

# Luke Montrose, Ph.D.

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Citizenship: USA

## Education

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Assistant Professor	<b>Boise State University</b> Department of Community and Environmental Health	2019
Postdoctoral Fellow	<b>University of Michigan</b> Focus: Toxicogenetics and fetal origins of disease Advisor and Primary Mentor: Dr. Dana Dolinoy	2015 – 2018
Ph.D.	<b>University of Montana</b> Focus: Environmental Toxicology Dissertation Title: DNA Methylation in Humans and Dogs: Evaluating the Impact on Nutritional and Particulate Exposures Committee Chair: Dr. Curtis Noonan	2015
B.S.	<b>Heidelberg College</b> Major: Biology	2007

## Research and Work Experience

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<b>Boise State University</b> Department of Community and Environmental Health	January 2019
<ul style="list-style-type: none"><li>• Developing an independent research program to study how environmental exposures during critical windows impact long term health and disease</li><li>• Engaging community stakeholders in the protection of vulnerable populations from region-specific exposures such as wildfire particulate matter</li><li>• Teaching courses and mentoring students in the Environmental and Occupational Health and Safety program</li></ul>	
<b>University of Michigan</b> <i>Postdoctoral Fellow – PI: Dr. Dana Dolinoy</i>	August 2015 – January 2019

- Drafted and edited manuscripts, book chapters and competitive grant applications
- Utilized environmental epigenetic methods to determine the effect of perinatal exposure on life course disease susceptibility in rodents and humans
- Assessed exposure to environmental contaminants including heavy metals and endocrine disrupting chemicals using biological samples such as urine and blood
- Provided training and mentorship to undergraduate, graduate students, and visiting scholars

## **University of Montana**

August 2010 – June 2015

*Graduate Research Assistant - PI: Dr. Curtis Noonan*

- Provided field support and molecular biological expertise on an R01 funded in-home intervention study of susceptible children exposed to biomass combustion smoke
- Conducted community based participatory research in rural Alaskan villages by collecting data on air pollution and lung-related disorders in children
- Participated in outreach and education in Montana and Alaska by teaching school-aged children about air pollution

## **Battelle Biomedical Research Center**

June 2009 – June 2010

*Microbiology Technician*

- Conducted microbiology research in a BSL-3 facility using Good Laboratory Practices
- Gained proficiency in techniques such as bacterial culture, blood fractionation and storage, and enzyme-linked immunosorbent assay (ELISA) for detecting antibodies

*Vivo Technician*

- Completed study goals in a BSL-3 facility aimed at testing the efficacy of counter terrorism measures utilizing research animals in a team oriented environment
- Responsibly used and cared for animals, primarily non-human primates, in a controlled research setting to include handling, assessment, exposure and treatment administration, as well as providing environmental enrichment

## **Battelle Memorial Institute**

June 2007 – May 2009

*Vivo Technician*

- Worked with technicians and investigators to complete study goals in a BSL-2 facility on projects involving pharmacotoxicology and drug development
- Assigned to studies that primarily utilized dogs and non-human primates

## **Teaching and Mentorship**

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### **Boise State University**

Dept. of Community and Environmental Health

- EOHS 438: Safety Strategies for Controlling Physical Hazards Spring 2019

- EOHS 435: Toxicology for Environmental and Occupation Health (prep) Spring 2019

### **University of Michigan**

Community Outreach and Translational Core – *Curriculum Development* Summer 2018

- Collaborator on a University of Michigan Community-University Partnership Seed (CUPS) grant working with the Healthy Home Coalition of West Michigan to generate curriculum for peer-to-peer training to improve children’s health via mitigation of in-home lead exposure

