

Douglas Fritz

MD/PhD Student, University of Colorado

Curriculum Vitae

November 2023

Denver, Colorado
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I am broadly interested in the fields of maternal/fetal health, planetary health, emerging pathogens, AI, infectious disease, virology and immunology. I'm a tinkerer: from latte machines, to laser cutters, to LLMs, I like fixing stuff, building stuff, and making my life better though STEAM.

Education

2029	MD/PhD University of Colorado Anschutz School of Medicine	Denver, CO
	➤ Lab Rotations: Fan Zhang Ph.D., Center for AI	
2019	BS Biology Saint Louis University	St Louis, MO
	➤ Biology Capstone Evaluating Adjuvants for a Th17-directed Chagas Vaccine	
	➤ Capstone Advisors: David Hoft, Ph.D., Lindzy Dodson, Ph.D	
2019	BA American Studies Saint Louis University	St. Louis, MO
	➤ American Studies Capstone: Not Just a Mom: Gender and Maternity in the West Lake Landfill Crisis	
	➤ Capstone Advisors: Kate Moran, Ph.D.	

Professional Appointments

2020-2021	IRTA Postbaccalaureate Fellow Ted Pierson Lab, National Institute of Allergy and Infectious Disease
2019-2020	Fulbright Scholar Goce Delchev University (UGD)
2016-2019	Infectious Disease Scientist Daniel Hoft Lab, Saint Louis University Medical School
2016-2017	Microflora Research Assistant Biology Department, Saint Louis University
2015	Research Assistant Monsanto

Selected Publications

- Guo, N., Vargas, J., **Fritz, D.**, Krishna, R., Zhang, F. (2023). Uncover spatially informed shared variations underlying single-cell spatial transcriptomics with STew *bioRxiv*. . <https://doi.org/10.1101/2023.10.10.561789>
- Marwah, H., Hampshire, K., Sood, N., **Fritz, D.**, Brewer, T., Walden, D., Potarazu, S.. (2023). Student-driven climate action to safeguard health *eBioMedicine*. 93. <https://doi.org/10.1016/j.ebiom.2023.104693>
- Fritz, D.**, Inamo J, Zhang F. (2023). Single-cell computational machine learning approaches to immune-mediated inflammatory disease: New tools uncover novel fibroblast and macrophage interactions driving pathogenesis *Frontiers in Immunology*. 13. <https://doi.org/10.3389/fimmu.2022.1076700>
- Fritz, D.** & Nuzhat, I. (2022). "OSS15.4 Arboviruses and Climate Change." *Climate Resources for Health Education*. . <https://climatehealthed.org/course/arboviruses/>

Selected Presentations

- Driscoll, B., Cooper, J., Romer, P., **Fritz, D.**, Seymour, D., Dwinnell, D. (2023, November). *Developing a Parenting Guide for Medical Students* [Poster presentation]. AAMC Learn Serve Lead.
- Potarazu, S., **Fritz, D.**, Malani, K., Drew, T., Randle, H., Bhardwaj, N., McKernan, K., Melnyk, A. (2023, October). *At the Crossroads of Climate Change and Reproductive Choice: A Scoping Review* [Conference session]. Climate and Health Conference.
- Fritz, D.**, Blevins, K., Smith, J., Canty, L., Walsh, C., Gillespie, E. (2023, October). *Planetary Health Curriculum Integration: A 5 Step process to teach climate medicine at your Med School*. [Poster presentation]. Climate and Health Conference.

- Fritz, D.** (2023, September). *Keynote: Why and How you should be talking to your patients about climate change* [Keynote]. AHEC NEAR Conference.
- Fritz, D.**, Blevins, K., Smith, J., Canty, L., Walsh, C., Gillespie, E. (2023, September). *Advances in Planetary Health Curriculum Integration*. [Poster presentation]. AHEC NEAR Conference.
- Guo, N., Vargas, J., **Fritz, D.**, Zhang, F (2023, July). *Uncover spatially informed biological axes by identifying shared variations underlying single-cell spatial transcriptomics with stCCA* [Poster presentation]. ISMB/ECCB 2023.
- Fritz, D.** (2023, July). *One Size doesn't fit: the "best" ways to statistically model data in spatial transcriptomics* [Poster presentation]. National MD-PhD conference.
- Fritz, D.** (2023, June). *IUD Insertional Pain: Why is it so Awful*. [1st Prize Poster presentation]. University of CO LIC Dream Day.
- Potarazu, S., Brewer, T., **Fritz, D.**, Marwah, H., Sood, N., Diedrich, T., Malits, J., Manivannan, M. (2023, April). *AAMC Webinars and Online Courses: Exploring Student Perspectives: The Current Landscape of Student-led Initiatives in Climate & Health Education (Building Better Curriculum)* [Webinar]. AAMC Webinars and Online Courses:.
- Zhang, F., Vargas, J., **Fritz, D.** (2022, October). *A robust computational framework to benchmark spatiotemporal trajectory association analysis in single-cell spatial transcriptomics* [Poster presentation]. ISCB Rocky 22.
- Zhang, F., Vargas, J., **Fritz, D.** (2022, November). *A robust computational framework to benchmark spatiotemporal trajectory association analysis in single-cell spatial transcriptomics* [Oral Presentation]. RSGDREAM 2022: RE-COMB/ISCB Conference on Regulatory and Systems Genomics with DREAM Challenges 2022.
- Fritz, D.**, Gordon, D., Sanchez, E., Dowd, K., Burgomaster, K., Pierson, T. (2021, May). *Characterization of Zika Virus Monoclonal Antibodies* [1st Prize "Outstanding Poster" Poster presentation]. NIH Postbac Poster Day 2021.
- Fritz, D.** (2018, December). *Progress Towards a Chagas Vaccine: Adjuvant Studies and Th17* [Poster presentation]. Senior Legacy Research Symposium.
- Fritz, D.** (2018, December). *West Lake Landfill: Lessons of Maternal, and Community Health in an Environmental Crisis* [Poster presentation]. Senior Legacy Research Symposium.

