

Heidi E. Steiner, PSM

1230 N Cherry Ave., Tucson, AZ 85721
920-579-0557 | heidiesteiner@email.arizona.edu
<https://heidiesteiner.netlify.app>

EDUCATION

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|----------------|---|
| 2019 - Present | Doctor of Philosophy (Expected Matriculation: December 2022) Clinical Translational Sciences, Minor in Biostatistics Advisor: Dr. Jason Karnes College of Medicine - The University of Arizona |
| 2017 - 2019 | Professional Science Masters Diagnostic Laboratory Sciences Graduate Interdisciplinary Program - The University of Arizona |
| 2010 - 2013 | Bachelor of Science, Biology College of Agriculture and Life Sciences - The University of Wisconsin |

PROFESSIONAL EXPERIENCE

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|----------------|---|
| 2022 – Present | Data Scientist III <i>Data Science Institute, The University of Arizona, Tucson, Arizona</i> <ul style="list-style-type: none">▪ Develop workshops for teaching data science skills to health science researchers▪ Motivate scientists to learn data science to increase the inherent reproducibility of their work |
| 2019 – Present | Graduate Research Assistant <i>Department of Pharmacy Practice and Science, College of Pharmacy, The University of Arizona, Tucson, Arizona</i> <ul style="list-style-type: none">▪ Perform computational analyses including data manipulation, algorithm development and statistical testing▪ Apply bioinformatic tools to genomic datasets and generate models of warfarin dose prediction▪ Design experiments for genomic data analysis and interpretation |
| 2016 - 2019 | Laboratory Assistant <i>The University of Arizona, College of Pharmacy, Department of Pharmacy Practice and Science, Tucson, Arizona</i> <ul style="list-style-type: none">▪ Conducted experiments including isolation of peripheral blood cells and DNA extraction▪ Managed all parts of human subject's research from Institutional Review Board application to subject enrollment to statistical analysis▪ Led laboratory staff trainings, inventory purchases, equipment maintenance, chemical and biosafety approvals |

2012 - 2013

Undergraduate Researcher

The University of Wisconsin, College of Agriculture and Life Sciences, Genetics Department, Madison, Wisconsin

- Conducted bench work including assembling effector plasmids, transfecting *Drosophila* S2 cells, running report assays and purifying band-shift assays
- Complied data for lab meetings

PUBLICATIONS

1. Karnes, J.H., Rollin, J., Giles, J., Martinez, K.L., **Steiner, H.E.**, Shaffer, C., Momozawa, Y., Inai, C., Bombin, A., Shi, M., Mosley, J.D., Stanaway, I.B., Selleng, K., Thiele, T., Mushioda, T., Pouplard, C., Heddle, N.M., Kubo, M., Phillips, E.J., Warkentin, T.E., Gruel, Y., Greinacher, A., Roden, D.M., 2022. "ABO O blood group as a risk factor for platelet reactivity in heparin-induced thrombocytopenia." *Blood*. <https://doi.org/10.1182/blood.2021014240>
2. Giles, J.B., Miller, E.C., **Steiner, H.E.**, Karnes, J.H., 2021. "Elucidation of Cellular Contributions to Heparin-Induced Thrombocytopenia Using Omic Approaches." *Front Pharmacol*. <https://doi.org/10.3389/fphar.2021.812830>
3. **Steiner, H.E.**, Gee, K., Giles, J., Knight, H., Hurwitz, B.L., Karnes, J.H., 2022. "Role of the gut microbiome in cardiovascular drug response: The potential for clinical application." *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*. <https://doi.org/10.1002/phar.2650>
4. **Steiner H.E.**, Giles JB, Patterson HK, Feng J, Rouby NE, Claudio K, Marcatto LR, Tavares LC, Galvez JM, Calderon-Ospina CA, Sun X, Hutz MH, Scott S, Cavallari LH, Fonseca DJ, Duconge J, Botton MR, Santos PCJL, Karnes JH. 2021. "Machine Learning for Prediction of Stable Warfarin Dose in US Latinos and Latin Americans." *Front Pharmacol*. <https://doi.org/10.3389/fphar.2021.749786>
5. El Rouby, N., Rodrigues Marcatto, L., Claudio, K., Camargo Tavares, L., **Steiner, H.**, Botton, M.R., Lubitz, S.A., Fallon, E.N., Yee, K., Kaye, J., Scott, S.A., Karnes, J., Caleb Junior de Lima Santos, P., Duconge, J., Cavallari, L.H., 2021. "Multi-site Investigation of Genetic Determinants of Warfarin Dose Variability in Latinos." *Clin Transl Sci* 14, 268–276. <https://doi.org/10.1111/cts.12854>
6. Grace, C., Larriva, M.M., **Steiner, H.E.**, Marupuru, S., Campbell, P.J., Patterson, H., Cropp, C.D., Quinn, D., Klimecki, W., Nix, D.E., Warholak, T., Karnes, J.H., 2021. "Efficacy of personal pharmacogenomic testing as an educational tool in the pharmacy curriculum: A nonblinded, randomized controlled trial". *Clin Transl Sci*. <https://doi.org/10.1111/cts.13121>
7. Karnes, J.H., Arora, A., Feng, J., **Steiner, H.E.**, Sulieman, L., Boerwinkle, E., Clark, C., Cicek, M., Cohn, E., Gebo, K., Loperena-Cortes, R., Ohno-Machado, L., Mayo, K., Mockrin, S., Ramirez, A., Schully, S., Klimentidis, Y.C., 2021. "Racial, ethnic, and gender differences in obesity and body fat distribution: An All of Us Research Program demonstration project." *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0255583>
8. Karnes, J.H., Wiener, H.W., Schwantes-An, T.-H., Natarajan, B., Sweatt, A.J., Chaturvedi, A., Arora, A., Batai, K., Nair, V., **Steiner, H.E.**, Giles, J.B., Yu, J., Hosseini, M., Pauciulo, M.W., Lutz, K.A., Coleman, A.W., Feldman, J., Vanderpool, R., Tang, H., Garcia, J.G.N., Yuan, J.X.-J., Kittles, R., de Jesus Perez, V., Zamanian, R.T., Rischard, F., Tiwari, H.K., Nichols, W.C., Benza, R.L., Desai, A.A., 2020. "Genetic Admixture and Survival in Diverse Populations with Pulmonary Arterial Hypertension." *Am J Respir Crit Care Med*. <https://doi.org/10.1164/rccm.201907-14470C>

