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Education

Research Scientist	<i>Massachusetts Institute of Technology</i> Center for Environmental Health Sciences Mentor: Leona Samson	2002-2008
Post-Doctoral Associate	<i>Massachusetts Institute of Technology</i> Department of Biomaterials Science/Biology Mentor: Cho-Kyun Rha	2000-2002
Ph.D.	<i>Tulane University-Degree</i> <i>Yale University-Research</i> Degree: Biology Department of Biology Mentor: Xing-Wang Deng	2000
M.S.	<i>Tulane University</i> Degree: Biology Department of Biology Mentor: Phillip Kadowitz (Pharmacology)	1997
B.S.	<i>William Smith College</i> Degree: Biology High Honors, Magna Cum Laude, Phi Beta Kappa Mentor: Steve Kolmes	1995

Professional Experiences

Carol Remmer Angle Distinguished Professor	UNC	2017-present
Professor, Department of Environmental Sciences and Engineering	UNC	2017
Associate Professor, Department of Environmental Sciences and Engineering	UNC	2013-2017
Assistant Professor, Department of Environmental Sciences and Engineering	UNC	2008-2013
Research Scientist	MIT	2002-2008
Post-Doctoral Associate	MIT	2000-2002
Graduate Research Assistant	Yale University	1997-2000
Graduate Research Assistant	Tulane University	1995-1997
Undergraduate Research Assistant	Cornell University	1994-1995
Research Intern	SmithKline Beecham Pharmaceuticals	1994

Other Professional Experiences

Associate Chair, Department of Environmental Sciences and Engineering	UNC	2017-present
Director, Institute for Environmental Health Solutions	UNC	2017-present
Director, UNC Superfund Research Program	UNC	2015-2018
Director, Graduate Studies, Curriculum in Toxicology	UNC	2015-present

Curriculum Vitae for Rebecca C. Fry, Ph.D.
Deputy Director, UNC Superfund Research Program
Director, Biostatistics T32 Training Grant
Director, CEHS Genomics and Bioinformatics Group

UNC
UNC
MIT

Date: December 2018
2014-2015
2010-present
2006-2008

Honors and Awards

- Teaching Innovation Award, Gillings School of Global Public Health 2014
- Teaching Innovation Award, Gillings School of Global Public Health 2012
- Newton Underwood Memorial Teaching Award 2011
- Winner of NIEHS Outstanding New Environmental Scientist (ONES) Award 2010
- PopTech Science Public Leadership Fellowship 2010
- Aspen Cancer Conference Fellow 2009
- Pfizer Scholar in Public Health 2009
- Infinite Mile Award-Massachusetts Institute of Technology 2005
- Magna Cum Laude and High Honors in Biology 1995

Scientific Membership

- American Chemistry Society 2012-present
- Society of Toxicology 2010-present
- Environmental Mutagen Society 2007-present
- Sigma Xi 1995-present
- Phi Beta Kappa 1995-present

Bibliography

Peer-reviewed publications (130 published or *in press*). Note: * indicates student mentees, ** indicates post-doc/senior researcher mentees, ++ indicates senior author):

1. **Bangma JT, Kwiatkowski E, Psioda M, Santos HP Jr, Hooper SR, Douglass L, Joseph RM, Frazier JA, Kuban KCK, O'Shea TM, **Fry RC**++. Assessing Positive Child Health among Individuals Born Extremely Preterm. *J Pediatr*. 2018 Aug 2. pii: S0022-3476(18)30836-9. doi: 10.1016/j.jpeds.2018.06.037. PMID:30078720
2. *Laine JE, Ilievski V, Richardson DB, Herring AH, Stýblo M, Rubio-Andrade M, Garcia-Vargas G, Gamble MV, **Fry RC**++. Maternal one carbon metabolism and arsenic methylation in a pregnancy cohort in Mexico. *J Expo Sci Environ Epidemiol*. 2018 Aug 1. doi: 10.1038/s41370-018-0041-1. PMID:30068932.
3. 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*. 2018 Jan 1:1933719118786453. doi: 10.1177/1933719118786453. [Epub ahead of print] PMID: 29976116
4. To KT, **Fry RC**, Reif DM. Characterizing the effects of missing data and evaluating imputation methods for chemical prioritization applications using ToxPi. *BioData Min*. 2018 Jun 13;11:10. doi: 10.1186/s13040-018-0169-5. eCollection 2018. PMID: 29942350
5. Manuck TA, **Fry RC**, McFarlin BL. Quality Improvement in Perinatal Medicine and Translation of Preterm Birth Research Findings into Clinical Care. *Clin Perinatol*. 2018 Jun;45(2):155-163. doi: 10.1016/j.clp.2018.01.003. Epub 2018 Feb 23. Review. PMID:29747880
6. **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 Mar 7;13(3):e0193271. doi: 10.1371/journal.pone.0193271. eCollection 2018. PMID:29513726
7. **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 Mar 5. PMID:29477804

8. **Smeester L, **Fry RC**⁺⁺. Long-Term Health Effects and Underlying Biological Mechanisms of Developmental Exposure to Arsenic. *Curr Environ Health Rep*. 2018 Feb 6. doi: 10.1007/s40572-018-0184-1. [Epub ahead of print] Review. PMID:29411302
9. **Adebambo OA, Shea D, **Fry RC**⁺⁺. Cadmium disrupts signaling of the hypoxia-inducible (HIF) and transforming growth factor (TGF- β) pathways in placental JEG-3 trophoblast cells via reactive oxygen species. *Toxicol Appl Pharmacol*. 2018 Mar 1;342:108-115. doi: 10.1016/j.taap.2018.01.010. Epub 2018 Feb 9. PMID:29408318
10. *Martin EM, **Fry RC**⁺⁺. Environmental Influences on the Epigenome: Exposure-Associated DNA Methylation in Human Populations. *Annu Rev Public Health*. 2018 Jan 12. PMID:29328878
11. Arashiro M, Lin YH, Zhang Z, Sexton KG, Gold A, Jaspers I, **Fry RC**, Surratt JD. Effect of secondary organic aerosol from isoprene-derived hydroxyhydroperoxides on the expression of oxidative stress response genes in human bronchial epithelial cells. *Environ Sci Process Impacts*. 2018 Jan 2. doi: 10.1039/c7em00439g. [Epub ahead of print] PMID:29292423
12. 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*. 2017 Dec 14. doi: 10.1055/s-0037-1613682. [Epub ahead of print] No abstract available. PMID:29241278
13. *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 Dec 14;12(12):e0188664. doi: 10.1371/journal.pone.0188664. eCollection 2017. PMID: 29240761.
14. **Smeester L, *Martin EM, Cable P, Bodnar W, Boggess K, Vora NL, **Fry RC**⁺⁺. Toxic metals in amniotic fluid and altered gene expression in cell-free fetal RNA. *Prenat Diagn*. 2017 Dec;37(13):1364-1366. doi: 10.1002/pd.5183. PMID:29111618
15. **Rager JE, Auerbach SS, Chappell GA, *Martin E, Thompson CM, **Fry RC**. Benchmark Dose Modeling Estimates of the Concentrations of Inorganic Arsenic That Induce Changes to the Neonatal Transcriptome, Proteome, and Epigenome in a Pregnancy Cohort. *Chem Res Toxicol*. 2017 Oct 16;30(10):1911-1920. doi: 10.1021/acs.chemrestox.7b00221. Epub 2017 Sep 27. PMID:28927277
16. Holmes BE, **Smeester L, **Fry RC**, Weinberg HS. Identification of endocrine active disinfection by-products (DBPs) that bind to the androgen receptor. *Chemosphere*. 2017 Aug 22;187:114-122. doi: 10.1016/j.chemosphere.2017.08.105. PMID:28843117
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18. **Brooks SA, **Fry RC**⁺⁺. Cadmium inhibits placental trophoblast cell migration via miRNA regulation of the transforming growth factor beta (TGF- β) pathway. *Food Chem Toxicol*. 2017 Aug 1. pii: S0278-6915(17)30441-6. doi: 10.1016/j.fct.2017.07.059. PMID:28774740
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20. *Tilley SK, Joseph RM, Kuban KCK, Dammann OU, O'Shea TM, **Fry RC**⁺⁺. Genomic biomarkers of prenatal intrauterine inflammation in umbilical cord tissue predict later life neurological outcomes. *PLoS One*. 2017 May 11;12(5):e0176953. PMID:28493900. PMCID:PMC5426658
21. *Rager JE, Ring CL, **Fry RC**, Suh M, Proctor DM, Haws LC, Harris MA, Thompson CM. High-Throughput Screening Data Interpretation in the Context of In Vivo Transcriptomic Responses to Oral Cr(VI) Exposure. *Toxicol Sci*. 2017 May 2. PMID: 28472532
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23. **Smeester L, *Bommarito P, *Martin E, Recio-Vegas, R Tania Gonzalez-Cortes, T., Olivas-Calderon, E., Lantz, C. and **Fry RC**⁺⁺. Chronic early childhood exposure to arsenic is associated with a TNF-mediated proteomic signaling response. *Environmental Toxicology and Pharmacology* 52 (2017) 183–187. PMID:28433805.

