# Rachel Sippy

Department of Genetics, 20 Downing Street, University of Cambridge, Cambridge, CB2 3EH
+1 (319) 551-1000 • rjs271@cam.ac.uk • www.rachelsippy.com • @GermCurves • ORCiD: 0000-0003-3617-2093

## Education

2013—2018 **University of Wisconsin-Madison**, G.P.A. 3.86
PhD in Epidemiology; Minor in Medical Microbiology & Immunology
Advisors: Jonathan Patz & Jorge Osorio
Graduate Certificate in Global Health
- Dissertation: Climate & Environmental Drivers of Dengue Seasonality in Ecuador
- National Center for Complementary & Integrative Health Fellowship
- William E. Scheckler, MD Research Writing Award

2011—2013 **University of Utah**, G.P.A. 3.98
Master of Public Health
Advisor: Christina Porucznik
- Capstone: Contact Among School-aged Children in Utah
- Phi Kappa Phi Honor Society, Delta Omega Honor Society

2003—2007 **Iowa State University**, G.P.A. 3.46
Bachelor of Science in Genetics; Minor in Philosophy
- Dean's List, Alpha Lambda Delta Honor Society, Phi Eta Sigma Honor Society

## Research Experience

Present Postdoctoral Researcher, **University of Cambridge**, Henrik Salje
- Studied the long-term evolution of dengue virus and drivers of dengue transmission processes
- Wrote grants and manuscripts

2018—2020 Postdoctoral Researcher & Program Manager, **University of Florida, SUNY-Upstate Medical University**, Anna Stewart-Ibarra & Sadie Ryan
- Developed and executed research projects related to vector-borne illness and environmental exposures in collaboration with local communities and public health institutions in southern coastal Ecuador
- Studied relationship between microclimates and regional climate patterns
- Determined dual roles of climate and built environment on mosquito-borne illness and mosquito exposure risk at varying spatial scales
- Developed prediction models for disease outbreaks and patient outcomes
- Supervised projects and staff at an international field site
- Trained and mentored undergraduate, graduate, and medical students
- Wrote grants, summary reports, protocols, and manuscripts
- Managed and cleaned multiple cross-linked datasets
- Organized workshops, symposia, and outreach activities

2013—2018 Epidemiology Graduate Student, **University of Wisconsin-Madison**
- Developed projects with local non-profit to address needs in rural Ecuador
- Developed and executed research plan for fieldwork on mosquito surveillance
- Prepared grants and protocols for hospital-based case-control study on socioeconomic risk factors and patient knowledge of acute febrile illness
- Analyzed data and prepared manuscripts regarding seasonality of mosquitos, climate, and dengue using generalized linear models, spatiotemporal analyses and predictions using machine learning

2013—2018 NCCIH Fellow**, University of Wisconsin-Madison**, Bruce Barrett
- Analyzed the effect of mindfulness meditation and exercise on acute respiratory illness using longitudinal and mediation approaches
- Participated in weekly trainings on research and professional development

2015—2016 Surveillance and Outbreak Support, **Wisconsin Division of Public Health**
- Completed follow-up interviews with persons diagnosed with reportable diseases
- Assisted staff with data entry, cleaning, and analysis of enteric disease reports

2012—2013 Research Intern, **University of Utah**, Molly Leecaster
- Assisted with Contact among Utah's School-aged Population Study of influenza
- Briefed children and distributed proximity sensors and subjective contact logs to determine social contacts and mixing patterns for influenza transmission models

2012 Visiting Scientist, **Charles Darwin Research Station**, Patty Parker
- Sampled mosquito populations to determine potential vectors of avian malaria and correlations between environmental factors and prevalence of avian malaria
- Captured and sampled Galápagos hawks for study of correlation between hawk social interactions and transfer of parasites between and among social groups
- Prepared biological samples for inspection and international airline transportation

2011 Student Researcher, **Gamma West Cancer Services**
- Collected data on post-intervention patient satisfaction and health outcomes for prostate cancer patients treated with radiation brachytherapy

2008—2011 Assistant Scientist, **Iowa State University**, Qijing Zhang
- Performed multi-locus sequence typing, pulsed-field gel electrophoresis, and minimum inhibitory concentration determination of isolates collected from sheep, cattle, and goats for epidemiological study
- Analyzed data to examine genetic/evolutionary relationships between isolates
- Generated expression vectors for and obtained purified recombinant proteins CmeA and CmeC for future study of antibiotic resistance in *Campylobacter*
- Assisted in handling, inoculation, and sampling of lab animals for study of abortifacient *Campylobacter*
- Completed genome sequence of ovine abortion-associated isolate of *Campylobacter* for research of virulence factors and abortion-causing genetics
- Performed cell culture infection/cytotoxicity studies of *Campylobacter* strains
- Wrote and contributed to several publications and grants
- Trained and supervised undergraduates, graduates, and visiting scholars on techniques, safety, procedures, and research
- Responsible for general lab maintenance of supplies, orders, repairs and calibration of equipment, and upkeep of safety certifications in BSL-2 laboratory with a $100,000 budget

