CURRICULUM VITAE

Leah Moubadder, MPH

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EDUCATION

Aug 2020-Present **Doctor of Philosophy, Epidemiology**
Emory University, Laney Graduate School
Atlanta, GA
Advisor: Lauren McCullough, PhD
Dissertation: "The legacy of redlining on the burden of air quality and breast cancer outcomes."

May 2020 **Master of Public Health, Epidemiology**
Certificate, Genetic and Molecular Epidemiology
Emory University, Rollins School of Public Health
Atlanta, GA
Thesis: "Interactions of a polygenic risk score and polybrominated biphenyl exposure on age at menarche."
Advisor: Michele Marcus, PhD

December 2016 **Bachelor of General Studies in Individualized Studies**
Concentrations: Biochemistry and Organic Chemistry, Human Genetics and Pathology, Liberal Studies
Eastern Michigan University
Ypsilanti, MI

RESEARCH INTERESTS

Cancer, environmental health, structural inequities, causal inference

RESEARCH EXPERIENCE

May 2020-Jan 2022 **Emory University, Rollins School of Public Health, Department of Epidemiology**
Graduate Research Assistant (PI: Lauren McCullough, Ph.D.)
Atlanta, GA

- Conducted epigenome-wide association study (EWAS) in R for the effect of redlining on DNA methylation among women in metro-Atlanta
- Used Georgia Cancer Registry data and Cox regression models in SAS to evaluate socioeconomic, regional, and racial disparities in breast cancer mortality among women diagnosed with metastatic breast cancer in the state of Georgia
- Submitted a first-authored manuscript for submission to a scientific journal

Jan 2020-Jan 2021 **Emory University, Rollins School of Public Health, Department of Epidemiology**
Graduate Research Assistant (PI: Veronika Fedirko, Ph.D.)
Atlanta, GA

- Examined the effects of calcium and vitamin D supplementation on markers of inflammation among colorectal adenoma patients in a 2 x 2 factorial, multi-center randomized controlled trial
- Conducted a literature review on epidemiologic evidence and mechanistic models of inflammation markers in the context of colorectal adenoma recurrence

- Utilized SAS and linear mixed models to analyze the effect of calcium and/or vitamin D supplementation on inflammatory biomarkers
- Drafted first-authored scientific manuscript for submission to Cancer Prevention

May 2019-Aug 2020 **Winship Cancer Institute, Department of Hematology and Oncology**
Graduate Research Assistant (PIs: Lauren McCullough, Ph.D. & Chris Flowers, MD)
Atlanta, GA

- Investigated the role of adiposity in non-Hodgkin lymphoma prognosis using imaging-based assessments
- Merged, cleaned, and applied inclusion criteria to three lymphoma databases containing >1,800 observations
- Annotated disease characteristics, completed cancer staging, and linked patients to imaging using electronic medical records
- Served as the primary liaison to four departments at Rollins School of Public Health and Winship Cancer Institute
- Conducted literature review on the molecular pathogenesis of non-Hodgkin lymphoma, carcinogenesis from environmental exposures, and epidemiologic research on environmental exposures in non-Hodgkin lymphoma
- Published a first-authored manuscript reviewing epidemiologic and basic science research of environmental exposures and non-Hodgkin lymphoma subtypes

Dec 2018-Aug 2020 **Emory University, Rollins School of Public Health, Department of Epidemiology**
Graduate Research Assistant (PI: Michele Marcus, Ph.D.)
Atlanta, GA

- Oversaw a multigenerational study on the heritability of epigenetic marks associated with polybrominated biphenyl (PBB) exposure at the PBB Registry
- Lead recruitment, data management, and data collection of family lineages with three generations of PBB exposure assessment
- Evaluated the effectiveness of the questionnaire screening tool to ascertain PBB exposure status (compared against the gold standard: serum PBB levels). Utilized these data to develop a revised screening tool that is currently being implemented in fieldwork
- Screened and consented participants and processed biospecimen for multiple PBB studies during fieldwork community meetings in Michigan
- Developed a new recruitment strategy for the registry: cleaned and merged four different iterations of 1,600 health research interest forms, spanning from 2013 to present-day, and subsequently applied inclusion criteria to identify eligible participants for fieldwork

Sep 2018-Dec 2018 **Georgia Center for Cancer Statistics, Rollins School of Public Health**
Graduate Research Assistant (PIs: Timothy Lash, DSc and Kevin Ward, Ph.D.)
Atlanta, GA

- Study investigating the utility of multiple data streams in effectively adding cancer recurrence data to the Georgia Cancer Registry
- Conducted pilot project on the value of pathology data from Commission on Cancer hospitals in Georgia in identifying breast and colorectal cancer recurrences
- Presented pilot study at the annual meeting of American Association for Cancer Research

