Alyson (Aly) L. Singleton

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Education

2021–2026 **Stanford University**, *Stanford, CA*.
Doctoral Candidate, Emmett Interdisciplinary Program in Environment and Resources
Jim and Gaye Pigott Interdisciplinary Graduate Fellow
Fields of Inquiry: Global change ecology and infectious disease epidemiology
Advisors: Erin Mordecai (Biology) and Stephen Luby (Infectious Diseases and Geo Medicine)

2020–2021 **Centers for Disease Control and Prevention**, *Atlanta, GA*.
ORISE Data Science Fellow
Advisor: Anna Blackstock (CDC/DDID/NCEZID/DFWED)

2019–2020 **Brown University**, *Providence, RI*.
M.A. in Biostatistics, Health Data Science Track
Advisor: Brandon Marshall (Epidemiology)

2015–2019 **Brown University**, *Providence, RI*.
B.S. Applied Mathematics, Honors
Honors Thesis: *Network structure and rapid HIV transmission among people who inject drugs in Indiana: A simulation-based analysis.*
Advisors: Matthew Harrison (Applied Mathematics) and Brandon Marshall (Epidemiology)

Technical Skills

Programming	R, Google Earth Engine/Java, Python, Julia, SAS, ArcGIS, SQL, DAX, MATLAB, Vim, LaTeX
Operating Sys	Linux/Unix, macOS
Data Viz	R, MS Power BI, ArcGIS, Tableau

Publications

1. Ferreira da Silva, V. A., Kampel, M., Silva dos Anjos, R., Gardini Sanches Palasio, R., Escada, M. I. S., Tuan, R., **Singleton, A.** ... Vieira Monteiro, A. M. (2024). Mapping schistosomiasis risk landscapes and implications for disease control: A case study for low endemic areas in the Middle Paranapanema river basin, São Paulo, Brazil. *PLOS Neglected Tropical Diseases*, 18(11), e0012582. doi.org/10.1371/journal.pntd.0012582
2. **Singleton, A. L.**, Glidden, C. K., Chamberlin, A. J., Tuan, R., Palasio, R. G., Pinter, A., ... Mordecai, E. A., De Leo, G. A. (2024). Species distribution modeling for disease ecology: A multi-scale case study for schistosomiasis host snails in Brazil. *PLOS Global Public Health*, 4(8), e0002224. doi.org/10.1371/journal.pgph.0002224
3. Glidden, C. K., **Singleton, A. L.**, Chamberlin, A., Tuan, R., Palasio, R. G., Caldeira, R. L., ... Mordecai, E. A., De Leo, G. A. (2024). Climate and urbanization drive changes in the habitat suitability of Schistosoma mansoni competent snails in Brazil. *Nature Communications*, 15(1), 4838. doi.org/10.1038/s41467-024-48335-9
4. Griffin, I., King, J.*, Lyons, B.*, **Singleton, A. L.***, Deng, X., Bruce, B. B., Griffin, P. M. (2024). Estimates of SARS-CoV-2 Hospitalization and Fatality Rates in the Prevaccination Period, United States. *Emerging Infectious Diseases*, 30(6), 1144-1153. doi.org/10.3201/eid3006.231285
5. Turner, M. A., **Singleton, A. L.**, Harris, M. J., Harryman, I., Lopez, C. A., Arthur, R. F., ... Jones, J. H. (2023). Minority-group incubators and majority-group reservoirs support the diffusion of climate change adaptations. *Philosophical Transactions of the Royal Society B*, 378(1889). doi.org/10.1098/rstb.2022.0401