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37. **Brooks SA, *Martin E, **Smeester L, Grace MR, Boggess K, **Fry RC⁺⁺**. 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 Chem Toxicol.* 2016 Jun 29. pii: S0278-6915(16)30203-4. PMID: 27375191
38. Xu X, Drobna Z, Voruganti VS, Barron K, González-Horta C, Sánchez-Ramírez B, Ballinas-Casarrubias L, Cerón RH, Morales DV, Baeza Terrazas FA, Ishida MC, Gutiérrez-Torres DS, Saunders RJ, Crandell J, **Fry RC**, Loomis D, García-Vargas GG, Del Razo LM, Stýblo M, Mendez MA. Association between Variants in Arsenic (+3 Oxidation State) Methyltransferase (AS3MT) and Urinary Metabolites of Inorganic Arsenic: Role of Exposure Level. *Toxicol Sci.* 2016 Sep;153(1):112-23. PMID: 27370415
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40. **Sollome J, *Martin E, Sethupathy P, **Fry RC⁺⁺**. Environmental contaminants and microRNA regulation: Transcription factors as regulators of toxicant-altered microRNA expression. *Toxicol Appl Pharmacol*. 2016 Jun 10. pii: S0041-008X(16)30143-0. doi: 10.1016/j.taap.2016.06.009. PMID: 27292125
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43. Drobná Z, *Martin E, Kim KS, **Smeester L, *Bommarito P, Rubio-Andrade M, García-Vargas GG, Stýblo M, Zou F, **Fry RC⁺⁺**. 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. *Reprod Toxicol*. 2016 Jun;61:28-38. doi: 10.1016/j.reprotox.2016.02.017. PMID: 26928318
44. Vizuete W, Sexton KG, Nguyen H, **Smeester L, Aagaard KM, Shope C, Lefer B, Flynn JH, Alvarez S, Erickson MH, **Fry RC⁺⁺**. From the Field to the Laboratory: Air Pollutant-Induced Genomic Effects in Lung Cells. *Environ Health Insights*. 2016 Feb 18;9(Suppl 4):15-23. doi: 10.4137/EHI.S15656. eCollection 2015. PMID: 26917966.
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57. **Bailey KA, Smith AH, Tokar EJ, Graziano JH, Kim KW, Navasumrit P, Ruchirawat M, Thiantanawat A, Suk WA, **Fry RC⁺⁺**. Mechanisms Underlying Latent Disease Risk Associated with Early-Life Arsenic Exposure: Present Research Trends and Scientific Gaps. *Environ Health Perspect*. 2015 Jun 26. PMID:26115410
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Books and Chapters: (10 total; 1 edited book, 9 chapter submissions). Note: * indicates student mentees, ** indicates post-doc/senior researcher mentees, ++ indicates senior author):

Book:

1. **Fry RC**++. *Systems Biology in Toxicology and Environmental Health*, 1st Edition. Edited by Fry, RC. 2015. London and Waltham: Elsevier.

Chapter contributions:

1. **Smeester, L., *Yosim, A.E. and **Fry RC**++. 'Chemical hazards', in Bartram, J., with Baum, R., Cocolanis, P.A., Gute, D. M., Kay, D., McFayden, S., Pond, K., Robertson, W. and Rouse, M.J. (eds). 2015. *Routledge Handbook of Water and Health*. London and New York: Routledge. pp. 107-121.
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3. **Ray, P. and **Fry RC**++. 'The Cell: The Fundamental Unit in Systems Biology' in *Systems Biology in Toxicology and Environmental Health*, 1st Edition. Edited by Fry, RC. 2015. London and Waltham: Elsevier. pp. 11-42.

4. *Tilley, SK and **Fry RC**⁺⁺. 'Priority Environmental Contaminants: Understanding Their Sources of Exposure, Biological Mechanisms and Impacts on health' in Systems Biology in Toxicology and Environmental Health, 1st Edition. Edited by Fry, RC. 2015. London and Waltham: Elsevier. pp. 117-169.
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6. *Tilley, SK and **Fry RC**⁺⁺. 'Hormone Response Pathways as Responders to Environmental Contaminants and Their Roles in Disease' in Systems Biology in Toxicology and Environmental Health, 1st Edition. Edited by Fry, RC. 2015. London and Waltham: Elsevier. pp. 225-238.
7. *Rager J and **Fry RC**⁺⁺. Network Biology: Theories, Methods and Applications. Edited by WenJun Zhang. Published 2013 by Nova Publishers. pp. 81-132.
8. **Bailey K and **Fry RC**⁺⁺. Arsenic and the Epigenome. Toxicology and Epigenetics, First Edition. Edited by Saura C. Sahu. John Wiley & Sons, Ltd. Published 2012 by John Wiley & Sons, Ltd. pp. 149-183.
9. **Fry RC** and Samson LD. 2003. Methods of Microarray Data Analysis II. DNA Repair, 21; 2 (11):1289-91.

Oral presentations/abstracts (132 Total Invited Speaker; 6 Keynote, 65 invited presentations, 61 poster presentations):

Keynote Speaker (6 total)

1. *The placenta: A driver of early and later life disease*. Developmental Programming and Disease: Environmental Risk Factors, Mechanics and Strategies Workshop, Rochester, NY. September 2018
2. *Mapping metals contamination in NC*. Water and Health Conference, Chapel Hill, NC. October 2016.
3. *Toxicant-induced epigenetic alterations in children; causes and effects*. Oklahoma State University Center for Health Sciences, Tulsa, OK. February 2016.
4. *Using genomics to inform the risk assessment process*. GEMS, NIEHS, Durham, NC. October 2014
5. *Identifying sites of DNA methylation that are functionally predictive*. Duke Epigenetic Symposium, Durham, NC. October 2014.
6. *Systems Biology in Environmental Health*. Third International Toxicogenomics Integrated with Environmental Sciences (TIES) conference, NC. September 2011.

Invited Speaker (68 total, * denotes international venue)

1. *Barriers and Challenges to Report-Back from the Toxicologist Perspective*. December 2018. Partnerships for Environmental Public Health Annual Meeting, National Institute of Environmental Health Sciences, Research Triangle Park, NC
2. *Global "OMICS" Approaches Targeting Adverse Pregnancy and Neonatal Outcomes Utilizing Existing Cohorts*, Grantee Meeting, November 2018. Washington, DC
3. *The Placental Epigenome as a Driver of Later Life Disease*, October 2018. National Institute of Health, Tenth Conference on Metal Toxicity & Carcinogenesis, University of New Mexico, Albuquerque, NM
4. *A Healthy Start for Every Child: How the Environment Influences Health and Development*, October 2018. U.S. Congress Briefing, Washington, DC
5. *Circulating Cell-Free RNA as Biomarkers of Exposure to Toxic Substances*, September 2018. National Institute of Environmental Health Sciences, Chapel Hill, NC
6. **Identifying epigenetic links for arsenic-associated bladder cancer: from human population data to The Cancer Genome Atlas (TCGA)*. June 2018. International Agency on Cancer Research. Lyon, France.
7. *The placental epigenome as a driver of the developmental origins of health and disease*. May 2018. Department of Environmental Health Sciences and Engineering. Oregon State University, Corvallis, OR.
8. **Links between Placental Bacteria, Epigenetic Variation, and Child Outcomes*. May 2018. Pediatric Academy Society Meeting. Toronto, Canada.

9. *Toxic metals exposure: understanding mechanism of action and risk assessment*. April 2018. Department of Environmental Health. Columbia University. New York, NY.
10. *The placental epigenome as a driver of the developmental origins of health and disease*. April 2018. Department of Environmental Health Sciences and Engineering. Johns Hopkins University. Baltimore, MD.
11. *Prenatal Arsenic Exposure and the Epigenome: Informing Disease Mechanisms and the Risk Assessment Process*. March 2018. Society of Toxicology (SOT) Annual Meeting. March 2018. San Antonio, TX.
12. *Genomic and Epigenomic Perturbations by Fetal Exposure to Endocrine Disruptors*. March 2018. ENDO2018. Chicago, Ill.
13. *The placental epigenome as a driver of the developmental origins of health and disease*. February 2018. Department of Environmental Sciences and Epidemiology. University of Buffalo. Buffalo, NY
14. *Genome editing research for translational toxicology solutions*. January 2018. The promise of genome editing tools to advance environmental health research. National Academies of Sciences, Engineering and Medicine. Washington, D.C.
15. *The placental epigenome as a driver of the developmental origins of health and disease*. September 2017. Duke University Integrated Toxicology and Environmental Health Program. Durham, NC.
16. *Identifying an epigenetic basis for arsenic-associated bladder cancer in a population in Chihuahua, Mexico*. September 2017. AACR Conference on Health Disparities. Atlanta, GA.
17. *Building AOPs for Arsenic-Induced Developmental Outcomes for Improved Risk Assessment*. July 2017. OpenTox USA. Durham, NC.
18. *Incorporating epigenetic data into the risk assessment Process: A case study on inorganic Arsenic*. May 2017. EPA, Raleigh, NC.
19. *Translational approaches to understand the role of the epigenome in metals-induced toxicity*. May 2017. Chromatin Meeting, UNC-Chapel Hill. Chapel Hill, NC.
20. *Translational approaches to understand the role of the epigenome in metals-induced toxicity*. May 2017. Department of EOHS, University of Pittsburgh. Pittsburgh, PA.
21. *Protecting Women and Children from Toxic Metals Exposure in the Home*. Women's health Awareness Day. April 2017. Raleigh, NC.
22. *Building AOPs for arsenic-induced developmental outcomes for improved risk assessment*. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
23. *Systems Toxicology Approaches to Understand the Harms of Toxic Metals in Vulnerable Populations*. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
24. *Toxic metals and children's environmental health*. The Children's Research Institute Retreat. UNC-Chapel Hill. Chapel Hill, NC. November 2016.
25. **Prenatal exposure to arsenic and miRNA expression as a modulator of immune response in children*. 8th Princess Chulabhorn International Science Congress. Bangkok, Thailand. November 2016.
26. *Metals induced toxicity and the epigenome*. Toxicoeigenomics: The Interface of Epigenetics and Risk Assessment. Tysons Corner, VA. November 2016.
27. *What's in your water?* Tarheel ToxTalks. Chapel Hill, NC. October 2016.
28. *Health effects of inorganic arsenic*. National Institute of Environmental Health Sciences (NIEHS) Superfund Research Program (SRP) and EPA's Contaminated Site Clean-Up Information (CLU-IN), Risk e-Learning webinars, SRP Water Innovation – An Integrated Approach to Sustainable Solutions: Session IV - Communicating Risk and Engaging Communities: Arsenic and Well Testing, Clu in Webinar, SRP. July 2016.
29. *Novel Approaches for the Assessment of Environmentally-Induced Birth Defects*. Teratology Society Annual Meeting. San Antonio, TX. July 2016
30. **Epigenetic regulation of toxic metal-induced disease in children*. Epigenetics and Environmental Origins of Cancer Meeting. IARC. Lyon, France. June 2016.
31. *Early Life Exposures, Later Life Disease: The Role of the Genome and the Epigenome*. Predictive Toxicology and Disease Group. NIEHS. Durham, NC. May 2016.
32. *Protecting children around the globe from the harms of toxic metals*. ONES Awardee Symposium. NIEHS. Durham, NC. May 2016.
33. *Building Academic-Government-Community Partnerships for Improved Public Health*. GEMS. US-EPA, Raleigh, NC. April 2016.