2007—2008 Research Assistant**, University of Iowa**, Jeff Murray, Richard Smith, and Ed Stone
- Utilized simple sequence conformation polymorphism testing to find causal mutations of rare childhood blindness disorder Leber's congenital amaurosis
- Performed linkage analysis among family with autosomal dominant glaucoma to determine causal mutation
- Used simple sequence repeat polymorphism testing to find gene causing familial autosomal dominant deafness
- Completed linkage study of immune system genes to find mutations associated with premature birth

2006—2007 Undergraduate Research Assistant**, Iowa State University**, James Reecy
- Collected tissues from wild-type and myostatin mutant mice
- Compared DNA, RNA, and protein content levels of collected tissues for studies of dwarfism in Angus cattle

2006 Technology Transfer Intern**, Fort Dodge Animal Health**
- Maintained tissue culture of MDCK and CRFK cells with varying growth conditions
- Designed and executed propagation optimization of six antigens in serum-free media for development of improved feline vaccines

2006 Undergraduate Research Assistant, **Iowa State University**, Richard Robson
- Characterized interaction of human muscle proteins α-actinin and synemin
- Purified protein domains of α-actinin and synemin and performed blot overlays

2004—2008 Seasonal Research Assistant**, University of Iowa**, Mike Feiss
- Performed burst size studies of bacteriophage lambda DNA packaging mutants

## Scholarships & Awards

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|---|---|
| 2019 | Best Abstract – International Society for Environmental Epidemiology ($100) |
| 2019 | VectorBiTE Workshop Travel ($2000) |
| 2018 | VectorBiTE Workshop Travel ($880) |
| 2017 | William E. Scheckler, MD Research Writing Award |
| 2017 | American Society for Tropical Medicine & Hygiene Travel Award ($2560) |
| 2017 | Twin Cities Women's Philanthropy Council International Research Travel Award ($1500) |
| 2017 | Best Oral Presentation - Great Plains Emerging Infectious Disease Conference ($100) |
| 2017 | Skatrud/Rankin Research Conference Travel Award ($1000) |
| 2016 | Global Health Institute Research Support ($3100) |
| 2016 | Private Donations ($4530) |
| 2014 | Genetic Analysis Workshop 19 Travel Scholarship ($1000) |
| 2013 | American Public Health Association Council of Affiliates Poster Award |
| 2013 | Utah Public Health Association Scholarship ($500) |
| 2013 | F. Marian Bishop Scholarship ($1500) |
| 2012, 2013 | Utah Public Health Association Conference Scholar ($95) |

## Grants

Active Support

University of Wisconsin-Madison Global Health Institute Paskewitz (PI) 7/1/2020-6/30/2022
"Tick-borne disease in South America: casting light on neglected vector-borne diseases" ($23,625)
Using banked samples from Argentina, Colombia, and Ecuador, we assess the presence of *Rickettsia* disease in three countries.
Role: Co-Investigator

SUNY Center for Environmental Health and Medicine Leydet (PI) 10/1/2019-9/30/2020
"Public health strategies to understand and combat the burden of ticks and tick-borne diseases in low- and middle-income countries: A pilot study in southern coastal Ecuador." ($15,000)
This project assessed the presence of tick species and tick-borne illnesses in an urban environment in Machala, Ecuador.
Role: Co-Investigator

Completed Support

Ira and Ineva Reilly Baldwin Wisconsin Idea Endowment Osorio (PI) 7/1/2016-6/30/2017
"Building capacity for mosquito-borne disease surveillance in Santo Domingo, Ecuador" ($4,000)
The purpose of this project is to build capacity for mosquito surveillance in Ecuador, particularly of the species that transmits dengue, chikungunya, and Zika virus.
Role: Co-Investigator

NIH/NICCH T32 Barrett (PI) 9/1/2013-5/31/2018
"Research training in complementary and alternative medicine"
This training program served to support pre- and post-doctoral researchers interested in complementary and integrative health.
Role: Trainee