9. Patanwala, A.E., Norwood, C., **Steiner, H.**, Morrison, D., Li, M., Walsh, K., Martinez, M., Baker, S.E., Snyder, E.M., Karnes, J.H., 2019. "Psychological and Genetic Predictors of Pain Tolerance." Clin Transl Sci. <https://doi.org/10.1111/cts.12605>
10. Karnes, J.H., Shaffer, C.M., Bastarache, L., Gaudieri, S., Glazer, A.M., **Steiner, H.E.**, Mosley, J.D., Mallal, S., Denny, J.C., Phillips, E.J., Roden, D.M., 2017a. "Comparison of HLA allelic imputation programs." PLoS ONE. <https://doi.org/10.1371/journal.pone.0172444>
11. Karnes, J.H., Shaffer, C.M., Cronin, R., Bastarache, L., Gaudieri, S., James, I., Pavlos, R., **Steiner, H.E.**, Mosley, J.D., Mallal, S., Denny, J.C., Phillips, E.J., Roden, D.M., 2017b. "Influence of Human Leukocyte Antigen (HLA) Alleles and Killer Cell Immunoglobulin-Like Receptors (KIR) Types on Heparin-Induced Thrombocytopenia (HIT)." Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy. <https://doi.org/10.1002/phar.1983>
12. Kaye, J.B., Schultz, L.E., **Steiner, H.E.**, Kittles, R.A., Cavallari, L.H., Karnes, J.H., 2017. "Warfarin Pharmacogenomics in Diverse Populations." Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy. <https://doi.org/10.1002/phar.1982>