34. *Temporal issues related to prenatal and early life exposure to inorganic arsenic*. USEPA Workshop on Temporal Exposure Issues for Environmental Pollutants. Research Triangle Park, NC. January 2016.
35. *Temporal issues related to prenatal and early life exposure to inorganic arsenic*. USEPA Workshop on Temporal Exposure Issues for environmental Pollutants. Research Triangle Park, NC. January 2016.
36. *Maternal genotype for arsenic 3 methyltransferase AS3MT is associated with arsenic metabolism and newborn birth outcomes with interactions between fetal sex*. Annual Superfund Research Program Meeting. San Juan, Puerto Rico. November 2015.
37. *Arsenic in private wells in North Carolina: potential public health implications*. Environmental Health Summit. Research Triangle Park, NC. October 2015
38. *Critical scientific issues in assessing health risk from oral exposure to inorganic arsenic*. Environmental Mutagenesis and Genomics Society Meeting. New Orleans, LA. September 2015
39. *Epigenetic impacts of prenatal exposure to inorganic arsenic*. Environmental Mutagenesis and Genomics Society Meeting. New Orleans, LA. September 2015.
40. *Epigenetic effects of arsenic and other toxic metals*. EPA Workshop on Epigenetics and Cumulative Risk Assessment. Washington DC. September 2015
41. *Systems Toxicology of Environmental Metals: Identifying Key Molecular Pathways Linking Environmental Exposure with Disease Prenatal metal exposure and the epigenome*. Pittcon. New Orleans, LA. March 2015.
42. *Prenatal metal exposure and the epigenome*. SRP annual Meeting. San Jose, CA November 2014.
43. *Prenatal Arsenic Exposure, Shifts in Cell Signaling Pathways and Newborn Health Effects*. ONES Awardee Symposium. NIEHS, Durham, NC. July 2014.
44. *The Glucocorticoid Receptor: A Role in Mediating Arsenic Toxicity*. Receptor Mechanisms Discussion Group. NIEHS, Durham, NC. April 2014.
45. *Prenatal arsenic exposure and shifts in the fetal proteome*. Toxicology and Risk Assessment Guidance: From principles to practice in the age of omics, osomes and new opportunities. West Chester, OH. April 2014.
46. *Systems biology and toxic metals: Linking biological pathways with health effects*. Vanderbilt University. Nashville, TN. January 2014.
47. *Prenatal arsenic exposure and the proteome*. 15th International Pacific Basin Consortium for Environment and Health. Honolulu, Hawaii. October 2013.
48. *Arsenic and the DNA methylome, linked by proteomic shifts*. Society of Toxicology, 52nd Annual Meeting and ToxExpo. San Antonio, TX. March 2013.
49. *Arsenic and the DNA methylome, linked by proteomic shifts*. Dartmouth College. Hanover, NH. March 2013,
50. **Arsenic and the DNA methylome, linked by methylation*. 7th Princess Chulabhorn International Science Congress. Bangkok, Thailand. November 2012.
51. *Arsenic and the DNA methylome, links to exposure and disease*. Arsenicals and the Epigenome. University of Arizona. Tuscon, AZ. September 2012.
52. *Prenatal Cadmium Exposure and Changes to the DNA methylome*. ATSDR (Connecting Research and Practice). CDC. Atlanta, GA. August 2012.
53. *Arsenic and the Epigenome*. NC-State University. Raleigh, NC. April 2012.
54. *Early Life Exposures-long term health consequences*. Superfund Webinar. NC. March 2012.
55. *Is your drinking water safe?* NC State Health Directors Meeting. Raleigh, NC. March 2012.
56. *Arsenic and the Epigenome*. Brown University. Providence, RI. March 2012.
57. *Arsenic and the Epigenome*. The North Carolina Society of Toxicology Fall Meeting. Durham, NC. September 2011.
58. *Altered DNA Methylation Patterns in Individuals with Arsenicosis*. The Society of Toxicology. Washington DC. March 2010.
59. *Toxicogenomics Approaches to Understand the Impact of Prenatal Arsenic Exposure*. International Society of Exposure Science (ISES). MN. November 2009.

60. *Identification of Genetic and Epigenetic Biomarkers of Metal Exposure and Metal-Induced Disease Using Environmental Toxicogenomics and Systems Biology*. Keystone Science Lecture: Division of Extramural Research and Training. NIEHS. Durham, NC. October 2009.
61. **Activation of Inflammation/NF- κ B Signaling in Infants Born to Arsenic Exposed Mothers*. International Meeting on Environmental Mutagens (ICEM). Florence, Italy. August 2009.
62. *Activation of Inflammation/NF- κ B Signaling in Infants Born to Arsenic Exposed Mothers*. ICCA-LRI workshop Connecting Innovations in Biological, Exposure and Risk Sciences: Better Information for Better Decisions. Charleston, SC. June 2009.
63. **Genomic Predictors of Inter-Individual Differences in Response to DNA Damaging Agents*. 3rd US-EU Systems Biology Workshop, Systems level understanding of DNA damage responses. The Netherlands. April 2009
64. *Genomics Applications: Detecting human exposures and predicting inter-individual susceptibilities*. Exposure Science Community of Practice. EPA. Durham, NC. March 2009.
65. *Genomics Applications: Detecting human exposures and predicting inter-individual susceptibilities*. EPA. Durham, NC. March 2009.
66. *Activation of Inflammation/NF- κ B Signaling in Infants Born to Arsenic Exposed Mothers*. Annual Environmental Health Sciences Symposium. MDIBL. Salisbury Cove, ME. July 2008.
67. *Activation of Inflammation/NF- κ B Signaling in Infants Born to Arsenic Exposed Mothers*. Environmental Mutagen Society Meeting. Atlanta, GA. 2007.
68. *Standardization across microarray platforms*. Toxicogenomics Gordon Conference. Bates College. Lewiston, ME. 2007.

Poster Presentations (61 total)

1. *Tilley, S.K., Joseph, R.M., Kuban K.C.K., Dammann, O.U., O'Shea, T.M. and **Fry RC⁺⁺**. Genomic Biomarkers of Prenatal Intrauterine Inflammation in Umbilical Cord Tissue Predict Later Life Neurological Outcomes. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
2. *Clark, J., *Martin, E., *Smeester, L., Rubio-Andrade, M., Styblo, M., García-Vargas, G. **Fry RC⁺⁺**. Prenatal Arsenic Exposure and Sexual Epigenetic Dimorphism: Sexual Dimorphism of 5-methylcytosine Alterations in Newborn Cord Blood from the BEAR Cohort. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
3. *Martin, E., **Smeester, L. M. Rubio-Andrade, M. G. García-Vargas, G. M. Styblo, M. **Fry RC⁺⁺**. Proteomic Analysis of Maternal Circulating Blood Reveals That Mothers Pregnant with Males Have More Arsenic-Associated Protein Alterations Than Mothers Pregnant with Females. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
4. *Gallo, G., *Martin, E., Drobná, Z., Douillet, C., Kim, K., Rubio-Andrade, M., García-Vargas, G., Styblo, M., Zou, F., **Fry RC⁺⁺** Maternal Genotype for Arsenic (+3 Oxidation State) Methyltransferase Is Associated with Cord Serum Levels of Methylated Arsenicals. Society of Toxicology (SOT) Annual Meeting. March 2017. Baltimore, MD.
5. *Bommarito, P.A., *Martin, E., *Smeester, L., Baker, E., Karagas, M.R. and **Fry RC⁺⁺**. Fetal-Sex Dependent Expression of Immune Genes in the Circulating Lymphocytes of Arsenic-Exposed Pregnant Women in New Hampshire. NIEHS SRP Annual Meeting/EHS Fest. December 2016. Durham, NC.
6. *Laine J.E., Ilievski V., García-Vargas G., Gamble M.V. and **Fry RC⁺⁺**. Maternal nutritional biomarkers involved in one carbon metabolism and arsenic exposure during the prenatal period. NIEHS SRP Annual Meeting/EHS Fest. December 2016. Durham, NC.
7. **Brooks, S., *Martin, E., *Smeester, L., Grace, M.R., Boggess, K. and **Fry RC⁺⁺**. 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. NIEHS SRP Annual Meeting/EHS Fest. December 2016. Durham, NC.
8. *Martin, E., *Smeester, L., *Bommarito, P.A., Grace, M.R., Boggess, K., Kuban, K., O'Shea, T.M. **Fry RC⁺⁺** Sexual epigenetic dimorphism in the human placenta: Implications for susceptibility to stressors during the prenatal period. Toxicoeugenetics, November 2016, Tysons Corner, VA.
9. *Adebambo O.A., Shea D. and **Fry RC⁺⁺**. Synergistic Induction of Metal-Responsive and Oxidative Stress Gene Biomarkers in Placental JEG-3 Cells by Environmental Arsenic & Cadmium Mixtures. SETAC Annual Meeting. 2016. Orlando, FL.