**Publications (published) * denotes co-first author, #denotes mentee**

1. **Sippy R**, Ortiz Prado E, Pizarro-Fajardo F, Hidalgo I, Victoriano-Aguilar G, Bonville CA, Cueva-Aponte C, Salazar-Gómez M, Carrillo-Aponte JL, Borbor Cordova M, Rincón Polo G, Suryadevara M, Domachowske JB. Medically attended outpatient coronavirus infections in Ecuadorean children during the 20 months preceding countrywide lockdown related to the SARS-CoV-2 pandemic of 2020. *Pediatr Infect Dis J*. 2020 Oct;39(10):e291-e296. doi: 10.1097/INF.0000000000002840

2. Wilkinson J, Arnold KF, Murray EJ, van Smeden M, Carr K, **Sippy R**, de Kamps M, Beam A, Konigorski S, Lippert C, Gilthorpe MS, Tennant PWG. It is time to reality check the promises of machine learning-powered precision medicine. *Lancet Digital Health*. 2020 Sep 16. doi: 10.1016/S2589-7500(20)30200-4

3. Estallo EL, **Sippy R**, Stewart-Ibarra AM, Grech MG, Benitez EM, Ludueña-Almeida FF, Ainete M, Frias Cespedes M, Robert M, Romero MM, Almirón WR. A decade of arbovirus emergence in the temperate southern cone of South America: dengue, *Aedes aegypti* and climate dynamics in Córdoba, Argentina. *Heliyon*. 2020 Sep;6(9):e04858. doi: 10.1016/j.heliyon.2020.e04858

4. Fletcher IK, Stewart-Ibarra A, **Sippy R**, Carrasco-Escobar G, Silva M, Beltran-Ayala E, Ordoñez T, Adrian J, Sáenz FE, Drakeley C, Jones K, Lowe R. The relative role of climate variation and control interventions on malaria elimination efforts in El Oro, Ecuador: a modelling study. *Front Environ Sci*. 2020 Aug 27;8:135. doi: 10.3389/fenvs.2020.00135

5. Petrova D, Rodó X, **Sippy R**, Ballester J, Mejía R, Beltrán-Ayala E, Borbor-Cordova M, Vallejo M, Olmedo A, Stewart-Ibarra A, Lowe R. The 2018-2019 weak El Niño: predicting the risk of a dengue outbreak in Machala, Ecuador. *Int J Climatol*. 2020 Jul 14. doi: 10.1002/joc.6744

6. Pollett S, Johansson M, Biggerstaff M, Morton L, Bazaco S, Brett-Major D, Stewart-Ibarra A, Pavlin J, Mate S, **Sippy R**, Hartman L, Reich N, Maljkovic Berry I, Chretien J, Althouse B, Meyer D, Viboud C, Rivers C. Identification and evaluation of epidemic prediction and forecasting reporting guidelines: a systematic review and a call for action. *Epidemics*. 2020 Jul 9;100400. doi: 10.1016/j.epidem.2020.100400

7. **Sippy R**, Lippi C, Stewart Ibarra A, Ryan S. Endemic and Emerging Arboviruses of Mosquitoes in Ecuador. *Práctica Familiar Rural*. 2020; 5(2). doi: 10.23936/pfr.v5i2.165

8. **Sippy R**, Lotto M, Bideaux A, Torres I, Narsipur S, Bhargava, Stewart Ibarra A. A national analysis of risk for potential chronic kidney disease of unknown etiology in Ecuador. *Práctica Familiar Rural*. 2020; 5(2). doi: 10.23936/pfr.v5i2.161

9. Maljkovic Berry I, Rutvisuttinunt W, **Sippy R**, Beltran-Ayala E, Figueroa K, Ryan S, Srikanth A, Stewart-Ibarra AM, Endy T, Jarman RG. The origins of dengue and chikungunya viruses in Ecuador following increased migration from Venezuela and Colombia. *BMC Evol Biol*. 2020 Feb 19;20(1):31. doi: 10.1186/s12862-020-1596-8

10. **Sippy R***, Rivera G*, Sanchez V, Heras Heras F, Morejón B, Beltrán-Ayala E, Hikida RS, López-Latorre MA, Aguirre A, Stewart-Ibarra AM, Larsen DA, Neira M. Ingested insecticide to control *Aedes aegypti*: Developing a novel dried attractive toxic sugar bait device for intra-domiciliary control. *Parasites Vectors*. 2020 Feb 17;13(1):78. doi: 10.1186/s13071-020-3930-9

11. **Sippy R**, #Farrell D, Lichtenstein D, Nigtingale R, Harris M, Toth J, Hantztidiamantis P, #Usher N, Cueva C, Barzallo Aguilar J, Puthumana A, Lupone C, Endy T, Ryan SJ, Stewart Ibarra AM. Severity Index for Suspected Arbovirus (SISA): Machine Learning for Accurate Prediction of Hospitalization in Subjects Suspected of Arboviral Infection. *PLoS Negl Trop Dis*. 2020 Feb 14;14(2):e0007969. doi: 10.1371/journal.pntd.0007969

