

# Justin K. Sheen

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Graduate Student  
Department of Ecology and Evolutionary Biology, Princeton University  
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**RESEARCH INTERESTS** Ecological structures that affect viral transmission and evolution, trial designs for infectious disease interventions

**ACADEMIC BACKGROUND** *Ph.D. Ecology and Evolutionary Biology* 2020-June 2025  
Princeton University, Princeton, NJ, USA

- *M.A. Ecology and Evolutionary Biology* 2022
- Adviser: C. Jessica E. Metcalf

*B.A. Biology (concentration: computational biology)* 2017  
University of Pennsylvania, Philadelphia, PA, USA

- Graduated magna cum laude with distinction in the major
- Thesis adviser: Michael Z. Levy
- Thesis title: “The behavior of the infected vector of Chagas disease”
- Minors in Statistics and English

**EMPLOYMENT** • Research Specialist, Department of Biostatistics, Epidemiology and Informatics, University of Pennsylvania, Philadelphia, PA, USA, 2017-2020

– Adviser: Michael Z. Levy

• Intern, Institute for Disease Modeling (IDM), Bellevue, WA, USA, 2018

– Adviser: Joel C. Miller

**JOURNAL ARTICLES** See also [my google scholar](#) page.

13. **Sheen**, Kennedy-Shaffer, Levy, Metcalf, [Design of field trials for the evaluation of transmissible vaccines in animal populations](#), *PLoS Computational Biology*, February 2025
12. Laxminarayan, Gleason, **Sheen**, Saad-Roy, Metcalf, Palmer, Fèvre, [Unlock the potential of vaccines in food-producing animals](#), *Science*, June 2024
11. Streicker, Griffiths, Antia, Bergner, Bowman, de Moraes, Esvelt, Famulare, Gilbert, He, Jarvis, Kennedy, Kuzma, Wanyonyi, Remien, Rocke, Rosenke, Schreiner, **Sheen**, Simons, Yordanova, Bull, Nuismer, [Developing transmissible vaccines for animal infections](#), *Science*, April 2024
10. Freedman, **Sheen**, Tsai, Yao, Lifshitz, Adinaro, Levin, Grenfell, Metcalf, [Inferring COVID-19 testing and vaccination behavior from New Jersey testing data](#), *Proceedings of the National Academy of Sciences USA*, April 2024
9. **Sheen**, Curtin, Finley, Konstorom, McGee, Craig, [Integrating Diversity, Equity, and Inclusion into Preclinical, Clinical, and Public Health Mathematical Models](#), *Bulletin of Mathematical Biology*, April 2024

8. **Sheen**, Rasambainarivo, Saad-Roy, Grenfell, Metcalf, [Markets as drivers of selection for highly virulent poultry pathogens](#), *Nature Communications*, January 2024
7. Rokhsar, Raynor, **Sheen**, Goldstein, Levy, Castillo-Neyra, [Modeling the impact of xenointoxication in dogs to halt Trypanosoma cruzi transmission](#), *PLOS Computational Biology*, May 2023
6. Arevalo-Nieto, **Sheen**, Condori-Luna, Condori-Pino, Shinnick, Peterson, Castillo-Neyra, Levy, [Incentivizing optimal risk map use for Triatoma infestans surveillance in urban environments](#), *PLOS Global Public Health*, August 2022
5. **Sheen**, Haushofer, Metcalf, Kennedy-Shaffer, [The required size of cluster randomized trials of nonpharmaceutical interventions in epidemic settings](#), *Statistics in Medicine*, March 2022
4. Buttenheim, Castillo-Neyra, Arevalo-Nieto, Shinnick, **Sheen**, Volpp, Behrman, Levy, [Do Incentives Crowd Out Motivation? A Feasibility Study of a Community Vector-Control Campaign in Peru](#), *Behavioral Medicine*, August 2021
3. Nande\*, **Sheen\*** (co-first author), Walters, Klein, Chinazzi, Gheorghe, Adlam, Shinnick, Florencia Tejada, Scarpino, Vespignani, Greenlee, Schneider, Levy\*, Hill\* (co-senior author), [The effect of eviction moratoria on the transmission of SARS-CoV-2](#), *Nature Communications*, April 2021
2. Nande, Adlam, **Sheen**, Levy, Hill, [Dynamics of COVID-19 under social distancing measures are driven by transmission network structure](#), *PLOS Computational Biology*, February 2021
1. Gutfraind\*, Peterson\* (co-first author), Billig Rose, Arevalo-Nieto, **Sheen**, Condori-Luna, Tankasala, Castillo-Neyra, Condori-Pino, Anand, Naquira-Verlarde, Levy, [Integrating evidence, models and maps to enhance Chagas disease vector surveillance](#), *PLOS Neglected Tropical Diseases*, November 2018

