

Lisa Smeester, Ph.D.

Gillings School of Global Public Health • UNC Chapel Hill • smesta@unc.edu

Education

- PhD, Environmental Sciences and Engineering** 2019
Gillings School of Global Public Health, The University of North Carolina at Chapel Hill
Dissertation: “A Critical Role for Imprinted Genes in the Placenta in the Developmental Origins of Health and Disease”
- MS, Environmental Sciences and Engineering** 2016
Gillings School of Global Public Health, The University of North Carolina at Chapel Hill
Thesis: “Exposure to Arsenic is Associated with a TNF-mediated Proteomic Signaling Response in Adolescents”
- BS, Joint Concentration in Psychobiology** 1995
Simmons College
Thesis: “Chromosomal Aneuploidy, Prenatal Diagnostic Techniques, and Changes in Birth Status due to Prenatal Screening: A Twenty-Year Study”

Professional Experience

- Scientific Program Manager, UNC Superfund Research Program** 2020 – present
Department of Environmental Sciences & Engineering
Gillings School of Global Public Health @ UNC Chapel Hill
- Scientific Program Manager, Institute for Environmental Health Solutions** 2018 – present
Department of Environmental Sciences & Engineering
Gillings School of Global Public Health @ UNC Chapel Hill
- Manager, Laboratory of Rebecca C. Fry** 2008 – 2018
Research Specialist, Department of Environmental Sciences & Engineering
Gillings School of Global Public Health @ UNC Chapel Hill
- Technical Associate** 2006 – 2008
Massachusetts Institute of Technology, The MIT BioMicro Center
- Research Associate, Laboratory of Leona D. Samson** 2002 – 2006
Massachusetts Institute of Technology, Center for Environmental Health Sciences
Massachusetts Institute of Technology, Department of Biological Engineering
- Technical Associate** 2001 – 2002
Massachusetts Institute of Technology, The MIT Biopolymers Laboratory
- Preimplantation Genetic Diagnostic Molecular Biology Assistant** 1999 – 2001
Brigham and Women’s Hospital, Pathology Department
Massachusetts General Hospital, Embryology Department
- Research Associate, Laboratory of Jeff C. Hall** 1995 – 1998
Brandeis University, Department of Neurogenetics
- Research Assistant, Case Surveillance** 1995 – 1997
Brigham and Women’s Hospital, Teratology Department
-

Awards

- 2017 **Department of Environmental Sciences & Engineering Employee Excellence Award**, UNC Gillings School of Global Public Health, Chapel Hill, NC
- 2010 **Department of Environmental Sciences & Engineering “Star Heel” Award**, UNC Gillings School of Global Public Health, Chapel Hill, NC
- 2010 **Best Poster Presentation “Altered DNA Methylation Patterns in Individuals with Arsenicosis.”** Genetics and Environmental Mutagenesis Society of North Carolina Fall Meeting, Durham, NC
-

Scientific Membership

- 2018 - *The International Federation of Placenta Associations*
- 2018 - *The International Society for Developmental Origins of Health and Disease*
- 2018 - *The US Society for Developmental Origins of Health and Disease*
- 2016 - *Society of Toxicology*
- 2015 - *Association for Women in Science*
- 2010 - *Genetics and Environmental Mutagenesis Society of North Carolina (NC GEMS)*
-

Publications (OCRID 0000-0001-5283-0485)