6. Benedict, K., **Singleton, A. L.**, Jackson, B. R., Molinari, N. A. M. (2022). Survey of incidence, lifetime prevalence, and treatment of self-reported vulvovaginal candidiasis, United States, 2020. *BMC Women's Health*, 22(1), 1-9. doi.org/10.1186/s12905-022-01741-x
7. **Singleton A. L.**, Marshall B. D. L., Bessey S., Harrison M. T., Galvani A. P., Yedinak J. L., Jacka B. P., Goodreau S. M., Goedel W.C. (2020). Network structure and rapid HIV transmission among people who inject drugs: A simulation-based analysis. *Epidemics* 2020;100426. doi.org/10.1016/j.epidem.2020.100426
8. **Singleton A. L.**, Marshall B. D. L., Zang X., Nunn A. S., Goedel W.C. (2020). Added benefits of pre-exposure prophylaxis use on HIV incidence with minimal changes in efficiency in the context of high treatment engagement among men who have sex with men. *AIDS Patient Care and STDs*, Volume 34 Issue 12. doi.org/10.1089/apc.2020.0151
9. Marshall B. D., Goedel W. C., King M. R., **Singleton, A.**, Durham D. P., Chan P. A., Townsend J. P., Galvani A. P. (2018). Potential effectiveness of long-acting injectable pre-exposure prophylaxis for HIV prevention in men who have sex with men: a modelling study. *The Lancet HIV*, 5(9), e498–e505. doi.org/10.1016/S2352-3018(18)30097-3

Papers in review

1. **Singleton, A. L.**, Lescano, A. G., MacDonald, A. J., Mandle, L., Sipin, T. J., Martel, K. S., ... Luby S. P., Mordecai, E. A. (2024). Highway paving dramatically increased dengue transmission in the Amazon. medRxiv, 2024-11. https://doi.org/10.1101/2024.11.15.24317406

Presentations

Impacts of paving the Interoceanic Highway on dengue in Peru's Amazon basin.

- 2025 Ecology and Evolution of Infectious Disease, Notre Dame University. Jun 2025. Poster.
- Lo Lab, Stanford University. Apr 2025. Invited Talk.
- 3 Minute Thesis, Stanford University. Apr 2025. Finalist. YouTube Recording Link.
- 11th Stanford Global Health Research Convening, Stanford. Feb 2025. Lightning Talk.
- GISDay 2024, Stanford University. Nov 2024. Lightning Talk.
- Human and Planetary Health (SUSTAIN 103), Stanford. Nov 2024. Guest Lecture.
- LaBeaud Lab, Stanford University. Aug 2024. Invited Talk.
- 2024 Ecology and Evolution of Infectious Diseases, Stanford University. Jun 2024. Poster.
- Doerr School of Sustainability Research Review, Stanford University. May 2024. Talk.

Species distribution modeling for disease ecology: a multi-scale case study for schistosomiasis host snails in Brazil.

- Stanford Data Science Conference, Stanford University. May 2023. Poster.
- Foley Lab, University of California, Davis. Mar 2023. Invited Talk.
- XVI International Symposium on Schistosomiasis, Ouro Preto, Brazil. Nov 2022. Poster.
- 8th Stanford Global Health Research Convening, Stanford University. Apr 2022. Talk.

Added benefits of pre-exposure prophylaxis use on HIV incidence.

- IDWeek 2020, Philadelphia, Pennsylvania. Oct 2020. Poster.

Structural network characteristics and vulnerability to rapid HIV transmission among PWID.

- 7th International Conference on Infectious Disease Dynamics, Charleston, South Carolina. Dec 2019. Poster.

Honors and Awards

2025 Stanford "3 Minute Thesis" Competition Finalist (one of ten, YouTube Recording Link)

2024 Jim and Gaye Pigott Interdisciplinary Graduate Fellow, Stanford University

Best Talk, Stanford Doerr School of Sustainability Research Review

2023 Award from the King Center on Global Development, Stanford Data Science Conference

Spotlight Award for Creative and Effective Visualization, Stanford Data Science Conference