10. *Adebambo O.A., Ray P.D., Shea D. and **Fry RC⁺⁺**. Induction of Metal-Responsive and Oxidative Stress Gene Biomarkers in Placental JEG-3 Cells by Arsenic & Cadmium Mixtures from Polluted Waste Sites. SOT Annual Meeting 2016, New Orleans, LA
11. *Laine JE, W Bodnar, P Cable, K Boggess, S. Offenbacher, **Fry RC⁺⁺**. Assessment of Toxic and Essential Metals in the Placenta and Risk of Preeclampsia in a Pregnancy Cohort. Society of Toxicology. March 2016. New Orleans, LA.
12. **Brooks SA, *Martin E, **Smeester L, Grace MR, Boggess K, **Fry RC⁺⁺**. Cadmium Exposure influences angiogenic pathways in preeclamptic placenta and placental cells Via epigenetic mechanisms. Society of Toxicology. March 2016. New Orleans, LA.
13. *Martin E,**Smeester L, *Bommarito PA, Grace M.R., Boggess K, Kuban, K, O'Shea T.M., **Fry RC⁺⁺**. Sexual epigenetic dimorphism in the human placenta: Implications for susceptibility to stressors during the prenatal period. Toxicoeugenomics: The Interface of Epigenetics and Risk Assessment. November 2016. Tysons Corner, VA.
14. *Adebambo OA, **Ray PD, Shea D and **Fry RC⁺⁺**. Synergistic induction of metal-responsive and oxidative stress gene biomarkers in placental JEG-3 cells by arsenic and cadmium mixtures from hazardous waste sites. Annual Superfund Meeting. November 2015. San Juan, Puerto Rico.
15. *Laine JE, Bodnar W, Cable P, Boggess K, Offenbacher S, **Fry RC⁺⁺**. Assessment of Toxic and Essential Metals in the Placenta and Risk of Preeclampsia in a Pregnancy Cohort. Annual Superfund Meeting. November 2015. San Juan, Puerto Rico.
16. *Laine JE, Bodnar W, Cable P, Boggess K, Offenbacher S, **Fry RC⁺⁺**. Assessment of Toxic and Essential Metals in the Placenta and Relationship to Preeclampsia in a Pregnancy Cohort. Society for Epidemiological Research. June 2015. Denver, CO.
17. *E Martin, *Rager J, Bailey K, González-Horta C, Sánchez-Ramírez B, Ballinas-Casarrubias L, Ishida M, Gutiérrez-Torres D, Cerón RH, Morales DV, Terrazas FB, Del Razo LM, Vargas GG, Saunders RJ, Jia W, Buse J, Loomis D, Drobna Z, Styblo M, **Fry RC⁺⁺**. Identification of a metabolomics fingerprint of arsenic-associated diabetes in a prospective cohort in Mexico. Annual Superfund Research Program. November 2015. San Juan, Puerto Rico.
18. *Miller SK, *Rager JE, Moeller BC, Kracko D, Doyle-Eisele M, Swenberg JA, **Fry RC⁺⁺**. Formaldehyde-associated changes in gene and cytokine expression profiles within a nonhuman primate nose and circulating blood. Society of Toxicology. 54th Annual Meeting and ToxExpo. March 2015. San Diego, California.
19. **Sollome, J, **Ray, P,* Laine, J, Grace, M *Martin, E **Smeester, S, Cable, P, Barrow, D, Bodnar, W, Boggess, K, **Fry RC⁺⁺**. Cadmium-associated dysregulation of pro-inflammatory cytokines in the human placenta. Society of Toxicology. 54th Annual Meeting and ToxExpo. March 2015. San Diego California.
20. *Rager JE, **Bailey KA, *Smeester L, *Miller SK, Parker JS, *Laine JE, Drobna 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. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
21. *Sanders AP, *Miller SK, Nguyen V, Kotch JB, **Fry RC⁺⁺**. Toxic Metal Levels in Children Residing in a Smelting Craft Village in Vietnam: A Pilot Biomonitoring Study. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
22. *Laine JE, **Bailey, KA, Rubio-Andrade MR, Olshan A, **Smeester L, Drobna Z, Styblo M, Herring, AH, Garcia-Vargas G, **Fry RC⁺⁺**. Biomarkers of Exposure to Arsenic (BEAR) pregnancy cohort in Mexico: Arsenic methylation is linked to poorer birth outcomes. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
23. *Laine JE, Rubio-Andrade MR, Olshan A, Styblo M, Garcia-Vargas G, **Fry RC⁺⁺**. Prenatal exposure to inorganic arsenic in Gómez Palacio, Mexico, links to contaminated drinking water. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
24. *Sanders AP, Desrosiers TA, Herring AH, Enright D, Olshan AF, Meyer R, **Fry RC⁺⁺**. Association between copper, iron, and zinc levels in private wells and birth defects prevalence in North Carolina. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.

25. *Rojas D, **Bailey K, *Sanders AP, **Smeester L, **Ahir B, *Rager J, **Fry RC⁺⁺**. Cadmium and the epigenome: DNA methylation patterns as “environmental footprints” of transcription factor occupancy. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
26. *Rager JE, Moeller BC, Doyle-Eisele M, Swenberg JA, **Fry RC⁺⁺**. Formaldehyde-Induced Changes in MicroRNA Signaling. Society of Toxicology. 53rd Annual Meeting and ToxExpo. March 2014. Phoenix, Arizona.
27. *Rager JE, Moeller BC, Doyle-Eisele M, Swenberg JA, **Fry RC⁺⁺**. Formaldehyde-Induced Changes in MicroRNA Signaling. NC SOT. February 2013. Research Triangle Park.
28. *Sanders AP, *Rojas D, **Bailey KA, **Ahir B, **Fry RC⁺⁺**. A systems biology approach to cadmium toxicity in human cardiomyocytes and choriocarcinoma JEG-3 placental cells. National Birth Defects Prevention Network Annual Meeting. February 2013. Atlanta, GA.
29. *Sanders AP, Desrosiers TA, Herring AH, Enright D, Olshan AF, Meyer RE, **Fry RC⁺⁺**. Association between arsenic, cadmium, lead, and manganese levels in private wells and birth defects prevalence in North Carolina. Annual Superfund Center Meeting. October 2012. Raleigh, NC.
30. *Laine J, *Sanders A, Garrett M, Miranda M, Ashley-Koch A, **Fry RC⁺⁺**. Genes and the Environment: Genetic Variants Of Th1/Th2 Cytokines Associated With Cd-Induced Racial Differences In Birth Weight. Annual Superfund Center Meeting. October 2012. Raleigh, NC.
31. *Gruber J, *Patel R, *Rager JE, *Sanders AP, Edwards S, Gallagher J, **Fry RC⁺⁺**. Exposure to metals mixtures: Genomic alterations of infectious disease response pathways in children exposed to environmental metals. Environmental Mutagen Society. September 2012. Seattle, Washington.
32. *Sanders AP, **Smeester L, DeBussycher T, Wu MC, Wright FA, Zhou Y, *Laine JE, *Rager JE, Swamy GK, Ashley-Koch A, Miranda ML, **Fry RC⁺⁺**. Identifying Cadmium-Specific Patterns of DNA Methylation in Mother-Baby Pairs. Environmental Mutagen Society. September 2012. Seattle, Washington.
33. *Sanders AP, *Rager JE, Wu M, *Laine JE, **Smeester L, Kelkar H, Swamy GK, Ashley-Koch A, Miranda ML, **Fry RC⁺⁺**. Prenatal cadmium exposure and altered gene-specific DNA methylation in newborn cord blood. Fetal Programming and Environmental Exposures. June 2012. New York, NY.
34. *Rager JE, Moeller BC, **Smeester L, Sexton KG, Jaspers I, Swenberg JA, **Fry RC⁺⁺**. Formaldehyde Induces Significant Changes in MicroRNA Expression Profiles In Vitro and In Vivo. Visiting Pulmonary Scholar Symposium. May 2012. Chapel Hill, NC.
35. *Rager JE, **Smeester L, Sexton KG, Jaspers I, Swenberg JA, **Fry RC⁺⁺**. Epigenetic Effects of Formaldehyde Exposure. Society of Toxicology, 51st Annual Meeting and ToxExpo. May 2012. San Francisco, CA. *student speaker
36. *Sanders AP, Desrosiers TA, Herring AH, Olshan AF, Meyer R, **Fry RC⁺⁺**. Association between arsenic, cadmium, lead, and manganese in private wells and birth defects prevalence. Epidemiology and Evaluation Annual Poster Day. North Carolina Division of Public Health. April 2012. Raleigh, NC.
37. **Bailey KA, **Smeester L, Ward WO, *Rager JE, Guan X, *Smith N, García-Vargas G, Del Razo L-M, Drobná Z, Kelkar H, Stýblo M, **Fry RC⁺⁺**. Arsenical-Specific DNA Methylation Profiles. Poster Presentation Society of Toxicology. 51st Annual Meeting and ToxExpo. March 2012. San Francisco, CA.
38. *Sanders AP, Desrosiers TA, Herring AH, Olshan AF, Meyer R, **Fry RC⁺⁺**. Association between toxic metals in private wells and birth defects prevalence. National Birth Defects Prevention Network Annual Conference. February 2012. Washington, DC.
39. **Bailey KA, **Smeester L, Ward WO, *Rager JE, Guan X, *Smith N, García-Vargas G, Del Razo LM, Drobná Z, Kelkar H, Stýblo M, **Fry RC⁺⁺**. Arsenic and the Epigenome: Linked by Methylation. Center for Environmental Health and Susceptibility (CEHS) annual symposium. November 2011. Chapel Hill, NC.
40. Kotch JB, **Fry RC**, *Sanders AP, Ngyugen V. Heavy metal contamination among children in the Red River Basin in Vietnam. Center for Environmental Health and Susceptibility. November 2011. UNC-Chapel Hill, NC.
41. *Sanders AP, *Rager JE, **Smeester L, Kelkar H, Ashley-Koch A, Miranda ML, **Fry RC⁺⁺**. Cadmium exposure in utero: epigenetic effects. Superfund Research Program Annual Meeting. October 2011. Lexington, KY.
42. *Sanders AP, *Rager JE, **Smeester L, Kelkar H, Ashley-Koch A, Miranda ML, **Fry RC⁺⁺**. Epigenetic effects of prenatal cadmium exposure: inflammatory pathways targeted. Environmental Mutagen Society Annual Meeting. October 2011. Montreal, Quebec, Canada.

