CURRICULUM VITAE January 6, 2025

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Summary Statement

My research program is organized around the dual challenges of understanding infectious disease burden and predicting how infectious diseases will respond to interventions. I confront those challenges by using mechanistic mathematical models to extract novel insights from empirical data and to make predictions about quantities that are not readily observable. My mentoring and teaching activities complement my research efforts, providing mentees and students with opportunities for growth in the areas of mathematical modeling and infectious disease epidemiology. Mosquito-borne diseases have been a consistent focus of my research for the past 13 years, although my interests continue to evolve over time as new public health threats emerge. My research has repeatedly had implications for public health policy and has received attention from both academic and non-academic audiences.

Education and Postdoctoral Appointments

Postdoctoral Fellow, Research and Policy for Infectious Disease Dynamics (RAPIDD) Program, Fogarty International Center, National Institutes of Health, 2011 – 2014
Co-mentors: Thomas W Scott and David L Smith

Ph.D., Population Biology, University of California, Davis, 2006 – 2011
Committee: Alan Hastings (Chair), Michael Turelli, Marissa Baskett
Dissertation: “Coupled ecological and evolutionary dynamics in managed populations”

B.A., Computational Ecology, University of Tennessee, Knoxville, 2002 – 2006
Co-advisors: Louis Gross and Susan Riechert

Employment

Associate Professor with Tenure, Department of Biological Sciences, University of Notre Dame, 2020 – present

Concurrent Faculty, Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, 2015 – present
Eck Family Assistant Professor, Department of Biological Sciences, University of Notre Dame, 2014 – 2020

Postdoctoral Awards, Honors, and Fellowships

Scialog Fellow (Mitigating Zoonotic Threats), Research Corporation of America, 2021
College of Science Research Award, University of Notre Dame, 2021
Finalist, NIH Director's New Innovator Award, 2020
Early Career Fellow, Ecological Society of America, 2017 – 2022
Visiting Scholar, Institute for Disease Modeling, 2016
Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities, 2015
RAPIDD Postdoctoral Fellowship, Fogarty International Center, National Institutes of Health, 2011 – 2014, Nationally competitive postdoctoral fellowship

Predoctoral Awards, Honors, and Fellowships

Volterra Award, Best student oral presentation on theory research, Ecological Society of America Annual Meeting, Albuquerque, NM 2009
Computational Sciences Graduate Fellowship, Department of Energy, 2007 – 2011, Nationally competitive graduate fellowship that provided tuition, stipend, and research expenses
Honorable Mention for Graduate Research Fellowship Program, National Science Foundation, 2007
Barry Goldwater Scholarship, 2005 – 2006, Nationally competitive undergraduate scholarship in mathematics, the natural sciences, and engineering
Morris K. Udall Scholarship, 2004 – 2005, Nationally competitive undergraduate scholarship for leadership, public service, and commitment to issues related to Native American nations or to the environment
Outstanding Graduate in Ecology and Evolutionary Biology, University of Tennessee, Knoxville, 2006
Chancellor's Citation for Extraordinary Professional Promise, University of Tennessee, Knoxville, 2006
Chancellor's Citation for Extraordinary Academic Achievement, University of Tennessee, Knoxville, 2006
summa cum laude, University of Tennessee, Knoxville, 2006
NSF REU Program, Rocky Mountain Biological Laboratory, 2004
Phi Beta Kappa, Epsilon Chapter of Tennessee, 2004
University Honors Scholar, University of Tennessee, Knoxville, 2002 – 2006
Tennessee Scholarship, 2002 – 2006, Merit-based, full-tuition scholarship to the University of Tennessee, Knoxville
Eagle Scout, Boy Scouts of America, 2002

Grants, Fellowships, and Other Funding

In total, I have been awarded $9,545,366 in research funds from external sources in the ten years since I became an independent investigator. Of that, $6,137,546 was awarded to me as Principal Investigator and $3,407,820 was awarded to me as Co-Principal Investigator or Co-Investigator. These funds derive from 27 awards from 16 different funders spanning federal agencies, non-governmental organizations, industry sponsors, and foundations. Awards to me are listed below, categorized by current or completed, by my status on the award, and sorted by end date within each of those categories. *Dollar amounts listed denote total amounts awarded for activities under my direction*.

Current external on which I am Principal Investigator

CDC IPA ($192,831) 2024 – 2025
- **Intergovernmental Personnel Agreement for Alex Perkins**
- Role: Principal Investigator
- This agreement is to pay for a portion of my time to perform dengue vaccination modeling work in support of the CDC Dengue Branch in Puerto Rico.

