Journal of Applied Toxicology, 35(12), 1452–1464. doi: 10.1002/jat.3110. PMID: 25727383.

106. Pratt, K. J., McRitchie, S., Collier, D. N., Lutes, L. D., & **Sumner, S****. (2015). Parent & family influences on adopting healthy weight-related behaviors: Views and perceptions of obese African-American female adolescents. Journal of the National Medical Association, 107(2), 74–79.

107. Poitras, E. P., Levine, M. A., Harrington, J. M., Essader, A. S., Fennell, T. R., Snyder, R. W., **Sumner, S. J**., and Levine, K.E. (2015). Development of an analytical method for assessment of silver nanoparticle content in biological matrices by inductively-coupled plasma mass spectrometry. Biological Trace Element Research, 163(1–2), 184–192.

108. Mazagova, M., Wang, L., Anfora, A. T., Wissmueller, M., Lesley, S. A., Miyamoto, Y., **Sumner, S.**, Westwater, C., Brenner, D.A., and Schnable, B. (2015). Commensal microbiota is hepatoprotective and prevents liver fibrosis in mice. The FASEB Journal: Official Publication of the Federation of American Societies for Experimental Biology, 29(3), 1043– 1055.

109. Vidanapathirana A. K., Thompson, L. C., Odom, J. T., Holland, N. A., **Sumner, S. J**., Fennell, T. R., Brown, J. M., and Wingard, C. J. (2014). Vascular tissue contractility changes following late gestational exposure to multi-walled carbon nanotubes or their dispersing vehicle in Sprague Dawley rats. Journal of Nanomedicine and Nanotechnology, 5(3), 1–15.

110. Wingard, C. J., Holland, N. A., Thompson, L. C., Brown, J. M., Lewin, A. H., **Sumner, S. J**., Fennell., T. R., and Vidanapahirana*, A .K. (2014) The need for reflective consideration of an integrative understanding of cardiovascular consequences to PVP formulated C60 exposure. Toxicological Sciences, 141(2):327–328.

111. Vidanapathirana, A. K., Thompson, L. C., Mann, E. E., Odom, J. T., Holland, N. A., **Sumner, S. J**., Han, L., Lewin, A. H., Fennell, T. R., Brown, J. M., and Wingard, C .J. (2014). PVP formulated fullerene (C60) increases Rho-kinase dependent vascular tissue contractility in pregnant Sprague Dawley rats. Reproductive Toxicology, 49C, 86–100.

112. Harrington, J. M., Young, D. J., Essader, A. S., **Sumner, S. J**., & Levine, K. E. (2014). Analysis of human serum and whole blood for mineral content by ICP-MS and ICP-OES: Development of a mineralomics method. Biological Trace Element Research, 160(1), 132– 142.

113. Church, R. J., Wu, H., Mosedale, M., **Sumner, S. J**., Pathmasiri, W., Kurtz, C. L., Pletcher M. T., Eaddy J. S., Pandher K., Singer M., Batheja A., Watkins P. B., Adkins K., Harrill A..H. (2014). A systems biology approach utilizing a mouse diversity panel identifies genetic differences influencing isoniazid-induced microvesicular steatosis. Toxicological Sciences, 140(2), 481–492. (Awarded Best Paper of the Year).

114. Thompson, L. C., Urankar, R. N., Holland, N. A., Vidanapathirana, A. K., Pitzer, J. E., Han, L., **Sumner, S. J**., Lewin, A. H., Fennell, T. R., Lust, R. M., Brown, J. M., and Wingard, C. J. (2014). C60 exposure augments cardiac ischemia/reperfusion injury and coronary artery contraction in Sprague Dawley Rats. Toxicological Sciences 138(2), 365–378.

115. Vidanapathirana, A. K., Lai, X., Hilderbrand, S. C., Pitzer, J. E., Podila, R., **Sumner, S. J**., Fennell., T. R., Wingard, C. J., Wiltzman, F. A., and Brown, J. M. (2012). Multi-walled carbon nanotube directed gene and protein expression in cultured human aortic endothelial cells is influenced by suspension medium. Toxicology, 302(2–3), 114–122.

116. Banerjee, R.*, Pathmasiri, W. W., Snyder, R., McRitchie, S., & **Sumner, S**.** (2012). Metabolomics of brain and reproductive organs: Characterizing the impact of gestational exposure to butylbenzyl phthalate on dams and resultant offspring. Metabolomics, 8(6), 1012–1025.

117. Pathmasiri, W. W., Pratt, K. J., Collier, D. N., Lutes, L. D., McRitchie, S., & **Sumner, S. C**.** (2012). Integrating metabolomic signatures and psychosocial parameters in responsivity to an immersion treatment model for adolescent obesity. Metabolomics, 8(6), 1037–1051.

118. Gika, H.G.*, Theodoridis, G.A., Earl, M., **Sumner, S**., and Wilson. I.D. (2010). Does the mass spectrometer define the marker? A comparison of global metabolite profiling data generated simultaneously via UPLC-MS on two different mass spectrometers. Analytical Chemistry 82(19):8226–8234.

119. **Sumner, S. C**.**, Burgess, J., Snyder, R., Popp, J., & Fennell, T. R. (2010). Metabolomics of urine for the assessment of microvesicular lipid accumulation in the liver following isoniazid exposure. Metabolomics, 6(2), 238–249.

120. **Sumner, S. J.**, Fennell, T. R., Snyder, R. W., Taylor, G., & Lewin, A. H. (2010). Distribution of carbon-14 labeled C60 ([14C]C60) in the pregnant and in the lactating dam and the effect of C60 exposure on the biochemical profile of urine. Journal of Applied Toxicology, 30(4), 354–360.

121. **Sumner, S.C.J.**, R. Snyder, J. Burgess, C. Myers, R. Tyl, C. Sloan, and T. Fennell. 2009. Metabolomics in the assessment of chemical-induced reproductive and developmental outcomes using non-invasive biological fluids: Application to the study of butylbenzyl phthalate. Journal of Applied Toxicology 29(8):703–714.

122. Mosquin, P.L, Licata, A.C., Liu, B., **Sumner, S.J.**, and Okino, M. (2009). Reconstructing exposures from small samples using physiologically based pharmacokinetic (PBPK) models and multiple biomarkers. Journal of Exposure Science and Environmental Epidemiology 19(3):284–297.

123. **Sumner, S.C.J**.**, and T.R. Fennell. (2007). Biomarkers, omics, and species comparisons. Human and Ecological Risk Assessment 13(1):111–119.

124. Garner, C., Sloan, C, **Sumner, S.C.J**., Burgess, J. Davis, J., Etheridge, A., Parham, A. and Ghanayem, B.I. (2007) CYP2E1-catalyzed oxidation contributes to the sperm toxicity of 1- bromopropane in mice. Biology of Reproduction 76(3):496–505.

125. Garner, C.E., **Sumner, S.C.J**., Davis, J.G., Burgess, J.P., Yueh, Y., Demeter, J., Zhan, Q., Valentine, J., Jeffcoat, A.R., Burka, L.T., and Mathews, J.M. (2006) Metabolism and disposition of 1-bromopropane in rats and mice following inhalation or intravenous administration. Toxicology and Applied Pharmacology 215(1):23–36.

126. Fennell, T.R., **Sumner, S.C**., Burgess, J., Snyder, R.W., and Friedman, M.A. (2006). Kinetics of elimination of urinary metabolites of acrylamide in humans. Toxicological Sciences 93(2):256–267.

127. Fennell, T.R., **Sumner, S.C**, Snyder, R.W., Burgess, J., Spicer, R., Bridson, W.E., and Friedman, M.A. (2005). Metabolism and hemoglobin adduct formation of acrylamide in humans. Toxicological Sciences 85(1):447–459.

128. Weis, B.K., Balshaw, D., Barr, J.R, Brown, D., Ellisman, M., Lioy, P., Omenn, G., Potter, J.D., Smith, M.T., Sohn, L., Suk, W.A., **Sumner, S**., Swenberg, J., Walt, D.R., Watkins, S., Thompson, C., and Wilson, S. (2005). Personalized exposure assessment: promising approaches for human environmental health research. Environmental Health Perspectives 113(7):840–848.

129. Xirasager, S., Gustafason, S., Merrick, A., Tomer, K., Stasiewicz, S., Chan, D.D., Yost, J., Yates, J.R., **Sumner, S**., Ziao, N., and Waters, M.D. (2004). CEBS object model for systems biology data. CEBS MAGE SysBio-Om. Bioinformatics 20(13):2004–2015.

130. Fennell, T.R., Krol, W.L., **Sumner, S.C**., and Snyder, R.W. (2004). Pharmacokinetics of dibutylphthalate in pregnant rats. Toxicological Sciences 82:407–418.

131. Fennell, T.R., Snyder, R., Krol, W.L., and **Sumner, S.C.J**.** (2003). Comparison of the hemoglobin adducts formed by administration of N-methylolacrylamide and acrylamide to rats. Toxicological Sciences 71(2):164–175.

132. **Sumner, S.C.J**.**, Janszen, D.B., Asgharian, B., Moore, T.A., Bobbitt, C.M., and Fennell, T.R. (2003). Blood pharmacokinetics of tertiary amyl methyl ether in male and female F344 rats and CD-1 mice after nose-only inhalation exposure. Journal of Applied Toxicology 23(6):419–425.

133. Colatsky TJ, **Sumner S** (2003) Metabolic profiling and biomarker discovery. Curr Opin Investig Drugs. 2003 Mar;4(3):262-3. PMID: 12735226

134. **Sumner, S.C.J**.**, Asgharian, B., Moore, T.A., Parkinson, H., Bobbitt, C.M., and Fennell, T.R. (2003). Characterization of metabolites and disposition of tertiary amyl methyl ether in male F-344 rats following inhalation exposure. Journal of Applied Toxicology 23:411–417.

135. **Sumner, S.C.J**.**, Janszen, D.B., Asgharian, B., Moore, T.A., Parkinson, H.D., and Fennell, T.R. (2003). Species and gender differences in the metabolism and distribution of tertiary amyl methyl ether in male and female rats and mice after inhalation exposure or gavage administration. Journal of Applied Toxicology 23:427–436.

136. **Sumner, S.C**.**, Williams, C.C., Snyder, R.W., Krol, W.L., Asgharian, B., and Fennell, T.R. (2003). Acrylamide: A comparison of metabolism and hemoglobin adducts in rodents following dermal, intraperitoneal, oral, or inhalation exposure. Toxicological Sciences 75(2):260–270.

137. Banajamali, A., DeMatteo, V., and **Sumner, S.C.J**.** (2003). A mechanism for the formation of bis-glutathione conjugates of propargyl alcohol. Pest Management Science 59:331–338.

138. Ghanayem, B.I., Wang, H., and **Sumner, S.C.J**.** (2000). Using cytochrome P450 gene knockout mice to study chemical metabolism, toxicity, and carcinogenicity. Toxicologic Pathology 28(6):839–850.

139. Johanson, G., Ernstrad, L., Gullstrand, E., Löf, A., Osterman-Golkar, S., Williams, C., and **Sumner, S**.** (2000). Styrene oxide in blood, hemoglobin adducts, and urinary metabolites in human volunteers exposed to (13)C(8)-styrene vapors. Toxicology and Applied Pharmacology 168(1):36–49.

140. Snyder, R.W., Maness, S.C., Gaido, K.W., Welsch, F., **Sumner, S.C.J**., and Fennell, T.R. (2000). Metabolism and disposition of bisphenol A in female rats. Toxicology and Applied Pharmacology 168(3):225–234.

141. Boogaard, P.J., **Sumner, S.C.J**., de Kloe, K.P., van Elburg, P.A., and Wong, B.A. (2000). Disposition of [ring-U-13C]styrene in rats and mice exposed by recirculating nose- only inhalation. Toxicological Sciences 58(1):161–172.

142. Boogaard, P.J., de Kloe, K.P., Wong, B.A., **Sumner, S.C.J**., Watson, W.P., and van Sittert, N.J. (2000). Quantification of DNA adducts formed in liver, lungs, and isolated lung cells of rats and mice exposed to 13C-styrene by nose-only inhalation. Toxicological Sciences 57(2):203–216.

143. Banajamali, A.R., Xu, Y., DeMatteo, V., Strunk, R.J., Gay, M.H., Putterman, G.J., and **Sumner, S**.** (2000). Identification of metabolites of [1,2,3-13C]propargyl alcohol in mouse urine by 13C NMR and mass spectrometry. Journal of Agricultural and Food Chemistry 48(10):4693–4710.

144. **Sumner, S.C.J**.**, Fennell, T.R., Moore, T.A., Chanas, B., Gonzalez, F., and Ghanayem, B.I. (1999). The role of cytochrome P450 in the metabolism of acrylamide and acrylonitrile in mice. Chemical Research in Toxicology 12(11):1110–1116.

145. Nihlén, S., **Sumner, S**., Löf, A., and Johanson, G. (1999). 13C-Labelled methyl tertiary- butyl ether (13C2-MTBE): toxicokinetics and characterization of urinary metabolites in humans. Chemical Research in Toxicology 12(9):822–830.

146. Collins, A.S., **Sumner, S.C.J**., Borghoff, S.J., and Medinsky, M.A. (1999). A physiological model for tert-amyl methyl ether and tert-amyl alcohol: Hypothesis testing of model structures. Toxicological Sciences 49:15–28.

147. Banajamali, A.R., Xu, Y., Strunk, R.J., Gay, M.H., Ellis, M.C., Putterman, G.J., and **Sumner, S**.** (1999). Identification of metabolites of 13C-labeled propargyl alcohol in rat urine by 13C NMR and mass spectrometry. Journal of Agricultural and Food Chemistry 47(4):1717–1729.

148. **Sumner, S.C.J**.**, Selvaraj, L., Nauhaus, S.K., and Fennell, T.R. (1997). Urinary metabolites from F344 rats and B6C3F1 mice co-administered acrylamide and acrylonitrile for 1 or 5 days. Chemical Research in Toxicology 10(10):1152–1160.

149. **Sumner, S.C**.**, Cattley, R.C., Asgharian, B., Janszen, D.B., and Fennell, T.R. (1997). Evaluation of the metabolism and hepatotoxicity of styrene in F344 rats, B6C3F1 mice, and CD-1 mice following single and repeated inhalation exposures. Chemico-Biological Interactions 106(1):47–65.

150. Boogaard, P.J., **Sumner, S.C.J**., Turner, M.J., and Bond, J.A. (1996). Hepatic and pulmonary glutathione conjugation of 1:2,3:4 diepoxide in human, rat, and mouse in vitro. Toxicology 113(1–3):297–299.

151. Boogaard, P., **Sumner, S.C.J**., and Bond, J.A. (1996). Glutathione conjugation of 1,2,3,4-diepoxybutane in human rat and mouse liver and lung in vitro. Toxicology and Applied Pharmacology 136(2):307–316.

152. Nauhaus, S.K., Fennell, T.R., Asgharian, B., Bond, J.A., and **Sumner, S.C.J**.** (1996). Characterization of urinary metabolites in rats and mice exposed to [1,2,3,4-13C]butadiene. Chemical Research in Toxicology 9(4):764–773.

153. **Sumner, S.C.J**.**, Stedman, D.B., Cheng, S-Y., Welsch, F., and Fennell, T.R. (1995). Dose effects on the excretion of urinary metabolites of [1,2-methoxy-13C]2-methanol. Toxicology and Applied Pharmacology 134(1):139–147.

154. **Sumner, S.C.J**.**, Stedman, D.B., Cheng, S-Y., Welsch, F., and Fennell, T.R. (1995). Characterization of urinary metabolites produced following administration of [1,2-methoxy- 13C]2-methoxyethanol to male F344 rats and pregnant CD-1 mice. Occupational Hygiene 2:25–31.

155. **Sumner, S.C.J**.**, and Fennell, T.R. (1994). Review of the metabolic fate of styrene. Critical Reviews in Toxicology 24(s1):S11–S33.

156. Osterman-Golkar, S.M., MacNeela, J.P., Turner, M.J., Walker, V.E., Swenberg, J.A., **Sumner, S.C.J**., Youtsey, N., and Fennell, T.R. (1994). Monitoring exposure to acrylonitrile using adducts to N-terminal valine in hemoglobin. Carcinogenesis 15(12):2701–2707.

157. Fennell, T.R., and **Sumner, S.C.J**. (1994). Identification of metabolites of carcinogens by 13C NMR spectroscopy. Drug Metabolism Reviews 26(1–2):469–481.

158. Yates, J.M., Fennell, T.R., Turner, M.J., Recio, L., and **Sumner, S.C.J**.** (1994). Characterization of phosphodiester adducts produced by the reaction of cyanoethylene oxide with nucleotides. Carcinogenesis 15(2):277–283.

159. **Sumner, S.C.J**.**, and Fennell, T.R. (1993). A possible mechanism for the formation of 14CO2 via 2-methoxyacetic acid in mice exposed to 14C-labelled 2-methoxyethanol. Toxicology and Applied Pharmacology 120(1):162–164.

160. Yates, J.M., **Sumner, S.C.J**., Turner, M.J., Recio, L., and Fennell, T.R. (1993). Characterization of an adduct and its degradation product produced by the reaction of cyanoethylene oxide with deoxythymidine and DNA. Carcinogenesis 14(7):1363–1369.

161. Kedderis, G.L., **Sumner, S.C.J**., Held, S.D., Batra, R., Turner, M.J., Roberts, A.E., and Fennell, T.R. (1993). Dose-dependent urinary excretion of acrylonitrile metabolites by rats and mice. Toxicology and Applied Pharmacology 120(2):288–297.