Feb 2017-Aug 2018 **University of Michigan School of Medicine, Department of Radiation Oncology – Cancer Biology**
Research Laboratory Specialist (PI: Corey Speers, MD, Ph.D.)
Ann Arbor, MI

- Led pre-clinical study of PARP1 inhibition in inflammatory breast cancer
- Created lab's first CRISPR/Cas9 cell lines and subsequently managed all CRISPR cell line development
- Investigated DNA repair mechanisms of a novel therapeutic target, TTK – a cell-cycle checkpoint kinase, in combination with radiation treatment in basal-like breast cancer
- Proficient in the following techniques: advanced tissue culture techniques, clonogenic and proliferation assays, bacterial transformation, western blotting, siRNA and shRNA transfection, RNA isolation, quantitative reverse transcription PCR, DNA sequence analysis, immunofluorescence imaging, and quantification of DNA damage response proteins
- Co-authored five published manuscripts
- Trained undergraduates on laboratory procedures and experimental designs

PROFESSIONAL EXPERIENCE

Jan 2016-Feb 2017 **Eversight Michigan**
Eye-Bank Laboratory Technician
Ann Arbor, MI

- A non-profit organization dedicated to the restoration of sight
- Evaluated donor medical records, social history, and post-mortem serologic tests for donor eligibility
- Assessed human ocular tissue for surgical transplantation
- Regularly collaborated with infectious disease practitioners, ophthalmologists, and primary care physicians to effectively determined donor eligibility

GRANTS

2022-2023 **The Legacy of Redlining on Air Quality and Breast Cancer Outcomes**
HERCULES Center's Pilot Project Core and the Winship Cancer Institute
Role: Doctoral Student (PI: McCullough)
Support to Leah Moubadder: $30,000

BIBLIOGRAPHY

Abstracts (Presenting Author)

1. Speers C, Chandler B, Olsen E, Wilder-Romans K, **Moubadder L**, Nyati S, Rae J, Hayes D, Spratt D, Wahl D, Feng FY, Eisner J, Pierce LJ. "Radiosensitization of androgen receptor (AR)-positive triple-negative breast cancer (TNBC) cells using seviteronel (INN-464), a selective CYP17 lyase and AR inhibitor." San Antonio Breast Cancer Symposium, San Antonio, TX. December 2017.
2. Chandler B, **Moubadder L**, Ritter C, Niknafs Y, Olsen E, Cameron M, Liu M, Wilder-Romans K, Nyati S, Brown P, Chinnaiyan A, Speers C. "TTK: A novel target for radiosensitization in triple-negative breast cancers." AACR Annual Meeting 2018, Chicago, IL. Cancer Research.
3. Nyati S, Chandler B, Olsen E, **Moubadder L**, Liu M, Cameron M, Wilder-Romans K, Lawrence TS, Brown P, Feng FY, Pierce LJ, Speers C. "Maternal embryonic leucine zipper kinase (MELK) confers radioresistance in triple-negative breast cancers (TNBC) through a non-homologous end joining (NHEJ) mediated pathway." AACR Annual Meeting 2018, Chicago, IL. Cancer Research.
4. Speers C, Chandler B, Olsen E, **Moubadder L**, Thomas D, Liu M, Griffith K, Bellon JR, Woodward WA, Horton JK, Ho AY, Overmoyer B, Sabel MS, Schott AF, Feng FY, Pierce LJ, Jagsi R. "Gene Expression Changes Predict Acute and Late Toxicity to Combined PARP1 Inhibition and Radiation (RT) in High-

Risk Breast Cancer Patients – Results of Biomarker Analysis of TBCRC 04." ASTRO Annual Meeting 2018. International Journal of Radiation Oncology.

