

Melissa M. Smarr, Ph.D.
Environmental Epidemiologist

Division of Intramural Population Health Research
Eunice Kennedy Shriver National Institute of Child Health & Human Development
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EDUCATION

PhD	Environmental Health Sciences University of Michigan School of Public Health, Ann Arbor, MI	2014
BS	Chemistry North Carolina Central University, Durham, NC	2007

RESEARCH EXPERIENCES

Professional Appointments

2014- present	Intramural Research Training Award (IRTA) Postdoctoral Fellow Division of Intramural Population Health Research <i>Eunice Kennedy Shriver</i> National Institute of Child Health & Human Development Responsibilities: <ul style="list-style-type: none">• Planning and implementing epidemiological assessment of reproductive, perinatal, and gravid health (gestational diabetes, hypertension) for two prospective cohort studies with novel study designs [<i>NICHD Fetal Growth Study & Longitudinal Investigation of Fertility and the Environment (LIFE)</i>]• Developing and implementing exposure research analyses to address data complexities such as chemical hazard mixtures and chemical hazard laboratory limits of detection• Conducting analyses of environmental epidemiology and pharmacoepidemiology• writing scientific manuscripts for submission to public health journals• Interpreting biostatistical findings for a trans-disciplinary audience comprising laboratory, population health and clinical communities• Building and performing statistical models to assess human health in relation to environmental and pharmaceutical influences to improve prenatal clinical care	
2010-2014	Graduate Student Research Assistant (GSRA) University of Michigan, School of Public Health	

Environmental Pollutants and Birth Outcomes in Mexico City Study

Responsibilities:

- Provided day-to-day supervision of four graduate and four undergraduate students who served as the UM based research study team.
- Created work schedules, project goals and data assignments to guarantee productivity for individual team members' projects and the overall progress of the research study
- Created project protocols for data entry, corrections, archiving and quality control/quality assurance procedures, to improve daily operations
- Modified data user agreement and confidentiality forms to ensure reliable data sharing methods between international and nation study sites
- Administered research support (i.e., planned, coordinated, and evaluated research/capstone projects for undergraduate and graduate students)

2008-2009

Student Services Contractor

U.S. Environmental Protection Agency,
Exposure Modeling & Research Branch, RTP, NC

Responsibilities:

- Coded data collected from human activity diaries to be included in the Consolidated Human Activity Database (CHAD)
- Reviewed scientific literature on physiological measurements to be used in the development of human exposure models to estimate the time profile of intake dose rate associated with environmental exposures
- Reviewed data on energy expenditure, metabolism and physiological parameters to be used in a meta-analysis performed by multiple branch members
- Aided with the entry of data to be input into the Air Pollution Exposure Model (APEX)

2006-2008

Student Services Contractor,

U.S. Environmental Protection Agency,
Exposure Measurements & Analysis Branch, RTP, NC

Responsibilities:

- Provided technical support for various research projects that measured human exposure to environmental hazards
- Performed extraction and multi-residue analysis of pesticide samples in various media, such as polyurethane foam, cotton wipes, and carpet sections
- Assisted with analytical methods validation including Gas Chromatography Mass Spectrometry (GC-MS) and High Performance Liquid Chromatography (HPLC)
- Processed and tabulated instrument data using Microsoft Excel
- Performed literature searches for reference documents and chemical compound information

- General laboratory duties included: conducting supply inventories, preparation of standards, and routine maintenance of laboratory equipment

Training Opportunities

2009

Research Rotation

University of Michigan School of Public Health

Project: *Cardiopulmonary Toxicity Induced by Particulate Matter: Inhalation Toxicology Studies Using a Mobile Particle Concentrator in Regions Dominated by Power Plant, Gasoline and Diesel Emissions*

Research Lab: Dr. J. Tim D'Vonch, Dept. of Environmental Health Sciences

Responsibilities:

- Assisted with laboratory responsibilities in the mobile air quality unit for research focused on exposing mice to concentrated air particles (CAPS), to better understand cardiovascular outcomes