NSF DMS IHBEM ($663,527) 2023 – 2027
- **Three-way coupling of water, behavior, and disease in the dynamics of mosquito-borne disease systems**
- Role: Principal Investigator across four collaborative proposals totaling $1M. I jointly conceived of the project with Co-PI Santos-Vega, led the writing of the proposal, lead 1/3 aims, contribute to 2/3 aims, and provide administrative leadership.
- Other investigators: Co-PI Mauricio Santos-Vega (U de los Andes, Colombia), Co-PI Tomás Rodríguez-Barraquer (UdlA), Co-PI Juan Camilo Cardenas (UdlA), Co-PI Mary Hayden (U Colorado), Co-PI Alun Lloyd (NC State), Co-PI Hayriye Gulbudak (U Louisiana)

NIH NIGMS MIRA R35 ($1,956,250) 2021 – 2026
- **Model-based inference and forecasting of co-circulating pathogen dynamics**
- Role: Principal Investigator

Vaccine Impact Modeling Consortium Contract ($756,500) 2018 – 2025
- **Yellow Fever Vaccine Impact Modeling**
- Role: Principal Investigator

Current external on which I am Co-Principal Investigator or Co-Investigator

Department of Defense PRMRP ($520,740) 2025 – 2026
- **Evaluation of the Safety and Efficacy of a Virus-Like Particle Vaccine for Prevention of Chikungunya Virus Disease: A Surveillance-Guided, Double-Blind, Placebo-Controlled Phase 3b/4 Trial**
- Role: Co-Investigator. I made significant contributions to the conceptual design of the study and lead mathematical modeling components of the project.
- Other investigators: PI Steven Stoddard (Bavarian Nordic), Co-I Natalie Dean (Emory), Co-I Kathryn Anderson (SUNY Upstate), in addition to other

collaborators at Bavarian Nordic and the US Armed Forces Research Institute for Medical Sciences in Thailand

NSF EEID ($213,610) 2021 – 2025

Identifying local-to-global "win-win" solutions for human health and sustainability through infectious disease control

Role: Co-PI. I contributed to the design of a portion of the study that will project the epidemiological impact of an intervention assessed under this project.

Other investigators: PI Jason Rohr (ND), Co-PI Chris Barrett (Cornell), Co-PI Ying Sun (Cornell)

UNITAID Award ($1,166,096) 2019 – 2025

Advancing Spatial Repellents for Vector-Borne Disease Control

Role: Co-PI. I conceived of and am leading a modeling component of this award that uses mechanistic models to infer the modes of action of spatial repellents from clinical trial data and uses those inferences to project the impact of spatial repellents upon completion of the trials and initiation of public-health rollout.

Other investigators: PI John Grieco (ND), Co-PI Nicole Achee (ND)

Subcontract from Colorado State University ($640,000) 2018 – 2024

USDA-NIFA through NSF Ecology and Evolution of Infectious Diseases Program

Cross-scale dynamics of multi-host vector-borne pathogens at the wildlife-domestic animal interface in ruminant communities

Role: Co-PI. I jointly conceived of the project and wrote the proposal with the PI, and I lead mathematical modeling aspects of the project that span 3/3 aims.

Other investigators: PI Christie Mayo (Colorado State), Co-PI Candace Mathiason (CSU), Co-PI Mark Stenglein (CSU)

This award is currently in a one-year no-cost extension.

Completed external on which I was Principal Investigator

Bavarian Nordic ($421,923) 2021 – 2024

Analytical and simulation tools to inform CHIKV VLP efficacy trial design and execution

Role: Principal Investigator

World Health Organization ($24,947) 2023

Modeling population benefit versus individual risk (benefit-risk assessments) for the tetravalent live attenuated dengue vaccine developed by Takeda

Role: Principal Investigator

Department of Defense ($512,186) 2020 – 2022

COVID-19 Modeling Support

Role: Principal Investigator

NSF RAPID Award ($199,883) 2020 – 2023

Real-time updating of an agent-based model to inform COVID-19 mitigation strategies

Role: Principal Investigator

This project received a one-year no-cost extension.

Coalition for Epidemic Preparedness Innovations Contract ($201,390) 2019 – 2020
Epidemiology and Vaccine Demand Curve Modelling
Role: Principal Investigator

UNICEF Brazil Award ($32,735) 2019 – 2020
Institutional Contract to Develop a Simulation Model of Dengue, Chikungunya, and Zika Incorporating Spatial Mobility Data in Brazil
Role: Principal Investigator

DARPA Young Faculty Award and Director's Fellowship ($754,147) 2016 – 2020
Bridging Gaps Across Multiple Spatial Scales for Models of Mosquito-Borne Viral Disease Dynamics
Role: Principal Investigator
The Director's Fellowship is a competitive one-year supplement to the YFA that is only awarded to the top 10% of YFA performers.

NSF RAPID Award ($200,000) 2016 – 2019
Overcoming uncertainty to enable estimation and forecasting of Zika virus transmission
Role: PI. I conceived of the project, led the development of the proposal, supervised a postdoctoral researcher who performed much of the work, and provided administrative leadership.
Other investigators: Co-PI Robert Reiner (U Washington), Co-I Isabel Rodriguez-Barraquer (UCSF), Co-I Michael Johansson (CDC), Co-I Carrie Manore (Los Alamos), Co-I Andrew Tatem (U Southampton, UK)
This project received a one-year no-cost extension.