School of Public Health - *Guest Lecturer*

- EHS 801: Research and Communication in the Env. Health Sciences Fall 2016 & 2017
  - Topic: Exploring non-academic careers
- NUTR 688: Research Topics in Nutritional Sciences Spring 2017
  - Topic: Nutritional assessment in an asthmatic cohort
- ENVIRON 310: Environmental Chemicals & Disease Spring 2016 - 2018
  - Topic: Air pollution and respiratory health
- EHS 869: Doctoral Seminar in Occupational and Environ Health Fall 2016
  - Topic: Candidate Intracisternal A project summary

Center for Research on Learning and Teaching (CRLT)

- Postdoctoral Short-Course on College Teaching in STEM Education Spring 2016
  - 8-week course covering course design, science of learning, assessment and feedback, active and inquiry-based learning, and inclusive teaching
  - Training included two mock teaching sessions with peer feedback

Department of Environmental Health Science – *Mentor*

- Provided mentorship to a visiting scholar Fall 2017
  - Dr. Oluwakemi Rotimi is a junior faculty of the Biochemistry Department of Covenant University, Nigeria and was selected through the University of Michigan African Presidential Scholars Program (UMAPS) in order to gain new skills in molecular biology
  - Dr. Rotimi became proficient at real time quantitative PCR (RTqPCR) under my supervision
- Provided primary mentorship to an undergraduate researcher Fall 2015 – Spring 2017
  - John Francis, a talented student and aspiring scientist, worked on several epigenetic projects and became proficient at PCR and pyrosequencing under my supervision

### **University of Massachusetts Amherst**

School of Public Health and Health Sciences- *Guest Lecturer*

- Topic: Metals Toxicity - taught remotely via Zoom

Fall 2017

## University of Montana

Mansfield Center: Study of the U.S. Institutes - *Graduate Student Mentor*

- Field study liaison Summer 2013 and 2014
  - Accompanied 20 Southeast Asian college students on a 2-day trip to Libby, MT to learn about asbestos and environmental policies

School of Pharmacy - *Graduate Student Teaching Assistant*

- BMED 362: Pharmaceutical Sciences Lab II Spring 2011-2014  
Topic: Microbiology - Six 3-Hour lab sections, approximately 70 pharmacy students
- BMED 361: Pharmaceutical Sciences Lab I Fall 2010-2014  
Topic: Risk Assessment - Three 3-Hour lab sections, approximately 70 pharmacy students

## Funding and Awards

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- 2019 ASSERT Fellow in the Center for Transformative Research at Boise State University
- 2018 Best Manuscript Award for 2018 from the Society of Toxicology, Occupational and Public Health Specialty Section
- 2017 New Investigator Best Paper Award for 2017 in the Environmental and Molecular Mutagenesis Journal
- 2017 October 2017 Editor's Choice in the Environmental and Molecular Mutagenesis Journal
- 2017 Postdoctoral Translational Scholars Program CTSA Fellowship at the University of Michigan
- 2017 Pediatric Endocrinology and Training Program Training Fellowship at the University of Michigan
- 2015 Environmental Toxicology and Epidemiology Program Training Fellowship at the University of Michigan
- 2012 Pacific North West International Section (PNWIS) of Air and Waste Management Association (AWMA) Willenberg-Hansen Chapter Recognition Program Moby Award (while serving as president)

## Research Skills and Expertise

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- Environmental toxicogenetics study design and execution with emphasis on inhalation and ingestion exposure pathways
- Biological sample evaluation including urine, exhaled breath condensate, buccal cells, dried blood spots, whole and fractionated blood, brain, liver, and adipose
- Capable of navigating institutional review board processes at the university and state department of health and human services

- Exposure assessment and analysis strategies involving endocrine disrupting chemicals, metals, air pollutants, and dietary nutrients
- DNA and RNA extraction
- Targeted and whole genome quantitative methylation analysis (pyrosequencing and chip array, respectively)
- Primer design, polymerase chain reaction (PCR) and quantitative reverse transcription PCR
- Data analysis with software packages (SAS and R)
- Design and execution of community-based participatory research surveys and analysis including in-home administration of asthma health survey and food frequency questionnaires
- Expertise working in BSL-2 and BSL-3 facilities using Good Laboratory Practices
- Research and husbandry skills: monkey, pig, dog, rabbit, ferret, guinea pig, rat, and mouse