5. B Chandler, S Nyati, C Ritter, **L Moubadder**, E Olsen, A Michmerhuizen, A Pesch, K Wilder-Romans, L Pierce, A Chinnaiyan, C Speers. "Targeting checkpoint kinases for the more effective treatment of radioresistant aggressive breast cancers". European Journal of Cancer, 2018.
6. **Moubadder L**, Chang A, Ward KC, Lash TL. "Registering cancer recurrence in a population-based registry: the value of pathology data." AACR Annual Meeting 2019, Atlanta, GA. Cancer Research.
7. Chandler B, **Moubadder L**, Ritter C, Wilder-Romans K, Cameron M, Liu M, Nyati S, Pesch A, Michmerhuizen A, Olsen E, Niknafs Y, Chinnaiyan A, Speers C. "Nomination and characterization of TTK for radiosensitization in basal-like breast cancers." AACR Annual Meeting 2019, Atlanta, GA. Cancer Research.
8. Michmerhuizen A, Pesch A, **Moubadder L**, Cameron M, Zhang A, Hirsh N, Liu M, Wilder-Romans K, Pierce LJ, Jagsi R, Speers C. "PARP inhibition as a radiosensitizing strategy to improve locoregional control in inflammatory breast cancer." AACR Annual Meeting 2019, Atlanta, GA. Cancer Research.
9. Nyati S, Chandler B, Michmerhuizen A, Pesch A, Ritter C, **Moubadder L**, Liu M, Cameron M, Olsen E, Wilder-Romans K, Dipankar R, Lawrence TS, Feng FY, Pierce LJ, Speers C. "Discovery of degradation pathway for maternal embryonic leucine zipper kinase (MELK): Implications for breast cancer therapy." AACR Annual Meeting 2019, Atlanta, GA. Cancer Research
10. B Chandler, C Ritter, **L Moubadder**, M Cameron, M Androsiglio, S Nyati, M Liu, E Olsen, LJ Pierce, A Chinnaiyan, C Speers. "Inhibition of TTK As a Novel Radiosensitization Target in Triple-Negative Breast Cancer That Acts through Impaired Homologous Recombination Repair Efficiency". International Journal of Radiation Oncology, Biology, Physics. September 2019.
11. Miller-Kleinhenz JM, **Moubadder L**, Beyer KM, Zhou Y, Gaglioti AH, Gohar J, Collin LJ, Henry K, Conneely KM, Krishnamurti U, D'Angelo O, Gogineni K, Torres M, Gabram-Mendola S, McCullough LE. "Neighborhood-level redlining-associated methylation in breast tumors: The impact of structural racism on the tumor epigenome". AACR 2021. Cancer Research.
12. **Moubadder L**, Collin LJ, Nash R, Switchenko JM, Miller-Kleinhenz JM, Gogineni K, Ward KC, McCullough LE. "Drivers of racial, regional, and socioeconomic disparities in metastatic breast cancer mortality". AACR Annual Meeting 2022, New Orleans, LA. Cancer Research.

Publications (†Authors contributed equally as shared first authors)

1. Michmerhuizen AR†, Pesch AM†, **Moubadder L**, Chandler BC, Wilder-Romans K, Cameron M, Olsen E, Thomas DG, Zhang A, Hirsh N, Ritter CL, Liu M, Nyati S, Pierce LJ, Jagsi R, Speers C. PARP1 Inhibition Radiosensitizes Models of Inflammatory Breast Cancer to Ionizing Radiation. Mol Cancer Ther. 2019 Nov;18(11):2063-2073. doi: 10.1158/1535-7163.MCT-19-0520. Epub 2019 Aug 14. PMID: 31413177; PMCID: PMC6825563.
2. Chandler BC**, Moubadder L**, Ritter CL, Liu M, Cameron M, Wilder-Romans K, Zhang A, Pesch AM, Michmerhuizen AR, Hirsh N, Androsiglio M, Ward T, Olsen E, Niknafs YS, Merajver S, Thomas DG, Brown PH, Lawrence TS, Nyati S, Pierce LJ, Chinnaiyan A, Speers C. TTK inhibition radiosensitizes basal-like breast cancer through impaired homologous recombination. J Clin Invest. 2020 Feb 3;130(2):958-973. doi: 10.1172/JCI130435. PMID: 31961339; PMCID: PMC6994133.
3. Michmerhuizen AR, Chandler B, Olsen E, Wilder-Romans K, **Moubadder L**, Liu M, Pesch AM, Zhang A, Ritter C, Ward ST, Santola A, Nyati S, Rae JM, Hayes D, Feng FY, Spratt D, Wahl D, Eisner J, Pierce LJ, Speers C. Seviteronel, a Novel CYP17 Lyase Inhibitor and Androgen Receptor Antagonist, Radiosensitizes AR-Positive Triple Negative Breast Cancer Cells. Front Endocrinol (Lausanne). 2020 Feb 11;11:35. doi: 10.3389/fendo.2020.00035. PMID: 32117061; PMCID: PMC7027396.
4. **Moubadder L**, McCullough LE, Flowers CR, Koff JL. Linking Environmental Exposures to Molecular Pathogenesis in Non-Hodgkin Lymphoma Subtypes. Cancer Epidemiol Biomarkers Prev. 2020 Oct;29(10):1844-1855. doi: 10.1158/1055-9965.EPI-20-0228. Epub 2020 Jul 29. PMID: 32727723; PMCID: PMC7541593.