• Peer-reviewed publications

1. Bhattacharya A, Freedman AN, Avula V, Harris R, Liu W, Joseph RM, **Smeester L**, Hartwell HJ, Kuban KCK, Marsit CJ, Li Y, O’Shea TM, Fry RC, Santos HP Jr. Distal mediator-enriched, placental transcriptome-wide analyses illustrate the Developmental Origins of Health and Disease. medRxiv 2021.04.12.21255170; doi: <https://doi.org/10.1101/2021.04.12.21255170>
2. Santos HP Jr, Bhattacharya A, Joseph RM, **Smeester L**, Kuban KCK, Marsit CJ, O’Shea TM, Fry RC. Evidence for the placenta-brain axis: multi-omic kernel aggregation predicts intellectual and social impairment in children born extremely preterm. Mol Autism. 2020 Dec 11;11(1):97. doi: 10.1186/s13229-020-00402-w. PMID: 33308293.
3. Eaves LA, Nguyen HT, Rager JE, Sexton KG, Howard T, **Smeester L**, Freedman AN, Aagaard KM, Shope C, Lefer B, Flynn JH, Erickson MH, Fry RC, Vizuite W. Identifying the Transcriptional Response of Cancer and Inflammation-Related Genes in Lung Cells in Relation to Ambient Air Chemical Mixtures in Houston, Texas. Environ Sci Technol. 2020 Nov 3;54(21):13807-13816. doi: 10.1021/acs.est.0c02250. Epub 2020 Oct 16. PMID: 33064461; PMCID: PMC7757424.
4. Eaves LA, Phookphan P, Rager JE, Bangma J, Santos HP Jr, **Smeester L**, O’Shea TM, Fry RC. A role for microRNAs in the epigenetic control of sexually dimorphic gene expression in the human placenta. Epigenomics. 2020 Sep;12(17):1543-1558. doi: 10.2217/epi-2020-0062. Epub 2020 Sep 9. PMID: 32901510; PMCID: PMC7607407.
5. Payton A, Clark J, Eaves L, Santos HP Jr, **Smeester L**, Bangma JT, O’Shea TM, Fry RC, Rager JE. Placental genomic and epigenomic signatures associated with infant birth weight highlight mechanisms involved in collagen and growth factor signaling. Reprod Toxicol. 2020 Jul 25;96:221-230. doi: 10.1016/j.reprotox.2020.07.007. Epub ahead of print. PMID: 32721520; PMCID: PMC7855285.
6. Eaves LA, **Smeester L**, Hartwell HJ, Lin YH, Arashiro M, Zhang Z, Gold A, Surratt JD, Fry

- RC. Isoprene-Derived Secondary Organic Aerosol Induces the Expression of MicroRNAs Associated with Inflammatory/Oxidative Stress Response in Lung Cells. *Chem Res Toxicol*. 2020 Feb 17;33(2):381-387. doi: 10.1021/acs.chemrestox.9b00322. Epub 2019 Dec 13. PubMed PMID: 31765140; PubMed Central PMCID: PMC7243464.
7. Clark J, Martin E, Bulka CM, **Smeester L**, Santos HP, O'Shea TM, Fry RC. Associations between placental CpG methylation of metastable epialleles and childhood body mass index across ages one, two and ten in the Extremely Low Gestational Age Newborns (ELGAN) cohort. *Epigenetics*. 2019 Nov;14(11):1102-1111. doi: 10.1080/15592294.2019.1633865. Epub 2019 Jul 2. PubMed PMID: 31216936; PubMed Central PMCID: PMC6773381.
 8. Addo KA, Bulka C, Dhingra R, Santos HP Jr, **Smeester L**, O'Shea TM, Fry RC. Acetaminophen use during pregnancy and DNA methylation in the placenta of the extremely low gestational age newborn (ELGAN) cohort. *Environ Epigenet*. 2019 Apr;5(2):dvz010. doi: 10.1093/eep/dvz010. eCollection 2019 Apr. PubMed PMID: 31404209; PubMed Central PMCID: PMC6682751.
 9. Santos HP Jr, Bhattacharya A, Martin EM, Addo K, Psioda M, **Smeester L**, Joseph RM, Hooper SR, Frazier JA, Kuban KC, O'Shea TM, Fry RC. Epigenome-wide DNA methylation in placentas from preterm infants: association with maternal socioeconomic status. *Epigenetics*. 2019 Aug;14(8):751-765. doi: 10.1080/15592294.2019.1614743. Epub 2019 May 21. PubMed PMID: 31062658; PubMed Central PMCID: PMC6615526.
 10. Johnson J, Robinson S, **Smeester L**, Fry R, Boggess K, Vora N. Ubiquitous identification of inorganic arsenic in a cohort of second trimester amniotic fluid in women with preterm and term births. *Reprod Toxicol*. 2019 Aug;87:97-99. doi: 10.1016/j.reprotox.2019.05.061. Epub 2019 May 23. Review. PubMed PMID: 31128209; PubMed Central PMCID: PMC6778474.
 11. Bulka CM, Dammann O, Santos HP Jr, VanderVeen DK, **Smeester L**, Fichorova R, O'Shea TM, Fry RC. Placental CpG Methylation of Inflammation, Angiogenic, and Neurotrophic Genes and Retinopathy of Prematurity. *Invest Ophthalmol Vis Sci*. 2019 Jul 1;60(8):2888-2894. doi: 10.1167/iovs.18-26466. PubMed PMID: 31266060; PubMed Central PMCID: PMC6607927.
 12. Vora NL, Grace MR, **Smeester L**, Dotters-Katz SK, Fry RC, Bae-Jump V, Boggess K. Targeted Multiplex Gene Expression Profiling to Measure High-Fat Diet and Metformin Effects on Fetal Gene Expression in a Mouse Model. *Reprod Sci*. 2019 May;26(5):683-689. doi: 10.1177/1933719118786453. Epub 2018 Jul 5. PubMed PMID: 29976116; PubMed Central PMCID: PMC6728581.
 13. Holmes BE, **Smeester L**, Fry RC, Weinberg HS. Disinfection Byproducts Bind Human Estrogen Receptor- α . *Environ Toxicol Chem*. 2019 May;38(5):956-964. doi: 10.1002/etc.4377. Epub 2019 Mar 20. PubMed PMID: 30698843.
 14. Vora NL, Parker JS, Mieczkowski PA, **Smeester L**, Fry RC, Boggess KA. RNA-Sequencing of Umbilical Cord Blood to Investigate Spontaneous Preterm Birth: A Pilot Study. *AJP Rep*. 2019 Jan;9(1):e60-e66. doi: 10.1055/s-0039-1678717. Epub 2019 Mar 7. PubMed PMID: 30854245; PubMed Central PMCID: PMC6406026.
 15. Manuck TA, **Smeester L**, Martin EM, Tomlinson MS, Smith C, Varner MW, Fry RC.