GlaxoSmithKline Contract ($200,000) 2015 – 2017
Simulating Virtual Vaccine Efficacy Trials via Modeling: Application to Dengue
Role: Principal Investigator

Ralph E. Powe Junior Faculty Enhancement Award ($10,000) 2015 – 2016
Oak Ridge Associated Universities
Inferring Spatiotemporal Drivers of Vector-Borne Disease Incidence in the United States
Role: Principal Investigator

Intellectual Ventures Contract ($11,227) 2015
Institute for Disease Modeling Contract: Dengue Modeling
Role: Principal Investigator

Completed external on which I was Co-Principal Investigator or Co-Investigator

NIH NIAID R21 ($25,337) 2021 – 2023
Assessing the impact of COVID-19 interventions on human mobility and SARS-CoV-2 transmission dynamics in the United States
Role: Co-Investigator. I provided feedback on the proposal and during the project.
Other investigators: PI Sean Moore (ND), Co-I Christopher Cronin (ND), Co-I Jeff Harden (ND)
This project received a one-year no-cost extension.

Department of Defense ($66,668) 2020 – 2022

Remote Emerging Disease Intelligence Network (REDI-NET) Phases 1 & 2

Role: Co-Investigator. I developed and led a portion of the project focused on spatial risk mapping of infectious disease threats to US military servicemembers. I stepped back from Phase 3 while on academic leave and am currently in discussions with the PI about returning to the project in Phase 4.

Other investigators: PI Nicole Achee (ND), Co-PI John Grieco (ND), Co-I Sean Moore (ND), Co-I Kyle Bibby (ND), in addition to various external partners

NSF RAPID Award ($63,337) 2020 – 2022

Wastewater Informed Epidemiological Monitoring of SARS-CoV-2

Role: Co-Investigator. I led aspects of the project that involved epidemiological modeling.

Other investigators: PI Kyle Bibby (ND)

120Water Award ($10,000) 2020

SARS-CoV-2 Wastewater Surveillance Program

Role: Co-PI. I led aspects of the project that involved epidemiological modeling.

Other investigators: PI Kyle Bibby (ND)

Subcontract from UC Davis ($332,887) 2015 – 2020

National Institutes of Health, National Institute of Allergy and Infectious Disease

P01: Quantifying Heterogeneities in Dengue Virus Transmission

Role: Co-Investigator. I contributed to a project on mathematical modeling that was one of three R01-scale projects under this P01 award.

Other investigators: PI Thomas Scott (UC Davis), Co-I Amy Morrison (UC Davis), Co-I Louis Lambrechts (Institut Pasteur), Co-I Alan Rothman (U Rhode Island), Co-I Robert Reiner (U Washington), Co-I Valerie Paz Soldan (Tulane), Co-I Uriel Kitron (Emory), Co-I Gonzalo Vazquez-Prokopec (Emory), Co-I Alun Lloyd (NC State)

Subcontract from Johns Hopkins University ($260,027) 2017 – 2019

National Institutes of Health, National Institute of Allergy and Infectious Disease

R01: Methods for Reducing Spatial Uncertainty and Bias in Disease Surveillance

Role: Leader of one of three independent modeling teams funded with an administrative supplement to an existing R01 at Johns Hopkins to provide guidance on Zika vaccine trial site selection to the NIH Vaccine Research Center

Other investigators: Justin Lessler (Johns Hopkins), Alex Vespignani (Northeastern)

Subcontract from UC San Francisco ($96,106) 2015 – 2018

Bill and Melinda Gates Foundation

Applying Molecular Epidemiology to Accelerate to Zero

Role: Co-Investigator. I led the development of statistical methods for the project.

Other investigators: PI Bryan Greenhouse (UCSF)

Subcontract from University of Oxford ($13,012) 2014 – 2015

Bill and Melinda Gates Foundation

Strategic Planning Tools for Staging Malaria Elimination

Role: Co-Investigator. I contributed to mathematical model development.

Other investigators: PI David Smith (Oxford)

Publications

I have published a total of 105 peer-reviewed journal articles, with 92 of those deriving from work done as an independent investigator in the last ten years. Of those, 77/92 are primary research articles and 15/92 are reviews or perspectives. I have also published 12 unrefereed articles. According to Google Scholar, I have been cited a total of 8,420 times and have an h-index of 41, as of January 6, 2025.

For publications involving myself or those under my mentorship (underlined in author list), I denote lab members' statuses as $ for undergraduate, @ for graduate, % for postdoc, and † for research faculty. (co) indicates authors with equal contributions, and * indicates corresponding author when that individual is me, a trainee, or a former mentor of mine. The SCImago Journal Rank quartile for each journal is provided, where Q1 indicates the best quartile and Q4 indicates the worst.