43. *Rager JE, Lichtveld K, Ebersviller S, **Smeester L, Jaspers I, Sexton KG, **Fry RC⁺⁺**. A Toxicogenomic Comparison of Primary versus Photochemically Altered Air Pollutant Mixtures. International Toxicology of Mixtures Conference. October 2011. Arlington, VA.
44. *Rager JE, Lichtveld K, Ebersviller S, **Smeester L, Jaspers I, Sexton KG, **Fry RC⁺⁺**. A Toxicogenomic Comparison of Primary versus Photochemically Altered Air Pollutant Mixtures. Visiting Pulmonary Scholar Symposium. October 2011. Chapel Hill, NC.
45. *Sanders AP, Messier KP, Sheehee M, Rudo K, Serre ML, **Fry RC⁺⁺**. Assessing Arsenic Levels in North Carolina Domestic Well Water. Legislative Day: North Carolina General Assembly. May 2011. Raleigh, NC.
46. **Bailey KA, Wallace K, **Smeester L, Thai, SF, Doug C. Wolf DC, Edwards, SC, **Fry RC⁺⁺**. Differential Modulation of Cancer-Related Molecular Networks in Human and Rat Urinary Bladder Cells Exposed to Trivalent Arsenicals. Society of Toxicology Annual meeting. March 2011. Washington, D.C.
47. *Sanders AP, Gallagher JE, McGee J, Rhoney S, Hudgens E, Özkaynak H, **Fry RC⁺⁺**. Assessing Metal Levels in Children from the Mechanistic Indicators of Childhood Asthma (MICA) Study. Society of Toxicology Annual Meeting. March 2011. Washington, DC.
48. **Bailey K., **Smeester L, Ward W, *Rager J, Guan X, *Smith N, García-Vargas G, Del Razo LM, Kelkar H, Stýblo M, **Fry RC⁺⁺**. Arsenical-Specific DNA Methylation Profiles. NC SOT. February 2011. Research Triangle Park, NC.
49. *Prasad PY, Chastain PD, Nikolaishvili-Feinberg N, **Smeester L, Kaufmann WK, **Fry RC⁺⁺**. An ATM-Dependent DNA Damage Response Induced by Titanium Dioxide Nanoparticles. Environmental Mutagen Society Annual Meeting. October 2011. Montreal, Canada.
50. *Sanders AP, *Rager J, **Smeester L, Kelkar H, Ashley-Koch A, Miranda ML, **Fry RC⁺⁺**. Epigenetic effects of prenatal cadmium exposure: inflammatory pathways targeted. Environmental Mutagen Society Annual Meeting. October 2011. Montreal, Canada.
51. *Sanders AP, Messier KP, Neal J, Sheehee M, Rudo K, Serre ML, **Fry RC**, Pfaender F, Gray K, Bouma B, Slaughter T. Tracking and Analyzing Contaminants in North Carolina Private Well Waters. Superfund Research Program Annual Meeting. November 2010. Portland, OR.
52. *Sanders AP, Messier KP, Neal J, Sheehee M, Rudo K, Serre ML, **Fry RC⁺⁺**. Mapping Arsenic Levels in North Carolina Private Well Waters. Environmental Mutagen Society Annual Meeting. October 2010. Fort Worth, Texas.
53. *Sanders AP, Gallagher J, McGee J, Rhoney S, Hudgens E, **Fry RC⁺⁺**. Identifying Concomitant Metals in Dust, Urine, and Fingernails from Children in Detroit, Michigan. Environmental Mutagen Society Annual Meeting. October 2010. Fort Worth, Texas.
54. *Rager J, **Smeester L, Jaspers I, Sexton K, **Fry RC⁺⁺**. Formaldehyde Exposure Alters MicroRNA Expression Profiles in Human Lung Cells. Environmental Mutagen Society Annual Meeting. October 2010. Fort Worth, Texas.
55. **Smeester L, *Rager J, Zhang L, Guan X, **Bailey K, *Smith N, Garcia-Vargas G, Del Razo L, Drobna Z, Kelkar H, Schroth G, Stýblo M and **Fry RC⁺⁺**. Altered DNA Methylation Patterns in Individuals with Arsenicosis. Genetics and Environmental Mutagenesis Society Fall Meeting. October 2010. Durham, NC.
56. *Rager JE, Lichtveld K, Ebersviller S, **Smeester L, Jaspers I, Sexton KG, **Fry RC⁺⁺**. A Toxicogenomic Comparison of Primary and Photochemically Altered Air Pollutant Mixtures. Environmental Mutagen Society Annual Meeting. March 2010. Fort Worth, Texas.
57. Drobna Z, Niculescu M, **Fry RC** et al. Epigenetic alterations in fetal mouse livers after in utero exposure to arsenic. 49th Annual SOT Meeting and ToxExpo. March 2010. Utah, Nevada.
58. **Fry RC** et al. Identifying genomic predictors of chemotherapeutic response. 24th Aspen Cancer Conference. July 2009. Denver, Colorado.
59. **Fry RC**, Kean O, Rha CK. Analysis of transcriptional responses of mouse fibroblasts to extracts of *Eurycoma longifolia* using DNA microarrays. Second Malaysia-MIT Biotechnology Partnership Program (MMBPP) Symposium. October 2002. Kuala Lumpur, Malaysia.
60. **Fry RC** and Deng XW. The isolation and characterization of novel mutations within the phytochrome A light signal transduction pathway. 10th International Conference on Arabidopsis Research. June 1999. Melbourne, Australia.

61. **Fry RC**, Champion H, Erickson C, Fitzgerald W, Bivalacqua T, Garrison E and Kadowitz P. Comparison of responses to proadrenomedullary peptide and PAMP (12-20) in the mesenteric vascular bed of the cat. *Experimental Biology*. October 1996. Washington, D.C.

Teaching Activities

- Course Director** **ENVR 630-001, UNC** **Fall, 2009-present**
 Title: “**Systems Biology in Environmental Health**.” New Course launched in the Department of Environmental Sciences and Engineering. Course ID: 630-001; Number of Enrolled Students: Fall 2009 (n=16); Spring 2011 (n=11); Spring 2012 (n=17); Spring 2013 (n=18); Fall 2013 (n=13); Fall 2014 (n=12); Fall 2015 (n=14); Fall 2016 (n=21). Credit Hours: 3; Role in the Course: Instructor (100%).
- Course Co-Director** **ENVR 890-004, UNC** **Fall, 2015- 2016**
 Title: “**Risk Assessment in the 21st Century**” Course ID: 890-004; Number of Enrolled Students: Fall 2015 (n=6); Fall 2016 (n=2, 3 auditors). Credit Hours: 1; Role in the Course: ESE Instructor, MacDonald-Gibson-Co-Instructor.
- Course Co-Director** **ENVR 442-001, UNC** **Fall, 2014- present**
 Title: “**Molecular and Biochemical Toxicology**” Course ID: 442-001; Number of Enrolled Students: Fall 2014 (n=14); Fall 2015 (n=11); Fall 2016 (n=14). Credit Hours: 3; Role in the Course: ESE Co-Instructor, Jaspers: Toxicology Instructor.
- Course Co-Director** **ENVR 890-001, UNC** **Fall, 2012- present**
 Title: “**Epidemiology for Environmental Scientists**” New Course launched in the Department of Environmental Sciences and Engineering. Course ID: 890-007; Number of Enrolled Students: Fall 2012 (n=6); Spring 2014 (n=19); Spring 2015 (n=23). Credit Hours: 3; Role in the Course: ESE Instructor, Yeatts: Epidemiology Instructor.
- Guest Lecturer** **ENVR 732, Duke University** **Spring, 2014-present**
 Title: “Mechanisms in Environmental Toxicology.” Course instructor: Joel Meyer; Role in course: Guest lecturer.
- Guest Lecturer** **ENVR 732, UNC** **Fall, 2012-present**
 Title: “Health Effects of Air Pollutants.” Course instructor: Milan Hazucha; Role in course: Guest lecturer.
- Guest Lecturer** **Pathology 726, UNC** **Fall, 2010-present**
 Title: “Human Environmental Disease.” Course instructor: William Kaufmann; Role in course: Guest lecturer.
- Guest Lecturer** **ENVR 442, UNC** **Fall, 2009-2014**
 Title: “Biochemical Toxicology.” Course instructor: Ivan Rusyn; Role in course: Guest lecturer.
- Guest Lecturer** **ENVR 431, UNC** **Fall, 2008-2012**
 Title: “Techniques in Environmental Health Sciences.” Coordinated and taught laboratories on microarray technology for ENVR 431. Course instructor: Louise Ball; Role in course: Guest lecturer.
- Module Instructor** **MIT** **2002-2008**
 Developed short courses on microarray processing/analysis for the Computational and Systems Biology Initiative at MIT, BE109 and IAP courses; Role in Course: Instructor (CSBi), Guest Lecturer (BE109 and IAP).