## Peer-Reviewed Publications

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- 2018      **Montrose, L.**, Padmanabhan, V., Goodrich, J.M., Domino, S.E., Treadwell, M.C., Burant, C., Meeker, J.D., Watkins, D.J., and Dolinoy, D.C. Maternal levels of endocrine disrupting chemicals in the first trimester of pregnancy are associated with infant cord blood DNA methylation. **Epigenetics**. 13(3):301-309.  
—*Best Manuscript Award for 2018 from the Society of Toxicology, Occupational and Public Health Specialty Section*—
- 2017      **Montrose, L.**, Francis, J., Faulk, C., and Dolinoy, D.C. Perinatal Lead (Pb) Exposure Results in Sex and Tissue-Dependent Adult DNA Methylation Alterations in Murine IAP Transposons. **Environmental and Molecular Mutagenesis**. Oct;58(8):540-550.  
—*Selected as the October 2017 issue Editor's Choice* —  
—*New Investigator Best Paper Award for 2017*—
- 2017      **Montrose, L.**, Ward, T.J., Brown, B., Cho, Y.H., and Noonan, C.W. Dietary intake is associated with respiratory health outcomes and DNA methylation in children with asthma. **Allergy, Asthma and Clinical Immunology**. Feb 27;13:12.
- 2017      Noonan, C.W., Semmens, E.O., Smith, P., Harrar, S., **Montrose, L.**, Weiler, E., Ballman, M., and Ward, T.J. Randomized trial of interventions in wood stove homes to improve childhood asthma. **Environmental Health Perspectives**. 125(9):097010.
- 2017      Christensen, S., Jaffar, Z., Cole, E., Porter, V., Ferrini, M., Postma, B., Pinkerton, K.E., Yang, M., Kim, Y.J., **Montrose, L.**, Roberts, K., Holian, A., and Cho, Y.H. Prenatal environmental tobacco smoke exposure increases allergic asthma risk with

- methylation changes in mice. **Environmental and Molecular Mutagenesis**. 58(6): 423-433.
- 2017 McCabe, C., Anderson, O.S., **Montrose, L.**, Neier, K., and Dolinoy, D.C. Sexually dimorphic effects of early-life exposures to endocrine disruptors: sex-specific epigenetic reprogramming as a potential mechanism. **Current Environmental Health Reports**. PMID:28980159. [Epub ahead of print]
- 2016 Kochmansk, J.J., **Montrose, L.**, Goodrich, J., and Dolinoy, D.C. Environmental Deflection: The Impact of Toxicant Exposures on the Aging Epigenome. **Toxicological Sciences**; 156(2): 325-335.
- 2016 Kochmansk, J.J., Savidge, M., Marchlewicz, L., **Montrose, L.**, Faulk, C., and Dolinoy, D.C. Longitudinal effects of perinatal bisphenol A exposure and variable diet on epigenetic drift in mice. **Reproductive Toxicology**; 68: 154-163.
- 2015 **Montrose, L.**, Noonan, C.W., Cho, Y. H., Lee, J., Harley, J., O'Hara, T., Cahill, C., and Ward, T.J. Evaluating the effect of ambient particulate pollution on DNA methylation in Alaskan sled dogs: Potential applications for a sentinel model of human health. **Science of the Total Environment**; 512-513C: 489-494.
- 2014 Ware, D., Lewis, J., Hopkins, S., Boyer, B., **Montrose, L.**, Noonan, C.W., Semmens, E., and Ward, T.J. Household reporting of childhood respiratory health and air pollution in rural Alaska Native communities. **International Journal of Circumpolar Health**; 73: 1-10.

