OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

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| NAME: Lemas, Dominick |
| eRA COMMONS USER NAME (credential, e.g., agency login): dlemas |
| POSITION TITLE: Research Assistant Professor |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

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| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE (if applicable) | END DATE MM/YYYY | FIELD OF STUDY |
| University of Vermont, Burlington, Vermont | BS | 05/2006 | Molecular Biology |
| University of Alaska Fairbanks, Fairbanks, Alaska | PHD | 12/2012 | Biochemistry and Molecular Biology |
| University of Colorado Denver, Aurora, Colorado | Postdoctoral Fellow | 07/2015 | Computational Biology |

### A. Personal Statement

My research is devoted to understanding the fetal origins of pediatric obesity with a specific interest in maternal factors that influence the development of infant microbiome. During my undergraduate training, I acquired training in molecular biology, mass spectrometry and proteomic analyses. After graduating college, I took a position with the Alaska Area Indian Health Service Institutional Review Board (IRB) and received training in database management, ethical research practices, and technical writing. My doctoral training at the University of Alaska Fairbanks (UAF) was focused on understanding how interactions between diet and genetic factors influence obesity traits in rural Alaska Native communities. Working in the Center for Alaska Native Health Research at UAF, I acquired training in data collection, bioinformatics, molecular epidemiology and statistical genetics (see list of publications and abstracts). My post-doctoral training at University of Colorado Denver (UCD) extended my graduate training in statistical genetics and maternal-fetal biology and provided experience and training in computational biology and metagenomics. My funded F32 (F32-DK101179) generated novel data that was focused on maternal-infant metabolism and the microbial signatures by which infants gut metabolism is affected by the maternal host. As an independent investigator at UF College of Medicine, I integrate bioinformatics, germ-free models and human studies to understand the functional implications of gut microflora as well as identify the critical host-microbe interactions that contribute to pediatric obesity. The goal of my own NIH K01 proposal was to investigate how breast feeding informs the gut microbiome in vaginally and C-section delivered offspring from obese and normal weight mothers and identify the critical microbe-host interactions associated with infant adiposity during the first year of life. Accordingly, a long-term focus of my research at UF is to develop low-cost dietary interventions for pregnant overweight/obese mothers that target microbial-derived compounds with therapeutic potential to attenuate the transmission of obesity risk from mother to child, and so my focus remains on maternal and child health. For this K01 project, my role is to be a project advisor for the proposal components in which the PI will use Natural Language Processing (NLP) techniques to identify relevant Social Determinants of Health and information about substance exposures from unstructured Electronic Health Record (EHR) data.

### B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

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| --- | --- |
| 2015 - | Research Assistant Professor, University of Florida College of Medicine, Gainesville, FL |
| 2012 - 2015 | Postdoctoral Research Fellow, University of Colorado Anschutz Medical Campus, Aurora, CO |
| 2007 - 2012 | Graduate Research Assistant, University of Alaska Fairbanks, Fairbanks, AK |
| 2006 - 2007 | Professional Research Assitant, Alaska Native Tribal Health Consortium, Anchorage, AK |
| 2003 - 2006 | Undergraduate Research Assitant, University of Vermont, Burlington, VT |

Honors

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| --- | --- |
| 2016 - 2018 | Fellow, Keystone Symposia |
| 2008 - 2012 | Scholarship, Citizen Potawatomi Nation Scholarship |
| 2007 - 2010 | Scholarship, Alaska Native Tribal Health Consortium Scholarship |
| 2002 - 2006 | Scholarship, Indian Health Service Health Professions Scholarship |
| 2015 | Travel Award, American Diabetes Association National Meeting |
| 2015 | Participant, National Research Mentoring Network Grant Writing Workshop |
| 2015 | Awardee, ASN Emergin Leader in Nutrition Science Lactation RIS |
| 2015 | Travel Award, UAB 3rd Metabolomics Workshop |
| 2015 | Travel Award, Keystone Symposium on the Human Microbiome |
| 2014 | Travel Award, Keystone Symposium on the Human Microbiome |
| 2014 | Travel Award, NIH/NIDDK Microbiome-Host Interactions Workshop |
| 2013 | Travel Award, American Society for Biochemistry and Molecular Biology |
| 2012 | Travel Award, IDeA Symposium for Biomedical Research |