Summary of Graduate Advising/Mentoring

Current Graduate Student Supervision-Primary Advisor (8 total; 7 Ph.D., 1 M.S.):

Ph.D.

1. **Jeliah Clark (Ph.D.)** **2018 -present**
 Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
2. **Lauren Eaves (Ph.D.)** **2018 -present**
 Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
3. **Cassandra Meaken (Ph.D.)** **2017 -present**

- Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
4. **Kezia Addo (Ph.D.)** **2018-present**
Primary advisor of supervisory committee. Department: Curriculum in Toxicology. UNC. Focus: Collaborative Cross and developmental toxicity.
 5. **Bevin Blake (Ph.D.)** **2017-present**
Co-advisor of supervisory committee. Department: Curriculum in Toxicology. UNC. Focus: PFOA and the placenta.
 6. **Paige Bommarito (Ph.D.)** **2015-present**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Focus: Cadmium, miRNAs and pregnancy.
 7. **Lisa Smeester (Ph.D.)** **2013-present**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Focus: Epigenetic changes associated with arsenic exposure.
 8. **Caroline Reed (M.S.)** **2018 -present**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
 9. Academic advisor to Elizabeth Corteselli, Jennifer Griggs, Hannah Smith and Sean Watford.

Former Graduate Student Supervision-Primary Advisor (24 total; 7 Ph.D., 17 M.S.):

Ph.D.:

1. **Martha Scott Tomlinson (Ph.D.)** **2014-2018**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: "*Placental microbes as an indicator of neurocognitive outcomes in children born preterm.*"
2. **Dami Adebambo (Ph.D.)** **2013-2018**
Co-advisor of supervisory committee. Department: Biological Sciences (Toxicology & Zoology), NC-State University. Focus: Metals mixtures and disease. Awards: Best Poster, Health Sciences Section at the NIEHS Superfund Research Program Meeting, San Juan, Puerto Rico 2015; KC Donnelly Award.
3. **Jessica Laine (Ph.D.)** **2011-2017**
Primary advisor of supervisory committee. Department: Epidemiology, Gillings School of Global Public Health, North Carolina, UNC. Title: "*Investigation of exposure to iAs during pregnancy, nutritional biomarkers, iAs metabolism and adverse birth outcomes.*" Awards: KC Donnelly Award.
4. **Elizabeth Sebastian (Ph.D.)** **2014-2017**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: "*The use of metabolomics profiling to elucidate mechanisms underlying arsenic-associated diabetes.*" Awards: Karen Wetterhahn Award.
5. **Allison Sanders (Ph.D.)** **2009-2013**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: "*Environmental metals and birth defects: New approaches to understanding the role of metals in congenital heart defects.*" Awards: GEAB Impact Award, UNC-Chapel Hill. 2013; Poster Presentation Award, National Birth Defects Prevention Network Annual Meeting, Alexandria VA 2012; GEAB Impact Award, UNC-Chapel Hill. 2011.
6. **Raju Prasad (Ph.D.)** **2009-2013**
Co-advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: "*Evaluation of genotoxicity and cellular responses upon exposure to titanium dioxide nanoparticles.*" Awards: EMS travel award (2012); SOT travel award (2012).
7. **Julia Rager (Ph.D.)** **2009-2013**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Public Health, North Carolina, UNC. Title: "*A Systems Biology-Based Approach to Investigating Formaldehyde's Effects on MicroRNA Expression Profiles.*" Awards: Poster Award (NC SOT 2013); Syngenta Award (SOT 2013); Graduate Student Fellowship – Novartis Award (SOT 2012); George C. Bunker Award for

Outstanding Scholarship and Professional Promise in Environmental Engineering (UNC 2011); Best Student Presentation in Mixture Toxicology (SOT 2011).

M.S./M.S.E.E./M.S.P.H.:

1. **Gabriella Gallo (M.S.)** **2017-2018**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
2. **Cassandra Meaken (M.S.)** **2016-2018**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC.
3. **Sloane Tilley (M.S.)** **2015-2017**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Analysis of Bladder Cancer Tumor CpG Methylation and Gene Expression within The Cancer Genome Atlas Identifies GRIA1 as a Prognostic Biomarker for Basal-Like Bladder Cancer*
4. **Andrew Nyguyen (M.S.)** **2015-2016**
Primary advisor of supervisory committee Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Using Tox-Pi to Rank ATSDR chemicals.*
5. **Cataia Ives (M.S.)** **2015-2016**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Adverse outcome pathways.*
6. **Lisa Smeester (M.S.)** **2013-2016**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Epigenetic changes associated with arsenic exposure.*
7. **Samantha Tulenko (M.S.P.H.)** **2014-2015**
Primary advisor of supervisory committee Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Identifying biological pathways associated with highest ranking ATSDR chemicals.*
8. **Andrew Yosim (M.S.)** **2014-2015**
Primary advisor of supervisory committee Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Title: *Estimating relationships between arsenic exposure through rice consumption and disease.*
9. **Joann Gruber (M.S.)** **2011-2012**
Primary advisor of supervisory committee. Department: Epidemiology, Gillings School of Global Public Health, North Carolina, UNC. Focus: *"Gene-Environment Interactions and newborn health effects"*.
10. **Rhea Patel (M.S.)** **2010-2012**
Primary advisor of supervisory committee: Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Graduation: May 2012. Thesis title: *"The NF-kB pathway integrates metals biomarkers in children."*
11. **Paul Ebohon (M.S.)** **2009-2011**
Co-advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2012. Thesis title: *" Screening Disinfection By-Products and Phenolic Compounds for Estrogenic Activity."* Primary Advisor: Howard Weinberg.
12. **Julia Rager (M.S.E.E.)** **2009-2010**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Graduation: May 2010. Thesis title: *"A Systems Biology Approach to Investigate Human Lung Cell Response to Air Pollutants."*
13. **Nikia Smith (M.S.)** **2008-2010**
Primary advisor of supervisory committee: Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Graduation: May 2010. Thesis title: *"Environmental Epigenomics: Altered DNA Methylation Patterns in Humans Exposed to Inorganic Arsenic."*
14. **Margaret Ann Benton (M.S.P.H.)** **2008-2010**

Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2010. Thesis title: “*Comparative Genomic Analysis Identifies Common Tumorigenesis-Associated Pathways Modulated by Exposure to Low Dose Arsenic or Cadmium.*”

15. **Qian Liu (M.S.P.H.)** **2008-2010**
Primary advisor of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Graduation: May 2010. Thesis title: “*Using systems biology approaches to identify gene biomarkers of tumor cell response to chemical compounds.*”
16. **Daniel Rojas (M.S.)** **2012-2014**
Primary advisor of supervisory committee. Department: Curriculum in Toxicology, School of Medicine, UNC. Focus: *Epigenetic changes associated with environmental contaminants.*
17. **Gayatri Ankem (M.S.)** **2010-2013**
Primary advisor of supervisory committee: Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Graduation: Focus: *Metals exposure and neurodevelopmental effects.*

Former undergraduate Honors Student Supervision-Primary Advisor (2 honors student)

1. **Saideep Gona** **2015-2016**
Primary advisor of supervisory committee Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Focus: *Transcription factor occupancy and DNA methylation patterns.*
2. **Yvette Nguyen (M.S.)** **2013-2014**
Primary advisor of supervisory committee Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC. Focus: *Inflammation-related proteins and preeclampsia.*

Graduate Student Supervision-Committee Member (ESE) (15 total: 10 Ph.D., 7 M.S., 3 M.S.P.H.)

Ph.D.:

1. **Breanne Holmes (Ph.D.)** **2012-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; *Thesis title: “Occurrence and control of estrogenic and androgenic activity in water.”* Advisor: Howard Weinberg.
2. **Joseph Zabinski (Ph.D.)** **2015-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; *Thesis title: “Advancing environmental human health risk assessment through Bayesian network analysis.”* Advisor: Jackie Macdonald-Gibson.
3. **Maiko Arashiro (Ph.D.)** **2011-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2017. *Thesis title: “Understanding the Biological Effects of Isoprene-derived Secondary Organic Aerosol.”* Advisor: Jason Surratt.
4. **Maya Nadmipalli (Ph.D.)** **2011-2015**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2015. *Thesis title: “Exposure to zoonotic Staphylococcus aureus among industrial hog operation workers and their household contacts in North Carolina, and dissemination into the household environment.”* Advisor: Jill Stewart.
5. **Sarah Hatcher (Ph.D.)** **2011-2015**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2015. *Thesis title: “Environmental and occupational transmission routes of antibiotic-resistant staphylococcus aureus in regions of high industrial hog operation density.”* Advisor: Jill Stewart.
6. **Grace Chappell (M.S.P.H., Ph.D.)** **2012-2015**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: April 2014. *Thesis title: “Assessment of DNA copy number alterations in mouse and human hepatocellular carcinoma.”* Advisor: Ivan Rusyn.
7. **Connie Kang (Ph.D.)** **2008-2010**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of

Global Public Health, North Carolina, UNC; Graduation: May 2010. Thesis title: *"Keratin Adducts as biomarkers for dermal exposure to jet fuel JP-8 in USAF fuel-cell maintenance personnel."* Advisor: Leena Nylander-French.

