

Anna K. Miller

Case Western Reserve University
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Education

- Ph.D. Genetic & Genomic Sciences, 2018-now
Case Western Reserve University, Cleveland, OH
Dr. Scott M. Williams
- B.A. Biology and Music, 2018
Albion College, Albion, Michigan

Experience

Graduate Student 07/2018-present
Case Western Reserve University

H. Pylori co-evolution in humans

Emergency Relief Intern 03/2020 to 07/2020
Broadstreet + COVID-19 data project

Albion College Student Researcher 09/2014 to 05/2018
Albion College, Albion MI

Genetics, Dr. Ken Saville and Dr. Brad Cavinder

-Studied the position of HOP8 within the P-element of *Drosophila melanogaster* using PCR and transposon display to visualize how DNA repairs: homologous recombination or non-homologous end joining

Ornithology, Dr. Dale Kennedy

-Performed field work on nesting house wrens by recording their nocturnal sleeping and preening activity, and compiling data using Excel

Brandeis REU Molecular and Cellular Visualization 5/2017 to 8/2017
Brandeis University, Waltham, MA, Dr. Michael Marr

-Studied FOXO mammalian embryonic kidney cells by creating nonfunctional cell lines with exons of FOXO1, 3, and 4 removed by CRISPR-Cas9. The cell lines were tested using PCR and T7 endonuclease digestion assays to determine that the cell lines were mutants and will be used for transcriptional assays

Summer Research Student

5/2016 to 7/2016

Henry Ford Hospital, Detroit, MI, Dr. Zhenggang Zhang

-Performed tissue preparation, western blots, cell staining, animal sacrifice, and behavioral testing to study how exosomes affect neuronal repair from strokes

Funding Sources/Grants Awarded

Biometric Genetic Analysis of Cardiopulmonary Disease T32

July 2019

Awards

CWRU School of Medicine PhD Student Leadership Award

November 2020

Charles J. Epstein Trainee Awards for Excellence in Human Genetics Research -Semifinalist

August 2020

Graduate Student Appreciation Award

May 2020

Teaching Experience

Introduction to Epidemiology

Fall 2019, Fall 2020

-Led discussions about topics in epidemiology to undergraduate students

Spoken English Program

August 2020

-Led and planned classes to improve pronunciation, vocabulary, and an understanding of United States culture for incoming Law students

Virus Hunters

Fall 2015 and 2017

-Assisted in rudimentary technique and poster preparation and prepared reagents for all classes for a first-year seminar course

Science Writing

The Nascent Transcript Writer

Winter 2019

-Trainee Newsletter that covers topics including science careers, policy/advocacy, and science features

AC Review of Books': Book Reviewer

Winter 2019

The Joy of Statistics

American Society of Human Genetics (ASHG) Blog Contributor

Fall 2019

-Interview scientists through "How I Work" page

Professional Outreach and ServiceGraduate Student Council (GSC)

Case Western Reserve University

President

June 2021

-Led the team to advocate for student needs and provide community

Director of Advocacy

June 2020

- Advocated for student's academic and student life needs
- Planned programming to fill student needs

Biomedical Graduate Student Symposium (BGSS)

School of Medicine, Case Western Reserve University

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| Fundraising | Dec 2021 |
| Co-chair | Dec 2020 |
| Advertising | May 2019 |
| -Spread flyers and information on campus, in faculty meetings, and student club meetings | |
| Abstract Book | May 2019 |
| -Acquired abstracts and compiled book | |

Women in Science and Humanities Earning PhDs (WISHED)

Flora Stone Mather Women's Center, Case Western Reserve University

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| Communications Chair | January 2019 |
| -Developing and sharing information and resources to increase membership and retention across campus, maintaining social media accounts, and working as a liaison with other groups | |
| Secretary | February 2019 |
| -Recording activities, minutes, and distributing information to board and all members | |

Biomedical Graduate Student Organization (BGSO)

School of Medicine, Case Western Reserve University

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| President | June 2019 |
| -Facilitated/organized meetings and attended Faculty Council Meetings | |
| Graduate Student Council Representative | June 2019 |
| -Attended monthly council meetings and relayed information | |

Science Riot

Cleveland Natural History Museum

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| Learned the basis of comedy writing and performance through science communication workshops and performed to a live audience | October 2019 |
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DNA Day

School of Medicine, Case Western Reserve University

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| School Liaison | January 2019 |
| -Contacted teachers to bring DNA Day to their science classes | |

Sciencepalooza!

School of Medicine, Case Western Reserve University

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| Committee Member | October 2019 |
| -Encouraged and assisted graduate student groups to attend | |

Girls Take Flight

NASA/Case Western Reserve University

April 2019

-Performed hands-on demonstrations and activities to elementary school-aged girls to give them exposure to aerospace science and STEM

SEO/YES Poster Session

Graduate Student Judge

July 2019

-Judged posters of high school students and gave feedback

Publications

Miller AK, Chen A, Bartlett J, Wang L, Williams SM, Buchner DA. A novel mapping strategy utilizing mouse chromosome substitution strains identifies multiple epistatic interactions that regulate complex traits. *G3*. 2020;10(12):4553-4563. doi: <https://doi.org/10.1534/g3.120.401824>