## Other Publications

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- 2017 **Montrose, L.**, Goodrich, J., Dolinoy, D.C. ToxicEpigenetics and effects on life course disease susceptibility. In: *Translational Toxicology and Therapeutics: Windows of Developmental Susceptibility in Reproduction and Cancer*. M.D. Walters and C.L. Hughes ed., Wiley, In Press
- 2013 **Montrose, L.**, Brown, T., Ferguson, M., Moroney, M., and Ward, T.J. How to have a successful AWMA student chapter. In: *Environmental Manager*. (Magazine)

## Professional Development and Certifications

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- 2018 Workshop on "Building Capacity for Women's Health- Student Peer Review Training Program" through the Pre-Publication Peer Review Service (PREPPS), University of Michigan

- 2018 Center for Research on Learning and Teaching (CRLT) workshop on “Implementing Inclusive Teaching Principles in Your Courses”, University of Michigan
- 2017 Professional Development and Technical Writing course, University of Michigan School of Public Health
- 2015 Statistical Analysis with R Workshop, University of Michigan Center for Statistical Consultation and Research
- 2009 Registered Laboratory Animal Technologist (Certificate) - American Association for Laboratory Animal Science

## Service

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### Peer Review

- *Clinical Epigenetics*
- *Frontiers in Public Health*
- *PLOS ONE*
- *Mutation Research Reviews*
- *Science of the Total Environment*

### Committee Participation

- 2019 – Research and Funding Committee, Department of Community and Environmental Health
- 2019 Faculty Search Committee, Department of Community and Environmental Health
- 2018– 2019 Postdoctoral Representative of the Michigan Regional Chapter of Society of Toxicology
- 2017– 2018 Postdoctoral Representative, Department of Environmental Health Sciences Committee for Diversity, Equity, and Inclusion
- 2017 Planning Committee, University of Michigan Environmental Health Science Annual Symposium on “Scientific Outreach: Community Engagement and Environmental Justice”
- 2018 Planning Committee, University of Michigan Environmental Health Science Annual Symposium on “Microbiome and the Environment”
- 2014-2015 University of Montana College of Health Professions and Biomedical Sciences Dean’s Student Advisory Committee
- 2014 Planning Committee, Air & Waste Management Association Specialty Conference on “Strategies to Reduce Residential Wood Smoke”

## Professional Affiliations

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- 2019 – Boise State Chapter of Trout Unlimited 5 Rivers College Outreach Program (Faculty Advisor)

- 2019 – Boise State Chapter of American Society of Safety Professionals (Faculty Advisor)
- 2017 – Environmental Mutagenesis and Genomics Society
- 2011 – Society of Toxicology
- 2012 – 2015 State of Montana Chapter of Air & Waste Management Association (President 2013-2014)
- 2011 – 2015 University of Montana Chapter of Air & Waste Management Association (President 2012-2013)
- 2011 – 2015 Air & Waste Management Association
- 2009 – 2010 American Association of Laboratory Animal Science

## Academic Conference Abstracts

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### *Platform Presentations*

1. **Montrose, L.**, Padmanabhan, V., Goodrich, J.M., Meeker, J.D., Watkins, D.J., Treadwell, M.C., and Dolinoy, D.C. Maternal phthalate levels in the first trimester of pregnancy are associated with infant cord blood DNA methylation. *Michigan Regional Chapter of the Society of Toxicology Fall Meeting: Urban Environmental Influences on Metabolic Health. 2017.* Detroit, MI
2. **Montrose, L.**, Padmanabhan, V., Goodrich, J.M., Meeker, J.D., Watkins, D.J., Treadwell, M.C., and Dolinoy, D.C. Maternal phthalate levels in the first trimester of pregnancy are associated with infant cord blood DNA methylation. *Environmental Mutagenesis and Genomics Society Meeting on Environmental Health Sciences Bridging the Gap between Exposure, Mechanism and Public Health 2017.* Raleigh, NC
3. **Montrose, L.**, Brown, B., Putnam, E., Semmens, E., Cho, Y. H., Ward, T.J., Noonan, C.W. Epigenetics of wood smoke exposure and diet in child asthma. *Children's Environmental Health Network Conference 2015: Children, Food and the Environment.* Austin, TX
4. **Montrose, L.**, Ward, T.J., Brown, B., McNamara, M., Weiler, E., Hester, C., Noonan, C.W. Study Design: Wood smoke, diet, and childhood asthma. *University of Montana Graduate Student and Faculty Research Conference 2012.* Missoula, MT
5. **Montrose, L.**, Ward, T.J., Brown, B., McNamara, M., Weiler, E., Hester, C., Noonan, C.W. Indoor Residential Concentrations of Fine and Coarse Particulate Matter. *Pacific Northwest International Section (PNWIS) of the Air & Waste Management Association (A&WMA) - Cross-Border Air and Waste Solutions 2011.* Harrison Hot Springs, BC, Canada
6. **Montrose, L.**, Ward, T.J., Brown, B., McNamara, M., Weiler, E., Hester, C., Noonan, C.W. Environmental Basics: Particulate Matter (PM) 101. *Pacific Northwest International*