8. **Rebecca Clewell (Ph.D.)** **2008-2010**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2010. Thesis Title: *"Mode of Action Studies with Phthalate Acid Monoesters: Pharmacokinetic and Pharmacodynamic Factors Affecting Steroidogenesis."* Advisor: Louse Ball.
9. **Dan Gatti (Ph.D.)** **2008-2010**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2010. Thesis title: *"Genome-wide Analysis of Transcriptional Regulation in the Murine Liver."* Advisor: Ivan Rusyn.
10. **Courtney Woods (Ph.D.)** **2003-2006**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2006. Thesis title: *"Role of Nuclear Receptor-Independent Pathways in the Mechanism of Action of Peroxisome Proliferators."* Advisor: Ivan Rusyn.

M.S./M.S.E.E./M.S.P.H.:

11. **Katlyn Phillips (M.S.)** **2015-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; *"Viability of Cultured Primary Human Skin Cells Treated with HDI monomer and HDI Isocyanurate."* Advisor: Leena Nylander French.
12. **Laura Taylor (M.S.)** **2015-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; *"Influence of Genetic Variance on Occupational Exposure to 1,6-Hexamethylene diisocyanate isocyanurate"* Advisor: Leena Nylander French.
13. **Kathleen Mcdermott (M.S.)** **2015-2017**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; *"Monitoring the Removal of Estrogenic Activity in Wastewater Treated by a Pilot-Scale Constructed Wetland using the Yeast Estrogen Screen"* Advisor: Howard Weinberg.
14. **Sean Watford (M.S.P.H.)** **2012-2014**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: April 2014. Thesis title: *"Building bridges between toxicity testing in the 21st century and regulatory decision making through interactive web applications."* Advisor: Ivan Rusyn.
15. **Andrew Shapiro (M.S.P.H.)** **2012-2014**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: April 2014. Thesis title: *"Health Assessment Workspace Collaborative (HAWC)."* Advisor: Ivan Rusyn.
16. **Jimmy Phuong (M.S.P.H.)** **2012-2014**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: April 2014. Thesis title: *"Structured Application of Biological Ontologies to Annotate High-Throughput Screening Assays and their targets of activity."* Advisor: Ivan Rusyn.
17. **Rebecca Milsk (M.S.)** **2010-2012**
Member of supervisory committee. Department: Environmental Sciences and Engineering, Gillings School of Global Public Health, North Carolina, UNC; Graduation: May 2012. Thesis title: *"Comparative cytotoxicity of drinking water disinfection by-product mixtures produced during chlorination and chloramination."* Advisor: Howard Weinberg.

Graduate Student Supervision-Committee Member in the Curriculum in Toxicology (9 total; 9 Ph.D.)

1. **Suen, Alisa (Ph.D.)** **2012-2017**
Chair of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Carmen Williams.

2. **Brooks, Samira (Ph.D.)** **2010-2015**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Kim Rathmell.
3. **Currier, Jenna (Ph.D.)** **2008-2013**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Mirek Styblo.
4. **Macon, Madisa (Ph.D.)** **2008-2014**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Sue Fenton.
5. **Sorrentino, Jessica (Ph.D.)** **2008-2013**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Ned Sharpless.
6. **Bowers, Emma (Ph.D.)** **2012-2018**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: David Diaz-Sanchez.
7. **Henriquez-Coria, Andres (Ph.D.)** **2012-2018**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Urmila Kodavanti.
8. **Huang, Mimi (Ph.D.)** **2013-2018**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: Mirek Styblo.
9. **Lavrach, Katelyn (Ph.D.)** **2013-2018**
Member of supervisory committee. Curriculum in Toxicology, School of Medicine, North Carolina, UNC; Advisor: James Samet.

Graduate Student Supervision-Committee member, Duke University (1 total; 1 Ph.D.)

1. **Chris Leonetti (Ph.D.)** **2011-2016**
Member of supervisory committee. Duke University, North Carolina, Advisor: Heather Stapleton.

Post-doctoral advisees (8 former, 3 current)

1. John Szilagi **2018-present**
2. Catherine Bulka **2017-present**
3. Jackie Bangma **2017-present**
4. Samira Brooks **2015-2017**
 - Next position: NCI Cancer Fellow; MS Johns Hopkins
5. James Sollome **2014-2015**
 - Next position: Regulatory Protein Biochemist BASF
6. Monica Nye **2014-2015**
 - Next position: Lecturer, UNC Charlotte
7. Jill Johnston (co-advisor) **2014-2015**
 - Next position: Assistant Professor, University of Southern California
8. Paul Ray **2014-2015**
 - Next position: Scientist Synchrogenix
9. Bhavesh Ahir **2010-2013**
Next position: Research Scientist at U. of Illinois, Chicago
10. Kathryn Bailey **2010-2013**
 - Next position: Scientist, Syngenta, NC
11. Elyse Lee **2009-2010**
 - Next position: US-EPA, Washington, D.C.

Junior faculty mentees (4 current)

1. Folami Ideraabdulah, K22 (Department of Genetics, UNC-Chapel Hill) **2016-present**
2. Hudson Santos, K23 (Department of Nursing, UNC-Chapel Hill) **2017-present**
3. Aisha Dickerson, K99 (Harvard University) **2018-present**

4. Kasia Kordas, Associate Professor (University of Buffalo)

2018-present**Graduate Student Supervisor****2002-2003**

Supervised research projects of graduate students in the Biological Engineering Department, MIT.

UROP Supervisor**2000-2003**

Trained and supervised undergraduates in microarray and genomics research techniques through the Undergraduate Research Opportunity Program (UROP), MIT.

Teaching Assistant**1995-1996**

Coordinated and taught laboratories: Vertebrate Physiology, General Ecology, and Introductory Biology, Tulane University.

Contracts and Grant Support**Active Grant Support:**

- NIH, R01ES029925 (Fry/Styblo, Pardo-Manuel de Villena) TBD
Total Amount: **\$TBD**
Arsenic exposure, CC strains and diabetes
Role: Principal Investigator
- NIH, 4UH3OD023348-03 (Fry/O'Shea) 09/21/2016–08/31/2023
Total Amount: **\$20,053,762**
Environment, Epigenetics, Neurodevelopment & Health of Extremely Preterm Children
Role: Principal Investigator
- NIH, 1R01ES029531-01 (Fry/Keil) 09/01/2018–05/31/2023
Total Amount: **\$1,460,827**
Public Health Priority Setting for Environmental Metals Mixtures and Birth Defects
Role: Principal Investigator
- NIEHS, 1R01ES028721-01A1 (Fry/Styblo) 09/01/2018–05/31/2023
Total Amount: **\$3,696,679**
Developmental windows for arsenic-associated diabetes
Role: Principal Investigator
- NIMHD, 1-R01-MD013349-01 (Harris) 08/14/2018-03/31/2023
Total Amount: **\$3,500,000**
The ADD Health Epigenome Resource: Life Course Stressors and Epigenomic Modifications in Adulthood
Role: Investigator
- NIH 5R01HD092374-02 (Fry/O'Shea) 09/08/2017–05/31/2022
Total amount: **\$3,490,000**
Placental Epigenome and Brain Dysfunction After Preterm Birth
Role: Principal Investigator
- NIH1-R01-HD087061-01A1 (Harris) 09/09/2016–05/31/2021
Total amount: **\$1,894,105**
Social Context, the Life Course, and Genetic Transcription in Add Health
Role: Investigator
- 1 R01 ES026973-01 (Heaney) 07/01/2016–06/30/2021
Total amount: **\$38,124**
Arsenic and Immune Response to Influenza Vaccination in Pregnant Women and Newborns
Role: Principal Investigator of UNC subcontract
- NIH 1 R01 ES025124-01A1 (Peden) 03/01/2016–02/28/2021
Total amount: **\$1,921,410**
Gamma Tocopherol Chemoprevention of Wood Smoke PM2.5-Induced Airway Inflammation
Role: Investigator
Role: Co-Investigator

- NIEHS, 2-T32-ES007018-36 (Fry) 07/01/2017-06/30/2022
Total Amount: **\$1,712,823**
Project: Biostatistics for Research in Environmental Health
Role: Principal Investigator

Prior Grant Support:

