

# SUSAN C.J. SUMNER

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## **Susan C. J. Sumner, PhD**

Professor, Nutrition Research Institute  
University of North Carolina at Chapel Hill  
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## **Education**

Staff Fellow, Spectroscopy, National Institutes of Health, Bethesda, MD, 1986 to 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**

2016. The University of North Carolina at Chapel Hill

Professor, Department of Nutrition, School of Public Health

MPI: NC HHEAR UAL for the NIEHS Human Health Exposure Analysis (HHEAR) Program (2019 to date)

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

Director, Untargeted Analysis for a NIEHS Early Childhood and Health Outcome (ECHO) supplement to CHEAR/HHEAR (2017-date)

Director, Metabolomics and Metabolic Phenotyping Core for a NIDDK Nutrition Obesity Research Core (2017-date)

PI/PD, NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Center (2012 to 2019).

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

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

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

Director, NCATS funded Metabolomics Core for the N.C. Translational Sciences Institute at UNC-CH (2013 to 09/2016)

Director, Systems and Translational Sciences (STS) Center (2013 to 09/2016)

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Adjunct Professor, Nutrition, University of North Carolina at Chapel Hill, (2012 to 09/2016).

Director, NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Center (2012 to 2019).

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

Senior Scientist 2, Center for Estimating Human Health Risks from Exposure to Nanoparticles (2009 to 4/2017).

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

Manager, Contracts Research (2003 to 2004).

Head, Biochemical Profiling (2002 to 2004).

Staff Scientist (2001 to 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 to 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 to 1986)

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

## **Selected Continued Education**

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

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Human Subject Research Training, 2011  
Bloodborne Pathogen, Radioactivity, and Safety Training, 2011- current  
One-on-One Executive Coaching for Leadership, 2002 to 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 to 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 and Awards

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 to 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 [<sup>14</sup>C]C60 in the  
Pregnant and Lactating Rat and Effects on Endogenous Metabolism, RTI, 2008.  
Recipient, Professional Development Award: Biomarkers, RTI, 2007 to 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

- Elected in 2019 as co-Chair, and Chair for the 2021 and 2023 Gordon Conference on Metabolomics
- Elected in 2018 and 2019 by the UNC Faculty for the Financial Exigency and Program Change Member, Metabolomics Society 2012-present
- Elected, Board of Directors, Metabolomics Society: 2016 to 2018
- Elected, Board of Directors, Metabolomics Society: 2014 to 2016
- Elected Chair, North Carolina Section of ACS (membership of approximately 2,600), 2002
- Member, North Carolina Biotechnology Center (NCBC) Genomics and Bioinformatics Consortium: 2000 to 2002
- Advisor, Acrylamide Monomer Producers Association: 1999 to 2002
- Advisor, Styrene Information and Research Center: 1997 to 2002
- Full Member, Society of Toxicology, Active: 1990 – 2014
- Member, American Chemical Society (ACS) and/or North Carolina Chapter of ACS: 1986 – date.

## Bibliography

### Book Chapters

1. 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. Humana, New York, NY. ISBN 978-1-0716-0238-6 ISBN 978-1-0716-0239-3 (eBook). PMID:3195381.
2. 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. Humana, New York, NY. ISBN 978-1-0716-0238-6 ISBN 978-1-0716-0239-3 (eBook). PMID:31953813.
3. \***Sumner, S. C. J.**, McRitchie, S., and Pathmasiri, W. (2019) 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, 1st Edition, Academic Press (Elsevier), Cambridge, MA, USA. ISBN: 9780128045725 (Hardcover).
4. \***Sumner SCJ**, Pathmasiri W, Carlson JE, McRitchie SL, and Fennell TR. (2018) Metabolomics Chapter 5 Molecular and Biochemical Toxicology 5th edition (eds R.C. Smart and E. Hodgson) J Wiley and Sons NY, NY. ISBN: 978-1-119-04241-9.
5. 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.
6. 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.