- Epigenetic Regulation of the Nitric Oxide Pathway, 17- α Hydroxyprogesterone Caproate, and Recurrent Preterm Birth. *Am J Perinatol*. 2018 Jul;35(8):721-728. doi: 10.1055/s-0037-1613682. Epub 2017 Dec 14. PubMed PMID: 29241278; PubMed Central PMCID: PMC6002888.
16. Meakin CJ, Martin EM, Santos HP Jr, Mokrova I, Kuban K, O'Shea TM, Joseph RM, **Smeester L**, Fry RC. Placental CpG methylation of HPA-axis genes is associated with cognitive impairment at age 10 among children born extremely preterm. *Horm Behav*. 2018 May;101:29-35. doi: 10.1016/j.yhbeh.2018.02.007. Epub 2018 Mar 5. PubMed PMID: 29477804; PubMed Central PMCID: PMC6354776.
 17. Tilley SK, Martin EM, **Smeester L**, Joseph RM, Kuban KCK, Heeren TC, Dammann OU, O'Shea TM, Fry RC. Placental CpG methylation of infants born extremely preterm predicts cognitive impairment later in life. *PLoS One*. 2018;13(3):e0193271. doi: 10.1371/journal.pone.0193271. eCollection 2018. PubMed PMID: 29513726; PubMed Central PMCID: PMC5841757.
 18. **Smeester L**, Fry RC. Long-Term Health Effects and Underlying Biological Mechanisms of Developmental Exposure to Arsenic. *Curr Environ Health Rep*. 2018 Mar;5(1):134-144. doi: 10.1007/s40572-018-0184-1. Review. PubMed PMID: 29411302.
 19. Tomlinson MS, Bommarito PA, Martin EM, **Smeester L**, Fichorova RN, Onderdonk AB, Kuban KCK, O'Shea TM, Fry RC. Microorganisms in the human placenta are associated with altered CpG methylation of immune and inflammation-related genes. *PLoS One*. 2017;12(12):e0188664. doi: 10.1371/journal.pone.0188664. eCollection 2017. PubMed PMID: 29240761; PubMed Central PMCID: PMC5730116.
 20. **Smeester L**, Martin E, Cable P, Bodnar W, Boggess K, Vora N, Fry R. Toxic metals in amniotic fluid and altered gene expression in cell-free fetal RNA. *Prenatal Diagnosis*. 2017 December; 37(13):1364-1366. doi: 10.1002/pd.5183.
 21. Holmes BE, **Smeester L**, Fry RC, Weinberg HS. Identification of endocrine active disinfection by-products (DBPs) that bind to the androgen receptor. *Chemosphere*. 2017 Nov;187:114-122. doi: 10.1016/j.chemosphere.2017.08.105. Epub 2017 Aug 22. PubMed PMID: 28843117.
 22. Bommarito P, Martin E, **Smeester L**, Palys T, Baker E, Karagas M, Fry R. Fetal-sex dependent genomic responses in the circulating lymphocytes of arsenic-exposed pregnant women in New Hampshire. *Reproductive Toxicology*. 2017 October; 73:184-195. doi: 10.1016/j.reprotox.2017.07.023.
 23. Nguyen H, Sexton K, **Smeester L**, Aagaard K, Shope C, Lefer B, Flynn J, Alvarez S, Erickson M, Fry R, Vizuite W. Genomic responses of human lung cells exposure through a successful in vitro field deployment in Houston, Texas. *Toxicology Letters*. 2017 October; 280:S212-. doi: 10.1016/j.toxlet.2017.07.583.
 24. **Smeester L**, Bommarito P, Martin E, Recio-Vega R, Gonzalez-Cortes T, Olivas-Calderon E, Lantz R, Fry R. Chronic early childhood exposure to arsenic is associated with a TNF-mediated proteomic signaling response. *Environmental Toxicology and Pharmacology*. 2017 June; 52:183-187. doi: 10.1016/j.etap.2017.04.007.