PEER-REVIEWED ABSTRACTS

1. **Steiner, H.**, El Rouby, N., Claudio, K., Rodrigues Marccatto, L., Giles, J., Rodrigues Botton, M., Scott, S., Cavallari, L., Duconge, J., Caleb de Lima Santos, P., Karnes, J.H. "Validity of International Warfarin Pharmacogenetic Consortium (IWPC) Dosing Algorithm and Application of Machine Learning to Predict Warfarin Dose Variability in US Latino and Latin American Populations." American Society of Clinical Pharmacology and Therapeutics Annual Meeting (Virtual), March 2021.
2. Karnes, J.H., Weiner, H., Schwantes-An, T., Natarajan, B., Chaturvedi, A., Arora, A.H., Batai, K., Nair, V., **Steiner, H.**, Giles, J., Yu, J., Hosseini, M., Pauciulo, M., Lutz, K., Coleman, A., Feldman, J., Vanderpool, R., Tang, H., Garcia, J., Yuan, J., Rischard, F., Kittles, R., Tiwari, H.K., Nichols, B., Benza, R., Desai, A. "Genetic Admixture and Survival in Diverse Populations with Pulmonary Arterial Hypertension (PAH)." American Heart Association Scientific Sessions, November 2019.
3. El Rouby, N., Marccatto, K., Claudio, L., Tavares, L., **Steiner, H.**, Botton, M.R., Lubtiz, S., Scot, S., Karnes, J., Cavallari, L., Santos, P.C.J.L., Ducong, J. "Multi-site investigation of genetic determinants of warfarin dose variability among Latinos." American Society for Clinical Pharmacology & Therapeutics Annual Meeting, March 2019.
4. Kaye, J.B., **Steiner, H.E.**, Wahl, J., Sweitzer, N., Karnes, J. "Warfarin Pharmacogenomics in a Hispanic Population: A Candidate SNP Study." American College of Clinical Pharmacy Global Conference, October 2018.
5. **Steiner, H.**, Larriva, M., Campbell, P., Nix, D.E., Quinn, D., Klimecki, W., Karnes, J. "Educational Benefit of Personal Pharmacogenomic Testing in the Pharmacy Curriculum." American College of Clinical Pharmacy Global Conference, October 2018.
6. Kaye, J.B., Schultz, L.E., **Steiner, H.E.**, Kittles, R.A., Cavallari, L.H., Karnes, J.H. "Performance of Warfarin Pharmacogenetic Dosing Algorithms in United States Minority Groups." American Indian Science and Engineering Society (AISES) National Conference, November 2016.
7. Bastarache, L., Shaffer, C.M., Gaudieri, S., Glazer, A.M., **Steiner, H.**, Mosley, J.D., Mallal, S., Denny, J.C., Phillips, E.J., Roden, D.M. "Comparison of HLA Allelic Imputation Programs." American Society of Human Genetics Annual Meeting, October 2016.

POSTER PRESENTATIONS

1. Giles pgrn
2. Knight, H., **Steiner, H.E.**, Giles, J.B., Heise, W., Karnes, J.H. "Potential for Dietary Vitamin K Intake to Predict Variability in Weekly Warfarin Dose." 6th Annual Arizona Biomedical Research Centre-Flinn Research Conference (Virtual), February 2021.
3. Giles, J.B., Rollin, J., Shaffer, C.M., **Steiner, H.E.**, Momozawa, Y., Stanaway, I., Mushiroda, T., Pouplard, C., Heddle, N., Kubo, M., Phillips, E., Warkentin, T.E., Gruel Y., Greinacher, A., Roden, D., Karnes, J. "Genome-Wide Association Study Identifies Variation in ABO as Risk Factor for Platelet Reactivity in Heparin-Induced Thrombocytopenia." American Society of Hematology Annual Meeting and Exposition, December 2020.
4. **Steiner, H.E.**, Giles, J.B., Knight, H., Fox, K., Stanaway, I.B., Heise, W., Karnes, J.H. "Association of the ABO O Blood Group with Increased Warfarin Stable Dose." Pharmacogenomics Global Research Network Annual Meeting (Virtual), October 2020.
5. **Steiner, H.E.**, Gonzalez, J., Karnes, J.H. "Warfarin Pharmacogenomics in a Hispanic/Latino Population: A Genome Wide Association Study." El Rio/Wright Center for GME Community Health Improvement & Research Fair (Cancelled), March 2020.
6. **Steiner, H.E.**, Patterson, H.K., Giles, J.B., Karnes, J.H. "Gut Microbiota and Therapeutic Warfarin Dose: A Pilot Study." Graduate Student Professional Council Annual Student Showcase, February 2020.
7. Giles, J.B., **Steiner, H.E.**, Patterson, H.K., Norwood, C., Karnes, J.H. "Genome-Wide Association Study of Heparin-Induced Thrombocytopenia." Graduate Student Professional Council Annual Student Showcase, February 2020.
8. **Steiner, H.E.**, Giles, J.B., Kaye, J.B., Peralta, A., Gonzalez, J., Heise, C.W., Karnes, J.H. "Warfarin Pharmacogenomics in Hispanics and Latinos." 4th Annual Arizona Biomedical Research Centre-Flinn Research Conference, May 2019.
9. **Steiner, H.E.**, Kaye, J.B., Peralta, A., Karnes, J. "Warfarin Pharmacogenomics in Hispanics and Latinos of Tucson, AZ." Graduate Student Professional Council Annual Student Showcase, February 2019.
10. **Steiner, H.E.**, Kaye, J.B., Peralta, A., Karnes, J. "Warfarin Pharmacogenomics in Hispanics and Latinos of Tucson, AZ: A Candidate Gene Study." Graduate Interdisciplinary Programs Student Research Showcase, December 2018.