2009

Research Rotation

University of Michigan School of Public Health

Project: *Processes of Mercury Dry Deposition*

Research Lab: Dr. J. Tim D'Vonch, Dept. of Environmental Health Sciences

Responsibilities:

- Aided with the preparation of data collection materials for field studies focused on atmospheric mercury deposition across southern Florida

2008

Internship

Summer Pre-Graduate Research Experience (SPGRE), University of North Carolina at Chapel Hill

Project: *Modification of a Quadrupole Ion Trap Mass Spectrometer*

Research Lab: Dr. Gary Glish, Department of Chemistry

Responsibilities:

- Supported doctoral students with the modification of a Quadrupole Ion Trap Mass Spectrometer, to measuring secondary aerosols in a smog chamber
- Provided assistance with the assessment and characterization of chemical hazards present in the urban atmosphere

2004

Partners Allied In Research (PAIR) Internship

Duke University Pain Clinic

Project: *Coping Skills Training for African American Prostate Cancer Survivors and Their Intimate Partners*

Responsibilities:

- Assisted with the collection of participant information for a behavioral study focused on ethnic disparities surrounding pain conditions among prostate cancer patients

- Evaluated the self-efficacy of coping skills and quality of life for patients and their caregivers
- Presented findings at clinical research meetings to discuss the translation of psychology and behavioral interventions to novel methods of clinical care for cancer patients
- Conducting telephone interviews, entering self-reported data from mailed questionnaires,
- Researched the history of racial/ ethnic disparities in clinical trial participation
- Recommended and created recruitment and informational materials to increase underrepresented populations participation in clinical trials and reduce cancer prevalence

PUBLICATIONS

Technical Reports

Air Pollution and Repeated Ultrasound Measures of Fetal Growth in Mexico City, a dissertation presented to the Faculty of the Rackham Graduate School, University of Michigan School of Public Health, August 2014.

Invited Journal Articles

1. **Smarr MM**, Vadillo-Ortega F, Castillo-Castrejón M, O’Neil MS. The Use of Ultrasound Measurements in Environmental Epidemiological Studies of Air Pollution and Fetal Growth. *Current Opinion in Pediatrics*, 2013 Apr; 25(2):240-6.
Doi: 10.1097/MOP.0b013e32835e1e74.

Peer-Reviewed Journal Articles

1. **Smarr MM**, Grantz KL, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Parental urinary biomarkers of preconception exposure to bisphenol A and phthalates in relation to birth outcomes. *Environmental Health*. 2015 Sep 11;14(1):73.
Doi: 10.1186/s12940-015-0060-5.

Submitted Manuscripts

1. **Smarr MM**, Zhang C, Grantz KL, Sundaram R, Maisog JM, Barr DB, Buck Louis GM. Preconception exposures to persistent organic pollutants and gravid conditions (*Int J Hygiene and Environ Health*).
2. **Smarr MM**, Sánchez BN, Martínez N, Beltran-Montoya J, Viveros-Alcaráz M, Espino y Sosa S, O’Neill MS, Vadillo-Ortega F. Inter-observer Reliability of Fetal Ultrasound Measurements Captured by Multiple Clinicians (*JMU*).
3. **Smarr MM**, Grantz KL, Sundaram R, Maisog JM, Honda M, Kannan K, Buck Louis GM. Urinary Biomarkers of Preconception Paracetamol Exposure and Time-to-Pregnancy (*Human Reproduction*).

4. Kim SS, Zhu Y, Grantz KL, Hinkle SN, Chen Z, Wallace M, **Smarr MM**, Epps NM, Mendola P. Obesity and pregnancy: Obstetric and neonatal risks among women without chronic disease (*Obesity*).
5. Mendola P, Sundaram R, Buck Louis GM, Sun L, Wallace ME, **Smarr MM**, Sherman S, Zhu Y, Ying Q, Liu D. Proximity to major roadways and prospectively-measured time-to-pregnancy and infertility (*Fertility & Sterility*).