12. Anderson KB, Stewart-Ibarra AM, Buddhari D, Beltran Ayala EF, **Sippy RJ**, Iamsirithaworn S, Ryan SJ, Fernandez S, Jarman RG, Thomas SJ, Endy TP. Key Findings and Comparisons From Analogous Case-Cluster Studies for Dengue Virus Infection Conducted in Machala, Ecuador, and Kamphaeng Phet, Thailand. *Front Public Health*, 12 Feb 2020;8. doi: 10.3389/fpubh.2020.00002

13. #Farovitch L*, **Sippy R***, Beltrán-Ayala E, Endy TP, Stewart-Ibarra AM, Leydet B. Tick-borne Disease in Southern Coastal Ecuador: Detection of Antibodies to Spotted Fever Group Rickettsia in Febrile Individuals in 2014 – 2015. *AJTMH*. 2019 Sep 23. doi: 10.4269/ajtmh.19-0157

14. Mordecai E, Caldwell J, Grossman M, Lippi C, Johnson L, Neira M, Rohr JR, Ryan S, Savage V, Shocket M, **Sippy R**, Stewart Ibarra A, Thomas M, Villena O. The thermal biology of mosquito-borne disease. *Ecol Lett*. 2019 Oct;22(10):1690-1708. doi: 10.1111/ele.13335

15. Ryan SJ, Mundis SJ, Aguirre A, Lippi CA, Beltrán E, Heras F, Sanchez V, Borbor-Cordova MJ, **Sippy R**, Stewart-Ibarra AM, Neira M. Seasonal and geographic variation in insecticide resistance in *Aedes aegypti* in southern Ecuador. *PLoS Negl Trop Dis*. 2019;13(6): e0007448. doi: 10.1371/journal.pntd.0007448

16. **Sippy R**, Herrera D, Gaus D, Gangnon R, Osorio J, Patz J. Seasonal Patterns of Dengue Fever in Rural Ecuador: 2009-2016. *PLoS Negl Trop Dis*. 2019;13(5): e0007360. doi: 10.1371/journal.pntd.0007360

17. Jaramillo-Ochoa R*, **Sippy R***, #Farrell DF, Cueva-Aponte C, Beltran-Ayala E, Gonzaga JL, Ordoñez León T, Quintana FA, Ryan SJ, Stewart-Ibarra AM. Effects of political instability in Venezuela on malaria resurgence at Ecuador-Peru border, 2018. *Emerg Infect Dis*. 2019 Apr;25(4):834-836. doi: 10.3201/eid2504.181355

18. **Sippy R,** Moreira F. *Aedes albopictus* in South America and its relationship with the distribution and maintenance of diseases**.** *Práctica Familiar Rural*. 2016; 1(3). doi: 10.23936/pfr.v1i3.67

19. Oh CS, Sippy J, Charbonneau B, Hutchinson JC, Romero OE, Barton M, Patel P, **Sippy R**, Feiss M. DNA Topology and the Initiation of Virus DNA Packaging. *PLoS One*. 2016 May 4;11(5):e0154785. doi: 10.1371/journal.pone.0154785

20. **Sippy R**, Kolesar JE, Darst BF, Engelman CD. Prioritization of Family Member Sequencing for the Detection of Rare Variants. *BMC Proc*. 2016 Oct 18;10(Suppl 7):227-231. doi: 10.1186/s12919-016-0035-8

21. Sippy J, Patel P, Vahanian N, **Sippy R**, Feiss M. Genetics of critical contacts and clashes in the DNA packaging specificities of bacteriophages λ and 21. *Virol*. 2015 Feb;476:115-23. doi: 10.1016/j.virol.2014.11.028

22. Wu Z, **Sippy R**, Sahin O, Plummer P, Vidal A, Newell D, Zhang Q. Genetic diversity and antimicrobial susceptibility of *Campylobacter jejuni* isolates associated with sheep abortion in the United States and the United Kingdom. *J Clin Microbiol*. 2014 Jun;52(6):1853-61. doi: 10.1128/JCM.00355-14

23. **Sippy R**, Sandoval-Green CMJ, Sahin O, Plummer P, Fairbanks WS, Zhang Q, Blanchong JA. Occurrence and molecular analysis of *Campylobacter* in wildlife on livestock farms. *Vet Microbiol*. 2012 Jun 15;157(3-4):369-75. doi: 10.1016/j.vetmic.2011.12.026