162. **Sumner, S.C.J**.**, Jaing, S-P., Jernigan, R.L., and Ferretti, J.A. (1992). Conformational analysis of the receptor specific tachykinin analogues, septide and senktide. Journal of Biomolecular Structure and Dynamics 10:429–439.

163. **Sumner, S.C.J**.**, MacNeela, J.P., and Fennell, T.R. (1992). Characterization and quantitation of urinary metabolites of [1,2,3-13C]acrylamide in rats and in mice using 13C nuclear magnetic resonance spectroscopy. Chemical Research in Toxicology 5(1):81–89.

164. **Sumner, S.C.J**.**, Stedman, D.B., Clarke, D.O., Welsch, F., and Fennell, T.R. (1992). Characterization of urinary metabolites from [1,2,methoxy-13C]2-methoxyethanol in mice using 13C NMR spectroscopy. Chemical Research in Toxicology 5(4):553–560.

165. Fennell, T.R., **Sumner, S.C.J**., and Walker, V.E. (1992). A computer model for the formation and removal of hemoglobin adducts. Cancer Epidemiology, Biomarkers, and Prevention 1(3):213–219.

166. Fennell, T.R., Kedderis, G.K., and **Sumner, S.C.J**.** (1991). Urinary metabolites of [1,2,3-13C]acrylonitrile in rats and mice detected by 13C nuclear magnetic resonance spectroscopy. Chemical Research in Toxicology 4(6):678–687.

167. **Sumner, S.J**.**, Gallagher, K.S., Davis, D., Covel, D.G., Jernigan, R.L., and Ferretti, J.A. (1990). Conformational analysis of the tachykinins in solution: Substance P and physalaemin. Journal of Biomolecular Structure and Dynamics 8(3):687–707.

168. **Sumner, S.J**.**, and Ferretti, J.A. (1989). Conformational behavior of the linear hexapeptide, senktide: A receptor selective tachykinin analogue. FEBS Letters 253(1,2):117–120.

169. **Sumner, S.J**.**, Moreland, C.G., Carroll, F.I., Brine, G.A., and Boldt, K.G. (1989). Solid state and solution conformations of methadone hydrochloride and related derivatives. Magnetic Resonance in Chemistry 27(4):311–317.

170. Moreland, C.G., Stejskal, E.O., **Sumner, S.C.J**., Memory, J.D., Carroll, F.I., Brine, G.A., and Portogehese, P.S. (1989). Nonbonded 13C-14N dipole-dipole interactions. Journal of Magnetic Resonance 83(1):173–176.

### *Monographs and Reports*

1. Tyl, R.W., Sloan, C.S., Hamby, B.H., Ehman, K.D., and **Sumner, S.**** (2006). *Hershberger Background Review Document*. EPA contract number EP-W-06-026 Prepared by RTI International. At http://www.oecd.org/dataoecd/18/57/37880949.pdf. (201 pages).

2. **Sumner, S.C.J.**** (2005). *Using Metabolomics/'Omics to Explore Species Differences in Metabolism*. Monograph presented at the National Academy of Sciences (NAS) Workshop on Toxicogenomics and Cross Species Comparisons, August 2004. National Academy of Sciences Press.

3. **Sumner, S.C.J.**, and Fennell, T.R. (2005). *Biomarkers, Omics, and Species Comparisons*. Monograph presented at the Board of Scientific Counselors (BOSC) Risk Assessment Workshop. National Academy of Sciences Press. February 2. (8 pages).

4. Collins, F. lead the development of this white paper. (2005). All subgroups and authors are listed at the link. *Design Considerations for a Potential United States Population-*

*Based Cohort to Determine the Relationships among Genes, Environment, and Health: Recommendations of an Expert Panel*. **Susan Sumner** served on the Environmental Exposure Technology Development Sub-group. Available at http://www.genome.gov/Pages/About/OD/ReportsPublications/PotentialUSCohort.pdf. (52 pages).

5. **Sumner S.C.J.****, and Liu, G. (2004). Pathway linkage and data integration: Metabolomics holds key to intelligent discovery efforts. Pp. 127–128 *in Methods and Techniques in Drug Discovery*. Larchmont, NY: Mary Ann Liebert.
6. Colatsky, T., and **Sumner, S.C.J.**** (2003). Metabolic profiling and biomarker discovery. *Current Opinions in Investigational Drugs 4*(3):1–3.
7. **Sumner, S.C.J.****, and Liu, G. (2002). Pathway linkage and data integration. *Genetics and Engineering News 22*(19). November 7.
8. **Sumner, S.C.J****., Cruzan, G., Johanson, G., Ghanayem, B., and Fennell, T.R. (2001). Metabolism of styrene in rats, mice, and humans. *CIIT Activities 21*:(3–4).
9. **Sumner, S**.**, T. Williams, B. Asgharian, and T. Fennell. 2001. *Acrylamide: Metabolism, Distribution, and Hemoglobin Adducts in Male F344 Rats and B6C3F1 Mice Following Inhalation Exposure and Distribution and Hemoglobin Adducts Following Dermal Application to F344 Rats*. TEGEWA.
10. **Sumner, S**.**, C. Williams, and T. Fennell. 1999. *Characterization of Urinary Metabolites of [1, 2, 3- $^{13}$C]Acrylamide in Male F344 Rats Following Dermal Application or IP Injection*. Acrylamide Monomer Producers Association.
11. **Sumner, S**.** 1999. *Urinary Metabolites of $^{13}$C-styrene in Exposed Human Volunteers*. Styrene Information and Research Center.
12. **Sumner, S.C.J**.**, R.C. Cattley, D. Janszen, and T.R Fennell. 1999*. Blood Pharmacokinetics of Propylene Glycol Methyl Ether (PGME) and Propylene Glycol Methyl Ether Acetate (PGMEA) in Male F-344 Rats After Dermal Application*. Chemical Manufacturers Association.
13. **Sumner, S.C.J**.**, T.A. Moore, R.C. Cattley, and T.R. Fennell. 1999. *1,1,1,3,3,3-hexachloropropane: Metabolism and Distribution in Male and Female Sprague Dawley Rats Following Inhalation Exposure or IP Administration*. Vulcan Chemicals.
14. **Sumner, S.C.J**.**, B. Asgharian, C. Laethem, and T.R. Fennell. 1997. *Tertiary Amyl Methyl Ether (TAME): Metabolism and Distribution in Male and Female F344 Rats and CD-1 Mice after Single or Repeated Inhalation Exposures or Gavage Exposure*. American Petroleum Institute. Final Report.
15. **Sumner, S.C.J**.**, B. Asgharian, and T.R. Fennell. 1997. *Blood Pharmacokinetics of Tertiary Amyl Methyl Ether in Male and Female Rats and Mice Following Inhalation Exposure at 100, 500, and 2,500 ppm*. American Petroleum Institute. Final Report.
16. **Sumner, S.C.J**.**, B. Asgharian, T.A. Moore, and T.R. Fennell. 1997. *Tertiary Amyl Methyl Ether (TAME): Pilot Study for Metabolism, Distribution, and Pharmacokinetics in Male F344 Rats after a Single Nose-Only Inhalation Exposure.* American Petroleum Institute, Final Report.
17. ****Sumner, S.C.J**., and Fennell, T.R. (1990). Nuclear magnetic resonance spectroscopy in metabolism studies. *CIIT Activities 10*(2):1–8.

### *Selected Conference Abstracts and Published Abstracts*

1. Weiss E, Sanchez C, Chrispell J, Cheng R, Ma J-X, Skiba N, **Sumner S**, Pathmasiri W,

McRitchie S, Lewis L, Cartoni R, Analysis of metabolomic, proteomic and mitochondrial dysfunction in rd10 retinas (ARVO Abstract # 4051830) The Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting; 2024 5-9 May 2024; Seattle, WA. (ARVO Abstract # 4051830).

2. Brasseur EM, Moline, S, Coble, R, McRitchie, S, Rushing, B, and **Sumner** SCJ. Metabolomics and Exposome Laboratory. NCRC Research Notes (*formerly CHEM101*); 22 February 2024. North Carolina Research Campus (DHMRI), Kannapolis,
3. Tan Y, Lyu X, Dunlop A, Barr D, Rushing B, Mcritchie S, **Sumner S**, Taibl K, Eick S, Ryan P, Corwin E, Jones D, Liang D, High-resolution Profiling of Newborn Metabolome to Study the Effect of Tobacco Smoke Exposure During Pregnancy on Early Birth Outcomes in the Atlanta African American Maternal-Child Cohort, International Society of Exposure Science (ISES) Annual Conference; 2023 27-31 August; Chicago, IL.
4. Rushing B, Fennell T, Pathmasiri W, **Sumner S**, Harnessing the power of metabolomics for the development of targeted intervention strategies. International Society of Exposure Science (ISES) annual meeting; 2023 27-31 August; Chicago, IL.
5. Hoffman S, Tang Z, Dunlop A, Barr D, Rushing B, McRitchie S, **Sumner S**, Huynh T, Panuwet P, Eick S, Taibl K, Lee G, Corwin E, Ryan P, Jones, D, Liang D, The Impact of Phthalate Exposure on the Newborn Metabolome in the Atlanta African American Maternal Child Cohort. International Society of Exposure Science (ISES) Annual Conference; 2023 27-31 August 2023; Chicago, IL.
6. **Sumner S**, Cotten S, Rushing B, McRitchie S, Du X, Smirnov A, Pathmasiri W, Fennell T, Harnessing the Power of Untargeted Metabolomics: Developing nutritional intervention strategies and identifying needs in exposure reduction. Metabolomics Society Annual Meeting; 2023 June 18 - 22, 2023; Niagara Falls, Canada.
7. Rushing B, Molina S, **Sumner S**. Novel metabolic mechanisms that drive drug resistance in triple negative breast cancer and potential targets to improve therapeutic response. The Metabolomics Society annual meeting; 2023 18-22 June 2023; Niagara Falls, Canada.
8. Smirnov A, Hall J, Nguyen T, Liao Y, Brumit D, Li Y, Rushing B, McRitchie S, Ponnuru RKB, Madamwar K, Suresh V, Gorle S, Gaikwad A, Eben SR, **Sumner S**, Du X (2023) ADAP informatics for untargeted mass spectrometry-based metabolomics and exposomics big data. 71st ASMS Conference on Mass Spectrometry and Allied Topics, Houston, TX, June 4 - 8, 2023.
9. Cook MD, Rushing B, Carroll I, **Sumner S**, McRitchie S, Pathmasiri W (2023) Metabolomics Assessment of Blood Biomarkers of Hypertension & Gut Dysbiosis: Effect of Supervised Exercise Training in African Americans. NIH PRIDE (Program to Increase Diversity Among Individuals Engaged in Health-Related Research) CVD-CGE Scholar Cohort 10. 10th Annual Conference April 24-27, 2023. Bethesda, MD.
10. Schroder M, Seelinger M, Fennell T, Rushing B, Smirnov A, Du X, Kay C, Snyder R, McRitchie S, **Sumner CJ**, North Carolina Human Health Exposure Analysis Resource Untargeted Analysis Laboratory: NC HHEAR UAL. Catalyst Chem 101; 2023 February 16, 2023; North Carolina Research Campus, Kannapolis, NC.
11. E. Laue, H.E., Bauer, J.A., **Sumner**, **S**., McRitchie, S., Pathmasiri, W., Palys, T.J., Hoen, A.G., Madan, J.C., Karagas, M.K. (2022) Patterns of fecal metabolite concentrations and social behavioral development in a prospective birth cohort, National IDeA Symposium of Biomedical Research Excellence (NISBRE) Conference, December 12-14, 2022 (Virtual).
12. McRitchie S, Pathmasiri W, Mariani LH, Cummins T, Merchant M, Jortani SA, Dougherty JA, Kamigaki Y, Klein JB, Smoyer WE, **Sumner SJ** (2022) Metabolomics

Provides Insights into Remission of Pediatric Nephrotic Syndrome During Treatment, Kidney Week (American Society of Nephrology). Orlando, FL, November 3rd – 6th, 2022

13. Bhayana S, Zhao Y, Merchant M, Cummins T, Dougherty JA, Kamigaki Y, Pathmasiri W, McRitchie S, Mariani LH**, Sumner S**, Klein JB, Li L, Smoyer WE, and the Pediatric Nephrology Research Consortium (2022) Patient-Specific Multi-Omic Analysis of Plasma Proteomics and Metabolomics of Steroid Resistance in Childhood Nephrotic Syndrome, Kidney Week (American Society of Nephrology). Orlando, FL., November 3rd – 6th, 2022
14. Cummins T, Merchant M, Wilkey DW, Jortani SA, Rane MJ, Mariani LH, Dougherty J, Kamigaki Y, Pathmasiri W, McRitchie S, **Sumner SJ,** Smoyer WE, Klein JB (2022) Proteomic Identification of Urine Biomarkers of Pediatric Nephrotic Syndrome, Kidney Week (American Society of Nephrology). Orlando, FL., November 3rd – 6th, 2022
15. Hullings AG, Howard AG, Meyer KA, Lewis CE, **Sumner S**, Li Y, Rushing B, Du X, North K, Avery CL, Gordon-Larsen P (2022). Metabolite pathways and obesity-related diet behaviors: The CARDIA Study Obesity Week 2022, Nov 1-4, 2022, San Diego, CA
16. Lynch DH, Batsis JA, Petersen CL, **Sumner S**, Stewart D, McRitchie S, Busby-Whitehead J (2022) Changes in Inflammatory Markers after a Dietary and Exercise Intervention in Older Adults with Obesity, 12th Annual Alliance for Healthy Aging, Minneapolis, MN, October 13 – 15, 2022.
17. Li Y-Y, Houle E, Schroder M, McRitchie SL, Pilsner JR, **Sumner SJ** (2022) Exploring the Internal Exposome of Seminal Plasma in a Pilot Study of Reproductive outcomes of Semen Quality and Live Birth, 4th Annual MANA Conference, Edmonton, Alberta, Canada, September 16 - 18th, 2022
18. Smirnov A, Hall J, Liao Y, Brumit D, Li Y, Rushing B, McRitchie S, **Sumner S**, Ponnuru, RKB, l Madamwar K, Suresh V, Du X (2022) ADAP: An Integrated Informatics Pipeline for Untargeted Mass Spectrometry-Based Metabolomics Big Data, 4th Annual MANA Conference, Edmonton, Alberta, Canada, September 16 - 18th, 2022
19. Rushing B, Pathmasiri W, Seelinger M, Loeser R, **Sumner S** (2022) Exposome analysis of stool samples from individuals with obesity-related osteoarthritis. University of North Carolina-Chapel Hill's Interdisciplinary Nutrition Sciences Symposium, July 21-22, 2022.
20. Hall J, Smirnov A, Li Y, Rushing B, Liao E, McRitchie S, **Sumner S**, Du X (2022). ADAP-BIG: A platform-independent and graphical software tool for preprocessing large-scale mass-spectrometry based metabolomics and exposomics data, Annual Meeting of the American Society for Mass Spectrometry, Minneapolis, MN, June 5-9, 2022.
21. Conway C, Smirnov A, Li Y, Rushing B, McRitchie S, Fennell T, **Sumner S**, Du X (2022). Developing a Web Resource for Exposome Research, Annual Meeting of the American Society for Mass Spectrometry, Minneapolis, MN, June 5-9, 2022.
22. Houle E, Li YY, **Sumner SJ**, Rahil T, Sites CK, Pilsner JR (2022). Seminal Plasma Metabolomics: A Pilot Study of Male Fertility and Live Birth Outcomes. American Society for Andrology Testis Workshop, La Jolla, CA, May 4-7, 2022.
23. Li Y, Freeman HL, McRitchie SL, Pathmasiri WW, **Sumner SJ**, Stewart DA (2022). Metabolic differences in breast cancer chemotherapeutic response identify targetable pathways. Annual Meeting of the American Association for Cancer Research, April 8-13, 2022, New Orleans, LA
24. Bhayana, S., Zhao, Y., Merchant, M., Cummins, T., Pathmasiri, W., McRitchie, S., **Sumner, S**., Klein, J., Li, L., and Smoyer, W. E. (2021) Integration of Plasma Proteomics

and Metabolomics Revealed Multiple Protein-Metabolite networks in Steroid Resistant Nephrotic Pediatric Patients. in Kidney Week (American Society of Nephrology). San Diego, CA.