In Preparation

1. **Smarr MM**, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Prospective Assessment of Antibacterial and Antimicrobial Phenols with Couples' Time-to-Pregnancy.
2. **Smarr MM**, Sapra KJ, Grantz KL, Sundaram R, Buck Louis GM. Prospective assessment of couples' time-to-pregnancy and birth outcomes.
3. **Smarr MM**, Albert PS; Buck Louis GM; Fuchs K; Grantz KL; Grewal J; Hediger ML; Hinkle SN; Kim SD; Zhang C. Repeated Fetal Exposure to Thermal and Mechanical Energy from ultrasonography: The NICHD Fetal Growth Study.
4. **Smarr MM**, Albert PS; Buck Louis GM; Fuchs K; Grantz KL; Grewal J; Hediger ML; Hinkle SN; Kim SD; Zhang C. Prenatal Self-Report of Maternal Acetaminophen (Paracetamol) Use and Fetal Growth: The Fetal Growth Study.
5. **Smarr MM**, O'Neill MS, Rivera-González LO, Beltrán Montoya J, Martínez N, Vadillo-Ortega F, Sanchez BN. Air Pollution and Repeated Ultrasound Measures of Intrauterine Growth in Mexico City, Mexico.
6. **Smarr MM**, Grantz KL, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Urinary Biomarkers of Preconception Paracetamol Exposure and Birth Outcomes.
7. **Smarr MM**, Grantz KL, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Preconception Assessment of Antibacterial and Antimicrobial Phenols in relation to Birth Outcomes.
8. Epps NM, Wallace M, Mendola P, Chen Z, **Smarr MM**, Hinkle SN, Zhu Y, Kim S, Grantz KL Racial Differences in Preterm Neonatal Outcomes.
9. (Authorship TBD) Is Human Fecundity Changing?

ABSTRACTS, CONFERENCE PRESENTATIONS & SYMPOSIA

Invited Talks & Other Scholarly Presentations

1. Is Human Fecundity changing- The Weight of Evidence. Human Fecundity Workshop, NICHD, Rockville, MD, September 2015.
2. Critical Review and Discussion of Prediction Models for in vitro Fertilization. Joint presentation with Dr. Torie Comeaux Plowden for the EPI/PRAE Journal Club, NICHD, Rockville, MD, September 2015.
3. Vitamin intake during pregnancy and the association between air pollution and fetal growth in Mexico City. Environmental Health Sciences Departmental Doctoral Seminar, University of Michigan, Ann Arbor, MI, December 2012.

4. Air pollution and repeated ultrasound measures of fetal growth in Mexico City. Environmental Health Sciences Departmental Doctoral Seminar, University of Michigan, Ann Arbor, MI, February 2010.