7. \***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.
8. 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, and J.L. Holmes. (pp. 1097-1104). San Diego, CA: Academic Press.

## Refereed Articles

1. Yuan-Yuan Li, Christelle Douillet, Madelyn Huang, Rowan Beck, **Susan Jenkins Sumner\***, Miroslav Styblo (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. 2020 Apr 10. doi: 10.1007/s00204-020-02729-y. [Epub ahead of print] PMID: 32277266.
2. Mortensen NP, Caffaro MM, Patel PR, Uddin J, Aravamudhan S, **Sumner SJ**, Fennell TR. Investigation of Twenty Metal, Metal Oxide, and Metal Sulfide Nanoparticles' Impact on Differentiated Caco-2 Monolayer Integrity (Accepted, NanoImpact).
3. Krupenko NI, Sharma J, Padiaditakis P, Fekry B, Helke KL, Du X, **Sumner S**, Krupeko SA (2019). Cytosolic 10-formyltetrahydrofolate dehydrogenase regulates glycine metabolism in mouse liver. Scientific Reports, Volume 9, Article number: 14937, doi.org/10.1038/s41598-019-51397-1.
4. 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. 2019 Sep 23. doi: 10.1038/s41370-019-0162-1. PMID: 31548623.
5. 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 15:124. doi.org/10.1007/s11306-019-1587-1. PMID: 31506796.
6. 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). doi.org/10.1016/j.bbadis.2019.165538. PMID: 31449969.
7. 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 doi.org/10.1016/j.ekir.2019.09.010 (Published online Sept. 2019).

8. 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. doi.org/10.1016/j.ekir.2019.09.009 (Published online Sept. 2019).
9. Gooding J, Cao L, Ahmed F, Mwiza J, Fernander M, Whitaker C, Acuff Z, McRitchie S, **\*Sumner S**, Onger E (2019). LC-MS-based metabolomics analysis to identify meprin  $\beta$ -associated changes in kidney tissue from mice with STZ-induced type 1 diabetes and diabetic kidney injury. Renal Physiology doi.org/10.1152/ajprenal.00166.2019.
10. Sarret C, Ashkavand , Paules E, Dorboz I, Padiadakis 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. doi.org/10.1038/s41525-019-0092-9. PMID: 31341639 PMCID: PMC6650503.
11. 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. doi.org/10.3389/fphar.2018.01575.
12. Gooding J, Cao L, Whitaker C, Mwiza JM, Fernander M, Ahmed F, Acuff Z, McRitchie S, **\*Sumner S**, Onger EM (2019) Meprin  $\beta$  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. doi: 10.1186/s12882-019-1313-2.
13. 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. doi.org/10.1038/s41396-019-0349-4.
14. 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.
15. 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, 12 pages, https://doi.org/10.1155/2018/2063540.
16. 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 https://doi.org/10.7554/eLife.37816.001.

17. 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. doi: 10.1371/journal.pone.0193792.
18. Ewald DR, \***Sumner SCJ** (2018). Human Microbiota, Blood Group Antigens, and Disease. *WIREs Systems Biology and Medicine* 10(3):e1413. doi: 10.1002/wsbm.1413 (2018 top downloaded paper: <http://wires.wiley.com/WileyCDA/WiresCollection/id-24.html>).
19. 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).
20. 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.
21. 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.
22. 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 doi:10.3390/genes8110314 PMID: 29120399.
23. 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.
24. 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):8689-8695 doi: 10.1021/acs.analchem.7b01069 PMID: 28752757.
25. 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.