25. Cummins, T., Merchant, M., Mariani, L. H., Pathmasiri, W., **Sumner, S. J**., Smoyer, W. E., and Klein, J. B. (2021) CureGN Pediatric Glomerulopathy: Identifying Pathologic Molecular Signatures in Glomerulopathy with Quantitative Proteomics. in Kidney Week (American Society of Nephrology). San Diego, CA.
26. Blake Rushing, Yuan Li, Madison Schroder, Rachel Coble, **Susan Sumner** (2021) Using UHPLC High Resolution Mass Spectrometry to Analyze Stool and Seminal Plasma, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
27. Yuan Li, Blake Rushing, Madison Schroder, Colin Kay, Xiuxia Du, Timothy Fennell, and **Susan Sumner** (2021) The Dietary Exposome Matters for Developing Nutritional Interventions, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
28. Susan McRitchie, Xiuxia Du, Colin Kay, Yuan Li, Wimal Pathmasiri, Blake Rushing, Madison Schroder, Aleksandr Smirnov, Timothy Fennell, and **Susan Sumner** (2021) How Exposome Research Is Informing Precision Medicine and Precision Nutrition, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
29. Wimal Pathmasiri, Anne Hoen, Modupe Coker, Juliette Madan, Susan McRitchie, Erika Dade, Brett Doherty, **Susan Sumner**, Margaret Karagas (2021) Assessment of metabolism and microbiome of infants at 6 weeks of age and the relationship to delivery mode and feeding type, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
30. Rachel Coble, David Kirchner, **Susan Sumner** (2021) Why Measuring Choline and Related Metabolites Matters in Nutrition Research, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
31. Colin Kay, Aleksandr Smirnov, Yuanyuan Li, Blake Rushing, Zhaocong Yang, Ciara Conway, Jing Yang, **Susan Sumner**, Xiuxia Du (2021) MetaboFood-KDB: A cloud knowledgebase for searching metabolomics data for nutritionally relevant compounds, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
32. Aleksandr Smirnov, Yunfei Liao, Eoin Fahy, Shankar Subramaniam, Yuanyuan Li, Blake Rushing, Susan McRitchie, **Susan Sumner**, and Xiuxia Du (2021) ADAP-KDB Spectral Knowledgebase: an online resource for searching and prioritizing untargeted metabolomics data, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
33. Ciara Conway, Aleksandr Smirnov, Yuanyuan Li, Blake Rushing, Susan McRitchie, Timothy Fennell, **Susan Sumner**, Xiuxia Du (2021) Development of a Knowledgebase of Environmentally Relevant Compounds for Exposomics, 3rd Annual Meeting of the Metabolomics Association of North America (MANA).
34. Joel Hall, Aleksandr Smirnov, Yuanyuan Li, Blake Rushing, Yunfei Liao, Susan McRitchie, **Susan Sumner**, and Xiuxia Du (2021) ADAP-BIG: A graphical desktop software tool for preprocessing multi-batch mass spectrometry-based raw untargeted metabolomics data. 69th ASMS Conference on Mass Spectrometry and Allied Topics (ASMS), Philadelphia, October 31 - November 4, 2021.
35. Ciara Conway, Aleksandr Smirnov, Yuanyuan Li, Blake Rushing, Colin Kay, Susan Mcritchie, Timothy Fennell, **Susan Sumner**, and Xiuxia Du (2021) Development of a Library of Environmentally Relevant Compounds for Exposomics. 69th ASMS Conference on Mass Spectrometry and Allied Topics (ASMS), Philadelphia, October 31 - November

4, 2021.

36. 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.
37. Li , Y.-Y., Ghanbari, R., Pathmasiri, W., McRitchie, S., Poustchi, H., Shayanrad, A., Roshandel, G., Etemadi, A., Pollock, J. D., Malekzadeh, R., and Sumner, S. (2021) Untargeted metabolomics reveals biological markers for opioid use disorder diagnosis intervention strategies. in Society of Biological Psychiatry Annual Meeting, Virtual.
38. 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.
39. Kay, C., Smirnov, A., Li, Y., Rusing, 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.
40. 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.
41. Pathmasiri, W., Hoen, A. G., Coker, M. O., Madan, J. C., McRitchie, S., Dade, E., Doherty, B., **Sumner, S.**, and Karagas, M. R. (2021) Assessment of metabolism and microbiome of infants at 6 weeks of age and the relationship to delivery mode and feeding type (Poster). in Metabolomics 2021 Online, June 22 - 24, 2021.
42. Rushing, B. R., McRitchie, S., Liubov, A., Nelson, A., Azcarate-Peril, M. A., Li, Y-Y.; Qian, Y., Pathmasiri, W., **Sumner, S.**, Loeser, R. (2021) The Internal Exposome Reveals Mechanisms of Increased Intestinal Permeability in Osteoarthritis (Poster). in Metabolomics 2021 Online, June 22 - 24, 2021.
43. 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
44. Rushing, B., McRitchie, S., Liubov, A., Nelson, A., Azcarate-Peril, M., Li, Y.-Y., Qian, Y., Pathmasiri, W., **Sumner, S.**, and Loeser, R. (2021) Fecal Metabolomics Reveals Products of Dysregulated Proteolysis and Altered Microbial Metabolism in Obesity-Related Osteoarthritis. in University of North Carolina-Chapel Hill's Interdisciplinary Nutrition Sciences Symposium. Chapel Hill.
45. Rushing, B. R., McRitchie, S., Liubov, A., Nelson, A., Azcarate-Peril, M. A., Li, Y-Y., Qian, Y., **Sumner, S.**, Loeser, R. . (2021) Oral presentation: Untargeted Fecal Metabolomics to Investigate the Role of the Microbiome and Nutrients in Osteoarthritis at the American Society of Nutrition. American Society for Nutrition Annual Meeting. Virtual.
46. *Sharma, J., Rushing, B., Krupenko, N., **Sumner, S.**, and Krupenko, S., Effect of Folate Diet on Liver Metabolomics in Wild Type and Aldh1l1 KnockoutMice. Current Developments in Nutrition, 2021. 5(Supplement_2): p. 949-949. (American Society for Nutrition Annual Meeting)
47. *Madduri, S. S., Rezeli, E. T., Santos, C. M., *Freeman, III, H. L., McRitchie, S. L., Kirchner, D. R., **Sumner, S. J.**, Hursting, S. D., and Stewart, D. A. (2020) High

Carbohydrate and Fat Diet Hastens Tumor Growth, Increases Pro-inflammatory Signals and Metabolic Shifts in a Mouse Model of Basal-like Breast Cancer, June, 2020. American Association for Cancer Research – Annual Meeting, Virtual II Conference.

48. Lee, S. E., Li, Y.-y., **Sumner, S.**, McRitchie, S., Wu, L., Labrique, A., Christian, P., West Jr, K., and Schulze, K., Plasma Untargeted Metabolomic Profile Associated with Vitamin A Status in Pregnant Women in Rural Bangladesh. Current Developments in Nutrition, 2020. 4(Supplement_2): p. 118-118. (American Society for Nutrition Annual Meeting)
49. Pathmasiri, W., Li, Y.-Y., Harville, E., Pan, K., McRitchie, S., and **Sumner, S.** Untargeted Metabolomics Analysis of First-trimester Serum to Discover Biomarkers and Mechanism of Pregnancy Complications: A Case-Control Study (Poster). in Metabolomics Association of North America (MANA) Annual Meeting. 2020. Virtual.
50. Doherty, B., Jiang Gui, J., McRitchie, S., Kirchner, D., Stewart, D., Madan, J., Hoen, A., **Sumner, S**., Karagas, M., and Romano, M. for the ECHO Program. Multipollutant Exposures Assessed via Silicone Wristbands and Plasma Metabolomics during Pregnancy. (Poster). 2020 Exposome Symposium, New York City on March 5-6, 2020
51. **Susan, SCJ**. The Internal Exposome, Opium Use, and Opium Use. 2020 Exposome Symposium, New York City on March 5-6, 2020.
52. Krissy Kay, HHEAR Project Team (MPIs: **Sumner**, Fennell, Du). December 5th, 2019. Catalyst CHEM 101 DHM Core Lab Building, North Carolina Research Campus, Kannapolis, NC.
53. Li YY, Stewart DA, Pathmasiri W, McRitchie S, Cheung H, **Sumner SJ**. A Metabolomics Approach to Investigate Lycii Cortex and Kukomine B- Potent Natural Products with Anti-diabetic Properties, November 15-17, 2019. Metabolomics Association of North America, Atlanta, GA.
54. Stewart DA, Pathmasiri WW, McRitchie SL, Naab T, DeWitty RL, Fripp VT, Beyene DA, Kassim OO, Kanaan YM, **Sumner SJ**, Copeland RL. Common and Unique Breast and Prostate Cancer Metabolic Profiles in African Americans, September 20-23, 2019. American Association for Cancer Research - 12th Conference on The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved, San Francisco, CA.
55. Li Y, Stewart DA, Pathmasiri WW, McRitchie SL, Cheung H, **Sumner SJ**. A Metabolomics Approach to Investigate Lycii Cortex and Kukomine B- Potent Natural Products with Anti-diabetic Properties, Interdisciplinary Nutrition Sciences Symposium, July 24-25, 2019, Chapel Hill, NC.
56. **Sumner S**, Ghanbari R, Pathmasiri W, Li Y, McRitchie S, Etemadi A, Abnet C, Pollock J, Malekzadeh R. Untargeted Metabolomics of Urine from Opium Users and Non-Users: A Golestan Cohort Study. Metabolomics 2019, June 23-27, 2019, The Hague, The Netherlands.
57. **Sumner S**, Ghanbari R, Pathmasiri W, Li Y, McRitchie S, Etemadi A, Abnet C, Pollock J, Malekzadeh R. Untargeted Metabolomics of Urine from Opium Users and Non-Users: A Golestan Cohort Study. Building International Collaboration in Metabolomics: An Epidemiological Perspective, June 22, 2019, The Hague, The Netherlands.
58. Pan K, Li Y, Pathmasiri W, McRitchie S, **Sumner S**, Harville EW. Untargeted metabolomics of 1st trimester blood for biomarkers and causal mechanisms of hypertensive disorders of pregnancy. Society for Pediatric and perinatal Epidemiological Research, 32nd Annual Meeting, June 17-18, 2019, Minneapolis, MN.
59. Crowley G, Kwon S, Lin Y, Clementi E, Haider SH, Talusan A, Prezant DJ, Schwartz T,

Zeig-Owens R, Liu M, McRitchie S, **Sumner SJ**, Nolan A. Metabolomics of WTC-Lung Injury (WTC-LI): A Validation Study. American Thoracic Society (ATS), May 17-22, 2019 Dallas, TX.

60. Ghanbari R, Pathmasiri W, McRitchie S, Stewart D, Li Y, Maleki H, Etemadi A, Abnet C, Pollock J, Malekzadeh R, **Sumner S**. Metabolomics Analysis of Opiate Abusers from Golestan Cohort Study (GCS). Experimental Biology, April 7-9, 2019, Orlando, FL.
61. Anzmann AF, Busa V, Pinto S, McRitchie S, **Sumner S**, Pandey A, Vernon HJ. Multi-omics studies in patient-derived and CRISPR-edited cellular models of methylmalonic. Society for Inherited Metabolic Disorders, April 6-9, 2019, Seattle, WA.
62. Smirnov A, Li Y, Pathmasiri, **Sumner S**, Du X. A workflow for detecting unknown compounds from untargeted GC/MS and LC/MS metabolomics data and an online library of unknowns detected in plasma and urine, June 25-28, 2018. Poster at Metabolomics Society, 2018, Seattle, WA
63. Li, Y.Y., Stewart, D.A., Pathmasiri, W., McRitchie, S., Urbina E.M., Mayer-Davis E.J., Dabelea D., and **Sumner, S.J**. 2018. The impact of obesity on metabotype of type 1 and type 2 diabetes in youth, June 25-28, 2018. Oral presentation at the Metabolomics Society Annual Meeting, Seattle, WA. Received [YL] travel award at the Metabolomics Society.
64. Li Y, **Sumner S**, Snyder R, Fennell T. Untargeted analysis of endogenous and environmentally relevant compounds in human plasma and urine. Poster at CHEAR Grantee Meeting, May 10-11, 2018, Rockville, MD.
65. Stewart DA, Pathmasiri WW, McRitchie SL, Buckley L, Naab TJ, DeWitty RL, Fripp VT, Estelle Cooke-Sampson E, Beyene DA, Ricks-Santi L, Copeland RL, **Sumner SJ** and Kanaan YM. Metabolic profiles distinguish breast cancer progression in African American women. Poster at Defining Precision Nutrition, May 1-2, 2018, Kannapolis, NC
66. Li Y, Stewart D, Pathmasiri W, McRitchie S, Urbina E, Mayer-Davis E, Dabelea D, and **Sumner S**. The impact of obesity on metabotype of type 1 and type 2 diabetes in youth. Poster at Defining Precision Nutrition, May 1-2, 2018, Kannapolis, NC.
67. Stewart DA, Pathmasiri WW, McRitchie SL, Buckley L, Naab TJ, DeWitty RL, Fripp VT, Cooke-Sampson E, Beyene DA, Ricks-Santi L, Copeland, **Sumner SJ**, Kanaan YM. Metabolic profiles distinguish breast cancer progression in African American women. Poster at American Association for Cancer Research (AACR). April 14-18, 2018.
68. Ghanbari R, Pathmasiri WW, Etemadi A, Abnet C, Malekzadeh R, **Sumner SJ**. Metabolomics Investigation of Opiate Addiction: Golestan Cohort Study. Poster at 7th Annual Catalyst Symposium at the NC Research Campus. March 23, 2018.
69. Reza Ghanbari Wimal Pathmasiri, Arash Etemadi, Christin Abnet, Reza Malekzadeh, **Susan Sumner**. Metabolomics Investigation of Opiate Addiction: Golestan Cohort Study. Poster at NIDA Genetics and Epigenetics Cross-cutting Research Meeting, January 8-9, 2018.
70. Rock KD, Horman B, Phillips AL, Arambula SE, McRitchie SL, Watson S, **Sumner SJ**, Statleton HM, Patisaul HB. Sex Specific Accumulation, Neuroendocrine, and Behavioral Impacts Following Developmental Exposure to the Flame Retardant Mixture Firemaster® 550 in Wistar Rats. Poster at Society for Neuroscience Annual Meeting, November 11- 15, 2017, Washington, DC.
71. Gooding J and **Sumner S**. Plasma Metabolomics in Steroid-Sensitive and Steroid-Resistant Nephrotic Syndrome. Poster at ASN Kidney Week 2017 Annual Meeting, October 31 – November 5, 2017. New Orleans, LA.

72. Stewart D and **Sumner S**. NIH Eastern Regional Comprehensive Metabolomics Resource Core (ERCMRC): Applications of Metabolomics in Cancer Research, November 2, 2017. Poster presented at the North Carolina Research Campus monthly "Chem101", Kannapolis, NC.
73. **Sumner SJ**, Fennell TR, McRitchie SL, Allardice H, Mason A, Rissman EF. Sex Differences in the Impact of Sire Exposure to BPA on Weight Gain, Glucose Tolerance, and Metabolic Endpoints in Offspring. Poster at International Society of Exposure Science (ISES) 27th Annual Conference, Oct. 15-19, 2017, Durham, NC.
74. Elnagheeb M, McRitchie S, Xue J, Valdar W, Tarantino LM, **Sumner S**, Ideraabdullah FY. The Effect of Genetic Background and Diet on Maternal Liver Metabolome during Pregnancy in the Collaborative Cross Genetic Reference Population. Poster at the 2017 UNC Gillings School of Global Public Health Practicum Day, October 6, 2017, Chapel Hill, NC.
75. Ghanbari R, Pathmasiri WW, McRitchie SL, Etemadi A, Pollock, Malekzadeh R, **Sumner SJ**. Metabolomics of Opiate Abusers Urine Specimens from the Golestan Cohort Study: A NIDA Invest Fellowship Project. Poster at the NIH C-F Metabolomics Program Annual Meeting, Sept. 27-28, 2017, Davis, CA.
76. Chou H, Pathmasiri W, Deese-Spruill J, **Sumner S**, Jima D, Funk DH, Jackson JK, Sweeney BW, Buchwalter DB (2017). Gene expression and metabolomics reveal physiological mechanisms underlying chronic thermal effects in mayfly larvae (*Neocloeon triangulifer*). Oral presentation at the Society of Freshwater Science (SFS) Annual Meeting, June 4-8, 2017, Raleigh, NC.
77. Myers O, **Sumner S**, Li S Barnes S, Du X (2017) New Algorithms for Reducing the Rate of False Positive and False Negative Compounds Detected from Mass Spectrometry Metabolomics Data. Poster at the 65th ASMS Conference, Indianapolis, IN June 4-8, 2017.
78. Allardice H, Mason A, **Sumner S**, Rissman E (2017) Preconception Paternal BPA Exposure Increases Body Weight and Impairs Glucose Tolerance in CD1 Mice Offspring. Poster at ENDO 2017, Orlando, FL April 1-4, 2017.
79. Gooding J, Reily C, Whitaker C, Vu HS, Acuff Z, McRitchie S, Julian BA, Novak J, **Sumner S** (2017). Characterization of Glycerophospholipid Separation in a HILIC LC-MS Metabolomics Method for Application to a Translational Study. Poster at ABRF 2017 Annual Meeting, San Diego, CA March 25-28, 2017.
80. Stewart D, Li Y, Pathmasiri W, Acuff Z, McRitchie S, **Sumner S**. Expansion of STS capability in cytokine array platform development: application in natural products research, January 18, 2017. Poster presented at RTI International's Internal Research & Development Annual Innovation Showcase, Research Triangle Park, NC.
81. Pathmasiri W, Li Y, Stewart D, McRitchie S, **Sumner S**. Establishment of a Platform to Evaluate Interactions Between Natural Products and Pharmaceutical Drugs, January 18, 2017. Poster presented at RTI International's Internal Research & Development Annual Innovation Showcase, Research Triangle Park, NC.
82. Cavallo TB, Mortensen NP, Deese-Spruill J, Stewart D, McRitchie S, Zachary Acuff Z, **Sumner SJ**. Flow Cytometry Method Development and Suitability of Cell Sorting in Metabolomics Analysis of Single Cell Populations, January 18, 2017. Poster presented at RTI International's Internal Research & Development Annual Innovation Showcase, Research Triangle Park, NC.
83. Merchant, M., Gooding, J., **Sumner, S**., McRitchie, S., Harrington, J., Burgess, J.P.,

Rovin, B.H., Klein, J.B., and Himmelfarb, J. (2016). Hemodialysis Patient Plasma Trace Metals Associate with Dialysis Incidence Versus Prevalence, Gender and Response to Erythropoiesis Stimulating Agents. ASN Kidney Week 2016 Nov 17 – 20, Chicago, IL.