25. Martin E, **Smeester L**, Bommarito PA, Grace MR, Boggess K, Kuban K, Karagas MR, Marsit CJ, O'Shea TM, Fry RC. Sexual epigenetic dimorphism in the human placenta: implications for susceptibility during the prenatal period. *Epigenomics*. 2017 Mar;9(3):267-278. doi: 10.2217/epi-2016-0132. Epub 2017 Feb 17. PubMed PMID: 28234023; PubMed Central PMCID: PMC5331919.
26. Laine JE, Bailey KA, Olshan AF, **Smeester L**, Drobná Z, Stýblo M, Douillet C, García-Vargas G, Rubio-Andrade M, Pathmasiri W, McRitchie S, Sumner SJ, Fry RC. 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. PubMed PMID: 27997141; PubMed Central PMCID: PMC5460981.
27. Manuck T, **Smeester L**, Martin E, Smith C, Varner M, Fry R. 379: Midtrimester epigenetic modifications of nitric oxide pathway genes in maternal circulating blood and placenta among women exposed to 17-alpha hydroxyprogesterone caproate (17P) for recurrent preterm birth (PTB) prevention. *American Journal of Obstetrics and Gynecology*. 2017 January; 216(1):S228-. doi: 10.1016/j.ajog.2016.11.637.
28. Manuck T, **Smeester L**, Martin E, Smith C, Varner M, Fry R. 380: Midtrimester epigenetic modification in circulating blood: novel predictors of response to 17-alpha hydroxyprogesterone caproate (17P) for recurrent preterm birth (PTB) prevention. *American Journal of Obstetrics and Gynecology*. 2017 January; 216(1):S228-S229. doi: 10.1016/j.ajog.2016.11.638.
29. Brooks S, Martin E, **Smeester L**, Grace M, Boggess K, Fry R. miRNAs as common regulators of the transforming growth factor (TGF)- β pathway in the preeclamptic placenta and cadmium-treated trophoblasts: Links between the environment, the epigenome and preeclampsia. *Food and Chemical Toxicology*. 2016 December; 98:50-57. doi: 10.1016/j.fct.2016.06.023.
30. Vora N, **Smeester L**, Boggess K, Fry R. Investigating the Role of Fetal Gene Expression in Preterm Birth. *Reproductive Sciences*. 2016 September; 24(6):824-828. doi: 10.1177/1933719116670038.
31. Drobná Z, Martin E, Kim K, **Smeester L**, Bommarito P, Rubio-Andrade M, García-Vargas G, Stýblo M, Zou F, Fry R. Analysis of maternal polymorphisms in arsenic (+3 oxidation state)-methyltransferase AS3MT and fetal sex in relation to arsenic metabolism and infant birth outcomes: Implications for risk analysis. *Reproductive Toxicology*. 2016 June; 61:28-38. doi: 10.1016/j.reprotox.2016.02.017.
32. Fry R, Martin E, Kim K, **Smeester L**, Stýblo M, Zou F, Drobná Z, Rubio-Andrade M, García-Vargas G. Maternal polymorphisms in arsenic (+3 oxidation state)methyltransferase AS3MT are associated with arsenic metabolism and newborn birth outcomes: Implications of major risk alleles and fetal health outcomes . In: *Arsenic in the Environment - Proceedings*. CRC Press; 2016-06. 441-442p.
33. Vizuete W, Sexton K, Nguyen H, **Smeester L**, Aagaard K, Shope C, Lefer B, Flynn J, Alvarez S, Erickson M, Fry R. From the Field to the Laboratory: Air Pollutant-Induced Genomic Effects in Lung Cells. *Environmental Health Insights*. 2016 February; 9s4:EHI.S15656-. doi: 10.4137/EHI.S15656.