26. 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:10.1016/j.jinsphys.2017.07.008.
27. 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), 301-310 doi: 10.14573/altex.1608221.
28. 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/jappphysiol.00242.2017.
29. Laine J., Bailey K., Olshan A., Smeester L., Drobná Z., Stýblo 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):625-633. doi: 10.1021/acs.est.6b04374. Epub 2016 Dec 20.
30. 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.
31. Quinnes 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. doi: 10.1371/journal.pone.0171977.
32. 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.
33. 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 hexabromocyclododecane (HBCD) alpha, gamma, and commercial mixture. *Environmental Health Perspectives* 125(4):651-59. doi:10.1289/EHP242.
34. 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, Article number:16140; doi:10.1038/nmicrobiol.2016.140.
35. 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*. Oct 3. DOI: 10.1002/jat.3387. PMID 27696470.
36. 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.
  37. 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.
  38. 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.
  39. 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.
  40. 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*. PMID: 27435284, DOI: 10.1007/s00467-016-3439-9.
  41. 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. doi:10.1371/journal.pone.0156755. PMID: 27300725.
  42. 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. doi: 10.1007/s10544-016-0076-9. PMID: 27231016.
  43. 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.
  44. 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. DOI: 10.1371/journal.pone.0151802.
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- adults. *Osteoarthritis Cartilage*, Aug;24(8):1479-86. DOI: 10.1016/j.joca.2016.03.011. PMID: 27012755.
46. 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.
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### Monographs and Reports

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### **Selected Conference Abstracts and Published Abstracts**

1. 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
2. **Susan, SCJ\***. The Internal Exposome, Opium Use, and Opium Use. 2020 Exposome Symposium, New York City on March 5-6, 2020

3. 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.
4. 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.
5. 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.
6. 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.
7. **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.
8. **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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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 2018, Seattle, WA
14. 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.
  15. 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.
  16. 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
  17. 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.
  18. 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.
  19. Ghanbari R, Pathmasiri WW, Etemadi A, Abnet C, Malekzadeh R, **Sumner SJ**. Metabolomics Investigation of Opiate Addiction: Golestan Cohort Study. Poster at 7<sup>th</sup> Annual Catalyst Symposium at the NC Research Campus. March 23, 2018.
  20. 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.
  21. 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.
  22. 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.
  23. 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.

24. **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) 27<sup>th</sup> Annual Conference, Oct. 15-19, 2017, Durham, NC.
25. 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.
26. 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.
27. 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.
28. 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 65<sup>th</sup> ASMS Conference, Indianapolis, IN June 4-8, 2017.
29. 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.
30. 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.
31. 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.
32. 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.
33. 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.

34. 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.
35. Onger, 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.
36. Gooding, J., Niyitegeka, J-M V., Mcritchie, S., **Sumner, S.**, Onger 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.
37. 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.
38. 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.
39. 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.
40. 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.
41. 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).
42. 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.
43. 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.
44. 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.

45. 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.
46. Cabrera A, Dhungana S, Sheridan P, **Sumner S** (2015). Metabolomic Profiling of Anxiety Prone HSV-Latently Infected Obese Mice. RTI Internship Showcase, August 2015
47. Harris R, Dhungana S, **Sumner S.** (2015) UPLS-MS Broad Spectrum Lipidomics Platform Development." RTI Internship Showcase, August 2015.
48. **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.
49. 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.
50. 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.
51. 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.
52. Pathmasiri, W. W., Laine, J. E., Bailey, K. A., Olshan, A. F., Smeester, L., Drobna, Z., ... **Sumner, S. J.**, et al. (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.
53. Li, J., Stewart, P., Fisher, K., Dhungana, S., Stewart, D. A., **Sumner, S. J.**, et al. (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.
54. Cox, L., Pathmasiri, W. W., McRitchie, S. L., Sohn, J., Robine, N., **Sumner, S. J.**, et al. (2015). *Systemic metabolic impact of early-life microbiota disruption.* Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
55. 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.
56. 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.

