

# Freddy Barragan

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## EDUCATION

**PhD, Biostatistics**, University of Washington, Seattle

September 2022 - Present

**BA, Statistics**, Macalester College, Saint Paul, *Magna Cum Laude*

August 2018 - May 2022

**Departmental Honor Thesis:** *Statistical Genetics for Pediatric Leukemia: Characterizing racial disparities in pediatric acute lymphoblastic leukemia*

**Selected Coursework:** Bayesian Statistics, Statistical Machine Learning, Correlated Data, Epidemiology

## WORK EXPERIENCE

**Researcher 1**, University of Minnesota, Minneapolis, MN

May 2022 - September 2022

- Mentors: Dr. Lindsay Williams and Dr. Lauren Mills
- Implementing demographic analysis and survival modeling to study treatment and survival disparities in young, adult, and elderly patients with Osteosarcoma in R. Population data accessed from the National Cancer Database (NCDB).
- Integrating differential gene expression, penalized regression, and survival modeling to study sex-based disparities in acute lymphoblastic leukemia and acute myeloid leukemia.
- Routine technical manuscript writing and preparation.

**Research Intern**, University of Minnesota, Minneapolis, MN

June 2020 - May 2022

- Mentors: Dr. Kelsey Grinde, Dr. Logan Spector, Dr. Lindsay Williams, and Dr. Lauren Mills.
- Performed demographic and differential gene expression analysis in 5 major pediatric cancers using TARGET & PeCan datasets via linear regression, empirical Bayes, and random forest classification in R.
- Conducted survival analyses in 17 different pediatric cancers using SEER datasets in R. Confirmed evidence of survival differences by race & sex in 11 different cancers, with publication pending.
- Independently scraped public data repositories and created an in-group directory of big genomic data using Python, R, and LINUX.

**Mann-Hill Research Fellow**, Macalester College, St. Paul, MN

June 2021 - August 2021

- Mentors: Dr. Kelsey Grinde, Dr. Logan Spector, Dr. Lindsay Williams, and Dr. Lauren Mills.
- Used admixture methods and ancestral inference to clarify the basis of major survival disparities by race/ethnicity in pediatric B-ALL using TARGET & PeCan datasets with R, RFMix, BASH and Python.
- Awarded scholarship to attend the University of Washington Department of Biostatistics's Summer Institute in Statistical Genetics.

**Preceptor**, Macalester College, St. Paul, MN

August 2019 - May 2022

- Helped instructors teach courses on Applied Multivariable Calculus (MATH 135), Introduction to Statistical Modeling (STAT 155), and Statistical Machine Learning (STAT 253).
- Hosted twice-weekly office hours, graded, and worked intimately with students to develop their fluency in study design, statistical models, and machine learning in R.
- Most recently helped 30-65 students implement and describe advanced regression, classification, PCA, and other unsupervised ML techniques in R and RMarkdown for semester-long projects.

## AWARDS, GRANTS, AND FELLOWSHIPS

- **Bill & Melinda Gates Foundation ARCS Endowed Fellowship**, ARCS Foundation, Seattle 2022
- **Excellence Award**, University of Washington, Department of Biostatistics 2022
- **Pat Wahl Award**, University of Washington, Department of Biostatistics 2022
- **Bressoud Prize**, Macalester College, Department of MSCS 2022
- **Research Supplements to Promote Diversity in Health-Related Research (PA-21-071)**, NCI 2022  
Parent Grant: *Admixture Analysis of Acute Lymphoblastic Leukemia in African American Children: the ADMIRAL Study (NIH R01 CA239701-01A1S1)*
- **Mann-Hill Research Fellowship**, Macalester College 2021
- **Best Video Poster**, Electronic Undergraduate Statistics Research Conference 2022
- **Catharine-Lealtad Scholarship**, Macalester College 2018

## PUBLICATIONS

1. **Barragan, F., Mills, L., Raduski, A., Marcotte, E., Grinde, K., Spector, L., Williams, L.**, “Genetic Ancestry, differential gene expression, and survival in pediatric B-cell acute lymphoblastic leukemia”, *Cancer Medicine* (forthcoming)
2. **Barragan, F., Moore, K., Williams, L.**, “Survival disparities for childhood cancers exist when defined by race/ethnicity and sex.”, *Cancer Epidemiology* (forthcoming)