Abstracts & Conference Presentations

1. **Smarr MM**, Grantz KL, Zhang C, Sundaram R, Maisog JM, Barr DB, Buck Louis GM. Pre-pregnancy low-level exposures to persistent organic pollutants and gravid conditions: the LIFE Study. **Oral presentation** for the 27th Conference of the International Society for Environmental Epidemiology (ISEE), Sao Paulo, Brazil, September 2015.
2. **Smarr MM**, Grantz KL, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Parental preconception exposure to non-persistent endocrine disrupting chemicals and birth outcomes: the LIFE study. **Oral presentation** for the 48th Annual Meeting of the Society for Epidemiologic Research (SER), Denver, CO, June 2015.
3. **Smarr MM**, Zhang C, Grantz KL, Sundaram R, Maisog JM, Kannan K, Buck Louis GM. Preconception exposures to persistent organic pollutants and gravid conditions. Accepted as a **poster presentation** for the Society for Pediatric and Perinatal Epidemiologic Research (SPER), Denver, CO, June 2015.
4. Kim SS, Zhu Y, Grantz KL, Hinkle SN, Chen Z, Wallace M, **Smarr MM**, Epps NM, Mendola P. Healthy obesity- does it exist in pregnancy? Accepted as a **poster presentation** for the 48th Annual Meeting of the Society for Epidemiologic Research (SER), Denver, CO, June 2015.
5. Epps NM, Wallace M, Mendola P, Chen Z, **Smarr MM**, Hinkle SN, Zhu Y, Kim S, Grantz KL. Racial Differences in Preterm Neonatal Outcomes. Accepted as a **poster presentation** for the Society for Pediatric and Perinatal Epidemiologic Research (SPER), Denver, CO, June 2015.
6. Mendola P, Liu D, Sundaram R, Sun L, Wallace ME, **Smarr MM**, Zhu Y, Buck Louis GM. Time-to-Pregnancy and Proximity to Major Roadways in the LIFE Study. **Oral presentation** for the 27th Conference of the International Society for Environmental Epidemiology (ISEE), Sao Paulo, Brazil, 2015.
7. Mendola P, Sundaram R, Buck Louis GM, Sun L, Wallace ME, **Smarr MM**, Zhu Y, Liu D. PROSPECTIVELY-MEASURED INFERTILITY AND PROXIMITY TO MAJOR ROADWAYS. Submitted for the American Society for Reproductive Medicine Annual Meeting (ASRM), Baltimore, MD, 2015.
8. **Smarr MM**, Rivera-González LO, Comment L, Vadillo-Ortega F, O'Neill MS. The Association between First Trimester Maternal Exposure to Air Pollutants and Indicators of Fetal Growth in Mexico City. **Poster presentation** for the 25th Conference of the International Society for Environmental Epidemiology (ISEE), Basel, Switzerland, August 2013.

9. **Smarr MM**, O'Neill MS, Castrejón MC, & Ortega FV. Vitamin Intake during Pregnancy and the Association between Air Pollution and Fetal Growth in Mexico City. **Poster presentation** for the 24th Conference of the International Society for Environmental Epidemiology (ISEE), Charleston, SC, August 2012.
10. Castillo-Castrejón M, **Smarr MM**, Migoya-Graue A, Meraz-Cruz N, O'Neill MS, Vadillo-Ortega F. Contribution of the Maternal Pre-pregnancy Body Mass Index and Air Pollution to Fetal Growth in Mexican Women. **Poster presentation** for the 24th Conference of the International Society for Environmental Epidemiology (ISEE), Charleston, SC, August 2012.
11. **Smarr MM**, O'Neill MS, Rivera-González LO, Beltrán Montoya J, Martínez N, Vadillo-Ortega F, Sanchez BN. Air Pollution and Repeated Ultrasound Measures of Fetal Growth in Mexico City. **Poster presentation** for the 23rd Conference of the International Society for Environmental Epidemiology (ISEE), Barcelona, Spain, 2011.
12. **Smarr MM**, Newsome A, Glish G. Modification of Quadrupole Ion Trap MS for Analysis of Secondary Aerosols. **Poster presentation** for the 2nd Annual H.T. Frierson Research Symposium, Chapel Hill, NC, July 2008.
13. **Smarr MM**, Sendlinger SC. Small-Scale Synthesis of Iron Carboxylate Compounds. **Poster presentation** for the Annual Biomedical Research Conference for Minority Students, Anaheim, CA, 2006.

FUNDING

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| 2014 | <i>Eunice Kennedy Shriver National Institute of Child Health & Human Development Intramural Funding</i>
<i>Over the Counter and Prescription Medication Use and Fetal Growth: The NICHD Fetal Growth Study, \$31,000</i> |
| 2010-2011 | National Institute of Environmental Health Sciences Extramural Funding
Research Supplement to Promote Diversity in Health-Related Research, parent grant - <i>Air Pollution, Inflammation and Preterm Birth, A Mechanistic Study in Mexico City, \$124,988</i> |