84. Ongeri, E.M., Niyitegeka, J.M., Whitaker, C., McRitchie, S., Gooding, J, and **Sumner, S**. Meprin expression/activity impacts metabolite profiles in kidney tissue of mice with STZ induced type 1 diabetes. (2016). ASN Kidney Week 2016 Nov 17 – 20, Chicago, IL.
85. Gooding, J., Niyitegeka, J-M V., Mcritchie, S., **Sumner, S**., Ongeri E.M., and Whitaker*, C. Meprin beta-associated changes in serum and urine metabolite profiles of mice with streptozotocin (STZ) induced type 1 diabetes. ASN Kidney Week 2016 Nov 17 – 20, Chicago, IL.
86. McClenathan B, Choi YS, Stewart D, Pathmasiri W, and **Sumner S**. (2016). Metabotypes of subjects with adverse reactions following vaccination: a pilot study. Oral presentation at the Military Health System Conference, August 2016, Florida.
87. McRitchie, S, Richardson, A, Pathmasiri, W, Perera, F, **Sumner, S.** (2016). Structural equation modeling: linking exposure to birth- and early life- health outcomes via the metabotype of cord blood." 2016 Metabolomics Society Meeting, Dublin, Ireland, June 2016.
88. Snyder, R. W., Mortensen, N. P., Pathmasiri, W. W., **Sumner, S. J**., & Fennell, T. R. (2016). Distribution, cellular localization, and metabolomics of multi-walled carbon nanotubes in female rats." Society of Toxicology 55th Annual Meeting and ToxExpo, New Orleans, LA., March, 2016.
89. Vickery B, Kulis M, Hamilton D, Stewart D, Pathmasiri W, McRitchie S, Burgess J, **Sumner S**, Burks AW. (2016) NMR-based metabolomics analysis reproducibly identifies unique subject-specific profiles that change during peanut oral immunotherapy. American Academy of Allergy, Asthma & Immunology Annual Meeting, Los Angeles, CA, March, 2016.
90. Byrd, W., Carlson, J., McRitchie, S. **Sumner, S.J.**, Buse, J., Bencharit, S. (2016) Exploring Salivary Metabolomic Profiles of Well-Controlled and Poorly-Controlled Type 1 and Type 2 Diabetes. 2016 AADR/CADR Annual Meeting (March 16-19, 2016, Los Angeles, CA).
91. Gooding, J. R., Saggi, S. J., Friedman, E., Ranganathan, N., Rangnathan, P., Mercier, K., McRitchie, S. & **Sumner S.** (2015). Metabolomics of Chronic Kidney Disease in a Cohort of Patients Given Probiotics. Kidney Week, San Diego, CA, November 2015.
92. Gooding JR, Burgess J, McRitchie S, Agarwal S, Acuff Z, Smoyer WE, **Sumner S.** (2015). Metabolism in Steroid-Sensitive and Steroid-Resistant Nephrotic Syndrome. Mayo Clinic Metabolomics Symposium, Rochester, MN. Awarded second-place in poster competition, October 2015.
93. Cabrera A, Dhungana S, Sheridan P, and **Sumner S.** (2015). Metabolic profiling of anxiety prone HSV-latently infected obese mice. American Chemical Society. Duke University. Durham, NC., September 2015.
94. Moreno, M., Mercier, K., Deese-Spruill, Ward, T., and **Sumner, S**. (2015). A Metabolomics investigation on the impact of exposure to particulate matter from on Asthmatic Children. RTI Internship Showcase, August 2015.
95. Cabrera A, Dhungana S, Sheridan P, **Sumner S** (2015). Metabolomic Profiling of Anxiety Prone HSV-Latently Infected Obese Mice. RTI Internship Showcase, August 2015
96. Harris R, Dhungana S, **Sumner S**. (2015) UPLS-MS Broad Spectrum Lipidomics

Platform Development." RTI Internship Showcase, August 2015.

97. **Sumner, S. J.**, Richardson, A. S., McRitchie, S. L., Pathmasiri, W. W., & Perera, F. (2015) *Relating exposure to health outcomes via the metabotype of cord blood. A problem for structural equation modeling*. Poster presented at Advancing Analysis of Xenobiotics in Environmental and Biological Media, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 2015.
98. Deese-Spruill, J. Y., Carlson, J. E., Mercier, K. A., Monero, M., Devlin, R., Ward, T., and **Sumner, S. J.** (2015). *Particulate matter exposure and perturbations in the metabolome*. Poster presented at Advancing Analysis of Xenobiotics in Environmental and Biological Media, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 2015.
99. Dhungana, S., & **Sumner, S. J.** (2015). *Profiling endocannabinoids and cannabinoid receptor agonist/antagonist fatty acid amides using UPLC-TOF ion mobility mass spectrometry*. Poster presented at Advancing Analysis of Xenobiotics in Environmental and Biological Media, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 2015.
100. Fennell, T. R., Snyder, R. W., Pathmasiri, W. W., McRitchie, S. L., Burgess, J. P., & **Sumner, S. J**. (2015). *Metabolomics in the assessment of prior in utero exposure*. Poster presented at Advancing Analysis of Xenobiotics in Environmental and Biological Media, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 2015.
101. Pathmasiri, W. W., Laine, J. E., Bailey, K. A., Olshan, A. F., Smeester, L., Drobna, Z., Stýblo, M., García-Vargas, G., Rubio-Andrade, M., McRitchie, S., **Sumner, S. J**., and Fry, R. C. (2015). *A metabolomic signature of in utero inorganic arsenic exposure in fetal cord serum*. Poster presented at Advancing Analysis of Xenobiotics in Environmental and Biological Media, U.S. Environmental Protection Agency, Research Triangle Park, NC, August 2015.
102. Li, J., Stewart, P. A., Fisher, K. J., Dhungana, S., Stewart, D. A., **Sumner, S. J.,** Welsh, E. A., Eschrich, S., Chen, A., Haura. E. B. (2015). *Proteo-metabolomic dissection of small cell lung cancer using activity based protein profiling and metabolomics profiling*. Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
103. Cox, L., Pathmasiri, W. W., McRitchie, S. L., Sohn, J., Robine, N., **Sumner, S. J**., and Blaser, M. J. (2015). *Systemic metabolic impact of early-life microbiota disruption*. Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
104. Weiss, E. R., Dhungana, S., Osawa, S., McRitchie, S. L., & **Sumner, S. J**. (2015). *Metabolomic profiling of early events in retinal degeneration*. Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
105. Petrovic, S., McRitchie, S. L., DuBose, Jr., T., Pathmasiri, W. W., Burgess, J. P., Xu, J., **Sumner, S. J**. (2015). *Urine Metabolomics Profile in Early CKD*. Oral and poster presentations at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
106. Brophy, P., Mercier, K. A., McRitchie, S. L., Pathmasiri, W. W**., Sumner, S. J**., Koralkar, R., Koralkar, R., Askenazi, D. J. (2015). *Metabolomics profiling of renal development and acute kidney injury in premature infants*. Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
107. Stewart, D. A., Winnike, J., McRitchie, S. L., Pathmasiri, W. W., & **Sumner, S. J**. (2015). *Triple negative breast cancer biomarker identification for drug development*. Poster presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
108. Loeser, R., Pathmasiri, W. W., **Sumner, S. J**., McRitchie, S. L., Beavers, D., Saxena, P., Jordan J, Hunter DJ, Messier SP (2015). *Correlation of urinary metabolites with*

*radiographic progression of knee osteoarthritis in overweight and obese adults*. Poster presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.

109. Wiernek, S., Mercier, K. A., Pathmasiri, W. W., McRitchie, S. L., **Sumner, S. J**., & Dai, X. (2015). *Global metabolomic profiling of endothelial cell response to inorganic phosphate*. Poster presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.

110. Dhungana, S., & **Sumner, S. J.** (2015). *Profiling endocannabinoids and cannabinoid receptor agonist/antagonist fatty acid amides using UPLC-TOF ion mobility mass spectrometry*. Poster presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.

111. Wang, H., Liang, S., Wang, M., Gao, J., Sun, C., Wang, J., **Sumner, S. J**., et al. (2015). *Metabolomics study of autism for biomarker discovery in Han Chinese population*. Poster presented at Society of Biological Psychiatry's 70th Annual Scientific Meeting entitled Stress, Emotion, Neurodevelopment, and Psychopathology, Toronto, Canada, May 2015.

112. Stewart, D. A., Winnike, J., McRitchie, S. L., Pathmasiri, W. W., & **Sumner, S. J.** (2015). *Triple negative breast cancer: Metabolomics and flux analysis to identify targets for drug development*. Poster presented at the American Association for Cancer Research Annual Meeting, Philadelphia, PA, April, 2015.

113. Kenley, S., Whitaker, C., Niyitegeka, J., Sedighi, R., Gooding, J., McRitchie, S., **Sumner, S**., & Ongeri, E. M. (2015). *Meprin deficiency associated with higher levels of neutrophil gelatinase associated lipocalin (NGAL) and kidney injury molecule (KIM-1) in mice with streptozotocin induced type 1 diabetes*. Experimental Biology, San Diego, CA, April 2015.

114. Appt, S., Dhungana, S., McRitchie, S. L., & **Sumner, S. J.** (2014). *Ovarian metabolomic profiles differ between monkeys consuming prudent and Western diets*. Poster presented at North American Menopause Society (NAMS) 25th Annual Meeting, Washington, DC, October 2014.

115. Raymer, J. H., Michael, L. C., **Sumner, S. J**., Studabaker, W. B., Deese-Spruill, J. Y., Ward, T., Noonan, C., & Devlin, R. (2014). *Environmental exposures to PM and resultant metabolomic pertubations in humans*. Poster presented at the Annual Conference of the International Society of Exposure Science (ISES 2014), Cincinnati, OH, October 2014.

116. Mortensen, N. P., Stewart, D. A., Pathmasiri, W. W., Mercier, K. A., McRitchie, S. L., Cavallo, T., **Sumner, S. J.** (2014). *Metabolomics and darkfield microscopy of mammalian cells from microfluidic and transwell systems*. Poster presented at NIH Common Fund Metabolomics Consortium Meeting, Research Triangle Park, NC, October, 2014.

117. Burgess, J. P., Cavallo, T., Pathmasiri, W. W., Mercier, K. A., McRitchie, S. L., Novokhatny, A., & **Sumner, S. J.** (2014). *Metabotyping of ABO blood groups*. Poster presented at NIH Common Fund Metabolomics Consortium Meeting, Research Triangle Park, NC, October 2014.

118. **Sumner, S. J**., McRitchie, S. L., Pathmasiri, W. W., & Dhungana, S. (2014). *Metabolomics in the assessment of exposure and health outcomes*. Poster presented at 10th Annual International Conference of the Metabolomics Society, Tsuruoka, Japan, June 2014.

119. Weiss, E. R., Osawa, S., Dhungana, S., McRitchie, S. L., **Sumner, S. J.** (2014). *Metabolic differences between light- and dark-adapted mouse retinas*. Poster presented at The Association for Research in Vision and Ophthalmology (ARVO), Orlando, FL, May, 2014.

120. Novokhatny, A., **Sumner, S. J.**, Snyder, R. W., Lewin, A. H., Pathmasiri, W. W., Brown, J. M., et al. (2013). *A distribution and metabolomics investigation of the impact of fullerene C60 exposure in mice fed high fat diets and mice fed diets normal in fat.* Poster presented at North Carolina Section of the American Chemical Society Sectional Conference, North Carolina State University, Raleigh, NC, November 2013.

121. Dhungana, S., Thomas, B. F., & **Sumner, S. J.** (2013). *Comparison and refinement of UPLC-MS based broad spectrum metabolomics methods*. Poster presented at the American Society for Mass Spectrometry's 61st Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN, July 2013.

122. Novokhatny, A., **Sumner, S. J**., Snyder, R. W., Lewin, A. H., Pathmasiri, W. W., Brown, J. M., et al. (2013). *A distribution and metabolomics investigation of the impact of fullerene C60 exposure in mice fed high fat diets and mice fed diets normal in fat*. Poster presented at 52nd Annual Conference of the Society of Toxicology, San Antonio, TX, March, 2013.

123. Novokhatny, A., **Sumner, S**. J., Snyder, R. W., Lewin, A. H., Brown, J. M., McRitchie, S. L., et al. (2012). *A distribution and metabolomics investigation of the impact of fullerene C60 exposure in mice fed high fat diets and mice fed diets normal in fat*. Poster presented at 8th Annual State of North Carolina Undergraduate Research and Creativity Symposium, Fitzpatrick Atrium, Duke University, Durham, NC, November, 2012.

124. Novokhatny, A., **Sumner, S. J**., Snyder, R. W., Lewin, A. H., Pathmasiri, W. W., Brown, J. M., et al. (2012). *A distribution and metabolomics investigation of the impact of fullerene C60 exposure in mice fed high fat diets and mice fed diets normal in fat.* Poster presented at 4th Annual RTI International Internship Showcase, Dreyfus Auditorium, RTI International, Research Triangle Park, NC, August, 2012.

125. Brown, J.M., A. Vidanapathirana*, J.E. Pitzer, P. Ramakrishna, R.W. Snyder, **S.J. Sumner**, A.H. Lewin, L. Han, C.J. Wingard, X. Lai, F.A. Witzmann, and T.R. Fennell. (2012). *Endothelial cell cytotoxicity and activation by C60, multi-walled carbon nanotubes and graphene nanosheets*. *Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

126. **Sumner, S.C.J**., R.W. Snyder, A.H. Lewin, J.A. Brown, C.J. Wingard, and T.R. Fennell. (2012). *Pharmacokinetics and distribution of fullerene C60 in female rats and mice. Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

127. Yoon, M., Y. Yang, **S.J. Sumner**, R.W. Snyder, J Pitzer, J.M. Brown, T.R. Fennell, and H.J. Clewell. (2012). *Development of a PBPK model for C60 fullerene disposition during gestation and lactation in the rat*. *Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

128. Brim, H., Lee, E. L., Nelson, K. E., Smoot, D. T., Sears, C. L., Hassanzadeh, H., Pathmasiri, W., **Sumner, S. C.**, Ashktorab, Hassan. (2012). *A comprehensive taxonomic, metagenomic and metabolomic gut flora analysis reveals distinct profiles in healthy and colon adenoma African Americans*. *Gastroenterology, 142* (5, Supplement 1), S-655.

129. Szabo*, D., Shah, R., **Sumner, S**., & Birnbaum, L. (2012). *NBTS 35: Systems biology approach for better understanding of mechanisms of neurodevelopment toxicity: A case study using the major flame retardant HBCD. Neurotoxicology and Teratology, 34*(3), 379.

130. Thompson, L.C., E.E. Mann, A. Vidanapathirana*, B.S. Harrison, L. Han, A.H. Lewin**, S. Sumner**, T.R. Fennell, J.M. Brown, and C.J. Wingard. (2012). *Pulmonary exposure to*

*multi-walled carbon nanotubes and C60 fullerenes activate indomethacin sensitive coronary constrictor responses to endothelin-1. Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

131. Urankar, R.N., R.A. Lust, A.H. Lewin, L. Han, **S. Sumner**, T.F. Fennell, J.M. Brown, and C.J. Wingard. (2012). *Cardiac ischemic/reperfusion injury response to instilled C60 fullerene*. *Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

132. Vidanapathirana*, A.K., L.C. Thompson, E.E. Mann, **S. Sumner**, L. Han, A.H. Lewin, T.R. Fennell, J.M. Brown, and C.J. Wingard. (2012). *The effect of C60 fullerene instillation on the vascular responses in pregnant Sprague Dawley rats*. *Toxicologist* (Poster presented at the 2012 Annual Meeting of the Society of Toxicology, San Francisco, CA).

133. Banerjee*, R., R. Snyder, W. Pathmasiri, and **S. Sumner**. (2011). *Metabolomics: Investigating the impact of gestational exposure to a phthalate on the brain and reproductive organs of the dam and prepubertal pups. Toxicologist 2202*:472.

134. Szabo*, D., W. Pathmasiri, J. Diliberto, **S. Sumner**, and L. Birnbaum. (2011). *Metabolomic analysis of serum after treatment with the emerging POP flame retardant Hexabromocyclododecane (HBCD): Commercial mixture, alpha and gamma stereoisomers elicit differential effects in infantile mice*. *Toxicologist 2248*:482.

135. Collier, D.N., W. Pathmasiri, K.J. Pratt*, Y. Crawford, S. Henes, A. Gross-McMillan, L. Lutes, and **S. Sumner.** (2011). *Obesity treatment and the biology of behavior: Metabolomic analysis of response to a behavioral intervention*. American Pediatrics Society Meeting, Denver, CO, April 30–May 3.

136. **Sumner, S.C**., R. Snyder, T. Fennell, R. Fernando, and B.J. Collins. (2010). *Metabolomics analysis of urine from resveratrol-treated male, female, and pregnant Wistar Han rats*. *Toxicologists 131*:284.