24. Luo Y, Sahin O, Dai L, **Sippy R**, Wu Z, Zhang Q. Development of a loop-mediated isothermal amplification assay for rapid, sensitive and specific detection of a *Campylobacter jejuni* clone. *J Vet Med Sci*. 2012 May;74(5):591-6. doi: 10.1292/jvms.11-0462

25. Sahin O, Fitzgerald C, Stroika S, Zhao S, **Sippy R**, Kwan P, Plummer P, Han J, Yaeger M, Zhang Q. Molecular Evidence for Zoonotic Transmission of an Emergent Highly Pathogenic *Campylobacter jejuni* Clone in the United States. *J Clin Microbiol*. 2012 Mar;50(3):680-7. doi: 10.1128/JCM.06167-11

26. Plummer P, Sahin O, Burrough E, **Sippy R**, Mou K, Rabenold J, Yaeger M, Zhang Q. LuxS in the fitness and virulence of *Campylobacter jejuni*. *Infect Immun*. 2012 Feb;80(2):585-93. doi: 10.1128/IAI.05766-11

https://www.ncbi.nlm.nih.gov/myncbi/rachel.sippy.2/bibliography/public/

**Publications (in preparation)**

Caldwell JM, LaBeaud AD, Lambin EF, Stewart-Ibarra AM, Ndenga BA, Mutuku FM, Krystosik AR, Beltran Ayala E, Anyamba A, Borbor-Cordova MJ, Damoah R, Grossi-Soyster EN, Heras Heras F, Ngugi HN, Ryan SJ, Shah MM, **Sippy R**, Mordecai EA. Climate explains geographic and temporal variation in mosquito-borne disease dynamics on two continents. In review at *Nat Comm* Jan 2020, doi: 10.1101/2020.02.07.938720

Martin JL, Stewart-Ibarra AM, Efraín Beltrán Ayala E, Mordecai EA, **Sippy R**, Heras Heras F, Blackburn JK, Ryan SJ. Household and climate factors influence *Aedes aegypti* risk in the arid city of Huaquillas, Ecuador. In review at *PLoS Negl Trop Dis* May 2020, doi: 10.1101/2020.05.19.104372

**Book Chapters**

Greenwood C, **Sippy R**, Weinert B, and Adams A. Diet and Nutrition. In Remington PL, Brownson R, Wegner MV: Chronic disease epidemiology and control. 4th Edition. Chapter 8. 2016.

## Oral Presentations

1. Prediction of Microclimates Using a Comparative Machine Learning Approach. *Society for Epidemiologic Research Annual Meeting*, Virtual, 2020.
2. Semi-Field Trials of a Nontoxic, Low-cost, Dried Attractive Bait Station for *Aedes aegypti* Control. *American Society for Tropical Medicine & Hygiene Annual Meeting*, National Harbor, MD, 2019.
3. Relationship between household characteristics and mosquito abundance in Ecuador. *International Congress of Infectious Disease & Tropical Medicine,* Quito, Ecuador, 2018.
4. Relationship between microclimates, environment, and mosquito abundance in Ecuador. *International Congress of Infectious Disease & Tropical Medicine,* Quito, Ecuador, 2018.
5. Seasonality of dengue fever in rural Ecuador: 2009—2016. *International Congress of Infectious Disease & Tropical Medicine,* Quito, Ecuador, 2018.
6. Estudio del Cohorte. *Research Collaboration Day*, Machala, Ecuador, 2018.
7. Men & Women in MEPARI-II. *Family Medicine & Community Health Fellowship Symposium,* Madison, WI, 2017.
8. Communicating health issues under a changing climate at the bedside and beyond. *Family Medicine & Community Health Fellowship Symposium,* Madison, WI, 2017.
9. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *University of Wisconsin-Madison One Health Colloquium,* Madison, WI, 2017.
10. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *Great Plains Emerging Infectious Disease Conference*, Iowa City, IA, 2017.
11. Adherence to treatment: a mediation analysis. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2017.
12. Validity of self-reported body mass index. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2016.
13. Acute febrile illness in Santo Domingo, Ecuador. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2015.
14. PersonTime: visualizing health & disease for your cohort. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2015.
15. Sensitivity analysis of potential differential disease misclassification in MEPARI data. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2014.
16. Secondary analyses of the effect of exercise or meditation on the incidence of acute respiratory infections. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2014.
17. Prioritization of family member sequencing for the detection of rare variants: extreme phenotypes. *Genetic Analysis Workshop 19*, Vienna, Austria, 2014.
18. Infections among MEPARI participants. *Family Medicine & Community Health Fellowship Symposium*, Madison, WI, 2013.
19. Bridging the gap: engaging public health students and professional organizations in Utah. *Utah Public Health Association Conference*, Ogden, UT, 2013.
20. Avian malaria in the Galápagos. *Division of Public Health Research Roundtable*, Salt Lake City, UT, 2012.
21. Emergence of a highly pathogenic *Campylobacter jejuni* clone: insights into pathogenesis and impacts on animal and public health. *China Agricultural University*, Beijing, China, 2010.