34. Wilmot B, Fry R, **Smeester L**, Musser ED, Mill J, Nigg JT. Methylomic analysis of salivary DNA in childhood ADHD identifies altered DNA methylation in VIPR2. *J Child Psychol Psychiatry*. 2016 Feb;57(2):152-60. doi: 10.1111/jcpp.12457. Epub 2015 Aug 25. PubMed PMID: 26304033; PubMed Central PMCID: PMC4724325.
35. Martin E, Ray PD, **Smeester L**, Grace MR, Boggess K, Fry RC. Epigenetics and Preeclampsia: Defining Functional Epimutations in the Preeclamptic Placenta Related to the TGF- β Pathway. *PLoS One*. 2015;10(10):e0141294. doi: 10.1371/journal.pone.0141294. eCollection 2015. PubMed PMID: 26510177; PubMed Central PMCID: PMC4624949.
36. Lee EY, Flynn MR, Du G, Lewis MM, Fry R, Herring AH, Van Buren E, Van Buren S, **Smeester L**, Kong L, Yang Q, Mailman RB, Huang X. T1 Relaxation Rate (R1) Indicates Nonlinear Mn Accumulation in Brain Tissue of Welders With Low-Level Exposure. *Toxicol Sci*. 2015 Aug;146(2):281-9. doi: 10.1093/toxsci/kfv088. Epub 2015 May 7. PubMed PMID: 25953701; PubMed Central PMCID: PMC4607746.
37. Rager J, Tilley S, Tulenko S, **Smeester L**, Ray P, Yosim A, Currier J, Ishida M, González-Horta M, Sánchez-Ramírez B, Ballinas-Casarrubias L, Gutiérrez-Torres D, Drobná Z, Del Razo L, García-Vargas G, Kim W, Zhou Y, Wright F, Stýblo M, Fry R. Identification of Novel Gene Targets and Putative Regulators of Arsenic-Associated DNA Methylation in Human Urothelial Cells and Bladder Cancer. *Chemical Research in Toxicology*. 2015 June; 28(6):1144-1155. doi: 10.1021/tx500393y.
38. Chervinskiy S, **Smeester L**, Kulis M, Peden D, Vickery B, Fry R. Glutathione S-Transferase Mu 1 (GSTM1) Gene Associated with Allergic Rhinitis in a Food Allergy Cohort. *Journal of Allergy and Clinical Immunology*. 2015 February; 135(2):AB10-. doi: 10.1016/j.jaci.2014.12.967.
39. Laine JE, Bailey KA, Rubio-Andrade M, Olshan AF, **Smeester L**, Drobná Z, Herring AH, Stýblo M, García-Vargas GG, Fry RC. Maternal arsenic exposure, arsenic methylation efficiency, and birth outcomes in the Biomarkers of Exposure to ARsenic (BEAR) pregnancy cohort in Mexico. *Environ Health Perspect*. 2015 Feb;123(2):186-92. doi: 10.1289/ehp.1307476. Epub 2014 Oct 17. PubMed PMID: 25325819; PubMed Central PMCID: PMC4314242.
40. Rojas D, Rager J, **Smeester L**, Bailey K, Drobná Z, Rubio-Andrade M, Stýblo M, García-Vargas G, Fry R. Prenatal Arsenic Exposure and the Epigenome: Identifying Sites of 5-methylcytosine Alterations that Predict Functional Changes in Gene Expression in Newborn Cord Blood and Subsequent Birth Outcomes. *Toxicological Sciences*. 2015 January; 143(1):97-106. doi: 10.1093/toxsci/kfu210.
41. Nylander-French L, Wu M, French J, Boyer J, **Smeester L**, Sanders A, Fry R. DNA methylation modifies urine biomarker levels in 1,6-hexamethylene diisocyanate exposed workers: A pilot study. *Toxicology Letters*. 2014 December; 231(2):217-226. doi: 10.1016/j.toxlet.2014.10.024.
42. **Smeester L**, Yosim AE, Nye MD, Hoyo C, Murphy SK, Fry RC. Imprinted genes and the environment: links to the toxic metals arsenic, cadmium, lead and mercury. *Genes (Basel)*. 2014 Jun 11;5(2):477-96. doi: 10.3390/genes5020477. PubMed PMID: 24921406; PubMed Central PMCID: PMC4094944.

