

Heidi Elizabeth Steiner, PSM

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EDUCATION

2019 - Current	Doctor of Philosophy (Expected Matriculation: May 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

RESEARCH EXPERIENCE

2019 - Present	Graduate Research Assistant <i>The University of Arizona, College of Pharmacy, Department of Pharmacy Practice and Science, Tucson, Arizona</i> <ul style="list-style-type: none">Perform computational analyses including data manipulation, algorithm development and statistical testingApply bioinformatic tools to genomic datasets and generate models of warfarin dose predictionDesign 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 extractionManaged all parts of human subject's research from Institutional Review Board application to subject enrollment to statistical analysisLed laboratory staff trainings, inventory purchases, equipment maintenance, chemical and biosafety approvals
2012 - 2013	Undergraduate Researcher <i>The University of Wisconsin, College of Agriculture and Life Sciences, Genetics Department, Madison, Wisconsin</i> <ul style="list-style-type: none">Conducted bench work including assembling effector plasmids, transfecting <i>Drosophila</i> S2 cells, running report assays and purifying band-shift assaysComplied data for lab meetings

PUBLICATIONS

1. **Steiner HE**, 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. "Machine Learning for Prediction of Stable Warfarin Dose in US Latinos and Latin Americans." Front Pharmacol. 2021 [In Press]
2. 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>
3. 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>
4. 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 16, e0255583–e0255583. <https://doi.org/10.1371/journal.pone.0255583>
5. 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 201, 1407–1415. <https://doi.org/10.1164/rccm.201907-1447OC>
6. 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 12, 189–195. <https://doi.org/10.1111/cts.12605>
7. 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 12, e0172444–e0172444. <https://doi.org/10.1371/journal.pone.0172444>
8. 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 37, 1164–1171. <https://doi.org/10.1002/phar.1983>
9. 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 37, 1150–1163. <https://doi.org/10.1002/phar.1982>

PEER-REVIEWED ABSTRACTS

1. **Steiner, H.**, El Rouby, N., Claudio, K., Rodrigues Marcatto, 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. 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.
2. El Rouby, N., Marcatto, 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.
3. 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.
4. **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.
5. Karnes, J.H., Batai, K., Arora, A., Kaye, J., **Steiner, H.**, Nair, V., Garcia, J.G.N., Yuan, J., Pauciulo, M., Nichols, W., Desai, A. "*Genome-Wide Association Study of Vasodilator Response in Pulmonary Arterial Hypertension*." American Heart Association Scientific Sessions, November 2017.
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. 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.
2. Giles, J.B., Rollin, J., Shaffer, C.M., **Steiner, H.E.**, Momozawa, Y., Stanaway, I., Mushiroda, T., Pouplard, C., Hedde, 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.
3. **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.
4. **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.
5. **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.
6. 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.
7. **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.
8. **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 2020.

- 2019.
9. **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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| 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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| 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

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| 2021 | “Blogdown: Creating Websites with RMarkdown”
Led a two-hour workshop of creating personal websites from RMarkdown files using Hugo
ResearchBazaar Arizona (Virtual) |
| 2020-present | UArizona Graduate 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

2021-present	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-present	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 computing Version control (GitHub) 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

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

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