Peer-Reviewed — Original Research

2024 117) **Misclassification of yellow fever vaccination status revealed through hierarchical Bayesian modeling.**
QM Tran @, TA Perkins*.
American Journal of Epidemiology (Q2) in press.
DOI: 10.1101/2023.11.12.23298434

116) **Potential impact of annual vaccination with reformulated COVID-19 vaccines: lessons from the US COVID-19 Scenario Modeling Hub.**
S Jung, SL Loo, E Howerton, L Contamin, CP Smith, EC Carcelén, K Yan, SJ Bents, J Levander, J Espino, JC Lemaitre, K Sato, CD McKee, AL Hill, M Chinazzi, JT Davis, K Mu, A Vespignani, ET Rosenstrom, SA Rodriguez-Cartes, JS Ivy, ME Mayorga, JL Swann, G España †, S Cavany %, SM Moore †, TA Perkins, S Chen, R Paul, D Janies, JC Thill, A Srivastava, MA Aawar, K Bi, SR Bandekar, A Bouchnita, SJ Fox, LA Meyers, P Porebski, S Venkatramanan, A Adiga, B Hurt, B Klahn, J Outten, J Chen, H Mortveit, A Wilson, S Hoops, P Bhattacharya, D Machi, A Vullikanti, B Lewis, M Marathe, H Hochheiser, MC Runge, K Shea, S Truelove, C Viboud, J Lessler.
PLOS Medicine (Q1) 21:e1004387.
DOI: 10.1371/journal.pmed.1004387

115) **Improving distribution models of sparsely documented disease vectors by incorporating information on related species via joint modeling.**
S Mowry* @, S Moore †, NL Achee, B Fustec, TA Perkins.
Ecography (Q1) e07253.
DOI: 10.1111/ecog.07253

114) **Human movement and environmental barriers shape the emergence of dengue.**

V Harish, FJ Colón-González, FRR Moreira, R Gibb, MUG Kraemer, M Davis, RC Reiner Jr., DM Pigott, TA Perkins, DJ Weiss, II Bogoch, G Vazquez-Prokopec, P Manrique Saide, GL Barbosa, EC Sabino, K Khan, NR Faria, SI Hay, F Correa-Morales, F Chiaravolloti-Neto, OJ Brady.
Nature Communications (Q1) 15:4205.
DOI: 10.1038/s41467-024-48465-0

113) **Estimating the health effects of COVID-19-related immunisation disruptions in 112 countries during 2020–30: a modelling study.**
AM Hartner, X Li, S Echeverria-Londono, J Roth, K Abbas, M Auzenbergs, MJ de Villers, MJ Ferrari, K Fraser, H Fu, T Hallett, W Hinsley, M Jit, A Karachaliou, SM Moore †, S Nayagam, T Papadopoulos, TA Perkins, A Portnoy, QM Tran @, E Vynnycky, AK Winter, H Burrows, C Chen, HE Clapham, A Deshpande, S Hauryski, J Huber @, K Jean, C Kim, JH Kim, J Koh, BA Lopman, VE Pitzer, Y Tam, P Lambach, SY Sim, K Woodruff, NM Ferguson, CL Trotter, KAM Gaythorpe.
Lancet Global Health (Q1) 12:e563.
DOI: 10.1016/S2214-109X(23)00603-4

112) **Projecting the future impact of emerging SARS-CoV-2 variants under uncertainty: modeling the initial Omicron outbreak.**
SM Moore* †, S Cavany %, TA Perkins, G España †.
Epidemics (Q2) 47:100759.
DOI: 10.1016/j.epidem.2024.100759

2023 111) **Model-based estimates of chikungunya epidemiological parameters and outbreak risk from varied data types.**
AD Meyer* %, S Mendoza Guerrera, NE Dean, KB Anderson, ST Stoddard, TA Perkins.
Epidemics (Q2) 45:100721.
DOI: 10.1016/j.epidem.2023.100721

110) **Direct mosquito feedings on dengue and Zika virus-infected people reveal dynamics of human infectiousness.**
L Lambrechts, RC Reiner, Jr., MV Briesemeister, P Barrera, KC Long, WH Elson, A Vizcarra, H Astete, I Bazan, C Siles, S Vilcarromero, M Leguia, AB Kawiecki, TA Perkins, AL Lloyd, LA Waller, U Kitron, SA Jenkins, RD Hontz, WR Campbell, LB Carrington, CP Simmons, JS Ampuero, G Vasquez, JP Elder, VA Paz-Soldan, GM Vazquez-Prokopec, AL Rothman, CM Barker, TW Scott #, AC Morrison.
PLOS Neglected Tropical Diseases (Q1) 17:e0011593.
DOI: 10.1371/journal.pntd.0011593

109) **Does ignoring transmission dynamics lead to underestimation of the impact of interventions against mosquito-borne disease?**

SM Cavany* %, JH Huber* @, A Wieler @, M Elliott $, QM Tran @, G España †, SM Moore †, TA Perkins*.
BMJ Global Health (Q1) 8:e012169.
DOI: 10.1136/bmjgh-2023-012169

108) **Fusing an agent-based model of mosquito population dynamics with a statistical reconstruction of spatio-temporal abundance patterns.**
SM Cavany* %, G España †, AL Lloyd, GM Vazquez-Prokopec, H Astete, LA Waller, U Kitron, TW Scott #, AC Morrison, RC Reiner Jr., TA Perkins*.
PLOS Computational Biology (Q1) 19:e1010424.
DOI: 10.1371/journal.pcbi.1010424

107) **Community incidence patterns drive the risk of SARS-CoV-2 outbreaks and alter intervention impacts in a high-risk institutional setting.**
SM Moore* †, G España †, TA Perkins, RM Guido, JB Jucaban, TL Hall, ME Huhtanen, SA Peel, K Modjarrad, S Hakre, PT Scott.
Epidemics (Q2) 43:100691.
DOI: 10.1016/j.epidem.2023.100691