Software

Guo, N., Vargas, J., **Fritz, D.**, Krishna, R., Zhang, F (2023). *STew* [R package]. <https://github.com/fanzhanglab/STew>

Fellowships

- Physicians for Social Responsibility National's Next Generation Climate & Health Ambassador (2022)
- Fulbright Fellow, North Macedonia (2019).

Grants

2022	Interest Group Outreach Grant: Climate Related Stress Assessment in Denver CO Colorado Family Medicine Association
	➤ \$1,500
2023	CU MSTP T32 GM008497 NIH MSTP T32
	➤ \$137,880
2024	Fulbright Colloquium Fulbright
	➤ \$11,500

Skills

Bioinformatics	scRNA-seq, Spatial Transcriptomics
Wet Lab	Enzyme linked assays, immunoassay binding assays, Flow Cytometry/CellSort SDS-Page, gel blots, HPLC, GC-MS, cell cultures, qRT-PCR
Code Languages	R, SQL, Python, HTML (Basic), Excel Macro
Infrastructure	Git/Github, RedCap, Notion
Data Visualization	R, Shiny, Prism, Tableau, Illustrator
Statistical Skills	Real-World Experience: Gaussian and non-gaussian regression modeling, MLM, machine learning, survey design
Animal Models	Murine, Arthropod
Dangerous Agents	BSL-3, Radionucleotides
Other Software	Audacity, Inkscape, Fusion360

Awards & Honors

- 2023 2nd place for Water Reduction Proposal. CU Presidents Sustainability Challenge 2023
- 2023 Best of 'CU one liner' medical evidence award 2023: "NPO status before operations: barely evidence-based"
- 2022 1st place for Campus-wide Green Revolving Fund Proposal. CU Presidents Sustainability Challenge 2022

Society Memberships

Alpha Epsilon Delta , American Society for Virology , American Physician Scientist Association , American Medical Association , American Society for Microbiology

University Leadership

- 2023-Present **Student Chair, CU Chancellor's Sustainable Committee**
University of Colorado
- 2022-Present **Vice President, CU CHASE Climate Student Group**
University of Colorado
- 2021-Present **CU Student Sustainability Representative**
University of Colorado

Community Leadership

- 2022-Present **National Chair**
Medical Students For A Sustainable Future
- 2021-Present **CU Representative**
AAMC: Organization of Student Representatives (OSR)
- 2015-2023 **Pantry Volunteer**
TEAM Food Pantry

Current Projects

- Denver Climate Risk Inventory** City and County of Denver
Develop a risk assessment tool that displays climate related-health stress in Denver communities using a granular geospatial model, public data, and survey canvassing.
- Climate Health Integration Project** CU Anschutz
Integrate planetary health curriculum into all 4 years of med school
- Improve IUD Insertion Pain** CU Anschutz
Pilot new pain adjuncts for IUD insertion
- Climate Grand Rounds** CU Anschutz
Create a climate grand rounds at CU
- Project Awesome** CU Anschutz
Foster multidisciplinary collaboration by building an AHEC Scholars program, public health med school elective, mobile food pantry on STEM school in Aurora, CO
- MS4SF research mentorship pipeline** Medical Students 4 a Sustainable Future
Develop a pipeline of PIs and interested students in the fields of climate change and health

In The Media

- Case Study: Global Infectious Disease & Our Changing Climate 2023 [Podcast](#)
- Toward More Equitable Assessment, with Erin Whitteck and Douglas Fritz. Teaching in Higher Ed 2021 [Podcast](#)
- SLU Offsets All Electrical Emissions with Renewable Energy 2019 [Univ. Press](#)

Notes

This CV is reproducible. All the source code behind this CV is available on [my Github repo](#).