Kiana Lee Martinez

Postdoctoral Research Associate
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EDUCATION

- **Doctor of Philosophy in Genetics** **August 2021**
  University of Arizona, Tucson, AZ

- **Bachelor of Science in Anthropology** **May 2016**
  University of Arizona, Tucson, AZ

RESEARCH EXPERIENCE

Postdoctoral Research Associate I
College of Pharmacy, University of Arizona, Tucson, AZ
PI: Jason Karnes, PharmD, PhD
August 2021 – present

The Karnes Lab's primary area of research is cardiovascular pharmacogenomics, specifically investigating the utility of genetic polymorphisms to predict toxicities of cardiovascular drugs. We employ a translational approach to investigate pharmacogenomic associations using observational studies, functional genomics techniques, and prospective clinical trials. As a postdoctoral research associate in this lab, I primarily utilize genomics and clinical data to conduct genome-wide association studies (GWAS) and phenome-wide association studies (PheWAS) on recruited participant data as well as the data provided by the *All of Us* Research Program. In additional to conducting statistical analyses and performing data visualization, I also established pipelines that include data quality control, imputation, phasing, and downstream analyses utilizing Python, R, and other bioinformatic software. Additionally, I perform data stewardship duties, write and apply to grants, and oversee and mentor students.

Graduate Researcher
University of Arizona Cancer Center, University of Arizona, Tucson, AZ
PI: Christina Laukaitis, MD, PhD
March 2017 – August 2021

My primary project focused on identifying genetic risk factors associated with the hypermobile subtype of Ehler-Danlos Syndrome. My responsibilities included interacting with patients, developing and executing relevant experiments, overseeing and mentoring undergraduate researchers, writing and applying to grants, data management, and utilizing exome and genome sequence data with bioinformatics tools. I performed genetic analyses such as linkage analysis and assembled bioinformatics pipelines on high performance computing (HPC) clusters that utilize software such as SAMtools, BAMtools, VCFtools, Picard Tools, GATK, ANNOVAR, and R. A secondary project focused on investigating evolutionary genetics and genome instability using mouse models. As part of my lab work, I handled mice, conducted PCR and real-time quantitative PCR, and prepared samples for both genome sequencing and RNA-sequencing.

Graduate Researcher at Casey Romanoski's Lab, BIO5 Institute
BIO5 Institute, University of Arizona, Tucson, AZ
PI: Casey Romanoski, PhD
January - March 2017

The Romanoski Lab focuses on identifying how cells achieve context-appropriate expression patterns and signal responsiveness by utilizing experimental and computational methods. During my rotation in this lab, I worked on identifying eQTLs from RNA-seq data collected from aortic endothelial cell lines. I used the software program Probabilistic Estimation of Expression Residuals (PEER) through R.

Graduate Researcher at Donata Vercelli's Lab, Arizona Respiratory Center
Arizona Respiratory Center, University of Arizona, Tucson, AZ
PI: Donata Vercelli, PhD
August - December 2016

The Vercelli Lab focuses on investigating genetic and environmental determinants of complex lung diseases such as asthma. During my rotation in this lab, I explored possible protective effects of dust exposure by exposing dust collected from Amish homes to mice models and observed lymphocyte expression using flow cytometry. I also started DNA methylation profiles for the *IL4* human gene locus.

Undergraduate Researcher at Michael Hammer's Lab, University of Arizona Genetics Core
University of Arizona Genetics Core, University of Arizona, Tucson, AZ
PI: Michael Hammer
January 2013 – May 2016

My work in the Hammer Lab focused on two topics: 1) identifying regulatory elements of the *SCNIA* gene that is known to cause epilepsy, and 2) identifying genes that underlie human adaptation to climatic stress, with a focus on genetic changes that lead to long-term cold tolerance. I conducted wet lab work including designing primers and running PCRs.