106) **COVID-19 reopening strategies at the county level in the face of uncertainty: Multiple Models for Outbreak Decision Support.**
K Shea, RK Borchering, WJM Probert, E Howerton, TL Bogich, S Li, WG van Panhuis, C Viboud, R Aguas, A Belov, SH Bhargava, S Cavany %, JC Chang, C Chen, J Chen, S Chen, YQ Chen, LM Childs, CC Chow, I Crooker, SY Del Valle, G España †, G Fairchild, RC Gerkin, TC Germann, Q Gu, X Guan, L Guo, GR Hart, TJ Hladish, N Hupert, D Janies, CC Kerr, DJ Klein, E Klein, G Lin, C Manore, LA Meyers, J Mittler, K Mu, RC Nunez, R Oidtman @, R Pasco, A Pastore y Pionti, R Paul, CAB Pearson, D Perdomo, TA Perkins, K Pierce, AN Pillai, RC Rael, K Rosenfeld, CW Ross, JA Spencer, AB Stoltzfus, KB Toh, S Vattikuti, A Vespignani, L Wang, L White, P Xu, Y Yang, ON Yogurtcu, W Zhang, Y Zhao, D Zou, M Ferrari, D Pannell, M Tildesley, J Seifarth, E Johnson, M Biggerstaff, M Johansson, RB Slayton, J Levander, J Stazer, J Salermo, MC Runge.
Proceedings of the National Academy of Sciences (Q1) 120:e2207537120.
DOI: 10.1073/pnas.2207537120

105) **Inapparent infections shape the transmission heterogeneity of dengue.**
GM Vazquez-Prokopec, AC Morrison, V Paz-Soldan, ST Stoddard, W Koval, LA Waller, TA Perkins, AL Lloyd, H Astete-Vega, J Elder, TW Scott #, U Kitron.
PNAS Nexus (no journal quartile yet) pgad024.
DOI: 10.1093/pnasnexus/pgad024

104) **Spatial repellents: the current roadmap to global recommendation of spatial repellents for public health use.**
NL Achee, TA Perkins, SM Moore †, F Liu, I Sagara, S Van Hulle, EO Ochomo,

JE Gimnig, HA Tissera, SA Harvey, A Monroe, AC Morrison, TW Scott #, RC Reiner Jr., JP Grieco.
Current Research in Parasitology & Vector-Borne Diseases (Q2) 3:100107.
DOI: 10.1016/j.crpvbd.2022.100107

103) **Expected endpoints from future chikungunya vaccine trial sites informed by serological data and modeling.**
QM Tran* @, KJ Soda %, AS Siraj %, SM Moore †, HE Clapham, TA Perkins.
Vaccine (Q1) 41:182-192.
DOI: 10.1016/j.vaccine.2022.11.028

102) **Impact of SARS-CoV-2 vaccination of children ages 5-11 years on COVID-19 disease burden and resilience to new variants in the United States, November 2021-March 2022: a multi-model study.**
RK Borchering, LC Mulllany, E Howerton, M Chinazzi, CP Smith, M Qin, NG Reich, L Contamin, J Levander, J Kerr, J Espino, H Hochheiser, K Lovett, M Kinsey, K Tallaksen, S Wilson, L Shin, JC Lemaitre, JD Hulse, J Kaminsky, EC Lee, JT Davis, K Mu, X Xiong, A Pastore y Piontti, A Vespignani, A Srivastava, P Porebski, S Venkatramanan, A Adiga, B Lewis, B Klahn, J Outten, B Hurt, J Chen, H Mortveit, A Wilson, M Marathe, S Hoops, P Bhattacharya, D Machi, S Chen, R Paul, D Janies, JC Thill, M Galanti, T Yamana, S Pei, J Shaman, G España †, S Cavany %, S Moore †, TA Perkins, JM Healy, RB Slayton, MA Johansson, M Biggerstaff, K Shea, SA Truelove, MC Runge, C Viboud, J Lessler.
Lancet Regional Health – Americas (Q1) 17:100398.
DOI: 10.1016/j.lana.2022.100398

2022 101) **Modeling cellular co-infection and reassortment of bluetongue virus in *Culicoides* midges.**
SM Cavany* %, C Barbera @, M Carpenter, C Rodgers, T Sherman, M Stenglein, C Mayo, TA Perkins*.
Virus Evolution (Q1) veac094.
DOI: 10.1093/ve/veac094

100) **Interactions between seasonal temperature variation and temporal synchrony drive increased arbovirus co-infection incidence.**
M Poterek* @, C Vogels, ND Grubaugh, GD Ebel, TA Perkins, SM Cavany* %.
Royal Society Open Science (Q1) 9:220829.
DOI: 10.1098/rsos.220829

99) **Prioritizing interventions for preventing COVID-19 outbreaks in military basic training.**
G España † (co), TA Perkins* (co), S Pollett, ME Smith %, SM Moore †, P Kwon, T Hall, MH Beagle, Jr., CK Murray, S Hakre, S Peel, K Modjarrad, PT Scott*.
PLOS Computational Biology (Q1) 18:e1010489.
DOI: 10.1371/journal.pcbi.1010489