PRESENTATIONS

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| 2022 | "Data Science in the Pursuit of Precision Medicine in Warfarin Therapy" Women in Data Science – Tucson (Virtual) |
| 2021 | "Validity of International Warfarin Pharmacogenetic Consortium (IWPC) Dosing Algorithm and Application of Machine Learning to Predict Warfarin Dose Variability in US Latino and Latin American Populations." American Society of Clinical Pharmacology and Therapeutics Annual Meeting (Virtual) |
| 2019 | "Genome-wide association study of warfarin stable dose in Hispanics and Latinos" Arizona Biomedical Research Conference, Phoenix Arizona |

AWARDS AND HONORS

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| December 2022 | The Finley and Florence Brown Endowed Research Award Sarver Heart Center, University of Arizona |
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\$25,000

May 2021

1st Place – Data Visualization Challenge

University of Arizona Libraries

\$250

March 2021

Presidential Trainee Awardee

American Society of Clinical Pharmacology and Therapeutics Annual Meeting

\$500

September 2020

Research and Project Grant

University of Arizona Graduate and Professional Student Council

\$1000

February 2019

2nd Place – Best Poster

Human Health Category

Graduate Student Professional Council Annual Student Showcase

OUTREACH

2022

“Data Science Skills for Biomedical Research”

Data Blitz presentation encouraging researchers to seek data science skills through the Data Science Institute

College of Medicine Research Day, Tucson, Arizona

2021

“blogdown: Creating Websites with R Markdown”

Led a two-hour workshop of creating personal websites from R Markdown files using Hugo

Research Bazaar Arizona (Virtual)

2020-2022

UArizona Graduate and Professional Student Council Grant Reviewer

2019-present

Software Data Carpentry Workshop Helper

2019

“Publication Quality Figures in ggplot2”

Led a two-hour workshop of tips and tricks for plot manipulation in the ggplot2 package in R

R-Ladies Tucson meetup, a group to increase diversity in R coding, Tucson, Arizona

PROFESSIONAL AFFILIATIONS & LEADERSHIP

2022-present

Women in Data Science – Tucson Organizer

2021-present

Pharmacogenomics Global Research Network Early Career Committee Member

2021-2022

UArizona Health and Recreation Fee Committee Member

2021-2022

UArizona Graduate Council Member

2021-2022

UArizona Graduate Professional Student Council Elected Representative for the College of Medicine – Tucson

2020-present

American Heart Association Member

2020- present

Pharmacogenomics Global Research Network Member

2020- present

American Society for Clinical Pharmacology and Therapeutics Member

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| 2019- present | R Ladies Tucson Member |
| 2019-2019 | UArizona Womxn's Hackathon Attendee |
| 2017-2018 | American Council of Clinical Pharmacy Member |
| 2017-2018 | UArizona Biosciences Toastmasters Club President |
| 2016-2018 | Toastmasters International Member |
| 2016- present | Clinical Research Professional Group Member |

SKILLS

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| <i>Computational</i> | R, Python, Bash, SQL programming Bioinformatic programs (QIIME, PLINK, bcftools, samtools, hail etc.) High performance, cloud computing Version control (GitHub) Containers Biostatistics Microsoft suite |
| <i>Wet bench</i> | DNA/RNA extraction Taqman genotyping Polymerase Chain Reaction (PCR) |
| <i>Clinical</i> | Subject recruitment Electronic Medical Records (Epic, Cerner) Data capture (REDCap) |
| <i>Regulatory</i> | Institutional Review Boards Health Insurance Portability and Accountability Act International Council for Harmonization Federal Drug Agency Good Clinical Practice |

CERTIFICATIONS

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| 2020 | Responsible Conduct of Research – National Institutes of Health |
| 2018 | Preventing Discrimination and Harassment for Nonsupervisory Employees Certification – UArizona |
| 2017 | Export Compliance – UArizona |
| 2016 | Biomedical Research Investigators – UArizona |

REFERENCES

Jason H. Karnes, PharmD, PhD (karnes@pharmacy.arizona.edu)

Associate Professor

The University of Arizona

520-626-1447

Yann C. Klimentidis, PhD (yann@arizona.edu)

Associate Professor

The University of Arizona

520-621-0147

George Watts, PhD (gwatts@arizona.edu)

Associate Professor

The University of Arizona

520-268-3277

Xiaoxiao Sun, PhD (xiaosun@arizona.edu)

Assistant Professor

The University of Arizona

(520) 626-7008