PUBLICATIONS

Giles JB, Rollin J, **Martinez KL**, Selleng K, Thiele T, Pouplard C, Sheppard JI, Heddle NM, Phillips EJ, Roden DM, Gruel Y, Warkentin TE, Greinacher A, Karnes JH. Laboratory and Demographic Predictors of Functional Assay Positive Status in Suspected Heparin-Induced Thrombocytopenia: A Multicenter Retrospective Cohort Study. Thromb Res. 2023 [In Press]

Jason B. Giles, Heidi E. Steiner, Jerome Rollin, Christian M. Shaffer, Yukihide Momozawa, Taisei Mushiroda, Chihiro Inai, Kathleen Selleng, Thomas Thiele, Claire Pouplard, Nancy M. Heddle, Michiaki Kubo, Elise C. Miller, **Kiana L. Martinez**, Elizabeth J. Phillips, Theodore E. Warkentin, Yves Gruel, Andreas Greinacher, Dan M. Roden, Jason H. Karnes; Genome-wide association study of platelet factor 4/heparin antibodies in heparin-induced thrombocytopenia. Blood Adv 2022; 6 (14): 4137–4146.

Jason H. Karnes, Jerome Rollin, Jason B. Giles, **Kiana L. Martinez**, Heidi E. Steiner, Christian M. Shaffer, Yukihide Momozawa, Chihiro Inai, Andrei Bombin, Mingjian Shi, Jonathan D. Mosley, Ian Stanaway, Kathleen Selleng, Thomas Thiele, Taisei Mushiroda, Claire Pouplard, Nancy M. Heddle, Michiaki Kubo, Elizabeth J. Phillips, Theodore E. Warkentin, Yves Gruel, Andreas Greinacher, Dan M.

Roden; ABO O blood group as a risk factor for platelet reactivity in heparin-induced thrombocytopenia. Blood 2022; 140 (3): 274–284.

Martinez, Kiana L, Mauss, Corina, Andrews, Jennifer, Saboda, Kathylynn, Huynh, Julie M, Sanoja, Alejandro J, Jesudas, Rohith, Byers, Peter H, and Laukaitis, Christina M. "Subtle Differences in Autonomic Symptoms in People Diagnosed with Hypermobile Ehlers-Danlos Syndrome and Hypermobility Spectrum Disorders." Am J Med Genet A. 2021 Jul;185(7):2021-2025.

PRESENTATIONS

Martinez, Kiana Lee. Helpful Hints to Get Started on the *All of Us* Research Workbench. Workshop given on April 20, 2023 as part of the University of Arizona Data Science Workshop Series with support of the *All of Us* Research Program.

Martinez, Kiana Lee. The Use (and Misuse) of Race, Ethnicity, and Ancestry in Research. Presentation given on April 13, 2023 as part of the University of Arizona Data Science Fellowship.

Martinez, **Kiana Lee**, Kathylynn Saboda, Corina Mauss, Peter Byers, Christina Laukaitis. Patients Diagnosed with hEDS and G-HSD Have Their Quality of Life Similarly Disrupted by GID Symptoms. (April 2019). Poster presented at the 2019 ACMG Annual Meeting, Seattle, WA.

Erdemir, Ozdemir, Alejandro Sanoja, **Kiana Lee Martinez**, Peter Byers, Christina Laukaitis.. Identifying Candidate Genes for hEDS: Design and Initial Results of the hEDS Gene Study. (April 2019). Poster presented at the 2019 ACMG Annual Meeting, Seattle, WA.

Jesudas, Rohith, Corina Mauss, Kathylynn Saboda, Julie Huynh, Alejandro Sanoja, **Kiana Lee Martinez**, Peter Byers, Christina Laukaitis. While Symptoms are Similar Between People Who Do and Do Not Meet hEDS Criteria, Bleeding and Bruising Differ. (April 2019). Poster presented at the 2019 ACMG Annual Meeting, Seattle, WA.

Martinez, **Kiana Lee.**, Pilocarpine Induces Salivary *Abp* Gene Expression in Mouse Models. (May 2018) Poster presented at the 2018 IMSD SWIMRS Conference, San Diego, CA.