- NIH, 1UG3OD023348-01 (Fry/O'Shea) 09/21/2016–08/31/2018
Total Amount: **\$5,053,762**
Environment, Epigenetics, Neurodevelopment & Health of Extremely Preterm Children
Role: Principal Investigator
- NIEHS, 1-R01-ES022697 (Styblo) 12/31/2013-10/31/2017
Total Amount: **\$1,045,000**
Project: Mechanisms of Arsenic-Induced Diabetes Mellitus
Role: Co-Investigator
- NIH, 1-P50-HL120100-02 (Tarran) 09/19/2013-08/31/2018
Total Amount: **\$2,648,046**
Project: The Impact of Tobacco Exposure on the Lung's Innate Defense System
- USEPA (CR-83591401) (Jaspers) 12/01/2015–01/30/2018
Total amount: **\$1,008,228**
Cooperative Training Partnership between the U.S. EPA and the UNC-CH Training Collaboration in Toxicology and Environmental Sciences (TC-ToxES)
Role: Investigator
- NIEHS, R21 (Satterwhite) 09/01/2016-08/31/2018
Total amount: **\$195,255**
Protecting Neurodevelopment in Latino Migrant Children by Reduced Exposure to Organophosphate Pesticides
Role: Co-Investigator
- NIEHS, P42 ES005948-22 (Fry) 04/01/2011- 03/31/2018
Total Amount: **\$3,179,000**
Project: UNC-Superfund Research Program
Role: Principal Investigator
- NIEHS 1-R13-ES027335-01 (Fry) 07/01/2016-06/30/2017
Total amount: **\$8,000**
Prenatal Environmental Toxicants: Risk Factors for Infectious Disease in Children
Role: Principal Investigator
- NIH, 5R01ES024950-02 (Lu) 02/05/2015-11/30/2016
Total amount: **\$2,958,130**
Functional Interaction between the Gut Microbiome and Arsenic Exposure
Role: PI of UNC subcontract
- NIH, 1 R03 HD80788-01 (Vora) 08/15/2014–07/31/2016
Total Amount: **\$100,000**
Project: Determination of Fetal Gene Expression in Women with Preterm and Term Birth
Role: Investigator
- Texas Commission on Environmental Quality (Swenberg/Fry) 05/01/2012- 04/31/2015
Total Amount: **\$200,000**
Project: Formaldehyde and Epigenetic Changes
Role: Principal Investigator
- NIEHS, R01-ES019315 (Fry) 10/01/2010- 05/31/2016
Total Amount: **\$2,300,000**
Project: In Utero Exposure to Arsenic, Links to Epigenetic Alterations and Disease
Role: Principal Investigator
- NIEHS, R01 Victor (Styblo) 10/01/2010- 09/30/2015
Total Amount: **\$900,000**
Project: Arsenic and Diabetes.

- Role: Investigator
- Gillings Innovation Laboratory (Fry) 07/01/2010-6/30/2012
Total Amount: **\$80,000**
Project: Body-on-a-Chip: A New *In Vitro* Testing System to Predict Toxicity of Environmental Contaminants
Role: Principal Investigator
 - Water Research Foundation (Weinberg/Fry) 04/15/2010-04/31/2013
Total Amount: **\$300,000**
Title: Screening Endocrine Activity of DBP's
Role: Principal Investigator
 - Pfizer Scholar Grant in Public Health (Fry) 09/01/2009–08/31/2011
Total Amount: **\$130,000**
Project: Establishing a Biomonitoring Program in NC for Prenatal Metals Exposure.
Role: Principal Investigator
 - NIH, ARRA Supplement (Swenberg) 07/01/2009-06/30/2011
Total Amount: **\$215,195**
Project: ARRA-SBRP: Environmental Exposure and Effect of Hazardous Chemicals (Administrative Supplement)
Role: Investigator
 - CEHS-UNC Pilot project award (Fry) 06/01/2009–06/01/2010
Total Amount: **\$30,000**
Project: Mapping methylated DNA sites associated with arsenical-induced skin disease.
Role: Principal Investigator
 - NCTRACS Institute UNC (Fry) 03/01/2009-04/01/2010
Total Amount: **\$10,000**
Project: Identifying CpG Site Methylation Associated with Prenatal Metal (Cadmium) Exposure.
Role: Principal Investigator
 - NCTRACS Institute UNC (Jaspers) 03/01/2009-04/01/2010
Total Amount: **\$10,000**
Project: Identifying CpG methylation associated with ETS exposure.
Role: Investigator
 - Grant Number: 2 P30 CA014051-34 (Jacks) 06/30/2005-04/30/2010
National Cancer Institutes
Cancer Center Support (Core) Grant
Role: Research Scientist; Director, Microarray Group
 - P30-ES02109 (Samson) 04/15/2005-03/31/2010
National Institute of Environmental Sciences
MIT Center for Environmental Health Sciences
Role: Research Scientist; Director, Genomics and Bioinformatics Group
 - 5-U19-ES11399 (Samson) 09/30/2001-07/31/2006
National Institute of Environmental Health Sciences
Global Responses to Aflatoxin B1 and Alkylating Agents
Project #2
Role: Research Scientist

Professional Service

To Discipline:

Committee member

- International Agency for Research on Cancer, Fellowship Selection Committee Chair 2018-present
- 2018 NC Women's Health Report Card Advisory Board Charge 2017-present
- All of Us: Child Enrollment Scientific Vision Working Group 2017-present
- ECHO Steering Committee 2017-present
- External Advisor, TaRGET II Consortium (T2C) 2016-present

- International Agency for Research on Cancer, Fellowship Selection Committee 2015-present
- Food and Drug Administration, Risk review panel 2015-2016
- National Research Council on Inorganic Arsenic 2012-2015

Editorial Board Member:

- Environmental Epigenetics 2015-present
- Mutation Research—Reviews 2015-present
- International Scholarly Research Network (ISRN), Genetics 2012-present

Invited reviewer:

- Environmental Science & Technology 2010-present
- Toxicological Sciences 2009-present
- Mutation Research/ Fundamental and Molecular Mechanisms of Mutagenesis 2009-present
- Physiological Genomics 2009
- Environmental Health Perspectives 2008-present

Invited member of review panel:

- NIEHS ONES review committee 2015-present
- Department of Defense (DoD) review committee 2017
- NIEHS EHS Review Committee 2017-present
- NIEHS, R21 Study section (Chair) 2017
- NIEHS, P30 and T32 Study section 2016-current
- NIEHS, R13 Study section (Chair) 2016
- NAME study section 2014
- NIEHS Career Awards Grant Review Panel (K applications) 2012-2015
- NIEHS Superfund Project Grant Review Panel 2011-2015
- NIH Director's Early Independence Award 2015
- National Science Foundation (NSF) East Asia and Pacific Summer Institutes (EAPSI) program Grant Review Panel 2010

Member/leadership roles within scientific societies:

- SOT Metals Specialty Section, President 2017-2018
- SOT Metals Specialty Section, Vice-President 2016-2017
- SOT Metals Specialty Section, Vice-President elect 2015-2016
- Councilor, Genetics and Environmental Mutagenesis Society (GEMS), NC 2010-2012
- SOT, Councilor for Stem Cell Specialty Section 2011-2015
- SOT, Secretary for Metals Specialty Section 2013-2015

To the State of North Carolina:*Invited presentations:*

1. *Health effects of toxic metals exposure in children.* Local Citizens Meeting, Lee County, NC. April 2016.
2. *Health effects of toxic metals exposure in children.* Civil Rights Meeting. Walnut Cove, NC. April 2016
3. *Health effects of toxic metals exposure in children.* North Carolina DHHS. July 2015.
4. *Examining the biological mechanism underlying adverse health outcomes of arsenic exposure.* Water Quality and Human Health. UNC Superfund Research Program Teacher Training Activity. March 2015
5. *Toxic metals in the Environment and Children's Health.* North Central Environmental Health District. NC Public Health Association. 4th Quarterly Meeting. December 2014.
6. *Toxic metals in the Environment and Children's Health.* City Council Town of Eden. November 2014.
7. *Health effects of toxic metals on children.* NC Healthy Homes Task Force. May 2014.

8. *Toxic metals in the environment*. Science Café for the NC community. February 2014.
9. *Epigenetics: Genes and the Environment Integrating this Topic into your Biology Curriculum*. Professional Development Workshop for Biology Teachers from NC. July 2012.
10. *Is your well water safe?* North Carolina Health Director's Meeting. February 2012.
11. *Tracking and Analyzing Contaminants in North Carolina's Private Wells*. North Carolina, DHHS. November, 2010

International

1. Member, Fellowship selection committee- IARC March 2015-present

Internal Service to SPH

1. *Chair, Search Committee (Associate Dean for Research)* July 2018
Directed search committee for a new Associate Dean for SPH
2. *Member, ESE Promotions Committee* 2017-present
Serve as member of the ESE promotions committee
3. *Member, SPH APT Committee* 2017-present
Serve as member of the SPH APT committee
4. *Member, Post-tenure Review Committee* Fall 2016
Served as member of the post-tenure review committee in ESE
5. *Member, Search Committee (Chair)* April 2016
Served as member of the search committee for a new Chair in ESE
6. *Chair, Search Committee (Faculty hire)* May 2015
Directed search committee for a new environmental health faculty member in ESE
7. *Member, ESE Academic Programs Committee* 2014-present
Serve as member of APC committee
8. *Member, UNC Faculty Council* 2013-present
Serve as Gillings School of Global Public Health Representative
9. *Member of ESE Admissions Committee* 2013-2015
Served as head of health-related admissions
10. *Member of Curriculum in Toxicology Executive Committee:* 2012-present
Serve on Toxicology Committee
11. *Member of ESE Committee for BSPH Program* 2012
Served on ESE Committee to refine BSPH requirements.
12. *Director of Search Committee* July 2011
Served as director of the search committee for a new Director for the Curriculum in Toxicology.
13. *Member of Search Committee* December 2009
Served on ESE Search Committee for Recruitment of a Research Associate Professor to direct ESE Smog Chamber Operations.
14. *Member of Steering Committee* 2009-2016
Served as environmental liason for the North Carolina Integrated Cancer Information and Surveillance System (ICISS). This project is funded through the Lineberger Cancer Center.