137. Fennell, T. R., Fernando, R. A., **Sumner, S**., & Collins, B. J. (2010). *Metabolomic analysis of urine from resveratrol-treated male, female, and pregnant Wistar Han rats*. Poster presented at the Annual Meeting of the Society of Toxicology, Salt Lake City Ut, March 2010.

138. Snyder, R., Fennell, T., Taylor, G. F., Lewin, A. H., Burgess, J. P., & **Sumner, S. J.** (2009). *Nanotoxicology in vivo distribution of [14C]C60 in pregnant and lactating rats*. Poster presented at the Annual Meeting of the Society of Toxicology, Baltimore, MD, March 2009.

139. **Sumner, S. J**., & Knudsen, T. B. (2009). *Incorporating 'omics in the study of reproduction and development*. Presented at the Annual Meeting of the Society of Toxicology, Baltimore, MD, March, 2009.

140. **Sumner, S. J**., Snyder, R., Burgess, J. P., Tyl, R., Sloan, C., & Fennell, T. (2009). *Metabolomics in the study of reproduction and development*. Presented at the Annual Meeting of the Society of Toxicology, Baltimore, MD, March, 2009.

141. Snyder, R., T. Fennell, G. Taylor, A. Lewin, J. Burgess, and **S. Sumner**. (2009). Distribution of $^{14}$C[C60] in the pregnant and lactating rat. Published in *Toxicologist 340*:112, March 2009.

142. **Sumner, S**. and T. Knudsen. (2009). Incorporating–omics in the study of reproduction and development. Published in *Toxicologist 1313*:218, March 2009.

143. **Sumner, S**., R. Snyder, J. Burgess, R. Tyl, S. Sloan, and T. Fennell. (2009). *Metabolomics in the study of reproduction and development*. Published in *Toxicologist*

*1414*:218, March 2009.

144. **Sumner, S.C.J**., R. Snyder, J. Burgess, C. Myers, R. Tyl, C. Sloan, and T. Fennell. (2008). *Metabolomics: Application to the study of phthalates in reproduction and developmen*t. *Toxicologist 63*, March, 2008. Published in *Toxicologist 64*:11.

145. Snyder, R. W., **Sumner, S. J**., Fennell, T. R., Burgess, J. P., Myers, C. B., & Deese-Spruill, J. Y. (2008) *Metabolomics: Markers of drug-induced liver injury*. Poster presented at the Annual Meeting of the Society of Toxicology, Seattle, WA, March 2008.

146. Snyder, R., Burgess, J., Deese-Spruill, J., Myers, C., Wu, S., Fennell, T., and **Sumner, S.** (2008). Metabolomics: Urinary markers of drug-induced liver injury with correlation with lobe variations in response. Published in *Toxicologist 1917*:344.

147. Snyder, R., J. Burgess, C. Myers, C. Sloan, R. Tyl, T. Fennell, and **S. Sumner**. (2007). *Metabolomics: Application to Reproductive and Developmental Toxicology*. North Carolina Society of Toxicology (NCSOT), U.S. Environmental Protection Agency, Research Triangle Park, NC, March 19, 2007.

148. **Sumner, S**., R. Snyder, J. Burgess, C. Myers, R. Tyl, C. Sloan, and T. Fennell. (2007). Metabolomics in Reproduction and Development from Exposure to Phthalates, NIEHS Workshop Publication on Endocrine Disruption, Durham, NC, August 27–29, 2007.

149. Deese-Spruill, J. Y., Snyder, R. W., Fennell, T. R., Burgess, J. P., Myers, C., & **Sumner, S. J.** (2007). *GC/MS metabolomics: Application to drug-induced liver injury*. Poster presented at RTI Fellows Internal Symposium (Presented by J. Y. Deese-Spruill), Research Triangle Park, NC, October, 2007.

150. Snyder, R. W., Burgess, J. P., Deese-Spruill, J. Y., Myers, C. B., Wu, S., Fennell, T. R., & **Sumner, S. J.** (2007). *Metabolomics: Urinary markers of drug-induced liver injury with correlation lobe variations in response* (Presented by J. Deese-Spruill). Poster presented to the North Carolina Society of Toxicology (NCSOT), Charlotte, NC, March 2007.

151. Deese-Spruill, J. Y., Snyder, R. W., Fennell, T. R., Burgess, J. P., Myers, C., & **Sumner, S. J.** (2007). *GC/MS metabolomics: Application to drug-induced liver injury*. Presented to the North Carolina Society of Toxicology (NCSOT) (Presented by J. Deese-Spruill), Research Triangle Park, NC, March, 2007.

152. Burgess, J. P., Snyder, H., Page, K. M., Fennell, T. R., Myers, C. B., & **Sumner, S. J.** (2007). *Quantitative NMR metabolomics of liver extracts: Application to drug-induced liver injury*. Presented to the North Carolina Society of Toxicology (NCSOT) at the National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC, March, 2007.

153. Fennell, T.R., R.W. Snyder, S.C. **Sumner, J**. Burgess, and M.A. Friedman. (2006). Kinetics of elimination of urinary metabolites of acrylamide in humans. *Toxicological Sciences 90*:S-1. [Abstract No. 166].

154. Burgess, J., R. Snyder, T. Fennell, and **S. Sumner**. (2006). *Metabolomics for discovery of biomarkers of hepatotoxicity*. Presented at SMASH, Burlington, VT, September 11–13.

155. Fennell, T., J. Burgess, S. Wu, R. Snyder, and **S. Sumner**. (2006). *Quantitative metabolomics: Markers of drug-induced liver injury*. Presented at the Biomarker World Congress, Philadelphia, PA. May 16–18.

156. **Sumner, S. J.** (2006). *Metabolomics in reproductive toxicology*. Presented at Science and Engineering Fellows Symposium (Sponsor: Rochelle Tyl), RTI International, Research Triangle Park, NC, September, 2006.

157. Colatsky, T.J., A.J. Higgins, B.R. Bullard, and **S.C. Sumner**. (2004). Metabolomics:

Urine and serum biomarkers for acetaminophen hepatotoxicity in rats. *Toxicologist 78*(S1):843.

158. Higgins, A.J., T.J. Colatsky, B.R. Bullard, and **S.C. Sumner**. (2004). Metabolomic analysis of the mechanisms of acetaminophen liver toxicity in rats. *Toxicologist 78*(S1):842.

159. Fennell, T.R., R.W. Snyder, W. Krol, M. Friedman, and **S.C. Sumner**. (2003). Hemoglobin adducts from N-methylolacrylamide in rats: comparison with those formed by acrylamide. *Toxicological Sciences 72*:S-1. [Abstract No. 1206].

160. **Sumner, S. C**., C.C. Williams, R. Snyder, W. Krol, and T.R. Fennell. (2002). Acrylamide: Metabolism and hemoglobin adducts following intraperitoneal, dermal, or inhalation exposure. *Toxicological Sciences 66*:S-1. [Abstract No. 1383].

161. Fennell, T.R., R.W. Snyder, W. Krol, B. Chanas, F. Gonzalez, B.I. Ghanayem, and **S.C. Sumner**. (2002). Effect of CYP2E1 genotype on acrylonitrile hemoglobin adducts. *Toxicological Sciences* 66:S-1. [Abstract No. 1112].

162. Banijamali, A.R., V. DeMatteo, M.H. Gay, R.J. Strunk, and **S.J. Sumner**. (2001). Deuterium Labeling: A Novel Approach in Determining the Biochemical Pathway for the Formation of Bis-Glutathione Conjugates of Propargyl Alcohol in Rats. *221st American Chemical Society National Meeting*. San Diego, CA, April.

163. **Sumner, S**., B. Ghanayem, B. Asgharian, C. Williams, B. Chanas, F. Gonzalez, and T.R. Fennell. (2001). The role of cytochrome P450 in the metabolism of [$^{13}C/^{13}C$]styrene. *Toxicological Sciences 60*(Suppl):403. [Abstract No. 1921].

164. Friedman, M., T.R. Fennell, B. Asgharian, C. Williams, and **S.J. Sumner**. (2001). Metabolism and distribution of acrylamide in rats and mice following inhalation exposure or dermal application. *Toxicological Sciences 60*(Suppl):93. [Abstract No. 444].

165. Fennell, T.R., W. Krol, **S.C.J. Sumner**, and R.W. Snyder. (2001). Placental transfer of dibutylphthalate metabolites in pregnant rats. *Toxicological Sciences, 60*(Suppl):292. [Abstract No. 1390].

166. Friedman, M., **S. Sumner**, C. Williams, and T. Fennell. (2000). Characterization of urinary metabolites of [1, 2, 3-$^{13}C$]acrylamide in male F344 rats following dermal application or ip injection. *Toxicological Sciences 54*(Suppl):296. [Abstract No. 1385].

167. **Sumner, S**., B. Asgharian, K. Roberts, T.A. Moore, and T.R. Fennell. (2000). 1,1,1,3,3,3-Hexachloropropane: Metabolism and distribution in male and female Sprague Dawley rats. *Toxicological Sciences, 54*(Suppl):57. [Abstract No. 265].

168. Fennell, T.R., R.W. Snyder, S.C. Maness, K.W. Gaido, **S. Sumner**, and F. Welsch. (2000). Metabolism and disposition of bisphenol A in female rats. *Toxicological Sciences* 54(Suppl):371. [Abstract No. 1740].

169. **Sumner, S**., T. Fennell, T. Moore, B. Chanas, F. Gonzalez, and B. Ghanayem. (1999). The role of cytochrome P450 in the metabolism of acrylamide. *Toxicological Sciences 48*(1-S):110. [Abstract No. 516].

170. **Sumner, S**., T. Fennell, T. Moore, B. Chanas, F. Gonzalez, and B. Ghanayem. (1999). The role of cytochrome P450 2E1 (CYP 2E1) in acrylonitrile metabolism. *Toxicological Sciences 48*(1-S):110. [Abstract No. 517].

171. Banijamali, A.R., Y. Xu, R.J. Strunk, M.H. Gay, G.J. Putterman, and **S.J. Sumner**. (1999). Identification of Metabolites of [1,2,3-$^{13}C$]Propargyl Alcohol in Mouse Urine by $^{13}C$ NMR and Mass Spectrometry. *2nd Pan-Pacific Conference on Pesticide Science*,

Honolulu, HI, October.

172. **Sumner, S**., B. Asgharian, T. Moore, and T. Fennell. (1998). Metabolism of tertiary amyl methyl ether in mice. *Toxicological Sciences 42* (1-S):90. [Abstract No. 443].

173. Collins, A. S., **Sumner, S. J**., Borghoff, S. J., & Medinsky, M. A. (1998). *PBPK modeling and hypothesis testing for TAME and TAA in male Fischer-344 rats*. Poster presented at 1998 National Institute of Environmental Health Sciences (NIEHS) Trainees Assembly Science Fair, NIEHS, Research Triangle Park, NC, December, 1988.

174. Collins, A. S., **Sumner, S. J**., Borghoff, S. J., & Medinsky, M. A. (1998). *Hypothesis testing of model structures using physiologically based pharmacokinetic models for tert-amyl methyl ether and tert-amyl alcohol*. Presented at the Annual Meeting of the Society for Risk Analysis, Phoenix, AZ, June, 1998.

175. Collins, A. S., **Sumner, S. J**., Borghoff, S. J., & Medinsky, M. A. (1998). *PBPK modeling and hypothesis testing for TAME and TAA in male Fischer-344 rats*. Poster presented at Fourth National Health and Environmental Effects Research Laboratory's (NHEERL's) Symposium on Research Advances in Risk Assessment, Cary, NC, April, 1998.

176. Collins, A. S., **Sumner, S. J**., Borghoff, S. J., & Medinsky, M. A. (1998). *Development of a physiologically based pharmacokinetic model for tertiary-amyl methyl ether and tertiary-amyl alcohol in male Fischer-344 rats*. Poster presented at the 37th Annual Meeting of the Society of Toxicology, Seattle, WA, March 1998. *Toxicological Sciences, 42*, 1-S (Abstract No. 702).

177. Selveraj, L., T.R. Fennell, and **S.C.J. Sumner**. (1997). Characterization of phosphodiester adducts produced by the reaction of ethylene oxide with nucleotides. *Fundamental and Applied Toxicology* 36(1, Part 2):97. [Abstract No. 496].

178. **Sumner, S.C.J**., B. Asgharian, and T.R. Fennell. (1997). Blood pharmacokinetics of tertiary amyl methyl ether in male and female rats and mice following inhalation exposure. *Fundamental and Applied Toxicology 36*(1, Part 2):338. [Abstract No. 1719].

179. **Sumner, S.C.J**., B. Asgharian, C. Laethem, and T.R. Fennell. (1997). Blood pharmacokinetics of tertiary amyl methyl ether in male and female rats and mice following inhalation exposure. *ISSX Proceedings* 12:144. [Abstract No. 288].

180. Nauhaus, S.K., T.R. Fennell, and **S.C.J. Sumner**. (1996). Metabolites in rat and mouse urine following administration of a mixture of [1,2,3-$^{13}$C]acrylamide and [1,2,3-$^{13}$C]acrylonitrile analyzed by NMR spectroscopy. *Toxicologist 30*:9. [Abstract No. 48].

181. **Sumner, S.C.J.**, S.K. Nauhaus*, J.A. Bond, B. Asgharian, and T.R. Fennell. (1996). Characterization of urinary metabolites from Sprague-Dawley rats and B6C3F1 mice exposed to [1,2,3,4-$^{13}$C]butadiene. *Toxicologist* 30:317. [Abstract No. 1628].

182. Banijamali, A.R., R.A. Covey, and **S.J. Sumner**. (1996). Characterization of the urinary metabolites of [1,2,3-$^{13}$C]propargyl alcohol in rats using $^{13}$C NMR spectroscopy. 211th American Chemical Society National Meeting, New Orleans, LA, March.

183. Cheng, S.-Y., C.D. Brown, T.R. Fennell, and **S.C. Jenkins-Sumner**. (1995). Detecting metabolites in tissues of rats exposed to $^{13}$C-labeled acrylamide using NMR spectroscopy. *Toxicologist 15*:109 [Abstract No. 576].

184. Cheng, S.-Y., C.D. Brown, T.R. Fennell, and **S.C. Jenkins-Sumner**. (1995). Application of NMR spectroscopy for direct detection of metabolites in tissues of rats exposed to $^{13}$C-labeled acrylamide*. Int. Toxicologist,* 85-P-6.

185. **Sumner, S.C**., B. Asgharian, O. Moss, R.C. Cattley, and T.R. Fennell. (1995). Correlating styrene metabolism and distribution with hepatotoxicity. *Toxicologist15*:4. [Abstract No. 20].

186. Cheng, S.-Y., D.B. Stedman, F. Welsch, T.R. Fennell, and **S.C.J. Sumner**. (1994). Urinary metabolites of [1,2,methoxy-$^{13}$C] 2-methoxyethanol in rats and mice at different doses determined by $^{13}$C NMR spectroscopy. *Toxicologist 12*:87.

187. Fennell, T.R., N.L. Youtsey, O. Moss, B. Asgharian, and **S.C.J. Sumner**. (1994). Metabolism of inhaled styrene in rats and mice. *Toxicologist 14*:332.

188. **Sumner, S.C.J**., K. Krishnan, O. Moss, O. Asgharian, and T.R. Fennell. (1993). Evaluation of species and sex differences in the urinary metabolites of [$^{13}$C]-ethylene oxide using NMR spectroscopy. *Toxicologist 13*:402.

189. **Sumner, S.C.J.**, K. Krishnan, O. Moss, O. Asgharian, and T.R. Fennell. 1993. Investigation of species and sex differences in the metabolism and disposition of ethylene oxide. *Proceedings of the American Association for Cancer Research 34*:161.

190. Fennell, T.R., V.E. Walker, and **S.C.J. Sumner**. 1992. A model for the accumulation and removal of hemoglobin adducts. *Toxicologist 12*:191.

191. Yates, J.M., T.R. Fennell, M.J. Turner, L. Recio, and **S.C.J. Sumner**. 1992. Characterization of DNA adducts from the reaction of cyanoethylene oxide with nucleosides, nucleotides, calf thymus DNA, and oligonucleotides that model mutational target sequences. *Toxicologist 12*:249.

192. **Sumner, S.C.J**., D.B. Stedman, T.R. Fennell, and F. Welsch. 1992. Species and dose effects on the urinary metabolites of [1,2, 3-$^{13}$C] methoxyethanol using NMR spectroscopy. *Toxicologist 12*:387.

193. Fennell, T.R., V.E. Walker, and **S.C.J. Sumner**. 1992. A model for the accumulation and removal of hemoglobin adducts. *Proceedings of the American Association for Cancer Research 33*:147.

194. **Sumner, S.C.J**., T.R. Fennell, B. Asgharian, O.R. Moss, and J.A. Bond. 1992. Characterization of metabolites in rat and mouse urine following exposure to 1,3-butadiene. *Proceedings of the American Association for Cancer Research 33*:157.

195. Fennell, T.R., S**.C.J. Sumner**, S.D. Held, and G.L. Kedderis. 1991. Detection of urinary metabolites of [1,2,3-$^{13}$C]acrylonitrile in the rat and mouse using $^{13}$C nuclear magnetic resonance spectroscopy*. Toxicologist 10*:333.

196. **Sumner, S.C.J**., D.O. Clarke, F. Welsch, and T.R. Fennell. 1991. Urinary metabolites of 2-methoxyethanol determined by NMR spectroscopy. *Toxicologist 11*:50.