GRANTS, AWARDS, & FELLOWSHIPS

- University of Arizona Data Science Institute Fellowship, August 2022 – August 2023
- Ehlers-Danlos Society, "Analysis of Genome Sequence Data from the HEDGE Study" [grant written by Kiana L. Martinez and awarded to Laukaitis Lab], awarded for 2021-2022
- Ehlers-Danlos Society, "Examining global gene expression in cultured cells or affected tissues derived from individuals with hypermobile Ehlers-Danlos syndrome" [grant written by Kiana L. Martinez and awarded to Laukaitis Lab], awarded for 2021-2022
- Zukowski Travel Award, 2019
- Summer Institute in Statistical Genetics registration and travel scholarship, 2018
- Sky School Graduate Fellowship, August 2017 – June 2019
- National Institutes of Health/Initiatives to Maximize Student Development Scholars program, 2016
- UA Honors College Outstanding Junior Award, 2014
- Byron Cummings Memorial Scholarship, for Research, 2014
- William Shirley Fulton Scholarship, 2014

- Traditions, Transitions, and Treasures Scholarship, 2014
- Magellan Scholarship, 2013 & 2014
- The Arizona Board of High Honors Tuition Scholarship, 2011
- Wildcat Excellence Tuition Award, 2011

TEACHING & MENTORING EXPERIENCE

University of Arizona: Applied Pharmacogenetics and Precision Medicine (PHPR 887)
Guest Lecturer, Fall 2022 and Fall 2023
I guest lectured on Population Genetics for this graduate level pharmacology class covering an introduction and review of key population genetic topics including Hardy Weinberg equilibrium and linkage disequilibrium.

University of Arizona Science: Sky School
Instructor, Fall 2017 – Summer 2019
As a Sky School instructor, I taught inquiry-based science education to Arizona K-12 students using the unique sky island environment in the Catalina Mountains. We focused on core University of Arizona science areas such as sky island ecology, geology, and astronomy and met Arizona State and Next Generation Science standards.

University of Arizona: Fundamental Genetic Mechanisms - from Molecules to Genomes (CMM 518)
Teaching Assistant, Fall 2019
I was a teaching assistant in this graduate level class that focused on the topic of genetic mechanisms and genetic interactions, and its relation to developmental biology, cell physiology, evolution, and disease. This course covered advanced concepts in gene function, genetic interactions, and genetic analyses and manipulations that are commonly in use in research laboratories, or that go awry in human disease.

University of Arizona – Introduction to Cellular and Molecular Biology Laboratory
Laboratory Instructor, Fall 2018
As a laboratory instructor for Molecular and Cellular Biology, I taught two 3-hour laboratory classes that were each held once a week. I introduced and taught introductory topics on cellular and molecular biology, and guided students through laboratory activities.

University of Arizona Science: Sky School
Research mentor, Fall 2017 – Spring 2018
As a Sky School research mentor, I mentored several middle school students throughout a period of several months in their creation and execution of field-based science projects that were presented at the Southern Arizona Regional Science and Engineering Fair (SARSEF).

CERTIFICATES/COURSES

- Foundational Open Science Skills (FOSS) (September – November 2022)
- Summer Institute of Statistical Genetics (SISG), University of Washington – Quantitative Genetics (July 2018)
- Summer Institute of Statistical Genetics (SISG)), University of Washington – Mixed Models in Quantitative Genetics (July 2018)

SKILLS

Bioinformatics:

- GWAS and PheWAS
- Linear and logistic regressions
- Exploratory and statistical analysis using R and Python packages
- Data visualization with Matplotlib, ggplot2, and Seaborn
- Created pipelines for genomic data quality control, imputation, and phasing with PLINK, SAMtools, BAMtools, VCFtools, Picard Tools, GATK, TOPMed, SHAPEIT, and R and Python packages
- Linkage analysis
- Heritability estimates
- Data management

Programming languages: Python, R, SQL, UNIX Bash scripting

Cloud computing: proficient with command line, high-performance computing, SLURM scheduler, *All of Us* Research Workbench, GitHub, Cyverse

Biochemistry/Genetics: spectrometry, conventional PCR, gel electrophoresis, real-time quantitative PCR, whole genome and exome sequencing, RNA and DNA isolation, cDNA synthesis, primer design

Mouse care: handle and restrain, weigh, administer injections, eyewash, mouthwash, anesthetize, perform dissections

General: communication, organization, management, collaboration, problem-solving, intermediate level of Spanish language

REFERENCES

Christina Laukaitis, MD, PhD, FACP, FACMG
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