

Heidi E. Steiner, PhD

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EDUCATION

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| 2019 - 2022 | Doctor of Philosophy
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 ~100/year learners to increase the inherent reproducibility of their work with open data science practices |
| 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
- Compiled data for lab meetings

PUBLICATIONS

1. **Steiner, H.E.**, Carrasquillo Carrion, K., Giles, J.B., Roche Lima, A., Yee, K., Sun, X., Cavallari, L.H., Perera, M.A., Duconge, J., Karnes, J.H., 2023. "Local Ancestry-Informed Candidate Pathway Analysis of Warfarin Stable Dose in Latino Populations." Clin Pharmacol Ther. <https://doi.org/10.1002/cpt.2787>.
2. **Steiner, H.E.**, Patterson, H. K., Giles, J.B., Karnes, J.H., 2022. "Bringing Pharmacomicrobiomics to the Clinic Through Well-Designed Studies." Clin Transl Sci. <https://doi.org/10.1111/cts.13381>.
3. Giles, J.B., **Steiner, H.E.**, Rollin, J., Shaffer, C.M., Momozawa, Y., Mushiroda, T., Inai, C., Selleng, K., Thiele, T., Pouplard, C., Heddle, N.M., Kubo, M., Miller, E.C., Martinez, K.L., Phillips, E.J., Warkentin, T.E., Gruel, Y., Greinacher, A., Roden, D.M., Karnes, J.H., 2022. "Genome-wide association study of platelet factor 4/heparin antibodies in heparin-induced thrombocytopenia." Blood Adv. <https://doi.org/10.1182/bloodadvances.2022007673>
4. 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>
5. 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>
6. **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>
7. **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>
8. 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. <https://doi.org/10.1111/cts.12854>
9. 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>

10. 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>
11. 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.201907-1447OC>
12. 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>
13. 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>
14. 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>
15. 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, J.B., **Steiner, H.E.**, Rollin, J., Shaffer, C.M., Momozawa, Y., Mushiroda, T., Inai, C., Selleng, K., Thiele, T., Pouplard, C., Heddle, N.M., Kubo, M., Miller, E.C., Martinez, K.L., Phillips, E.J., Warkentin, T.E., Gruel, Y., Greinacher, A., Roden, D.M., Karnes, J.H., "*Genome-Wide Association Study Of Platelet Factor 4/Heparin Antibodies In Heparin-Induced Thrombocytopenia.*" Pharmacogenomics Global Research Network Annual Meeting, March 2022
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

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

December 2022	The Finley and Florence Brown Endowed Research Award Sarver Heart Center, University of Arizona \$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	"Personal Websites with Quarto" Instructed learners to publish a Quarto built website to GitHub pages UArizona (virtual)
2022	Reviewer for Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy
2022	"Reproducible Reporting with Quarto" Instructed learners on the incorporation of R and Observable code in a single reproducible markdown report Research Bazaar Arizona (Virtual)
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	<i>"blogdown: Creating Websites with R Markdown"</i> Led workshop on creating personal websites from R Markdown with Hugo Research Bazaar Arizona (Virtual)
2020-2022	UArizona Graduate and Professional Student Council Grant Reviewer
2019-present	Software Data Carpentry Workshop Helper
2019	<i>"Publication Quality Figures in ggplot2"</i> Led workshop of tips and tricks 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 Co-Ambassador
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
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

<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

2022	Carpentries Instructor Certification
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

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

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Co-PI, CyVerse
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