57. Brophy, P., Mercier, K. A., McRitchie, S. L., Pathmasiri, W. W., **Sumner, S. J.**, Koralkar, R., et al. (2015). *Metabolomics profiling of renal development and acute kidney injury in premature infants*. Presented at The Metabolomics Society Meeting, San Francisco, CA, June 2015.
58. 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.
59. Pathmasiri, W. W., Loeser, R., **Sumner, S. J.**, McRitchie, S. L., Beavers, D., Saxena, P., et al. (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.
60. 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.
61. 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.
62. Brophy, P., Mercier, K. A., Novokhatny, A., McRitchie, S. L., Pathmasiri, W. W., Burgess, J. P., **Sumner, S. J.**, et al. (2015). *Metabolomics profiling of renal development and acute kidney injury in premature infants*. Presented at Metabolomics 2015, Burlingame, CA, June 2015.
63. 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.
64. 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.
65. Kenley, S., Whitaker, C., Niyitegeka, J., Sedighi, R., Gooding, J., McRitchie, S., **Sumner, S.**, & Onger, 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.
66. 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.
67. 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 perturbations in humans*. Poster presented at the Annual Conference of the International Society of Exposure Science (ISES 2014), Cincinnati, OH, October 2014.

68. 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.
69. 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.
70. **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.
71. 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.
72. 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.
73. 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.
74. 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.
75. 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.
76. 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.
77. 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).



78. **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).
79. 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).
80. Brim, H., Lee, E. L., Nelson, K. E., Smoot, D. T., Sears, C. L., Hassanzadeh, H., **Sumner, S. C.**, et al. (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.
81. 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.
82. 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).
83. 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).
84. 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).
85. 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.
86. 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.
87. 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.
88. **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.

89. 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.
90. 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.
91. **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.
92. **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.
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97. 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.
98. 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.
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100. **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.
101. 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.
102. 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.
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104. 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.
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139. 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.
140. **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 [<sup>13</sup>C]-ethylene oxide using NMR spectroscopy. *Toxicologist* 13:402.
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- nucleosides, nucleotides, calf thymus DNA, and oligonucleotides that model mutational target sequences. *Toxicologist* 12:249.
144. **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-<sup>13</sup>C] methoxyethanol using NMR spectroscopy. *Toxicologist* 12:387.
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148. **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.
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151. **Sumner, S.C.J.**, J.P. MacNeela, and T.R. Fennell. 1990. Urinary metabolites of [1,2,3-<sup>13</sup>C]acrylamide determined by <sup>13</sup>C nuclear magnetic resonance spectroscopy. *Toxicologist* 10:332.

### Selected Invited Presentations

1. *Metabolomics Reveals Biomarkers of Opium Use Disorder, and Informs Nutritional Intervention Strategies*. Global Summit on Regulatory Science 2020 (GSR20). September 28-30, 2020. Virtual.
2. *The Dietary Exposome*. The Chemical Space in Exposure Assessments. International Society of Exposure Science. September 20-24, 2020. Virtual or Oakland, CA.
3. *Precision Nutrition: Metabolomics to Deliver Biomarkers and Mechanistic Insights*. Health Talks speaker series. February 6, 2020, Arizona State University, AZ.
4. *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.
5. *The Internal Exposome, Opium Use Disorder, and Nutrition Intervention*. November 15-17, 2019. Metabolomics Association of North America, Atlanta, GA.
6. *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.