98) ***Plasmodium knowlesi* on accurate diagnosis by light microscopy: a systematic review and modeling analysis.**
JH Huber* @, M Elliott $, C Koepfli, TA Perkins. The impact of emerging
American Journal of Tropical Medicine and Hygiene (Q2) 108:61.
DOI: 10.4269/ajtmh.21-1155

97) **Projecting vaccine demand and impact for emerging zoonotic pathogens.**
A Lerch %, QA ten Bosch, M L'Azou-Jackson, AA Bettis, M Bernuzzi, GAV Murphy, QM Tran @, JH Huber @, A Siraj %, M Elliott $, C Hartlage $, K Koh $, K Strimbu $, M Walters $, TA Perkins*, SM Moore* †.
BMC Medicine (Q1) 20:202.
DOI: 10.1186/s12916-022-02405-1

96) **Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the United States.**
EY Cramer, EL Ray, VK Lopez,…, 284 authors including S Cavany %, G España †, S Moore †, R Oidtman @, TA Perkins,…, RB Slayton, MA Johansson, M Biggerstaff, NG Reich.
Proceedings of the National Academy of Sciences (Q1) 119:e2213561119.
DOI: 10.1073/pnas.2113561119

95) **Inferring person-to-person networks of pathogen transmission: is routine surveillance data up to the task?**
JH Huber* @, MS Hsiang, N Dlamini, M Murphy, S Vilakati, N Nhlabathi, A Lerch %, R Nielsen, N Ntshalintshali, B Greenhouse, TA Perkins*.
Malaria Journal (Q1) 21:58.
DOI: 10.1186/s12936-022-04072-2

94) **Performance of three molecular tests for SARS-CoV-2 on a university campus estimated jointly with Bayesian latent class modeling.**
TA Perkins*, M Stephens, W Alvarez Barrios, SM Cavany %, L Rulli, ME Pfrender.
Microbiology Spectrum (Q2) 10:e01220-21.
DOI: 10.1128/spectrum.01220-21

93) **Inferring SARS-CoV-2 RNA shedding into wastewater relative to time of infection.**
S Cavany %, A Bivins, Z Wu, D North, K Bibby* (co), TA Perkins* (co).
Epidemiology and Infection (Q2) 150:e21.
DOI: 10.1017/S0950268821002752

2021 92) **Site-specific biases in phase-III clinical trials underestimate the effect of radical cure against *Plasmodium vivax* hypnozoites.**

Huber JH @, C Koepfli, G España †, N Nekkab, MT White, TA Perkins.
Malaria Journal (Q1) 20:479.
DOI: 10.1186/s12936-021-04017-1

91) **Burden is in the eye of the beholder: Sensitivity of yellow fever disease burden estimates to modeling assumptions.**
TA Perkins*, JH Huber @, QM Tran @, RJ Oidtman @, MK Walters $, AS Siraj %, SM Moore †.
Science Advances (Q1) 7:eabg5033.
DOI: 10.1126/sciadv.abg5033

90) **Trade-offs between individual and ensemble forecasts of an emerging infectious disease.**
RJ Oidtman* @, E Omodei, MUG Kraemer, CA Castaneda-Orjuela, E Cruz-Rivera, S Misnaza-Castrillon, MP Cifuentes, LE Rincon, V Canon, P de Alarcon, G España †, J Huber @, SC Hill, CM Barker, MA Johansson, CA Manore, RC Reiner, I Rodriguez-Barraquer, AS Siraj, E Frias-Martinez, M Garcia-Herranz*, TA Perkins*.
Nature Communications (Q1) 12:5379.
DOI: 10.1038/s41467-021-25695-0

89) **Impacts of K-12 school reopening on the COVID-19 epidemic in Indiana, USA.**
G España* %, SM Cavany % (co), RJ Oidtman @ (co), C Barbera @, A Costello @, A Lerch %, M Poterek @, Q Tran @, A Wieler @, S Moore †, TA Perkins*.
Epidemics (Q2) 37:100487.
DOI: 10.1016/j.epidem.2021.100487

88) **Lives saved with vaccination for 10 pathogens across 112 countries in a pre-COVID world.**
J Toor, S Echeverria-Londono, X Li, K Abbas, ED Carter, HE Clapham, A Clark, MJ de Villiers, K Eilertson, M Ferrari, I Gamkrelidze, TB Hallett, WR Hinsley, D Hogan, JH Huber @, ML Jackson, K Jean, M Jit, A Karachaliou, P Klepac, A Kraay, J Lessler, X Li, BA Lopman, T Mengistu, CJE Metcalf, SM Moore †, S Nayagam, T Papadopoulos, TA Perkins, A Portnoy, H Razavi, D Ravazi-Shearer, S Resch, C Sanderson, S Sweet, Y Tam, H Tanvir, QM Tran @, CL Trotter, SA Truelove, E Vynnycky, N Walker, A Winter, K Woodruff, NM Ferguson, KAM Gaythorpe.
eLife (Q1) 10:e67635.
DOI: 10.7554/eLife.67635

87) **The impact of dengue illness on social distancing and caregiving behavior.**
KL Schaber, AC Morrison, WH Elson, H Astete-Vega, JJ Córdova-López, EJ Ríos-López, WL Quiroz Flores, AS Vizcarra Santillan, TW Scott #, LA Waller, U

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108:185-197.