197. **Sumner, S.C.J**., and T.R. Fennell. 1991. The assignment and quantitation of urinary metabolites of acrylonitrile in the rat and mouse using NMR spectroscopy*. Proceedings of the American Association for Cancer Research 32*:123.

198. Fennell, T.R., and **S.C.J. Sumner**. 1991. NMR characterization of the complex mixture of endogenous and exogenous metabolites in urine*. Proceedings of the 32nd Experimental NMR Spectroscopy Conference 1991*.

199. **Sumner, S.C.J**., J.P. MacNeela, and T.R. Fennell. 1990. Urinary metabolites of [1,2,3-$^{13}$C]acrylamide determined by $^{13}$C nuclear magnetic resonance spectroscopy. *Toxicologist 10*:332.

## SELECTED INVITED PRESENTATIONS

1. Keynote: The impact of metabolomics on nutrition research: past, present & future, 20th NuGOweek 2024 on: “INTEGRATING NUTRITIONAL OMICS INTO A HEALTHY DIET”, Ghent, Belgium, September 2 to 5, 2024.
2. Metabolomics in Precision Nutrition. NUTRITION 2024, Annual Conference of the American Society for Nutrition (ASN); 2024 June 29 – July 2; McCormick Place, Chicago, IL.
3. Metabolomics and Human Health: Omics and Translation tools in nutritional research section (May 16, 2024). NGx and Precision Nutrition in Clinical Practice. May 13-16, 2024. Charlotte, NC.
4. Metabolomics to inform Precision Health. Precision Nutrition for the National Dairy Council Workshop. December 13, 2023.
5. Sumner S, Metabolomics: A Tool for Precision Medicine, Nutrition, and Environmental Health. NYU Langone Health Seminar; 2023 October 30, 2023; New York.
6. Invited Plenary Speaker: Exposome: Precision Medicine, Precision Nutrition, and Precision Environmental Health. 4th Annual Canadian Metabolomics Conference (CanMetCon); 2023 June 15, 2023 - June 16, 2023, Prince of Wales Hotel in Niagara-on-the-Lake, ON, Canada.
7. *Metabolic Individuality and Nutrition for Precision Health*, Precision Nutrition: Connections Between Food, Environment, and Health | March 22, 2023 (Virtual Mini-Symposium and Forum), Organized by UNC Program for Precision Medicine in Healthcare (PPMH).
8. *Metabolomics and Opioid Use Disorder*. Speaker and panelist at the Joint FDA and NIH Workshop on Risk Prediction Devices of Opioid Use and Opioid Use Disorder-Opportunities and Challenges November 8, 2022. (Virtual).
9. *Precision Nutrition and the Environment*. 11th Annual Mayo Clinic Individualizing Medicine Conference at the Mayo Clinic, November 2-3, 2022.
10. *The Exposome in Precision Medicine and Precision Nutrition*. MANA Fall Symposium. "We are what we eat - Metabolomics leading the way for Nutrition Research". October 14 (virtual, hosted by UC Davis).
11. *The Concept of the Internal Exposome in Precision Medicine, Precision Nutrition, and Precision Environmental Health*. Duke Endocrine Grand Rounds Virtual Symposium on Nutritional Metabolomics, Sept. 16, 2022.
12. *The Internal Exposome in Precision Medicine and Precision Nutrition*. HHEAR Exposomics Webinar Series, Translation of Exposomics to Precision Medicine and Precision Nutrition, July 25, 2022.
13. *Microbiome and Metabolomics in Precision Nutrition*. The North Carolina Microbiome Consortium. North Carolina Biotechnology Center. May 25. 2022.
14. *Metabolomics, the Exposome, and Precision Health*. UNC NRI Nutrigenomics, Nutrigenetics Workshop. Embassy Suites by Hilton Charlotte Concord Golf Resort and Spa May 17, 2022.
15. *The Internal Exposome in Precision Medicine and Precision Nutrition*. Building Scientific Bridges. CUREGN Virtual Investigators Meeting. April 18, 2022.
16. *The Exposome and Precision Nutrition*. The American Chemical Society Conference. August 22 - 26, 2021.
17. *Nutritional Pharmacology/Toxicology informs Precision Nutrition. Core Center for Clinical* Research. Thurston Arthritis Research Center, UNC School of Medicine, August 4, 2021.

18. *Metabolomics and Drug Addiction Research*. Bowles Center for Alcohol Studies, UNC School of Medicine, September 27, 2021.
19. *Metabolomics, and Exposome, in Nutrition for Precision Health.* UNC NRI Nutrigenomics/Nutrigenetics Workshop. May 20, 2021. Virtual.
20. *Why Metabolomics Matters in Nutritional Pharma/Tox*. UNC Chapel Hill Department of Pharmacology Seminar Series. February 9, 2021. Virtual.
21. *Metabolomics Reveals Biomarkers of Opium Use Disorder, and Informs Nutritional Intervention Strategies*. Global Summit on Regulatory Science 2020 (GSRS20). September 28-30, 2020. Virtual.
22. *The Dietary Exposome.* The Chemical Space in Exposure Assessments. International Society of Exposure Science. September 20-24, 2020. Virtual or Oakland, CA.
23. *The Internal Exposome in Precision Nutrition: A Study of Opium Use, and Opium Use Disorder*. Dartmouth Department of Epidemiology's Seminar Series, June 04, 2020, Dartmouth College, NH. Online presentation.
24. *The Internal Exposome in Drug Addiction Research*. Environmental Health Seminar Series, February 27, 2020, University of Washington, WA.
25. *Precision Nutrition: Metabolomics to Deliver Biomarkers and Mechanistic Insights*. Health Talks speaker series. February 6, 2020, Arizona State University, AZ.
26. *The Internal Exposome, Opium Use, and Opioid Use Disorder*. NIDA Genetics and Epigenetics Cross-Cutting Research Meeting, January 13-14, 2020, NIDA Headquarters, 6001 Executive Blvd., Rockville, MD 20892.
27. *The Internal Exposome, Opium Use Disorder, and Nutrition Intervention*. November 15- 17, 2019. Metabolomics Association of North America, Atlanta, GA. (Keynote).
28. *The Exposome Meets Precision Nutrition*: Applications in Addiction, Maternal and Child Health, and Obesity and Diabetes. Plenary speaker for the Annual Ohio Mass Spectrometry and Metabolomics Symposium, October 1-2, 2019, Columbus, OH.
29. *The Internal Exposome and Opium Use Disorder*: Implications for Precision Nutrition. National Institute of Drug Abuse, July 10, 2019, Rockville, MD.
30. *Metabolome, Exposome, and Precision Nutrition: Why Vitamins and Essential Nutrients Matter*, June 23, 2019. Metabolomics Enabling Tools for Large Studies and Biobank Initiatives – A Precision Medicine Approach – A Satellite Symposium by the Metabolomics Society Precision Medicine Task Group, Metabolomics 2019, The Hague, The Netherlands.
31. *Untargeted Exposome Analysis for Nutrient Intervention*, June 3-6, 2019. Nutrigenetics, Nutrigenomics and Precision Nutrition, Kannapolis, NC.
32. *Metabolic Individuality and Precision Nutrition*, February 15, 2019. ECHO Obesity Working Group Metabolomics Subgroup Virtual Meeting.
33. *Metabolic Individuality and Precision Nutrition*, February 3-8, 2019. The Gordon Research Conference, "Understanding Human Diseases through Metabolomics: Interactions Among the Genome, Proteome, Gut Microbiome and Nutrition, Ventura, CA.
34. *Metabolic Individuality and Precision Nutrition*, January 18, 2019. Metabolic Health Center Symposium, Stanford University, Palo Alto, CA.
35. *Metabolic Individuality and Precision Nutrition*: An Evidence-based Approach to Communicating Confidence in Untargeted Analysis of the Metabolome/Exposome, January 15, 2019. Mass Spectrometry Users Group Meeting, UNC-Chapel Hill, Chapel Hill, NC.

36. *Exposome and Metabolic Phenotyping*, SEARCH for Diabetes in Youth Study Group Meeting, November 14-15, 2018. Denver, CO.
37. *Metabolomics and Metabolic Phenotyping Core*, NORC Directors Meeting, November 11-12, 2018. Nashville, TN.
38. *Communicating Confidence in the Untargeted Analysis of the Exposome*, November 1-2, 2018, CHEAR Grantee Meeting, New York, NY.
39. Keynote Presentation. *Communicating Confidence in Untargeted Assignment of the Exposome*, June 27, 2018. Metabolomics 2018, Seattle, WA.
40. *Technologies to Capture Influences of Exposome and Diet*, June 25, 2018. Precision Medicine Workshop, Metabolomics 2018, Seattle, WA.
41. *Core Facilities Forum*, June 24, 2018. Metabolomics Association of North America Meeting, Metabolomics 2018, Seattle, WA.
42. Invited panel discussant, June 24, 2018. *QA and QC in Untargeted Metabolomics*, Metabolomics 2018, Seattle, WA.
43. *Metabolomics, Nutrition Research*, June 4, 2018. Nutrigenomics, Nutrigenetics, and Precision Nutrition Conference, Kannapolis, NC.
44. *An Overview of Precision Nutrition at UNC NRI*. May 1-2, 2018. Defining Precision Nutrition Symposium. North Carolina Research Campus.
45. *Appetite for Life*, Kannapolis, NC. March 14, 2018. (Community presentation for the NC Research Campus).
46. *Metabolomics in Nutrition Research*. University of Texas at Austin. November 16-17, 2017.
47. *Metabolomics and Metabolic Phenotyping Core*. NORC External Advisory Board Meeting, Chapel Hill, NC. November 15, 2017
48. *Metabolomics in Nutrition Research*. 2017 Food & Nutrition Conference, Chicago, IL. October 21-24, 2017.
49. *Best practices of the NIH Metabolomics Resource Cores*. NIH C-F Metabolomics Program Annual Meeting, Sept. 27-28, 2017, Davis, CA.
50. *Metabolomics in Nutrition Research.* ILSI North America's Food, Nutrition and Safety Program (FNSP) mid-year meeting, Arlington, VA. July 18, 2017.
51. *Metabolomics in KidneyDisease.* The Sri Lanka Medical Association's 130$^{th}$ Anniversary International Medical Congress via skype, Colombo, Sri Lanka. July 13-16, 2017
52. *Metabolomics and Cell-Based Research*. Humacyte, Inc., Morrisville, NC. June 27, 2017.
53. *Metabolomics and Opium Addiction*. Joint NIDA-NCI meeting, Rockville, MD. June 7, 2017.
54. *Nutritional Metabolomics*. Nutrigenomics, Nutrigenetics, and Precision Nutrition Conference, Kannapolis, NC. May 22-25, 2017.
55. *The NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Core*. 6$^{th}$ Annual NCRC Catalyst Research Symposium, Kannapolis, NC. April 17, 2017.
56. *Harmonization of Untargeted Analysis Cores for the Children Health Exposure Analysis Resource (CHEAR) Hub.* International Society of Exposure Sciences. Utrecht, Netherlands. October 10, 2016.

57. *Structural Equation Modelling to Link Exposure to Health Outcomes via the Metaboytpe of Cord Blood.* International Society of Exposure Sciences. Utrecht, Netherlands. October 10, 2016.
58. *The Metabotype of Blood Type and Implications in Disease Risk*. NHLBI Blood Diagnostics Meeting, Bethesda, MD, September 22-23, 2016.
59. *Metabolomics in Women's Health*, University of California at Davis, September 7, 2016.
60. *Metabolomics in Maternal and Child Health,* Presented at National Institute of Standards and Technology, Charleston, South Carolina, August 1, 2016.
61. *Experiences as a Regional Metabolomics Center.* 4th Annual Workshop on Metabolomics, University of Alabama Birmingham, July 17-21, 2016.
62. *Early biomarkers to predict risk of third trimester placental abruption*. June 30, 2016 Metabolomics Society Meeting, Dublin, Ireland.
63. *Metabolomics in Nutrition Research.* Presented at the Nutrigenomics, Nutrigenomics, and Precision Nutrition Workshop. May 22-26, 2016.
64. *Metabolomics in Nutritional Research, and Implications in Blood Type Research*. Presented at American Society for Nutrition (ASN) Experimental Biology, Promise of Metabolomics for Advancing Nutrition Research, San Diego, CA. April 6, 2016.
65. *Biomarkers in Maternal and Child Health*. Presented at New York University Medical Center, New York, NY. January 29, 2016.
66. *Metabolomics for Pediatric Biomarkers*. J. Yaffe Memorial Lecture Series, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development. Bethesda, MD. January 16, 2016.
67. *Metabolomics in Maternal and Child Health*. Presented at the University of Michigan Medical School, Ann Arbor, MI. December 9, 2015.
68. *Metabolomics to Reveal Markers of the Environmental Influence of Disease in Pregnancy and Early in Life.* Presented at Emory University, Atlanta, GA. October 13, 2015.
69. *Metabolomics as a Tool for Characterizing the Exposome.* Presented at the National Academy of Sciences, Washington, DC. May 28–29, 2015.
70. *New Horizons. Metabolomics of Kidney Disease*. Presented at the Emerging Trends in Dialysis Care. SUNY DownState Medical Center, NY, May 8, 2015.
71. *Metabolomics in Epidemiology*. Presented to the School of Veterinary Medicine, North Carolina State University, Raleigh, NC. March 2015.
72. *Why Biomarkers Matter*. Presented at Cancer Prevention in India: Catalyzing Action and Enhancing Implementation, New Delhi, India. February 20, 2015.
73. *Translational Sciences*. Presented to the Department of Biology, North Carolina AT&T State University, Greensboro, NC. January 30, 2015.
74. *Metabolomics in Environmental Sciences*. Presented at the Nicholas School of the Environment, Duke University, Durham, NC. January 28, 2015.
75. *Metabolomics to Provide Biomarkers and Mechanistic Insights*. INDO-US Symposium: Mass Spectrometry Based Metabolomics in Disease Biology, Trivandrum, Kerala, India. January 23–24, 2014.
76. Metabolomics in Toxicology. Presented to the American Chemical Society, Indianapolis, IN. October 10, 2013.

77. Metabolomics at RTI. Presented at the Metabolomics Society Meeting, Glasgow, Scotland. July 2013.
78. *Metabolomics in Urology.* Presented at the NIH Workshop at Lister Hill, Bethesda, MD. February 2013.
79. *Personalized Medicine and Environmental Omics*. Presented at the Environmental Omics Conference, Guangzhou, Guangdong Province. November 8–12, 2011.
80. *Metabolomics for the Midwestern Pediatric Nephrology Consortium*. Presented in Chicago, IL. November 11, 2012.
81. *Metabolomics in Epidemiology*. Presented at the University of North Carolina at Chapel Hill, Chapel Hill, NC. November 2012.
82. *Metabolomics in Pharmacology*. Presented at the Duke University, Durham, NC. November 2012.
83. *Metabolomics in Clinical Research.* Presented at Wake Forest University, Greensboro, NC. October 2012.
84. *Personalized medicine and environmental OMICS. Session E2*. Presented at 2011 International Conference on Environmental OMICS (ICEO), November 11, 2011, Guangzhou, China.
85. *Biomarkers in Personalized Medicine: Applications of Metabolomics to Provide Biomarkers for the Treatment of Obesity, Liver Injury, and Reproduction and Development Outcomes*. Presented to the American Association for the Advancement of Sciences, Washington, DC. February 19, 2011.
86. *Applications of Metabolomics*. National Toxicology Program. Presented at NIEHS, RTP, NC. June 16, 2010.
87. Panelist, Personalized Medicine Symposium, sponsored by RTI and the North Carolina Biotechnology Center (NCBC), Sheraton Imperial Hotel and Convention Center, RTP, NC. June 15, 2010.
88. *Emerging Technologies in Personalized Medicine*. Presented at the Brody School of Medicine, East Carolina University, Greenville, NC. February 4, 2010.
89. *Metabolomics and Proteomics: Early and Sensitive Markers for Personalized Medicine*. Presented at the RTI Fellows' Symposium, Friday Center, Chapel Hill, NC. November 2, 2009.
90. *Incorporation of 'Omics in the Study of Reproduction and Development*. Presented to Society of Toxicology, Baltimore, MD. March 2009.
91. *Metabolomics in Drug Discovery and Drug Development*. Presented to the Eastern Analytical Society (EAS), Somerset, NJ. November 17–20, 2008.
92. *Metabolomics in the Study of Reproduction and Development*. Presented at the Women's Health Initiative, Friday Center, Chapel Hill, NC. April 2, 2008.
93. *Metabolomics: Application to the Study of Phthalates in Reproduction and Development*. Presented at the Society of Toxicology Meeting, Seattle, WA. March 17, 2008.
94. *Metabolomics: Applications to Pediatrics Health*. Presented at the 5th Annual Pediatric Healthy Weight Conference, Greenville, NC. March 6, 2008.
95. *Biomarkers in Translational Medicine*. Presented at the Innovations and Technologies for India's Public Health System, New Delhi, India. November 1–2, 2007.
96. *Metabolomics in the Study of Endocrine Disruption*. Presented to EPA's Endocrine

Disrupting Chemical Discussion Group, EPA, RTP, NC. October 10, 2007.