7. *The Internal Exposome and Opium Use Disorder: Implications for Precision Nutrition*. National Institute of Drug Abuse, July 10, 2019, Rockville, MD.
8. *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.
9. *Untargeted Exposome Analysis for Nutrient Intervention*, June 3-6, 2019. Nutrigenetics, Nutrigenomics and Precision Nutrition, Kannapolis, NC.
10. *Metabolic Individuality and Precision Nutrition*, February 15, 2019. ECHO Obesity Working Group Metabolomics Subgroup Virtual Meeting.
11. *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.
12. *Metabolic Individuality and Precision Nutrition*, January 18, 2019. Metabolic Health Center Symposium, Stanford University, Palo Alto, CA.
13. *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.
14. *Exposome and Metabolic Phenotyping*, SEARCH for Diabetes in Youth Study Group Meeting, November 14-15, 2018. Denver, CO.
15. *Metabolomics and Metabolic Phenotyping Core*, NORC Directors Meeting, November 11-12, 2018. Nashville, TN.
16. *Communicating Confidence in the Untargeted Analysis of the Exposome*, November 1-2, 2018, CHEAR Grantee Meeting, New York, NY.
17. Keynote Presentation. *Communicating Confidence in Untargeted Assignment of the Exposome*, June 27, 2018. Metabolomics 2018, Seattle, WA.
18. *Technologies to Capture Influences of Exposome and Diet*, June 25, 2018. Precision Medicine Workshop, Metabolomics 2018, Seattle, WA.
19. *Core Facilities Forum*, June 24, 2018. Metabolomics Association of North America Meeting, Metabolomics 2018, Seattle, WA.
20. Invited panel discussant, June 24, 2018. *QA and QC in Untargeted Metabolomics*, Metabolomics 2018, Seattle, WA.
21. *Metabolomics, Nutrition Research*, June 4, 2018. Nutrigenomics, Nutrigenetics, and Precision Nutrition Conference, Kannapolis, NC.
22. *An Overview of Precision Nutrition at UNC NRI*. May 1-2, 2018. Defining Precision Nutrition Symposium. North Carolina Research Campus.
23. *Appetite for Life*, Kannapolis, NC. March 14, 2018. (Community presentation for the NC Research Campus).

24. *Metabolomics in Nutrition Research*. University of Texas at Austin. November 16-17, 2017.
25. *Metabolomics and Metabolic Phenotyping Core*. NORC External Advisory Board Meeting, Chapel Hill, NC. November 15, 2017
26. *Metabolomics in Nutrition Research*. 2017 Food & Nutrition Conference, Chicago, IL. October 21-24, 2017.
27. *Best practices of the NIH Metabolomics Resource Cores*. NIH C-F Metabolomics Program Annual Meeting, Sept. 27-28, 2017, Davis, CA.
28. *Metabolomics in Nutrition Research*. ILSI North America's Food, Nutrition and Safety Program (FNSP) mid-year meeting, Arlington, VA. July 18, 2017.
29. Sumner SS and Pathmasiri WW. *Metabolomics in Kidney Disease*. The Sri Lanka Medical Association's 130<sup>th</sup> Anniversary International Medical Congress via skype, Colombo, Sri Lanka. July 13-16, 2017
30. *Metabolomics and Cell-Based Research*. Humacyte, Inc., Morrisville, NC. June 27, 2017.
31. Sumner SJ and Ghanbari R. Presented at a joint NIDA-NCI meeting, Rockville, MD. June 7, 2017.
32. *Nutritional Metabolomics*. Nutrigenomics, Nutrigenetics, and Precision Nutrition Conference, Kannapolis, NC. May 22-25, 2017.
33. *The NIH Common Fund Eastern Regional Comprehensive Metabolomics Research Core*. 6<sup>th</sup> Annual NCRC Catalyst Research Symposium, Kannapolis, NC. April 17, 2017.
34. *Harmonization of Untargeted Analysis Cores for the Children Health Exposure Analysis Resource (CHEAR) Hub*. International Society of Exposure Sciences. Utrecht, Netherlands. October 10, 2016.
35. *Structural Equation Modelling to Link Exposure to Health Outcomes via the Metabotype of Cord Blood*. International Society of Exposure Sciences. Utrecht, Netherlands. October 10, 2016.
36. *The Metabotype of Blood Type and Implications in Disease Risk*. NHLBI Blood Diagnostics Meeting, Bethesda, MD, September 22-23, 2016.
37. *Metabolomics in Women's Health*, University of California at Davis, September 7, 2016.
38. *Metabolomics in Maternal and Child Health*, Presented at National Institute of Standards and Technology, Charleston, South Carolina, August 1, 2016.
39. *Experiences as a Regional Metabolomics Center*. 4<sup>th</sup> Annual Workshop on Metabolomics, University of Alabama Birmingham, July 17-21, 2016.
40. *Early biomarkers to predict risk of third trimester placental abruption*. June 30, 2016 Metabolomics Society Meeting, Dublin, Ireland.
41. *Metabolomics in Nutrition Research*. Presented at the Nutrigenomics, Nutrigenetics, and Precision Nutrition Workshop. May 22-26, 2016.