43. Bailey KA, Laine J, Rager JE, Sebastian E, Olshan A, **Smeester L**, Drobná Z, Styblo M, Rubio-Andrade M, García-Vargas G, Fry RC. Prenatal arsenic exposure and shifts in the newborn proteome: interindividual differences in tumor necrosis factor (TNF)-responsive signaling. *Toxicol Sci.* 2014 Jun;139(2):328-37. doi: 10.1093/toxsci/kfu053. Epub 2014 Mar 27. PubMed PMID: 24675094; PubMed Central PMCID: PMC4031624.
44. Rager JE, Bailey KA, **Smeester L**, Miller SK, Parker JS, Laine JE, Drobná Z, Currier J, Douillet C, Olshan AF, Rubio-Andrade M, Styblo M, García-Vargas G, Fry RC. Prenatal arsenic exposure and the epigenome: altered microRNAs associated with innate and adaptive immune signaling in newborn cord blood. *Environ Mol Mutagen.* 2014 Apr;55(3):196-208. doi: 10.1002/em.21842. Epub 2013 Dec 10. PubMed PMID: 24327377; PubMed Central PMCID: PMC4023469.
45. Sanders AP*, **Smeester L***, Rojas D, DeBussycher T, Wu MC, Wright FA, Zhou YH, Laine JE, Rager JE, Swamy GK, Ashley-Koch A, Lynn Miranda M, Fry RC. Cadmium exposure and the epigenome: Exposure-associated patterns of DNA methylation in leukocytes from mother-baby pairs. *Epigenetics.* 2014 Feb;9(2):212-21. doi: 10.4161/epi.26798. Epub 2013 Oct 28. PubMed PMID: 24169490; PubMed Central PMCID: PMC3962531. *Authors contributed equally to this work
46. Rager J, Bauer R, Müller L, **Smeester L**, Carson J, Brighton L, Fry R, Jaspers I. DNA methylation in nasal epithelial cells from smokers: identification of ULBP3-related effects. *American Journal of Physiology-Lung Cellular and Molecular Physiology.* 2013 September; 305(6):L432-L438. doi: 10.1152/ajplung.00116.2013.
47. Prasad RY, Chastain PD, Nikolaishvili-Feinberg N, **Smeester L**, Kaufmann WK, Fry RC. Titanium dioxide nanoparticles activate the ATM-Chk2 DNA damage response in human dermal fibroblasts. *Nanotoxicology.* 2013 Sep;7(6):1111-9. doi: 10.3109/17435390.2012.710659. Epub 2012 Aug 23. PubMed PMID: 22770119; PubMed Central PMCID: PMC3867138.
48. Bailey KA, Wu MC, Ward WO, **Smeester L**, Rager JE, García-Vargas G, Del Razo LM, Drobná Z, Styblo M, Fry RC. Arsenic and the epigenome: interindividual differences in arsenic metabolism related to distinct patterns of DNA methylation. *J Biochem Mol Toxicol.* 2013 Feb;27(2):106-15. doi: 10.1002/jbt.21462. Epub 2013 Jan 11. PubMed PMID: 23315758; PubMed Central PMCID: PMC3892431.
49. Rager J, Lichtveld K, Ebersviller S, **Smeester L**, Jaspers I, Sexton K, Fry R. A Toxicogenomic Comparison of Primary and Photochemically Altered Air Pollutant Mixtures. *Environmental Health Perspectives.* 2011 November; 119(11):1583-1589. doi: 10.1289/ehp.1003323.
50. Benton MA, Rager JE, **Smeester L**, Fry RC. Comparative genomic analyses identify common molecular pathways modulated upon exposure to low doses of arsenic and cadmium. *BMC Genomics.* 2011 Apr 1;12:173. doi: 10.1186/1471-2164-12-173. PubMed PMID: 21457566; PubMed Central PMCID: PMC3082247.
51. Rager J, **Smeester L**, Jaspers I, Sexton K, Fry R. Epigenetic Changes Induced by Air Toxics: Formaldehyde Exposure Alters miRNA Expression Profiles in Human Lung Cells.