**Poster Presentations**

1. Impact of Household Characteristics on *Aedes aegypti* Presence in Rural Ecuador. *Society for Epidemiologic Research Annual Meeting,* Virtual, 2020.

2. Prediction of Microclimates Using Machine Learning. *Emerging Pathogens Institute Research Day*, Gainesville, FL, 2020.

3. Impact of Household Characteristics on *Aedes aegypti* Abundance in Rural Ecuador. *American Society for Tropical Medicine & Hygiene Annual Meeting*, National Harbor, MD, 2019.

4. Prediction of Microclimates Using Machine Learning. *American Society for Tropical Medicine & Hygiene Annual Meeting*, National Harbor, MD, 2019.

5. Prediction of Microclimates Using Machine Learning. *International Society for Environmental Epidemiology Annual Meeting,* Utrecht, Netherlands, 2019.

6. A National Analysis of Potential Chronic Kidney Disease of Undetermined Causes in Ecuador. *International Society for Environmental Epidemiology Annual Meeting,* Utrecht, Netherlands, 2019.
7. Relationship between household characteristics and mosquito abundance in Ecuador. *American Society for Tropical Medicine & Hygiene*, New Orleans, LA, 2018.

8. Relationship between microclimate, environment, and mosquito abundance in Ecuador. *American Society for Tropical Medicine & Hygiene*, New Orleans, LA, 2018.

9. Seasonal variation in microclimates and the role of regional weather and environmental factors. *International Society for Environmental Epidemiology Annual Meeting*, Ottawa, Canada, 2018.

10. Seasonality of dengue in Ecuador and vaccination timing. *Epidemics International Conference*, Sitges, Spain, 2017.

11. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *Epidemics International Conference*, Sitges, Spain, 2017.

12. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *American Society for Tropical Medicine & Hygiene*, Baltimore, MD, 2017.

13. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *American Society for Tropical Medicine & Hygiene Young Investigator Award Competition*, Baltimore, MD, 2017.

14. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *Society for Epidemiologic Research General Meeting*, Seattle, WA, 2017.

15. Seasonality of arboviral illness in rural Ecuador: 2009—2016. *Population Health Sciences Departmental Welcome Day Poster Session*, Madison, WI, 2017.

16. Mosquito surveillance and population modeling in Santo Domingo, Ecuador. *Global Health Symposium*, Madison, WI, 2016.

17. Mosquito surveillance and population modeling in Santo Domingo, Ecuador. *Population Health Sciences Departmental Welcome Day Poster Session*, Madison, WI, 2016.

18. Non-travel associated cases of enteropathogenic or enterotoxigenic *Escherichia coli*. *Epidemiology Congress of the Americas*, Miami, FL, 2016.

19. Exercise or mindfulness meditation decreases risk of acute respiratory infection. *Society for Epidemiologic Research General Meeting*, Denver, CO, 2015.

20. Exercise or mindfulness meditation decreases risk of acute respiratory infection. *Population Health Sciences Departmental Welcome Day Poster Session*, Madison, WI, 2015.

21. PersonTime: visualizing health & disease for your cohort. *WARF Discovery Challenge Poster Session*, Madison, WI, 2015.

22. Secondary analyses of the effect of exercise or meditation on the incidence of acute respiratory infections. *IDWeek Poster Session*, Philadelphia, PA, 2014.

23. Secondary analyses of the effect of exercise or meditation on the incidence of acute respiratory infections. *WARF Discovery Challenge Poster Session,* Madison, WI, 2014.

24. Secondary analyses of the effect of exercise or meditation on the incidence of acute respiratory infections. *Population Health Sciences Departmental Welcome Day Poster Session*, Madison, WI, 2014.
25. Bridging the gap: engaging public health students and professional organizations in Utah, *American Public Health Association Conference*, Boston, MA, 2013.

26. Genetic diversity of *Campylobacter* isolates associated with sheep abortion in the United States and the United Kingdom. *American Society for Microbiology General Meeting*, New Orleans, LA, 2011.

27. Genetic diversity of *Campylobacter jejuni* in healthy sheep. *One Health Symposium*, Ames, IA, 2010.

28. Genetic diversity of *Campylobacter jejuni* in healthy sheep. *American Society for Microbiology General Meeting*, San Diego, CA, 2010.

## Invited Presentations

1. "Sorting Through the Facts of COVID-19 and Ionization Systems". Straight Talk Webinar Series, *Duncan Aviation*, 2020.