42. *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.
43. *Biomarkers in Maternal and Child Health*. Presented at New York University Medical Center, New York, NY. January 29, 2016.
44. *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.
45. *Metabolomics in Maternal and Child Health*. Presented at the University of Michigan Medical School, Ann Arbor, MI. December 9, 2015.
46. *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.
47. *Metabolomics as a Tool for Characterizing the Exposome*. Presented at the National Academy of Sciences, Washington, DC. May 28–29, 2015.
48. *New Horizons. Metabolomics of Kidney Disease*. Presented at the Emerging Trends in Dialysis Care. SUNY DownState Medical Center, NY, May 8, 2015.
49. *Metabolomics in Epidemiology*. Presented to the School of Veterinary Medicine, North Carolina State University, Raleigh, NC. March 2015.
50. *Why Biomarkers Matter*. Presented at Cancer Prevention in India: Catalyzing Action and Enhancing Implementation, New Delhi, India. February 20, 2015.
51. *Translational Sciences*. Presented to the Department of Biology, North Carolina AT&T State University, Greensboro, NC. January 30, 2015.
52. *Metabolomics in Environmental Sciences*. Presented at the Nicholas School of the Environment, Duke University, Durham, NC. January 28, 2015.
53. *Metabolomics to Provide Biomarkers and Mechanistic Insights*. INDO-US Symposium: Mass Spectrometry Based Metabolomics in Disease Biology, Trivandrum, Kerala, India. January 23–24, 2014.
54. *Metabolomics in Toxicology*. Presented to the American Chemical Society, Indianapolis, IN. October 10, 2013.
55. *Metabolomics at RTI*. Presented at the Metabolomics Society Meeting, Glasgow, Scotland. July 2013.
56. *Metabolomics in Urology*. Presented at the NIH Workshop at Lister Hill, Bethesda, MD. February 2013.
57. *Personalized Medicine and Environmental Omics*. Presented at the Environmental Omics Conference, Guangzhou, Guangdong Province. November 8–12, 2011.
58. *Metabolomics for the Midwestern Pediatric Nephrology Consortium*. Presented in Chicago, IL. November 11, 2012.
59. *Metabolomics in Epidemiology*. Presented at the University of North Carolina at Chapel Hill, Chapel Hill, NC. November 2012.

60. *Metabolomics in Pharmacology*. Presented at the Duke University, Durham, NC. November 2012.
61. *Metabolomics in Clinical Research*. Presented at Wake Forest University, Greensboro, NC. October 2012.
62. *Personalized medicine and environmental OMICS. Session E2*. Presented at 2011 International Conference on Environmental OMICS (ICEO), November 11, 2011, Guangzhou, China.
63. *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.
64. *Applications of Metabolomics*. National Toxicology Program. Presented at NIEHS, RTP, NC. June 16, 2010.
65. 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.
66. *Emerging Technologies in Personalized Medicine*. Presented at the Brody School of Medicine, East Carolina University, Greenville, NC. February 4, 2010.
67. *Metabolomics and Proteomics: Early and Sensitive Markers for Personalized Medicine*. Presented at the RTI Fellows' Symposium, Friday Center, Chapel Hill, NC. November 2, 2009.
68. *Incorporation of 'Omics in the Study of Reproduction and Development*. Presented to Society of Toxicology, Baltimore, MD. March 2009.
69. *Metabolomics in Drug Discovery and Drug Development*. Presented to the Eastern Analytical Society (EAS), Somerset, NJ. November 17–20, 2008.
70. *Metabolomics in the Study of Reproduction and Development*. Presented at the Women's Health Initiative, Friday Center, Chapel Hill, NC. April 2, 2008.
71. *Metabolomics: Application to the Study of Phthalates in Reproduction and Development*. Presented at the Society of Toxicology Meeting, Seattle, WA. March 17, 2008.
72. *Metabolomics: Applications to Pediatrics Health*. Presented at the 5th Annual Pediatric Healthy Weight Conference, Greenville, NC. March 6, 2008.
73. *Biomarkers in Translational Medicine*. Presented at the Innovations and Technologies for India's Public Health System, New Delhi, India. November 1–2, 2007.
74. *Metabolomics in the Study of Endocrine Disruption*. Presented to EPA's Endocrine Disrupting Chemical Discussion Group, EPA, RTP, NC. October 10, 2007.
75. *Developing Markers Informative of Adverse Response from Drugs or Chemicals*. Presented at the Advances in Metabolite Profiling Conference, London, England. October 17–19, 2006.
76. *Metabolomics in Reproductive Toxicology*. Presented at the Science and Engineering Fellows Symposium (Sponsor: Rochelle Tyl), RTI, RTP, NC. September 2006.