### C. Contribution to Science

1. My publications related to my doctoral training at the University of Alaska Fairbanks (UAF) were focused on gene-by-diet interactions and “healthy obesity” in Alaskan Native communities. Specifically, my dissertation research examined whether an individual’s genetic risk of developing obesity was modified by consumption of n-3 polyunsaturated fatty acids (n-3 PUFAs) in a cross-sectional cohort of Yup’ik people living in Southwest Alaska. These studies demonstrate that large-scale genomic surveys, such as linkage analyses and GWAS, have identified genetic variants that interact with dietary n-3 PUFA and partially account for the “missing heritability” attributed to obesity and may contribute to “heathy obesity”. Importantly, this research was supported by several research fellowships that translated into two first-author publication and a second author publication.
   1. Lemas DJ, Klimentidis YC, Aslibekyan S, Wiener HW, O'Brien DM, Hopkins SE, Stanhope KL, Havel PJ, Allison DB, Fernandez JR, Tiwari HK, Boyer BB. Polymorphisms in stearoyl coa desaturase and sterol regulatory element binding protein interact with N-3 polyunsaturated fatty acid intake to modify associations with anthropometric variables and metabolic phenotypes in Yup'ik people. Mol Nutr Food Res. 2016 Dec;60(12):2642-2653. PubMed Central PMCID: PMC5148654.
   2. Klimentidis YC, Lemas DJ, Wiener HH, O'Brien DM, Havel PJ, Stanhope KL, Hopkins SE, Tiwari HK, Boyer BB. CDKAL1 and HHEX are associated with type 2 diabetes-related traits among Yup'ik people. J Diabetes. 2014 May;6(3):251-9. PubMed Central PMCID: PMC3964139.
   3. Lemas DJ, Klimentidis YC, Wiener HH, O'Brien DM, Hopkins SE, Allison DB, Fernandez JR, Tiwari HK, Boyer BB. Obesity polymorphisms identified in genome-wide association studies interact with n-3 polyunsaturated fatty acid intake and modify the genetic association with adiposity phenotypes in Yup'ik people. Genes Nutr. 2013 Sep;8(5):495-505. PubMed Central PMCID: PMC3755132.
   4. Lemas DJ, Wiener HW, O'Brien DM, Hopkins S, Stanhope KL, Havel PJ, Allison DB, Fernandez JR, Tiwari HK, Boyer BB. Genetic polymorphisms in carnitine palmitoyltransferase 1A gene are associated with variation in body composition and fasting lipid traits in Yup'ik Eskimos. J Lipid Res. 2012 Jan;53(1):175-84. PubMed Central PMCID: PMC3243474.
2. In addition to my work that examines gene-by-environment interactions and obesity, I have several publications focused on understanding the dietary and environmental factors that contribute to pediatric obesity. Specifically, these studies demonstrate consumption of n-3 and n-6 PUFAs are associated with protection from pediatric obesity and that maternal obesity and gestational weight gain during pregnancy are associated with neonatal cardio-metabolic risk factors at delivery.
   1. Lemas DJ, Brinton JT, Shapiro AL, Glueck DH, Friedman JE, Dabelea D. Associations of maternal weight status prior and during pregnancy with neonatal cardiometabolic markers at birth: the Healthy Start study. Int J Obes (Lond). 2015 Oct;39(10):1437-42. PubMed Central PMCID: PMC4596750.
   2. Cardel M, Lemas DJ, Jackson KH, Friedman JE, Fernández JR. Higher Intake of PUFAs Is Associated with Lower Total and Visceral Adiposity and Higher Lean Mass in a Racially Diverse Sample of Children. J Nutr. 2015 Sep;145(9):2146-52. PubMed Central PMCID: PMC4548162.
3. During my post-doctoral training, I expanded my expertise to include the fetal origins of obesity with an emphasis on the development of the microbiome. The overall objective of my F32 project was to test how maternal obesity impact the infant’s microbiome, resulting in functional elements of the infant microbiome that will be associated with differences in adiposity during the first 4 months of life. Our first observations demonstrate that maternal obesity results in elevated fasting human milk (HM) insulin and leptin are associated with features of the infant microbiome that contribute to gut development and inflammation. Moreover, we have recently been asked to contribute to an invited review that will present an expanded view of the hypothesis that maternal obesity contributes directly to the function and structure of the maternal-infant microbiome, resulting in greater risk of pediatric obesity during early life.
   1. Lemas DJ, Yee S, Cacho N, Miller D, Cardel M, Gurka M, Janicke D, Shenkman E. Exploring the contribution of maternal antibiotics and breastfeeding to development of the infant microbiome and pediatric obesity. Semin Fetal Neonatal Med. 2016 Dec;21(6):406-409. PubMed PMID: 27424917.
   2. Lemas DJ, Young BE, Baker PR 2nd, Tomczik AC, Soderborg TK, Hernandez TL, de la Houssaye BA, Robertson CE, Rudolph MC, Ir D, Patinkin ZW, Krebs NF, Santorico SA, Weir T, Barbour LA, Frank DN, Friedman JE. Alterations in human milk leptin and insulin are associated with early changes in the infant intestinal microbiome. Am J Clin Nutr. 2016 May;103(5):1291-300. PubMed Central PMCID: PMC4841936.