## PRESENTATIONS

3. “The Value of Vaccines: An Introduction,” *Value of Animal Vaccines*. Princeton, NJ, USA, 2024 (with Saad-Roy, C)
2. “The Effect of Evictions on the Transmission of SARS-CoV-2,” *Society for Mathematical Biology Conference*. DEI Session. Columbus, OH, USA, 2023
1. “Two-stage randomized trial design to evaluate a transmissible vaccine,” *Coordinating the Development of Self-Disseminating Vaccines for Spillover Prevention Workshop*. Stevenson, WA, USA, 2023

## POSTERS

8. **Sheen\*** (co-first author), Nande\*, Walters, Klein, Chinazzi, Gheorghe, Adlam, Shinnick, Florencia Tejada, Scarpino, Vespignani, Greenlee, Schneider, Levy\*, Hill\* (co-senior author), [The effect of eviction moratoria on the transmission of SARS-CoV-2](#), *Institute for Disease Modeling (IDM) Annual Symposium*, Seattle, WA, USA, 2024
7. **Sheen**, Kennedy-Shaffer, Levy, Metcalf, “Design of field trials for the evaluation of transmissible vaccines in animal populations”, *Ecology and Evolution of Infectious Disease Conference (EEID)*, Stanford, CA, USA, 2024
6. **Sheen**, Rasambainarivo, Saad-Roy, Metcalf, Grenfell, “Markets can select for and maintain highly virulent poultry pathogens”, *Ecology and Evolution of Infectious Disease Conference (EEID)*, State College, PA, USA, 2023
5. Rokhsar, Raynor, **Sheen**, Levy, Castillo-Neyra, “Modeling the impact of treating dogs with fluralaner to halt Trypanosoma cruzi transmission”, *Models of Infectious Disease Agent Study Conference (MIDAS)*, Bethesda, MD, USA, 2022

4. Freedman, **Sheen**, Tsai, Yao, Lifshitz, Adinaro, Metcalf, Grenfell, “Estimating the true trajectory of SARS-CoV-2 in New Jersey using serology and PCR data”, *Ecology and Evolution of Infectious Disease Conference (EEID)*, online conference, 2021
3. **Sheen**, Arevalo-Nieto, Bhattacharya, Castillo-Neyra, Levy, “Functional Optimization of Surveillance for Chagas Disease Vectors in a City”, *Ecology and Evolution of Infectious Disease Conference (EEID)*, Princeton, NJ, USA, 2019
2. **Sheen**, Salazar-Sanchez, Chipana-Ramos, Vargas-Maquera, Zamudio-Rodriguez, “The Behavior of the Infected Vector of Chagas Disease”, *Ecology and Evolution of Infectious Disease Conference (EEID)*, Santa Barbara, CA, USA, 2018
1. Arevalo-Nieto, Gutfraind, Peterson, Billig, Franco-Condori, Tankasala, **Sheen**, Castillo-Neyra, Levy, “VectorPoint: using free, open-source software to improve vector surveillance”, *American Society of Tropical Medicine and Hygiene Conference*, Baltimore, Maryland, USA, 2017

## BOOK CHAPTERS

1. Metcalf, **Sheen**. “Life History and the Control of Diseases.” *Life History Evolution: Traits, Interactions, and Applications*, edited by Segoli and Wajnberg, Wiley, March 2025

## TEACHING ASSISTANT

- EEB 355: Statistics for Biologists, Princeton University, Spring 2024
- ENV 304: Disease Ecology, Princeton University, Fall 2023
- GHP 351: Epidemiology, Princeton University, Spring 2022
- EEB 211: Life on Earth, Princeton University, Fall 2022

## LEADERSHIP AND SERVICE

- Led linear regression tutorial, EEB department, Princeton University
- Co-organized fundraiser for staff at Mpala Research Centre in Laikipia, Kenya
- Co-organized “Disease group” meetings, EEB department, Princeton University
- Co-edited Committee on Climate for All newsletter, EEB department, Princeton University
- Vice chair (and acting Chair), Social chair of Lakeside Apartments Committee

## AD HOC REVIEWER

- Nature Medicine, PLOS Biology, PLOS Computational Biology, PLOS Pathogens, The Proceedings of the National Academy of Sciences USA (PNAS), Proceedings of the Royal Society B: Biological Sciences

## SOFTWARE

- Java, Python, R, L<sup>A</sup>T<sub>E</sub>X
- See also [my github](#) page.

## REFERENCES

### C. Jessica E. Metcalf

Professor  
 Department of Ecology and Evolutionary Biology  
 School of Public and International Affairs  
 Princeton University

### Bryan T. Grenfell

Kathryn Briger and Sarah Fenton Professor  
 Department of Ecology and Evolutionary Biology

School of Public and International Affairs  
Princeton University

**Christopher D. Golden**

Associate Professor  
Department of Nutrition  
School of Public Health  
Harvard University