77. *Metabolomics and biomarkers*. New Jersey Drug Metabolism Group Symposium, Somerset, NJ. October 2005.
78. *Metabolomics: Promises and Realities*. Presented at the Fox Chase Cancer Research Center, Buckingham, PA. April 2005.
79. *Metabolomics, Biomarkers, and Cross Species Extrapolation*. Presented at the Board of Scientific Councilors EPA Workshop, National Academy of Sciences, Washington, DC. February 2005.
80. *Cross-species Extrapolation of Toxicogenomics Data*. Presented at the Board of Scientific Councilors' EPA Workshop, National Academy of Sciences Workshop, Washington, DC. August 2004.
81. *Metabolomics: Data Analysis and Pathway Mapping*. Presented at the NIH ADME/Toxicity Summit, NIH Lister Hill, Bethesda, MD. June 2004.
82. *From Metabolites to the Metabolome: Chemistry and Biochemistry Symposium*. Presented at the University of North Carolina at Wilmington, Wilmington, NC. January 29, 2004.
83. *Metabolomics and Pathway Mapping*: Triangle Array Users Group. Presented at NCBC, RTP, Park, NC. November 2003.
84. *Metabolomics: Processes and Approaches*. Presented to the NIEHS ToxPath Working Group, NIEHS, RTP, NC. June 2003.
85. *Metabolomics: From Genes to Cells to Systems*. Presented to the NIEHS International Workshop on Metabonomics, NIEHS, RTP, NC. May 2003.
86. Lecturer, Continuing Education Course, *Applications of NMR Spectroscopy in Toxicology*. Presented to Society of Toxicology. March 1993.

## PROFESSIONAL SERVICE

### Editorial Boards

Metabolites, 2018-date

Frontiers in Nutrition, 2018-date

Associate Editor: Environmental Health Perspectives, 2016-2019

RTI Press, 2010-2014

Editorial Board Member, Journal of Toxicology, 2008-date

Board Member, Journal of Applied Toxicology, 2007-date

Editorial Board Member, Metabolomics: Official Journal of the Metabolomic Society, 2005-date

### Selected Activities

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).

## **Selected Chair Positions**

- Session Co-Chair, Global Summit on Regulatory Science 2020 (GSRS20). OMICS, Biomarkers and Precision Medicine. September 28-30, 2020. Virtual.
- Planning Committee for the 1st annual MANA conference, Georgia Institute of Technology, Atlanta, GA, November 15-17, 2019
- Planning Committee for the 2021 and Co-Chair for the 2023 Gordon Conference on Metabolomics
- Session Chair, Metabolome Nutrition and Precision Health at the 2019 Metabolomics and Human Health Gordon Conference. Feb 3-8, 2019. Ventura, Ca.
- Chair, Organized Conference: "Defining Precision Nutrition." North Carolina Research Campus, May 1-2, 2018
- 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.

## SUSAN C.J. SUMNER

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- 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.