*Section (PNWIS) of the Air & Waste Management Association (A&WMA) - Cross-Border Air and Waste Solutions 2011. Harrison Hot Springs, BC, Canada*

7. **Montrose, L.,** Noonan, C.W. Establishing Capacity to Investigate Gestational Exposures and Epigenetics. *University of Montana Graduate Student and Faculty Research Conference 2011. Missoula, MT*

*Poster Presentations*

1. **Montrose, L.,** Padmanabhan, V., Goodrich, J.M., Meeker, J.D., Watkins, D.J., Treadwell, M.C., and Dolinoy, D.C. Maternal phthalate levels in the first trimester of pregnancy are associated with infant cord blood DNA methylation. *Society of Toxicology Annual Meeting 2018. San Antonio, TX*
2. **Montrose, L.,** Padmanabhan, V., Goodrich, J.M., Meeker, J.D., Watkins, D.J., Treadwell, M.C., and Dolinoy, D.C. Maternal phthalate levels in the first trimester of pregnancy are associated with infant cord blood DNA methylation. *University of Michigan Developmental Origins of Metabolic Syndrome Symposium 2017. Ann Arbor, Michigan*
3. **Montrose, L.,** Padmanabhan, V., Goodrich, J.M., Meeker, J.D., Watkins, D.J., Treadwell, M.C., and Dolinoy, D.C. Maternal phthalate levels in the first trimester of pregnancy are associated with infant cord blood DNA methylation. *Gordon Research Conference on Cellular and Molecular Mechanisms of Toxicity 2017. Andover, NH*
4. **Montrose, L.,** Francis, J., Faulk, C., and Dolinoy, D.C. Perinatal lead (Pb) exposure results in sex and tissue-dependent adult DNA methylation alterations in murine IAP transposons. *Society of Toxicology Annual Meeting 2017. Baltimore, MD*
5. **Montrose, L.,** Francis, J., Faulk, C., and Dolinoy, D.C. Perinatal lead (Pb) exposure results in sex and tissue-dependent adult DNA methylation alterations in two novel murine IAP transposons. *Society of Toxicology Contemporary Concepts in Toxicology: Toxicoepigenetics Meeting 2016. Tysons, VA*
6. **Montrose, L.,** Noonan, C.W., Cho, Y. H., Lee, J., Harley, J., O'Hara, T., Cahill, C., and Ward, T.J. Particulate matter exposure and global DNA methylation in Alaskan sled dogs: Sentinels for human health. *International Society of Environmental Epidemiology (ISEE) 2014. Seattle, WA*
7. **Montrose, L.,** Ward, T.J., Brown, B., McNamara, M., Weiler, E., Hester, C., Noonan, C.W. Epigenetics of wood smoke exposure and diet in child asthma. *The Children's Environmental Health Network- The contribution of Epigenetics in Pediatric Environmental Health 2012. San Francisco, CA*