2. "Mosquitoes in the Home: Disease Risks in the Household Environment". *Translational Global Infectious Diseases Seminar*, University of Vermont, Burlington, VT, 2020.

3. "Mosquitoes in the Home: Disease Risks in the Household Environment". *Paul G. Allen School of Global Health Seminar*, Washington State University, Pullman, WA, 2019.

4. "Vectorborne Disease and Interactions with Climate: Examples from Ecuador". *Roundtable on the Risk of Malaria Reemergence at the Ecuador-Peru Border*, Salud Comunitaria, Machala, Ecuador, 2019.

5. "Vectorborne Disease and Interactions with Climate: Examples from Ecuador". *III Journada Científica de la Carrera de Medicina*, Universidad Técnica de Machala, Machala, Ecuador, 2019.

6. "Vectorborne Disease and Interactions with Climate: Examples from Ecuador". *National Level Adaptation to Climate Change*, Escuela Superior Politecnica del Litoral, Guayaquil, Ecuador, 2018.

7. "Epidemiology & Disease Ecology". *3rd Annual Wildhaven Biology Field Day*, Algona & Bishop Garrigon High Schools, Algona, IA, 2016.

## Professional Affiliations

| | |
|---|---|
| Present | Models of Infectious Disease Agent Study (MIDAS) |
| 2018—Present | International Society for Environmental Epidemiology |
| 2017—Present | American Society for Tropical Medicine & Hygiene |
| 2013—Present | Society for Epidemiologic Research |
| 2012, 2013 | Utah Public Health Association |
| 2012 | American Public Health Association |
| 2010, 2011 | American Society for Microbiology |
| 2007 | American Society of Human Genetics |

## Teaching Experience

2020 — Instructor, Society for Epidemiologic Research
- "Machine Learning for Epidemiologists", Pre-conference Workshop

2020 — Guest Lecturer, **University of Florida**
- "Machine Learning for Prediction", Jason Blackburn

2019 — Instructor, **SUNY-Upstate Medical University**
- Taught biweekly workshop series on introductory programming with R

2017, 2019 — Guest Lecturer, **University of Wisconsin-Madison**
- "Toxic Sugar Baits", Lyric Bartholomay
- "Infectious Disease Epidemiology Research: A Roadmap", Ajay Sethi
- "Mediation Analysis", Leonelo Bautista

2018 — Discussion Section Leader, **University of Wisconsin-Madison,** Pat Remington
- Led weekly discussion sections for undergraduate-level course in public health

2018 — Teaching Assistant, **University of Wisconsin-Madison**, Laurel Legenza
- Assisted with graduate-level course in global health field work in Ecuador

2016—2018 — John Snow Society President, **University of Wisconsin-Madison**
- Founded epidemiology club with learning sessions for advanced research methods

2017 — Teaching Assistant, **University of Wisconsin-Madison**, Karen Solheim, Maureen Durkin
- Assisted with graduate courses in public health and global health epidemiology
- Managed online course materials, created and graded class assignments
- Lectured on climate change, migration & conflict, and health indicators

2013 — Teaching Assistant, **University of Utah**, Jim VanDerslice
- Assisted with graduate-level course in environmental public health, primarily helping students to understand material and addressing student questions
- Managed online course materials, created and graded assignments and exams, and lectured on food production, foodborne illness and the built environment

2012 — Biostatistics Tutor, **University of Utah**
- Tutored MPH students in introductory biostatistics

## Mentorship

2020
Colin Wiest, MD. "*Arbovirus Surveillance in Machala, Ecuador*"
Zachary Ripich, BS. "*Tick Surveillance & Public Education*"

2019
Abigail Bideaux, MD. "*Chronic Kidney Disease of Unknown Origin (CKDu) in Ecuador*"
Michael Conroy, MD. "*Tuberculosis & HIV in Ecuador*"
Lorne Farovitch, PhD. "*Tick Ecology in Machala, Ecuador*"
Joshua Harris, MD/PhD. "*Stress, Adverse Childhood Events, & Dengue Susceptibility*"
Martin Lotto, MS. "*Chronic Kidney Disease of Unknown Origin (CKDu) in Ecuador*"
Denisse Vega Ocasio, PhD. "*Psychosocial Stress, Immune Response, & Dengue*"
Zachary Ripich, BS. "*Tick Surveillance & Public Education*"
Sarah Ruthen, MD. "*Environmental Exposures & Childhood Respiratory Infections*"

2018
Daniel Farrell, MD. "*Severity Index for Suspected Arbovirus Infection*"
Nicholas Usher, BS. "*Severity Index for Suspected Arbovirus Infection*"