Environmental Health Perspectives. 2011 April; 119(4):494-500. doi: 10.1289/ehp.1002614.

52. **Smeester L**, Rager JE, Bailey KA, Guan X, Smith N, García-Vargas G, Del Razo LM, Drobná Z, Kelkar H, Stýblo M, Fry RC. Epigenetic changes in individuals with arsenicosis. *Chem Res Toxicol*. 2011 Feb 18;24(2):165-7. doi: 10.1021/tx1004419. Epub 2011 Feb 4. PubMed PMID: 21291286; PubMed Central PMCID: PMC3042796.
53. Liu Q, Zhang H, **Smeester L**, Zou F, Kesic M, Jaspers I, Pi J, Fry R. The NRF2-mediated oxidative stress response pathway is associated with tumor cell resistance to arsenic trioxide across the NCI-60 panel. *BMC Medical Genomics*. 2010-8-; 3(1):- . doi: 10.1186/1755-8794-3-37.
54. Delaney J, **Smeester L**, Wong C, Frick L, Taghizadeh K, Wishnok J, Drennan C, Samson L, Essigmann J. AlkB reverses etheno DNA lesions caused by lipid oxidation in vitro and in vivo. *Nature Structural & Molecular Biology*. 2005 October; 12(10):855-860. doi: 10.1038/nsmb996.

• Book Chapters:

1. **Smeester L**, Yosim AE and Fry RC. 2015. ‘Chemical hazards’, in Bartram J, with Baum R, Coclanis, PA, Gute, DM, Kay D, McFayden S, Pond K, Robertson W, and Rouse MJ (eds). *Routledge Handbook of Water and Health*. London and New York: Routledge.

• Published Abstracts:

1. Chervinskiy SK, **Smeester L**, Kulis Jr MD, Peden DB, Vickery BP, Fry RC. Glutathione S-Transferase Mu 1 (GSTM1) Gene Associated with Allergic Rhinitis in a Food Allergy Cohort. *Journal of Allergy and Clinical Immunology*. 2015;135(2, Supplement):AB10. doi: <http://dx.doi.org/10.1016/j.jaci.2014.12.967>.

Poster Presentations

1. “CpG methylation of imprinted genes within the placenta is associated with intrauterine growth restriction risk.” **Smeester L**, Santos Jr. H, O’Shea MT, and Fry RC. *NICHD Human Placenta Project 5th Annual Meeting*, November 2018, Bethesda, MD.
2. “Toxic metal exposure in amniotic fluid associated with disruption in fetal gene expression.” **Smeester L**, Martin M, Cable P, Bodnar W, Boggess K, Vora NL, and Fry RC. *Society for Reproductive Investigation Annual Meeting*, March 2016, Montreal, Quebec, CA.
3. “Altered DNA Methylation Patterns in Individuals with Arsenicosis.”
* **Smeester L**, Rager J, Zhang L, Guan X, Bailey K, Smith N, Garcia-Vargas G, Del Razo L, Drobná Z, Kelkar H, Schroth G, Styblo M and Fry RC. *Genetics and Environmental Mutagenesis Society Fall Meeting*, October 2010, Durham, NC. ***Best Poster Presentation Award**

Funding

2019	UNC Creativity Hubs Pilot Award (Fry) Role: Co-Investigator	\$5000.00
2013	UNC Center for Environmental Health and Susceptibility (Fry)	\$5000.00

Instrumentation grant

Professional Service

Peer review:

2017 - present Environment International

Member/leadership roles within scientific societies:

2016 - 2018 Board of Directors, Treasurer
Genetics and Environmental Mutagenesis Society of North Carolina

Member of Search Committee, University of North Carolina at Chapel Hill:

2020 Served on search committee for a Research Specialist within the Department of
Epidemiology, BioSpecimen Processing Facility

2019 Served on search committee for a Business Officer within the Department
of Environmental Sciences and Engineering, Institute for Environmental Health Solutions

2018 Served on search committee for a Laboratory Operations Manager within the Department
of Epidemiology, BioSpecimen Processing Facility

2017 Served on search committee for a Research Specialist within the Department of
Epidemiology, BioSpecimen Processing Facility

2017 Served on search committee for a Research Specialist within the Department
of Epidemiology, BioSpecimen Processing Facility