5. Speers C†, Chang SL†, Pesch A, Ritter C, Olsen E, Chandler B, **Moubadder L**, Liu M, Cameron M, Michmerhuizen A, Wilder-Romans K, Zhao SG, Nyati S, Bartelink H, Feng FY, Pierce LJ. A Signature That May Be Predictive of Early Versus Late Recurrence After Radiation Treatment for Breast Cancer That May Inform the Biology of Early, Aggressive Recurrences. Int J Radiat Oncol Biol Phys. 2020 Nov 1;108(3):686-696. doi: 10.1016/j.ijrobp.2020.05.015. Epub 2020 May 17. PMID: 32434041.
6. LJ Collin, Ross-Driscoll K, Nash R, Miller-Kleinhenz JM, **Moubadder L**, Osborn C, Subhedar PD, Gabram-Mendola S, Switchenko JM, Ward KC, McCullough LE. Surgical delay and quality of care as potential drivers of racial disparities in breast cancer mortality. *Under submission at JAMA Surgery.*
7. **Moubadder L**, Latash J, Bostick RM, Baron JA, Barry EL, Rutherford RE, Seabrook ME, Fedirko V. Effects of Supplemental Calcium and Vitamin D on Circulating Biomarkers of Inflammation in Colorectal Adenoma Patients: A Randomized Clinical Trial. *Manuscript in preparation for submission to Cancer Prevention.*
8. **Moubadder L**, Collin LJ, Nash R, Switchenko JM, Miller-Kleinhenz JM, Gogineni K, Ward KC, McCullough LE. Drivers of racial, regional, and socioeconomic disparities in late-stage breast cancer mortality. *Under submission at Cancer.*
9. Miller-Kleinhenz J, **Moubadder L**, Gohar J, Conneely K, McCullough LE. Neighborhood-level Redlining-associated methylation in breast tumors: the impact of structural racism on the tumor epigenome. *Under submission at JNCI.*

TEACHING EXPERIENCE

Jan 2022-Present — **Emory University, Rollins School of Public Health, Department of Epidemiology**

Graduate Teaching Assistant –EPI 560: Epidemiologic Methods IIII

- Core methods course for epidemiology majors focused on advanced methods such as causal inference, longitudinal data, and survival analysis
- Taught weekly lab section of 20 MPH, MSPH, and Ph.D. students
- Lead discussion on course concepts and practice problems
- Maintained weekly office hours for one-on-one instruction and assistance in the course material

Jan 2021-April 2021 — Graduate Teaching Assistant –EPI 540: Epidemiologic Methods II

- Core methods course for epidemiology majors focused on methods such as sources of bias, mediation analysis, and basics of causal inference
- Taught weekly lab section of 18 MPH/MSPH students
- Lead discussion on course concepts and practice problems
- Maintained weekly office hours for one-on-one instruction and assistance in the course material

Aug 2020-Dec 2020 — Graduate Teaching Assistant –EPI 550: Epidemiologic Methods III

- Core methods course for epidemiology majors that covers four main types of regression used to analyze epidemiologic data with independent outcomes (logistic regression, survival analysis, log-binomial regression, and Poisson regression)
- Taught weekly lab section of 19 MPH/MSPH students
- Lead discussion on course concepts and practice problems
- Maintained weekly office hours for one-on-one instruction and assistance in the course material

Jan 2020-May 2020 — Graduate Teaching Assistant –EPI 585: Advanced Topics in Cancer Epidemiology

- Elective course focused on molecular epidemiologic investigations in cancer
- Assisted in designing course structure
- Developed and maintained course Canvas site
- Graded exams and assignments and provide feedback

- Held weekly office hours for one-on-one instruction and assistance in the course material

Aug 2019-Dec 2019 Graduate Teaching Assistant –EPI 530: Epidemiologic Methods I

- Core introductory methods course for epidemiology majors
- Taught weekly lab section of 24 MPH/MSPH students
- Lead discussion on course concepts and practice problems
- Maintained weekly office hours for one-on-one instruction and assistance in the course material

GUEST LECTURES

Spring 2022 **Emory University, Rollins School of Public Health**
EPI560 – Epidemiologic Methods IIII
Title: "Identifiability assumptions for complex longitudinal data"

Spring 2022 **Emory University, Rollins School of Public Health**
EPI 561 – Methods in Obesity Epidemiology
Title: "Structural Determinants of Environmental Exposures"

Spring 2021 **Spelman University**
BIO 319 – Social Epigenomics
Title: "How Physical & Social Environments Can Get "Under the Skin": Mechanisms of action related to environmental cues and biological pathways."

MENTORSHIP

Spring 2021-Present **Jackie Lanning**
MPH, Epidemiology, Emory University
Thesis title: Neighborhood Redlining and Air Pollution Exposure

- Co-mentored with Lauren McCullough, PhD

Fall 2020-May 2021 **Isatou Joof**
MPH, Epidemiology, Emory University
Thesis title: Area-level Incarceration as a Driver of Prostate Cancer Mortality

- Co-mentored with Lauren McCullough, PhD

MEDIA

March 2022 **Interview**: Historical redlining and environmental hazards
NPR WABE Atlanta

SERVICE

Peer review

- *Annals of Epidemiology*