## RESEARCH PRESENTATIONS

1. **Barragan, F., Mills, L., Raduski, A., Marcotte, E., Spector, L., Grinde, K., Williams, L.**, “Genetic Ancestry, gene expression, and survival in children with B-cell acute lymphoblastic leukemia”. Contributed poster at 2022 Pediatric Research, Education, & Scholarship Symposium, Virtual.
2. **Barragan, F., Mills, L., Raduski, A., Marcotte, E., Spector, L., Grinde, K., Williams, L.**, “Gene Expression Differences by Race and Genetic Ancestry in B-Cell Acute Lymphoblastic Leukemia”. Contributed poster at American Society for Human Genetics 2021 Annual Meeting, Virtual.
3. **Barragan, F., Mills, L., Raduski, A., Marcotte, E., Spector, L., Grinde, K., Williams, L.**, “Characterizing Racial Disparities in Pediatric Cancer: Ancestry, Gene Expression, and Survival Disparities in B-Cell Acute Lymphoblastic Leukemia”. Contributed poster at Underrepresented Students in STEM Symposium 2021, Minneapolis, MN.
4. **Barragan, F., Mills, L., Raduski, A., Marcotte, E., Spector, L., Grinde, K., Williams, L.**, “Statistical Methods for Pediatric Leukemia: Gene Expression & Ancestry in B-Cell Acute Lymphoblastic Leukemia”. Contributed poster at Macalester Summer Research Showcase 2021, Saint Paul, MN.
5. **Barragan, F., Moore, K., Williams, L.**, “Survival disparities for some childhood brain tumors exist when defined by race/ethnicity and sex”. Contributed poster at Neuro-Oncology Symposium Conference 2021, Minneapolis, MN.
6. **Barragan, F., Mills, L., Spector, L., Williams, L.**, “Gene Expression & Clinical Differences in Pediatric Neuroblastoma by Sex”. Video presentation at Electronic Undergraduate Statistics Research Conference 2020.

## SERVICE & LEADERSHIP

- CGH Steering Committee Member**, Macalester College, St. Paul, MN September 2020 - April 2022
- Senior student representative for 59 Community & Global Health (CGH) concentrators that advocated for student needs to the academic board.

- Organized and hosted academic panels and webinars and community outreach events to connect potential students with other CGH concentrators and CGH faculty.
- Presented at community outreach events, lectures, and new student orientations to help guide CGH concentrators through the internship process.

**WMCN 91.7 FM Station Staff**, Macalester College, St. Paul, MN

**January 2019 - December 2021**

- Organize event-programming and trained shows dedicated to international music, as a senior staff member of a FM radio station.
- Independently designed and implemented new training programs in September 2019 for beginning DJs.

**MACCESS Coordinator**, MPIRG, St. Paul, MN

**October 2018 - November 2020**

- Lead coordinator of an independent admissions and college counseling event for 50 first-generation, low-income, high school students of color from the Twin Cities' Public School District. 2019-2021 Sessions cancelled due to COVID-19.
- Collaborated with faculty to provide an introductory Computational Linear Algebra lecture on facial recognition software for 24 attendees interested in Computer Science and Mathematics.

## SKILLS

**Technical:** Highly Proficient in R; Proficient in Git and Excel; Familiar with Python, SQL, RShiny, & Mathematica

**Spoken Languages:** English (Native), Spanish (Bilingual Proficiency)

## CERTIFICATIONS AND COURSES

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|---|-------------|
| • <b>Computational Pipeline for WGS Data</b> , SISG, University of Washington           | <b>2021</b> |
| • <b>Bayesian Statistics for Genetics</b> , SISG, University of Washington              | <b>2021</b> |
| • <b>Association Mapping: GWAS and Sequencing Data</b> , SISG, University of Washington | <b>2021</b> |

## PROFESSIONAL MEMBERSHIPS

- **American Statistical Association (ASA)**
- **International Society for Bayesian Analysis (ISBA)**
- **Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)**