2013 14) **A systematic review of mathematical models of mosquito-borne pathogen transmission: 1970-2010.**
RC Reiner* (co), TA Perkins* (co), CM Barker, T Niu, LF Chaves, AM Ellis, DB George, A Le Menach, JRC Pulliam, D Bisanzio, C Buckee, C Chiyaka, DAT Cummings, AJ Garcia, ML Gatton, PW Gething, DM Hartley, G Johnston, EY Klein, E Michael, SW Lindsay, AL Lloyd, DM Pigott, WK Reisen, N Ruktanonchai, BK Singh, AJ Tatem, U Kitron, SI Hay, TW Scott #, DL Smith #.
Journal of the Royal Society Interface (Q2) 10:20120921.
DOI: 10.1098/rsif.2012.0921

Peer-Reviewed — Conference Proceedings

2024 13) **Proceedings of the Dengue Endgame Summit: Imagining a world with dengue control.**
AD Wegman, S Kalimuddin, ETA Marques, LE Adams, AL Rothman, GD Gromowski, TT Wang, D Weiskopf, ML Hibberd, TA Perkins, RC Christofferson, B Gunale, PS Kulkarni, A Rosas, L Macareo, S Yacoub, EE Ooi, G Paz-Bailey, SJ Thomas, AT Waickman.
Vaccine (Q1) in press.
DOI: 10.1016/j.vaccine.2024.06.038

Peer-Reviewed — Book Chapters

2020 12) **Seven Lessons about the Role of Space in Vector-Borne Disease Epidemiology.**
Perkins TA, G España %, SM Moore †, RJ Oidtman @, S Sharma, B Singh, AS Siraj %, KJ Soda %, M Smith, MK Walters $, E Michael.
In: ***Population Biology of Vector-Borne Diseases*** (J Drake, MB Bonsall, MR Strand, eds.). Oxford University Press.

2014 11) **A review of transmission models of dengue: a quantitative and qualitative analysis of model features.**
Perkins TA (co), RC Reiner (co), I Rodriguez-Barraquer, DL Smith #, TW Scott #, DAT Cummings.
In: ***Dengue and Dengue Hemorrhagic Fever***. (D.J. Gubler, E.E. Ooi, and J. Farrar, eds.). pp. 99-114. CABI Publishing.

Non-Peer-Reviewed — White Papers and Technical Reports

2022 10) **An epidemiological and intervention assessment of the malaria epidemic in Bolívar, Venezuela: A modelling study.**
Huber JH @, LF Chaves, AS Siraj %, JE Moreno, M Villegas, L Pocaterra, L Villegas, TA Perkins.
medRxiv
DOI: 10.1101/2022.04.19.22274042

2020 9) **Indiana Wastewater Monitoring Program: Sampling Community Watersheds for SARS-CoV-2.**
Walker E, K Bibby, TA Perkins, J Hixson.
State of Indiana. https://www.in.gov/ifa/files/Indiana-Wastewater-Monitoring-Report-2020.pdf

2018 8) **DTK-Dengue: A new agent-based model of dengue virus transmission dynamics.**
Soda KJ %, SM Moore †, G España %, J Bloedow, B Raybaud, B Althouse, MA Johansson, E Wenger, P Welkhoff, TA Perkins* (co), QA ten Bosch* @ (co).
bioRxiv
DOI: 10.1101/376533

2017 7) **Preliminary results of models to predict areas in the Americas with increased likelihood of Zika virus transmission in 2017.**
Zika Modeling and Projections for Vaccination Trials Collaboration (alphabetical): J Asher, C Barker, G Chen, D Cummings, M Chinazzi, S Daniel-Wyman, M Fischer, N Ferguson, D Follman, ME Halloran, M Johansson, K Kugeler, J Kwan, J Lessler, IM Longini, S Merler, A Monaghan, A Pastore y Piontti, TA Perkins, DR Prevots, R Reiner, L Rossi, I Rodriguez-Barraquer, AS Siraj %, K Sun, A Vespignani, Q Zhang.
bioRxiv
DOI: 10.1101/187591

2016 6) **Comparative modelling of dengue vaccine public health impact.**
Flasche S (co), M Jit (co), I Rodriguez-Barraquer (co), L Coudeville (co), M Recker (co), K Koelle (co), G Milne (co), T Hladish (co), TA Perkins (co), I Dorigatti, DAT Cummings, G España %, J Kelso, I Longini, J Lourenco, C Pearson, RC Reiner, NM Ferguson.
World Health Organization.