PROFESSIONAL ACTIVITIES & SERVICE

Professional Society Affiliations

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| 2015 | Society for Epidemiologic Research (SER) |
| 2015 | Society for Pediatric and Perinatal Epidemiologic Research (SPER) |
| 2011- present | International Society for Environmental Epidemiology (ISEE) |
| 2004 | Phi Eta Sigma, National Honor Society |

Service

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| 2015 | Coordinator - Joint Epidemiology and Program in Reproductive and Adult Endocrinology Fellows Journal Club, NICHD Rockville, MD |
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- 2015 **Coordinator** - Joint Epidemiology and Regional Maternal and Fetal Medicine Fellows Journal Club, Rockville, MD
- 2015 **Poster Judge** - NIH Postbac Poster Day, Bethesda, MD,
- 2015 **Scientific Planning Committee** - NICHD workshop: *Is Human Fecundity Changing?*
- Actively assisted with the organization and conducted all aspects of the scientific workshop designed to facilitate communication among fecundity research clinical, demography and epidemiological investigators and research fellows
 - Organized the writing group that resulted from the workshop, aimed at summarizing current methodology and fostering resources to support emerging directions of fecundity research

Ad Hoc Journal Reviewer

Human Reproduction
 Scientific Reports -Nature
 Environmental Science & Technology
 Journal of Toxicology and Environmental Health, Part B: Critical Reviews

Professional Development

- 2015 Alan Alda Center for Communicating Science Improvisation workshop, Bethesda, MD
- 2015 Scientific storytelling workshop, Scott Morgan Group, NIH, Bethesda, MD
- 2015 Media Training, Oratorio Media and Presentation Training, Washington, DC
- 2015 Writing and Publishing a Scientific Paper (4-week course), NIH, Bethesda, MD
- 2014 Scientists Teaching Science workshop, Bethesda, MD
- 2014 Statistical Short Course on Recurrent Events, Rockville, MD

Mentoring

- 2014-2015 Nikira Epps; Co-mentored postbac fellowship
- 2013-2014 Samantha Batdorf; Co-mentored & supervised. Current Position: MPH student, University of Michigan
- 2012-2013 Edwin Aruz; Co-mentored & supervised MPH research
- 2012-2013 Rony Aruz; Co-mentored & supervised MPH research
- 2012-2013 Jennifer Crorey; Co-mentored, supervised Undergraduate Research Opportunities Program (UROP) participation
- 2011-2014 Lauren Bylsma; Co-mentored & supervised MPH research. Current Position: Epidemiologist, EpiStat Institute

- 2011-2014 Brooke Bidwell; Co-mentored, supervised Undergraduate Research Opportunities Program (UROP) participation. Current Position: MPH student, Boston University
- 2011-2014 Patricia Maina; Co-mentored, supervised Undergraduate Research Opportunities Program (UROP) participation
- 2011-2014 Allison Pall; Co-mentored, supervised Undergraduate Research Opportunities Program (UROP) participation
- 2011-2014 Kaitlyn Sykes; Co-mentored, supervised Undergraduate Research Opportunities Program (UROP) participation. Current Position: MPH student, University of Michigan.

AWARDS & HONORS

- 2012 University of Michigan, Center for Global Health, Global Health Research Scholar, Ann Arbor, MI
- 2009-2014 University of Michigan, Rackham Graduate School, Rackham Merit Fellow, Ann Arbor, MI
- 2011, 2012 University of Michigan, Rackham Graduate School, Rackham Travel Award, Ann Arbor, MI
- 2011 University of Michigan, Center for Global Health Student Associates Conference Award, Ann Arbor, MI
- 2007 North Carolina Central University, GlaxoSmithKline Scholar, Durham, NC
- 2007 North Carolina Central University, American Chemical Society Analytical Chemistry Award, Durham, NC
- 2005-2007 North Carolina Central University, MARC U Scholar, Durham, NC
- 2003-2007 North Carolina Central University, Chancellor's Scholar, Durham, NC

ADDITIONAL SKILLS

- Proficient in Windows/Apple operating systems, Microsoft Office, R, SAS and EndNote.