2021 Delta Omega Honorary Society in Public Health, Epsilon Iota Chapter, Brown University School of Public Health

2019 Honors in Applied Mathematics, Brown University

Journal Review

2025 PLOS Global Public Health, PLOS Neglected Tropical Diseases

2024 PLOS One, Emerging Infectious Diseases, Science (co-review w advisor), Ecology Letters

2023 PLOS Global Public Health

2021 AIDS Patient Care & STDs

Fieldwork Experience

Aug 2025 (upcoming) This summer, I will conduct fieldwork in Brazil and Peru to investigate the impacts of Amazonian highway construction on dengue transmission. This project builds on earlier findings from Madre de Dios, Peru, where we documented a substantial increase in dengue cases following road paving. In Brazil, I will collaborate with remote sensing and epidemiology experts to visit highway corridors representing different stages of development, conducting informal interviews and field observations to explore mobility, infrastructure, and health linkages. I will also return to Peru to present findings to the national CDC and local health authorities, reinforcing research collaborations.

Nov 2022 To study impacts of land-use change on *Biomphalaria* snails (obligate hosts for schistosomiasis) across Brazil, I visited multiple *Biomphalaria* snail collection field sites across São Paulo state with the Coordination for Disease Control of the State Health Secretariat of São Paulo (CCD-SP). I also visited the Image Processing Division of Brazil's National Institute for Space Research (INPE) in São José dos Campos, São Paulo, Brazil to further understand the institute's remote-sensing analyses of deforestation and agricultural land development.

Aug–Sept 2022 Working with the Regional Health Directorate of Madre de Dios, Peru (DIRESA) and the Emerge team of the Universidad Peruana Cayetano Heredia (UPCH), I conducted epidemiologic and ecologic field research to study the compounding impacts of human behavior and land-use change on vector-borne disease transmission. Over the course of six weeks in the field, we conducted household surveys, observed household characteristics, tested blood, stool, and urine samples, and trapped hosts and vectors of interest. Data collection took place in six communities spanning multiple stages of the land-use gradient (urban, mining, and agricultural areas). I worked successfully in a Spanish-only working environment.

Teaching and Workshops

Spring 2025 Guest Lecture for Ecology and Evolution of Infectious Disease in a Changing World (BIO2N), Stanford University. 2025 Apr.

Fall 2024 Guest Lecture for Human and Planetary Health Course (SUSTAIN 103), Stanford University

Spring 2024 Google Earth Engine Workshop Teaching Assistant and Scientific Planning Committee Member for the 2024 Ecology and Evolution of Infectious Disease Conference at Stanford University

Fall 2022 Co-led workshop on species distribution modeling techniques for international collaborators and students visiting from Universidad Peruana Cayetano Heredia (UPCH). github.com/ckglidden/UPCH-species-distribution-tutorial

Spring 2022 Teaching Assistant for Global Change and Emerging Infectious Disease (EARTHSYS 214)

Mentorship

2022-2025 Raina Talwar Bhatia (Biology Summer Undergraduate Research Program, King Center Undergraduate Fellow, and International Policy Honors Thesis): Pave, Rain, Leptospira Gain - The Impact of Climate and Land-Use Change on Leptospirosis in Brazil 2007–2023. Awarded a 2025 Firestone Medal for Excellence in Undergraduate Research.

2023-2025 Lyn Lee Loth (STEM Fellow and Biology Honors Thesis): How do urbanization and climate interact to alter dengue dynamics in Phnom Penh, Cambodia?

2024-2025 Kunal Arora (Science Writing Advancing Planetary Health Program): Co-creation of multiple scientific communication products for Interoceanic Highway and dengue project.

2025 Harper Baer (Biology Research Credits): An introduction to dengue SIR compartmental modeling methods.

2023-2024 Sage McGinley-Smith (Computer Science Departmental Independent Project and Computer Science Research Credits): Classification of pineapple and palm plantations in Costa Rica for environmental and human health applications.

Leadership

2024-2025 *E-IPER Executive Committee* Doctoral Student Representative

2020-2021 Surveillance, Information Management, and Statistics Office representative and voting member for *CDC DFWED Tactical and Mission Coordination Teams*

2019-2020 Volunteered and co-taught for a community college business math class within the *Rhode Island Department of Corrections*

Languages

English First Language

Spanish Oral and Written Proficiency