## Training & Certifications

2008—Present — **Collaborative Institutional Training Initiative**
Human Subjects Research
Life Sciences Responsible Conduct of Research
Biomedical Institutional Review Board
Good Clinical Practice for Drug/Device Researchers

2020 — **University of Cambridge**
Inclusive Teaching Series, Disability Resource Centre

2020 — **Grant Writers' Seminars and Workshops**
Write Winning NIH Grant Proposals

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| 2020 | **National Postdoctoral Association**<br>Responding to Bias at Work |
| 2019 | **American Society for Tropical Medicine & Hygiene: Arbovirology**<br>Arboviromics |
| 2018, 2019 | **VectorBiTE Working Group**<br>Spatial and Temporal Patterns and Mismatch between Models, Vectors, and Vector-borne Diseases<br>Density Dependence and Size Structured Mosquito Populations |
| 2018 | **Institute for Disease Modeling**<br>Agent-based Modeling |
| 2013—2018 | **University of Wisconsin-Madison**<br>Teaching Philosophies Workshop<br>Women in One Health Workshop<br>Breaking the Prejudice Habit: Creating Inclusion and Overcoming Bias<br>Biological & Hazardous Materials Shipping<br>National Center for Complementary & Integrative Health Fellowship<br>Health Insurance Portability and Accountability Act Compliance |
| 2017 | **National Center for Atmospheric Research/Centers for Disease Control & Prevention**<br>Workshop on Weather, Climate and Health |
| | **Society for Epidemiologic Research**<br>Estimation and Interpretation: Introduction to Parametric and Semi-parametric Estimators for Causal Inference |
| 2015 | **Summer Institute in Statistics and Modeling in Infectious Diseases**<br>Mathematical Models of Infectious Diseases<br>Stochastic Epidemic Models with Inference |
| 2014—2015 | **Genetic Analysis Workshop 19**<br>Familial Phenotypes & Sequence Data |

## Service & Outreach

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| | **University of Cambridge** |
| 2020 | Cambridge Infectious Diseases Interdisciplinary Research Centre |
| | **ResearcHers Code Twitter Takeover** |
| 2020 | Host, April 13th—19th: https://bit.ly/3dyNWjj |
| | **Outbreak Science and Model Implementation Working Group** |
| 2019—Present | Member, Epidemic Forecasting Reporting Guidelines |
| | **Society for Epidemiologic Research** |
| 2020 | Mentoring Pilot Program |
| 2020 | "Critical Questions for Covid-19", Panel Co-chair |
| 2020 | Epidemiology WikiThon, Chair |
| 2018—Present | Communications Committee |
| 2018 | Social Media Contributor |
| 2017 | Annual Meeting Abstract Reviewer |
| 2015, 2016 | Annual Meeting Volunteer |
| | **American Society for Tropical Medicine & Hygiene** |
| 2019 | "Climate Change and Tropical Medicine: The Issue of Our Day". Symposium Co-chair. |

**Journal Reviewer**

2015—Present *J Infect Dis*, *PLoS One*, *BMC Infect Dis*, *PLoS Negl Trop Dis*, *Epidemiol Infect*, *Annals of BAS*, *Birth Defects Res*, *Am J Trop Med Hyg*, *JAMA Netw Open*, *Biocybernet Biomed Eng*, *Geospat Health*, *Acta Tropica*

**University of Wisconsin-Madison**

2018 Campus Climate Committee
2017—2018 MPH Curricular Transformation Committee
2017—2018 Population Health Sciences Student Representative
2013—2018 Family Medicine & Community Health Fellowships Social Chair
2013—2018 Population Health Sciences Student Organization
2017 Supervisory Collaborator for iForward Student Spaceflight Experiment Program Proposal
2016—2017 Go Big Read Review Committee
2015—2017 Curriculum Committee Member
2014—2015 Work Environment Committee Member

**University of Utah**

2012 Student Advisory Committee Vice President

## Professional Skills

Languages: Spanish (advanced), French (beginner), German (beginner), Czech (beginner)

Software: R, SAS, GitHub, QGIS, EpiInfo, Tableau, Engauge Digitizer, EndNote, Zotero, Microsoft Office

Laboratory: DNA/RNA isolation, PCR (gradient/touchdown/real-time), primer design, plasmid construction, PFGE, MLST, MIC, SDS-PAGE, sequence alignment, immuno-staining, blotting, blood smear slides, cell culture

Field work: GPS, HOBO/iButton Data Loggers, sample collection from humans/mice/birds/guinea pigs/cattle, tick collection, mosquito trapping (gravid/light/$CO_2$/BG Sentinel traps), mosquito dissection

## International Work Experience

Ecuador (42 months), Czechia (3 months)