97. *Developing Markers Informative of Adverse Response from Drugs or Chemicals*. Presented at the Advances in Metabolite Profiling Conference, London, England. October 17–19, 2006.
98. *Metabolomics in Reproductive Toxicology*. Presented at the Science and Engineering Fellows Symposium (Sponsor: Rochelle Tyl), RTI, RTP, NC. September 2006.
99. *Metabolomics and biomarkers*. New Jersey Drug Metabolism Group Symposium, Somerset, NJ. October 2005.
100. *Metabolomics: Promises and Realities*. Presented at the Fox Chase Cancer Research Center, Buckingham, PA. April 2005.
101. *Metabolomics, Biomarkers, and Cross Species Extrapolation*. Presented at the Board of Scientific Councilors EPA Workshop, National Academy of Sciences, Washington, DC. February 2005.
102. *Cross-species Extrapolation of Toxicogenomics Data*. Presented at the Board of Scientific Councilors' EPA Workshop, National Academy of Sciences Workshop, Washington, DC. August 2004.
103. *Metabolomics: Data Analysis and Pathway Mapping*. Presented at the NIH ADME/Toxicity Summit, NIH Lister Hill, Bethesda, MD. June 2004.
104. *From Metabolites to the Metabolome: Chemistry and Biochemistry Symposium.* Presented at the University of North Carolina at Wilmington, Wilmington, NC. January 29, 2004.
105. *Metabolomics and Pathway Mapping*: Triangle Array Users Group. Presented at NCBC, RTP, Park, NC. November 2003.
106. *Metabolomics: Processes and Approaches*. Presented to the NIEHS ToxPath Working Group, NIEHS, RTP, NC. June 2003.
107. *Metabolomics: From Genes to Cells to Systems.* Presented to the NIEHS International Workshop on Metabonomics, NIEHS, RTP, NC. May 2003.
108. Lecturer, Continuing Education Course, *Applications of NMR Spectroscopy in Toxicology*. Presented to Society of Toxicology. March 1993.

## TEACHING ACTIVITIES

**2020– Present: NUTR714 Residential. Nutritional Biochemistry, Metabolism, and Health.**

- Co-Director 2020-2021, Director 2022-2023, Director 2023-2024.
- This course was developed in the fall of 2019, and launched in the Spring of 2020, for the residential MPH-RD program in the Department of Nutrition. The course includes approximately 45 MPH-RD candidates each spring semester. Students are provided with an Introduction to biochemistry and functions of macro- and micronutrients with a limited focus on medical aspects of nutrient deficiencies and metabolism, and the link to health disparity outcomes. This course primarily focusses on chemical structures, chemical properties, metabolism, functions of macro- and micronutrients.

**2020– Present: NUTR714 Online. Nutritional Biochemistry, Metabolism, and Health.**

- Co-Director 2020-date
- In addition to the residential course, I co-developed the on-line NUTR714

course, including video production by 2U in January 2020.

**2019– Present: NUTR845. Nutritional Biochemistry.**

- Guest instructor
- NUTR845 includes a problem-based approach to examine current topics in biochemistry relevant to nutrition and metabolism. The class has a size of 6-15 students. Students interpret data and design experiments related to recent advances in nutritional biochemistry.

**2019– Present: NUTR295. Undergraduate Research Experience.**

- I am a research mentor for Nutrition 295, "Undergraduate Research Experience". This course provides the student the opportunity to conduct research through reading, literature review, secondary data analysis, and/or within the laboratory.
    - 2018 – 2020 Pradeep Madduri, BSPH: primary research project advisor
    - 2020-2022 Alleigh Wiggs, BSPH: primary research project advisor
    - 2020-2022 Spencer Tilley, BSPH: primary advisor (with thesis)
    - 2022- Heidi Cao, BSPH; primary advisor (with thesis)
    - 2022- Grace Fu, BSPH, advisor (with thesis)
    - 2023-- Mansi Choudhari, primary advisor (with thesis)

**2020-Present NUTR992. MPH-RD/Nutrition Research Experience.**

- I am a research mentor for Nutrition 992. MPH-RD/Nutrition candidates have the opportunity to conduct research and prepare a paper: through literature review, secondary data analysis, or within the laboratory.
    - 2021 – Present Brittney Jones, BS; advisor for practicum
    - 2021 – 2022 Marcea Lewis, BS; advisor for practicum
    - 2021 – 2022 Michelle Simonds, MPH; advisor for practicum
    - 2021 – Present Racheal Hathcock, BS; advisor practicum and paper project
    - 2021 – 2021 Sydney Perales, MPH; advisor for practicum
    - 2020 – 2022 Jessica Sprinkles, MPH; advisor for practicum
    - 2020 – 2021 Molly Jean Murphy, MPH; research advisor for paper project
    - 2017 – 2019 Marwa Elnagheeb, MPH; mentor

## STUDENTS, MENTORING, AND TRAINING ACTIVITIES

Interns, students, postdoctoral fellows, early career scientists, and scholars trained in metabolomics, metabolism, DNA adducts, and nutritional metabolomics.

| Name and degree when trained | Field | Start Year | Training Topic | Position at time of training | Current Position |
|---|---|---|---|---|---|
| Mansi Choudhari | Nutrition and Metabolism | 2023 | Omics Analysis | BSPH student | |
| Braden Yorke | Nutrition and Metabolism | 2023 | Metabolomics | Freshman intern | BSPH student |
| Isabella Falcone | Nutrition and Metabolism | 2023 | Metabolomics | Freshman intern | BSPH student |
| Emily Brasseur, BS | Chemistry | 2023 | Metabolomics | Intern | |
| Heidi Cao | Nutrition and Metabolism | 2022 | Omics Analysis | BSPH student | |
| Grace Fu | Nutrition and Metabolism | 2022 | Omics Analysis | BSPH student | |
| Molly Seelinger, BS | Biology | 2022 | Dietary Biomarkers | Intern | RTI International |
| Sabrina Molina, BS | Biology | 2021 | Metabolomics | Intern | Research Assistant (UNC) |
| Alleigh Wiggs, BSPH | Nutrition | 2020 | Metabolism and Breast Cancer | BSPH Candidate | UNC School of Medicine |
| Molly Jean Murphy, MPH | Nutrition | 2020 | Performance Nutrition | RD Candidate | Eating Disorder Specialist (UNC) |
| Spencer Tilley, BSPH | Nutrition | 2020 | Metabolism, Cancer, Tobacco Use | BSPH Candidate | UNC Bioinformatics |
| Yunzhi Qian, MS | Biostatistics | 2020 | Biostatistics & Metabolomics | PhD Student | PhD Student (UNC) |
| Madison Schroder, BS | Chemistry | 2020 | Exposome | Intern | Research Assistant (UNC) |
| Rachel Coble, BS | Chemistry | 2020 | One Carbon Metabolism | Intern | Research Assistant (UNC) |
| Blake Rushing, PhD | Pharmacology/ Toxicology | 2019 | Nutritional Pharma/Tox for Precision Nutrition (PN) | Postdoctoral Fellow | Assistant Research Professor (UNC) |
| Annie Green Howard, PhD | Bioinformatics | 2019 | Omics data Analyiss | Associate Professor | Associate Professor (UNC) |
| Krissy Kay, PhD | Biochemistry | 2019 | Isotopic Tracing | Postdoctoral Fellow | Lab Manager DHMRI |
| Aleksandr Smirnov, PhD | Computing and Informatics | 2019 | Mass Spectrometry | Postdoctoral Fellow | Assist Professor (UNCC) |
| Justin Chandler, TBS | Biology | 2019 | Metabolism and Precision Nutrition | Intern | - |

| | | | | | |
|---|---|---|---|---|---|
| Herman Freeman, BS | Biology | 2019 | Metabolism and Precision Nutrition | Intern | UNC School of Medicine |
| Hossein Maleki, PhD | Chemistry | 2019 | UPLC-Orbi-MS | Postdoctoral Fellow | KBI Biopharma |
| Xioafan Xu, BS | Epidemiology | 2019 | Epi-Metabolomics | PhD Student | |
| Yiqing Wang, BS | Epidemiology | 2019 | Epi-Metabolomics | PhD Student | Res. Fellow Harvard |
| Laura Raffield, PhD[1] | Genetics/Epi | 2019 | Metabolomics Harmonization | K-awardee | Assistant Professor |
| Pradeep Madduri | Nutrition | 2018 | Breast Cancer | BSPH Candidate | Medical Student UNC SOM |
| Anne Hoen, PhD | Epidemiology | 2017 | Metabolomics | Assistant Prof Dartmouth | Associate Prof Dartmouth |
| Reza Ghanbari, PhD | Cancer | 2017 | PN for Opioid Addiction | NIDA Invest Scholar - UNCCH | Assistant Professor University of Tehran, Iran |
| Marwa Elnagheeb, BS | Nutrition | 2017 | Genetic Determinants of Vitamin D Deficiency | MPH Student UNCCH | Clinical Research Specialist UNC-CH |
| Aurora Cabrera, BS | Chemistry | 2015 | UPLC-TOF-MS | Intern Meredith College | Graduate Student Duke |
| Kelly Mercier, PhD | Chemistry | 2015 | NMR | Early Career Trainee | Jazz Pharmaceutics |
| Maria Moreno, BS | Biochemistry | 2015 | NMR | Intern | RTI Staff |
| Claudia Gunsch, PhD | Environmental Sciences | 2015 | Environmental metabolomics | Visiting Scholar Duke University | Faculty Duke University |
| Ellen Weiss, PhD | Biochemistry | 2015 | Eye Disease and Nutrition | Visiting Scholar UNC-CH | Faculty UNC-CH |
| Rose Ewald | Nutrition | 2015 | Gut Microbiome | Intern UNC-G | Graduate Student UNC-G |
| [1]Jessica Gooding, PhD | Chemistry | 2015 | Kidney Disease | NIH Common Fund K-Awardee | Chemist |
| [3]Laura Cox, BS | Microbiology | 2014 | Gut Microbiome | Graduate Student (PhD 2016) | Research Fellow at Brigham and Women's Hospital |
| Yuanyuan Li, PhD | Natural Products | 2015 | PN meets Exposome in Large-Scale Epi | Postdoctoral Fellow | Assistant Research Professor (UNC) |
| [3]Brandi Johnson-Weaver | Immunology | 2014 | Allergens | Graduate Student Duke University (PhD 2016) | Consultant |
| Bizu Gelaye, PhD | Epidemiology | 2014 | Nutrition and Pregnancy Complications | Postdoctoral Fellow Harvard | Research Scientist, Harvard |

| | | | | | |
|---|---|---|---|---|---|
| Tammy Cavallo, BS | Biology | 2014 | GC-TOF-MS Blood Type and Nutrition | Intern NCSU | UNC Lineberger Center |
| Courtney Whitaker, BS | Chemistry | 2014 | LC-MS | Undergraduate UNC-CH | Clinical Psychology (ASU) |
| [3]A.E. Livanos, BS | Microbiology | 2015 | Gut Microbiome | Graduate Student NYUMC (PhD 2016) | Medical Training NYUMC |
| Ninell Mortensen, PhD | Biomed. Eng. | 2013 | Microfluidics | Early Career Trainee | RTI Staff |
| [3]Jessica Laine, BS | Toxicology | 2013 | Environmental Metabolomics | Graduate Student UNC- CH (PhD 2017) | Postdoctoral Fellow Imperial College |
| Xiuxia Du, PhD | Computing and Informatics | 2013 | Mass Spectrometry | Assistant Prof UNC-C | Full Professor UNC-C |
| [3]Justin Milner, BS | Immunology | 2013 | Response to flu vaccination | Graduate Student (PhD 2016) | Postdoctoral Fellow, UCSD A.R.P: UNC-CH |
| [2]Aastha Ghimere | Biology | 2013 | UPLC-TOF-MS | Undergraduate UNC-CH | Graduate School Univ. Edinburgh |
| Darya Cheng, BS | Chemistry | 2013 | UPLC-TOF-MS | Intern Duke University | Graduate School UCLA |
| [2]Jon Brodish | Biology | 2013 | UPLC-TOF-MS | Student Intern UNC-CH | Rapid 7 |
| Suraj Dhungana, PhD | Chemistry | 2012 | UPLC-TOF-MS | Early Career Trainee | Technical Rep. Water's Corporation |
| Delisha Stewart, PhD | Molecular Biology | 2012 | PN in Cancer and Immunology | Postdoctoral Fellow | Assistant Professor UNC-CH |
| [2]Ranjan Banergee | Biology | 2011 | Reproduction & Development | Intern UNC-CH | Medical School UNC-CH |
| [3]David Szabo, BS | Toxicology | 2010 | Environmental -omics | Graduate Student (PhD 2011) | RAI Services |
| [3]Achini K. Vidanapathirana | Toxicology | 2011 | General Biomarkers | Graduate Student (PhD 2013) | SAHMRI |
| Susan McRitchie, MS | Biostatistics | 2011 | Modelling Metabolomics Data | Biostatistics/Social Sciences | Program Manager UNC-CH |
| Keely Pratt, PhD | Biomarkers | 2011 | Obesity | Postdoctoral Fellow | Associate Professor Ohio State University |
| [2,4]Andrew Novokhatny, MS | Biochemistry | 2010 | NMR | Intern and then Graduate Student | DataBase Management CapTech Ventures |
| Wimal Pathmasiri, PhD | Biochemistry | 2009 | PN and Natural Products | Postdoctoral Fellow | Assistant Professor, UNC-CH |

| | | | | | |
|---|---|---|---|---|---|
| Rodney Snyder, MS | Nutrition | 2005 | NMR | RTI Chemist | RTI Staff |
| Jocelin Deese-Spruill, BS | Chemistry | 2005 | GC-MS | RTI Chemist | Metabolon, Inc |
| Peter Boogard, PhD | Toxicology | 1994 | Xenobiotic Metabolism and DNA Adducts | Visiting Scholar Shell International Netherlands | Shell International Netherlands |
| Siv Osterman-Golkar, PhD | Toxicology | 1996 | Xenobiotic Metabolism and DNA Adducts | Visiting Scholar Karolinska Institute, Sweden | Karolinska Institute, Sweden |
| [3]Annsofi Nihlen, PhD | Env. Sci | 1998 | Xenobiotic Metabolism | Visiting Scholar Karolinska Institute, Sweden | National Institute for Working Life, Sweden |
| [3]Amy Collins, BS | Toxicology | 1998 | PB-PK Modelling | NCSU Graduate Student (PhD 1999) | Retired |
| Leena Selvaraj, PhD | Chemistry | 1996 | Analytical Chemistry | Postdoctoral Fellow | Biotechnology |
| [5]Sarah Nauhuas, BS | Chemistry | 1995 | Xenobiotic Metabolism | Duke Graduate Student (MS 1997) | Clinical Team Manager at Chiltern |
| [6]J Mark Yates, BS | Chemistry | 1992 | DNA adducts | NCSU Graduate Student (PhD 1994) | Campbell College Faculty |

[1] Jessica Gooding completed a NIH K-award in the Sumner-Lab; Sumner advisor to K-awardee Laura Raffield
[2] Completed undergraduate coursework at UNC-CH while interning in in Sumner-Lab.
[3] Completed some elements of PhD dissertation in Sumner-Lab
[4] Completed Master's Degree in Health Information in Sumner-Lab
[5] Completed Master's Degree in Chemistry in Sumner-Lab
[6] Completed all aspects of PhD dissertation in Sumner Lab

*2000-2002*: I provided oversight for Project Seed as Chair of N.C. ACS in 2001 and Past Chair 2002. I assisted Kenneth Cutler, PhD, Director of Project Seed to support economically disadvantaged high school students to pursue careers in science.

## FUNDING HISTORY

### ACTIVE SUPPORT

**1U24CA268153-02S** (Sumner, PI, UNC-CH) 01/01/2023 – 12/31/2024
NCI/NIH Common Fund
Title: Metabolomics and Clinical Assays Center (MCAC)
Goal: Conduct targeted assays of host metabolism and phytochemical assays
Role: PI

**1U24CA268153** (Sumner, PI, UNC-CH) 01/01/2022 – 12/31/2027
NCI/NIH Common Fund
Title: Metabolomics and Clinical Assays Center (MCAC)
Goal: The goal of the MCAC is to participate in the development of a common protocol for the Nutrition for Precision Health Powered by the All of Us Research Program, and conduct metabolomics and clinical assay analyses
Role: PI

**1R01DK126666-01** (Sumner, MPI, UNC-CH) 07/31/2021 – 06/31/2026
NIDDK
Title: Mechanistic and metabolic underpinnings of ALDH1L1 polymorphisms in the regulation of glycine metabolism
Goal: This proposal aims to address the question of how haplotype-specific ALDH1L1 variants affect the cellular metabotype, and how the haplotype-specific effect is modified by folate supplementation.
Role: Multiple PI with Krupenko and Voruganti: Lead for Metabolomics

**1U2CES030857** (Sumner, MPI, UNC-CH) 09/01/2019 – 08/31/2026
NIEHS
Title: Human Health Exposure Analysis Resource (HHEAR) Hub and Environmental Influences on Childhood Outcomes (ECHO)
Goal: The goal of this center is to use untargeted methods to facilitate exposome research in order to advance understanding of the influence of the environment on human health over a lifetime.
Role: Multiple PI with Du and Fennell, and Director UARC

**R01HL143885** (Sumner, MPI, UNC-CH) 04/01/2019 – 03/31/2023
NHLBI
Title: Leveraging multi-omics approaches to examine metabolic challenges of obesity in relation to cardiovascular diseases.
Goal: The goal of this project is to use untargeted metabolomics along with other study data to better understand disease mechanisms, with strong potential for identifying biomarkers of CVD risk.
Role: MPI for Metabolomics: with North (Genetics), Gordon-Larsen (Obesity), and Avery

**U01OH011300-05** (Nolan, PI, NYUSOM) 09/1/2017 – 06/30/2026
NIOSH
Title: Metabolomics of World Trade Center-Lung Injury
Goal: The overarching hypothesis of this proposal is that metabolomic profiling, integrated with other molecular data, **will** identify key pathways that elucidate our understanding of WTC-LI and related lung diseases. We will 1. IDENTIFY individual metabolites and metabolic profiles associated with WTC-LI using global metabolomic screens. 2. To improve the prediction models' generalizability we will VALIDATE biomarker data in less homogeneous groups of WTC exposed FDNY rescue and recovery workers. 3. TREAT. We will identify metabolomic signatures through the integration of environmental, clinical, and targeted metabolomics data Role: Co-I, Metabolomics

**PENDING SUPPORT**

**XXX**: (Bae-Jump, Victoria, PI, UNC Chapel Hill) 09/2024 – 09/2027
NCI/NIH
Title: Breaking the Obesity-Endometrial Cancer Link with Bariatric Surgery: Role of the Microbiome
Major Goals: Obesity is a causal risk factor in ~60% of ECs and portends a poor prognosis. We hypothesize that the dramatic protection against EC afforded by bariatric surgery is mediated by re-establishment of healthy gut and uterine microbiomes, which secondarily reverses metabolic and inflammatory abnormalities. By delineating the markers and mechanisms underlying this protection, we seek to: i) establish that the pro-EC effects of obesity are reversible; and ii) identify new targets for developing mechanism-based lifestyle or pharmacologic strategies to mimic the effects of bariatric surgery.