Miller AK, Azhibekov T, O'Toole JF, Sedor JR, Williams SM, Redline RW, Bruggeman LA. Association of preeclampsia with infant APOL1 genotype in African Americans. *BMC Med Genet*. 2020;21(1):110. doi:10.1186/s12881-020-01048-4

Miller, A.K., Williams, S.M. *Helicobacter pylori* infection causes both protective and deleterious effects in human health and disease. *Genes Immun* (2021). <https://doi.org/10.1038/s41435-021-00146-4>

Miller AK, Tavera G, Dominguez RL, Camargo MC, Waterboer T, Wilson KT, Williams SM, Morgan DR. Ornithine decarboxylase and gastric cancer risk in Honduras. *Accepted*

Local Special Lectures Seminar

2020 University Hospital Genetics Ground Rounds: "Epistatic regulation of hematological-related traits and gene expression in mice reveals additional heritability missed by standard GWAS-type analyses"

2020 Student Recruitment Weekend: "The Co-evolution of *H. pylori* and Humans"

2019 Journal Club Presentation: "Retweeting Science: Peer reviewed or Twitter reviewed?"

2019 Journal Club Presentation: "Phenome-wide Burden of Copy-Number Variation in the UK Biobank"

Contributed Oral Presentations

Miller AK., Williams SM., Buchner DA. "Revealing heritability missed by single locus analyses by examining epistasis in mouse chromosome substitution strains"; American Society of Human Genetics. Online, October 2020

Miller AK., O'Toole J., Sedor J., Williams S, Redline R., Bruggeman L. "The Association of APOL1 Genotype and Pathological Factors with Preeclampsia Risk in Black Women"; North Coast Conference on Precision Medicine, Cleveland, OH, September 2020

Miller AK., Chen A., Barlett J., Wang Li., Williams SM., Buchner DA. "Revealing heritability missed by single locus analyses by examining epistasis in mouse chromosome substitution strains"; Genetics Trainee Seminar, Cleveland, OH, July 2020

Miller AK., Saville K. "The Effect of Hobo Transposon Excision on DNA repair in *Drosophila melanogaster*"; Albion Biology Symposium, Albion, MI, April 2017 & 2018

Miller AK., Saville K. "The Effect of Hobo Transposon Excision on DNA repair in *Drosophila melanogaster*"; Elkin Isaac Symposium, Albion, MI, April 2018

Contributed Poster Presentations

Miller AK, Tavera G, Dominguez RL, Wilson KT, Williams SM, Morgan DR. Ornithine decarboxylase (*ODC1*) gene variants are associated with gastric cancer and independent of cag-a status: an opportunity for DFMO chemoprevention. Digestive Disease Week. May 2021.

Miller AK, Morgan D, Williams SM. "Driving Gastric Cancer Risk: the Association of Human Gene Variants in a Honduran High Gastric Cancer Incidence Region."; Biomedical Graduate Student Symposium. Online. November 2020

Miller AK, Morgan D, Williams SM. "Driving Gastric Cancer Risk: the Association of Human Gene Variants in a Honduran High Gastric Cancer Incidence Region."; Wellcome Trust: Exploring Human Host-Microbiome interactions in Health and Disease. Online. October 2020

Miller AK., Chen A., Barlett J., Wang Li., Williams SM., Buchner DA. "Revealing heritability missed by single locus analyses by examining epistasis in mouse chromosome substitution strains"; Genetics and Genome Science Annual Poster Session, Cleveland, OH, June 2020

Miller AK., Chen A., Barlett J., Wang Li., Williams SM., Buchner DA. "Epistatic Regulation of Hematological-related Traits and Gene Expression in Mice Reveals Additional Heritability Missed by Standard GWAS-type Analyses"; Epi Lifestyle Phoenix, Arizona, March 2020

Miller AK., O'Toole J., Sedor J., Williams S, Redline R., Bruggeman L. "The Association of APOL1 Genotype and Pathological Factors with Preeclampsia Risk in Black Women"; Biomedical Graduate Student Symposium, Cleveland, OH, October 2019

Miller AK., O'Toole J., Sedor J., Williams S, Redline R., Bruggeman L. "The Association of APOL1 Genotype and Pathological Factors with Preeclampsia Risk in Black Women"; American Society of Human Genetics Poster Session, Houston, TX, October 2019

Miller AK., O'Toole J., Sedor J., Williams S, Redline R., Bruggeman L. "The Association of APOL1 Genotype and Pathological Factors with Preeclampsia Risk in Black Women"; Genetics and Genome Science Annual Poster Session, Cleveland, OH, May 2019

Miller AK., Saville K. "The Effect of Hobo Transposon Excision on DNA repair in *Drosophila melanogaster*"; American Society of Biochemistry and Molecular Biology, San Diego, CA, April 2018- Travel Award Winner

Miller AK., Saville K. "The Effect of Hobo Transposon Excision on DNA repair in *Drosophila melanogaster*"; Elkin Isaac Symposium, Albion, MI, April 2017

Miller AK., Gartland S., Marr M. "FOXO Clones: CRISPR Cuts or Wild-Type"; Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ, November 2017

Miller AK., Gartland S., Marr M. "FOXO Clones: CRISPR Cuts or Wild-Type"; Brandeis SciFest, Waltham, MA, August 2017