Role: Metabolomics analysis

**XXX:** (Bae-Jump, Victoria, PI, UNC Chapel Hill) 12/01/2024 – 11/30/2029
NCI/NIH
Title: Mitigating the Impact of Obesity on Endometrial Cancer with Diet and Incretin Mimetics
Major Goals: Given the obesity rates are high in endometrial cancer (EC) patients (>65%) and outcomes are steadily worsening, interventions to target weight loss in EC are desperately needed, such as reduced calorie diet regimens (intermittent energy restriction or IER), and pharmacotherapeutic interventions, like tirzepatide (FDA approved drug for weight loss). We hypothesize that IER and tirzepatide will have both anti-obesity and anti-tumorigenic effects that lead to an improvement in the metabolic environment of the host (indirect effect) and the EC tumor microenvironment (direct effect). Through investigations in pre-clinical mouse models and a pre-operative window study in EC patients, we seek to demonstrate that IER and tirzepatide separately, and in combination, are highly promising protective strategies for reducing the burden of EC that will lay the framework for future clinical trials for this highly obesity-driven cancer.

**XXX:** (Pilsner, Richard, PI, Wayne State University) 09/01/2024 – 08/30/2029
NIEHS/NIH
Title: Seminal plasma metabolomic signatures, preconception phthalates and reproductive outcomes.
Major Goals: The objective of this study is to identify seminal plasma metabolomic signatures that are associated with paternal phthalate exposure and reproductive health outcomes, such as fertilization, embryo quality, time-to-pregnancy, and probability of live birth.

**XXX:** (Bae-Jump, Victoria, PI, UNC Chapel Hill) 09/01/2024 – 08/30/2029
NCI/NIH
Title: Targeting Obesity Via Diet and Drugs for the Treatment of Endometrial Cancer
Major Goals: Given that obesity is a causal risk factor in ~ 65% of endometrial cancers (ECs) and portends a poor prognosis, effective interventions to target weight loss are desperately needed in EC patients, potentially in combination with chemotherapy/immunotherapy. To better understand the anti-obesity and anti-tumorigenic benefits of intermittent energy restriction (IER) diet vs. dual GLP-1/GIP receptor agonist therapy, we will compare IER vs. tirzepatide +/- paclitaxel or PD-1 inhibitor therapy in pre-clinical EC mouse models and assess tirzepatide in a pre-operative window study of EC.

## PREVIOUS SUPPORT

**U01ES027254** (Sumner, UNC Chapel Hill) 09/01/2016 – 09/01/2023
NIEHS
Early-life END exposure and the impact on neurobehavioral, cardiovascular, and biochemical mechanisms.
Goal: The goal of this project is to investigate Consortium-selected ENMs, with a broad range of physicochemical properties, to reveal how early life ENM exposure impacts ENM tissue distribution, and effects observed via functional observational battery, non-invasive cardiovascular measurements, neurotransmitter levels, and metabolomics analysis in female and male neonatal and juvenile rats.
Role: Multiple PI with Fennell, Mortensen

**5UG3OD023275** (Karagas, PI, Dartmouth College) 09/01/2016 – 09/01/2023
National Institute of Environmental Health Sciences
Environmental Influences of Child Health Outcomes (ECHO) Pediatrics Cohort
Goal: The goal of this study is to investigate new hypotheses and contribute critical exposomic

data to address major gaps in our knowledge about early life environmental influences on child health and development in a rural US pregnancy cohort.
Role: Co-I, Metabolomics

**5UG3OD023305** (Trasande, PI, NYU SOM) 09/01/2016 – 09/01/2023
National Institute of Environmental Health Sciences
Environmental Influences of Child Health Outcomes (ECHO) Pediatrics Cohort
NYU Pediatric Obesity, Metabolism and Kidney Cohort Center
Goal: The goal of this project is to use birth cohorts in the Environmental Influences on Child Health Outcomes Program to inform understanding of early life environmental impacts on child health and development
Role: Co-I, Metabolomics

**1R01DK115380-01** (Zeisel, PI) 12/08/2017 – 11/30/2022
NIDDK
Developing a Biomarker Panel to Assess Choline Nutritional Status
Goal: Develop and validate a panel of laboratory tests that assess choline status in humans.
Role: Co-I, Metabolomics

**R01DK110077** (Smoyer, PI, Nationwide Children's Hospital) 01/01/2017 – 12/31/2022
NIDDK
Integrating Proteomics and Metabolomics to Understand Pediatric Glomerular Disease
Goal: The goal of this project is to apply both proteomics and metabolomics analysis to a large cohort of phenotyped pediatric urine samples to identify and validate novel biomarkers that can predict treatment responsiveness and identify new molecular targets for potential future glomerular disease treatments.
Role: Co-I Metabolomics

**1R01DK117854-01A1** (Krupenko, PI, UNC-CH) 04/01/2019 – 03/31/2023
NIDDK
Title: Regulation of Mitochondrial Function by Folate Enzyme ALDH1L2 in Health and Disease
Goal: The goal of this project is to use untargeted metabolomics to increase understanding of the role of ALDH1L2 in maintenance of mitochondrial function, as well as in mitochondria-related diseases. This project will provide mechanistic insight into the role of ALDH1L2 in human diseases.
Role: Co-I, Metabolomics

**1U01CA235507** (Du, PI, UNC-C) 09/19/2018 – 08/31/2022
NCI
Title: Cross-Platform and Graphical Software Tool for Adaptive LC/MS and GC/MS Metabolomics Data Preprocessing
Goal: The goal of this project is to develop algorithms that will allow scientists to more accurately extract information about metabolites from metabolomics data, which will help scientists to investigate mechanisms of various diseases and develop therapeutic measures to treat the diseases.
Role: Co-I, Metabolomics

**1R37CA226969-01** (Bae-Jump, PI, UNC-CH) 03/14/2018 – 02/28/2023
NCI
Title: Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer
Goal: The goal of this project is to assess the contribution of indirect effects and direct effects of metformin (+/- chemotherapy) to its overall anti-cancer efficacy.

Role: Co-I, Metabolomics

**5P30DK056350-20** (Myers-Davis, PI) 04/01/2021 – 07/31/2023
NIDDK
Nutrition Obesity Research Center (NORC) at the University of North Carolina at Chapel Hill (UNC-CH)
Goal: The overarching theme of the NORC at UNC-CH is Trans-Disciplinary Nutrition Research: From Molecules to Public Health. The NORC adapts and translates expertise in community/population-based and clinical studies to facilitate the transfer of ideas and information to the laboratory, while at the same time helping to translate ideas from the laboratory into new hypotheses for studies at the clinical and community level.
Role: Director Metabolomics and Metabolism Core

**U24DK097193 plus NCE** (Sumner, UNC Chapel Hill) 9/4/2012 – 8/31/2019
NIDDK/ NIH Common Fund Metabolomics Program
Eastern Regional Comprehensive Metabolomics Resource Center (ERCMRC)
The ERCMRC established standards in metabolomics research and increases capacity through infrastructure, pilot and feasibility studies, and training.
Role: PI

**5P30DK056350-17** (Zeisel, PI) 04/01/2016 – 03/31/2021
NIDDK
Nutrition Obesity Research Center (NORC) at the University of North Carolina at Chapel Hill (UNC-CH)
Goal: The overarching theme of the NORC at UNC-CH is Trans-Disciplinary Nutrition Research: From Molecules to Public Health. The NORC adapts and translates expertise in community/population-based and clinical studies to facilitate the transfer of ideas and information to the laboratory, while at the same time helping to translate ideas from the laboratory into new hypotheses for studies at the clinical and community level.
Role: Director Metabolomics and Metabolism Core starting in 2017.

**1R21CA235029-01 (Smith-Ryan & Bae-Jump, MPI)** 1/2019 – 12**/**2022
NCI
Title: Interval Exercise Training as A Therapy For Endometrial Cancer
Role: Co-I, Metabolomics

**1R21HD087878-01A1** (Harville, PI, Tulane University) 0/01/2017 –8/31/2019
NICHD
Title: Preterm birth, pre-eclampsia, and the exposome
Role: Co-I, Metabolomics

**U2CES026544-01 + NCR and Supplements** (Fennell, PI) 09/28/2015–08/30/2020
National Institute of Environmental Health Sciences
RTI CHEAR Exposure Assessment Hub with ECHO supplements
The goal of this center is to conduct analyses of markers of exposure in children's health studies.
Role: Director, Untargeted Analysis Core

**P30ES02518 (Smart, NCSU)** 3/15/2015 –3/15/2020
National Institute of Environmental Health Sciences
NIEHS Center for Human Health and Environment
The goal of this center is to facility research in environmental health
Role: Co-I: Sumner, CHHE Analytical Analysis

**1UMDK10086601** (Smoyer, PI) 9/16/2013–5/31/2018
NIDDK
Biorepository for Pediatric Glomerular Disease
The goal of this center is to establish a biorepository for the GN Consortium
Role: Sumner, co-investigator for sample collection and storage

**HHSN268201300021C** (Seltzman, PI) 09/16/2013–05/31/2018
NIH Common Fund, NHLBI
Metabolites Synthesis Core
The goal of this core is to synthesis metabolites to advance metabolomics investigations
Role: Sumner, co-investigator, testing and analysis

**U19 ES019525 plus NCE and Supplements** (Fennell, PI) 09/28/2010–04/30/2017
NIEHS
C60, MWCNTs and the Influence on Cardiovascular, Reproductive, and Developmental Processes
The goal of this center is to develop data on the disposition and effects of exposure to carbon nanoparticles and integrate the data obtained in a pharmacokinetic/pharmacodynamic framework that can be used in human risk assessment
Role: Sumner, PI of Project 2 RO1 of the U19 Center

**R25 GM103802** (Kohlmeier, PI, UNC-CH) 2012–2016
NIGMS
Online learning platform: introducing clinicians and researchers to metabolomics.
Role: provide advice, interviews, and tutorials on metabolomics.

**1U19 ES019525** (Sumner, PI) 09/28/2010–09/29/2015
NIEHS
Pharmacokinetics and Pharmacodynamics of C60 and MWCNTS in Rats and Mice.
Role: PI of the RO1- Project 2 of U19 nanoparticle center.

**Consultant:** (Sumner, PI) 5/2009–5/2010
NIH
Study Design, Safety, and Toxicology Consultant to the National Institutes of Health.
Role: Provide consultation for protocol and SOP development.

**Contract** (Kaplan, PI, Wake Forest) 2008
Metabolomics of Soy and Casein Diets
Role: Sumner: Metabolomics subcontract to grant held at Wake Forest University.

**Confidential Client***:* (Fennell, RTI, PI) 08/2008 – 02/2009
Pharmacokinetic Investigations of Acrylonitrile (AN)*.*
Investigations of the pharmacokinetics of AN in rats.
Sumner: Co-investigator.

**N66001-05-D-2500/0009**: (Michael Schwerin, RTI, Contract Leader) 2007
Naval Health Research Center Biospecimen Data Collection Design and Methodology

Considerations – The Millennium Cohort Study (2007).
Role: Sumner contributed to a framework for merging new markers in the MilCohort Study and recommendations for pilot projects. The purpose of this project was to develop recommendations for the MilCohort Study related to biospecimen collection procedures, potential use in biomarker development, and description of pilot studies that could be conducted using serum from existing repositories or using additional biospecimens.

**Confidential Client**. (Fennell, RTI, PI) 03/2006 - 09/2006
Investigated the identity of colored metabolites of a drug candidate in rat urine.
Role: Sumner, co-investigator

**N01-ES-65554** (Fernando, RTI, PI) 12/01/05–11/30/2010 + renewal 10/2010-9/2015
NIEHS: National Toxicology Program (NTP) Chemistry Support Services
Role: Sumner served as Leader for metabolomics investigations, including studies of a) interaction of xenobiotics with the nuclear receptor, ROR$\alpha$ and TAK1, their effects on gene expression, physiological processes (including metabolism), and disease; b) HBCD exposure in mice, and c) resveratrol exposure in rats.

**R21GM075903** (Sumner, RTI, PI) 9/01/2005–7/31/2010
NIGMS: NIH Roadmap
Metabolomics: Markers of Drug Induced Liver Injury
Role: PI

**Confidential Client**. (Fennell, RTI, PI) 11/2004–03/2007
Metabolism and pharmacokinetic studies on diisopropylether, tertiary butyl alcohol and ethyl tertiary butyl ether.
Sumner Co-investigator. Metabolism.

**EP-D-04-068** (Raymer, RTI Leader for Subcontract) 2003–2005
U.S. EPA Human and Ecological Exposure Monitoring Research
RTI Subcontract to Battelle
Provided support to the EPA Office of Research and Development National Exposure Research Laboratory (ORD/NERL) Role: Dr. Sumner made recommendations regarding the use of existing samples from NHANES, NHEXAS, and CTEEP for the development of biomarkers of exposure, effect, or susceptibility with considerations of incorporation of these markers in the assessment of human health risks from exposure to environmental contaminants. This project included the development of a PB-PK model using data derived from the NHANES studies.

**Confidential Client** Fennell (PI) 8/2002–12/2006
Metabolism and adducts of acrylamide (AM)
Title: Investigations of the metabolism and pharmacokinetics and adduct formation by AM in rats and humans.
Role: Co-investigator

**HHSN291200445524C** (Sumner, Paradigm Genetics, PI) 05/2002–05/2004
NIEHS Phase I/Phase II Small Business Innovated Research Award.
PHS 2004-1 Topic 100: Metabonomics of the Liver.
Title: Metabolomics and Pathway Analysis: Urine, Serum, and Liver.
Role: PI

**HHSN281200310004C** (Sumner, Paradigm Genetics, PI) 05/2002–05/2004

NIAAA Phase I/Phase II Small Business Innovated Research Award.
PHS 2004-1 Topic 025: Identification of Genomics, Proteomic, or Metabolomic Differences Associated with Alcohol-Induced Organ Damage and Other Alcohol-Related Diseases.
Title: Metabolomics: Alcohol Induced Toxicity.
Role: PI
Sumner (co-investigator). Gift from SNF (2002) for the Study of the DNA adducts of acrylamide. Fennell, PI.

Sumner (co-investigator). Grant (2002) from the Ethylene Propylene Work Group of CMA for the Study of the effects of ethylene on cytochrome P450 in the rat liver. Fennell, PI.

Sumner (PI) (2001). Gift from SNF for the study of acrylamide.

Sumner (PI). Grant (2000) from TEGEWA for the *Study of acrylamide metabolism in rats following inhalation exposure.*

Sumner (PI). Grant (1999) from the Acrylamide Monomer Producers Association for the *Study of acrylamide metabolism following dermal exposure*.

Sumner (PI). Grant (1998-1999) from the Styrene Information Research Center for the *Study of the metabolism of Styrene in Exposed Human Volunteers.*

Sumner (PI). Grant (1998) from Vulcan Chemicals for *Determining the metabolism of hexachloropropane in rats.*

Sumner (PI). Grant (1997-1998) from the Chemical Manufacturers Association for determining *The blood pharmacokinetics of propylene glycol methyl ether and its acetate in rats*.

Sumner (co-investigator). Grant (1996-1998) from the Alkylphenols & Ethoxylates Research Council for the *Study of the metabolism and disposition of nonylphenol in rats*. Fennell, PI

Sumner (PI). Grant (1995-1996) from the American Petroleum Institute for *Determining the metabolism of tertiary amyl methyl ether in rats and mice following multiple routes of exposure*.

Sumner (PI). Grant (1995-1996) from the Styrene Information Research Center for *Determination of the metabolism of styrene in rodents.*

Sumner (co-investigator). Grant (1994-1999) from the Ethylene Oxide Industry Council, EOIC, CMA to *Study the metabolism, pharmacokinetics, and adducts of ethylene oxide*. Fennell, PI.

Sumner (co-investigator). Grant (1991-1993) from the Ethylene Oxide Industry Council, EOIC, CMA to *Study the carcinogenesis of ethylene oxide.* Fennell, PI.