Non-Peer-Reviewed — Commentaries and Perspectives

2021 5) **Timing is everything when it comes to pertussis vaccination.**
TA Perkins*, Q Tran @.
Lancet Infectious Diseases (Q1) doi:10.1016/S1473-3099(21)00353-4.
DOI: 10.1016/S1473-3099(21)00353-4

2020 4) **Aggregated mobility data could help fight COVID-19.**
CO Buckee CO, S Balsari, J Chan, M Crosas, F Dominici, U Gasser, YH Grad, B Grenfell, ME Halloran, MUG Kraemer, M Lipsitch, CJE Metcalf, LA Meyers, TA Perkins, M Santillana, SV Scarpino, C Viboud, A Wesolowski, A Schroder.
Science (Q1) eabb8021.
DOI: 10.1126/science.abb8021

2019 3) **Letter to the editor in response to 'Reconstruction and prediction of viral disease epidemics'.**
TA Perkins*.
Epidemiology and Infection (Q2) 147:398.
DOI: 10.1017/S095026881900013X

2017 2) **Retracing Zika's footsteps across the Americas with computational modeling.**
TA Perkins*.
Proceedings of the National Academy of Sciences (Q1) 114:5558-5560.
DOI: 10.1073/pnas.1705969114

Non-Peer-Reviewed — Book Chapters

2020 1) **Theories of Diversity in Disease Ecology.**
Perkins TA, J Rohr.
In: ***Theoretical Ecology: Concepts and Applications, 4th edition***. (K McCann, G Gellner, eds.) Oxford University Press.

Professional Talks

Invited Seminars

Center for Infectious Disease Dynamics. (2025) **Pennsylvania State University.**

Public Health Modeling Seminar. (2024) **Yale School of Public Health**.
Quantitative Veterinary Epidemiology Group. (2022) **Wageningen University and Research**.
Pathogen Dynamics Group. (2022) **University of Cambridge**.
Centre for Mathematical Modelling of Infectious Diseases. (2022) **London School of Hygiene and Tropical Medicine**.
Saw Swee Hock School of Public Health. (2022) **National University of Singapore**.
Center for Environmental Health in Northern Manhattan. (2022) **Columbia University**.
Department of Entomology. (2022) **Cornell University**.
Center for Statistics and Quantitative Infectious Diseases. (2021) **University of Florida**.
Center for Infectious Disease Dynamics. (2020) **Pennsylvania State University**.
MIDAS Webinar Series. (2020)
COVID-19 Modeling Consortium. (2020) **University of Texas, Austin**.
Population Biology, Ecology, and Evolution Graduate Group. (2019) **Emory University**.
School of Public Health. (2019) **Fudan University**.
Pacific Southwest Center of Excellence in Vector-Borne Diseases. (2018) **University of California, Davis.**
Department of Biological Sciences. (2017) **Virginia Tech**.
Theoretical Biology and Biophysics Group. (2017) **Los Alamos National Laboratory**.
Department of Pathobiology. (2016) **University of Illinois**.
College of Global Public Health. (2016) **New York University**.
Department of Epidemiology. (2016) **Indiana University - Purdue University Indianapolis**.
Department of Biology. (2016) **University of Puerto Rico, Rio Piedras**.
Department of Biological Sciences. (2015) **Florida State University**.
Public Health Dynamics Laboratory. (2014) **University of Pittsburgh**.
Disease Modeling Group. (2014) **Princeton University**.
Department of Biology. (2014) **Georgetown University**.
Department of Biological Sciences. (2014) **University of Notre Dame**.
Department of Ecology and Evolutionary Biology. (2014) **University of Toronto**.
Global Health Group. (2013) **University of California, San Francisco**.

Invited Conference Presentations

"The Dengue Endgame: Imagining a World with Dengue Control" invitation-only meeting. (2023, 2024) SUNY Upstate Medical University. Syracuse, NY.
"Mathematical Models for Vector-borne Infections" Symposium at 13th European Conference on Mathematical and Theoretical Biology. (2024) Toledo, Spain.
"Leveraging Agent-based Modeling in Epidemiology and Pathogen Evolution" Symposium at Society for Mathematical Biology Annual Meeting. (2024) Seoul, South Korea.
"Across scale disease modeling and incorporating data" Symposium at Society for Mathematical Biology Annual Meeting. (2024) Seoul, South Korea.
"Mathematical Modeling of Social-Ecological Systems" Symposium at SIAM Conference on the Mathematics of Planet Earth. (2024) Portland, OR.

“Advances in Computational Modeling of Infectious Diseases” Symposium at SIAM Central States Section Meeting. (2023) University of Nebraska. Lincoln, NE.

“Mathematical Modeling of Pandemics” Invited Session. (2023) 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications. Wilmington, NC.

Panel on Climate, Environment, and Health. (2023) Joint session of the American Meteorological Society Committee on Climate Variability and the Board of Environment and Health. Denver, CO.

Keynote talk at One Health PACT Annual Meeting. (2022) Rotterdam, The Netherlands.

iFAST Theoretical Ecology Symposium to celebrate Simon Levin's 80th birthday. (2021) University of Oklahoma.

"Integrating Parallel Data Streams in Disease Ecology" Symposium. (2020) Ecological Society of America Annual Meeting, Salt Lake City, UT. (withdrawn on account of the COVID-19 pandemic)

“Artificial Intelligence and Tropical Medicine: New Approaches to Understand and Combat Emerging Tropical Diseases” Symposium. (2019) American Society of Tropical Medicine and Hygiene Meeting, Washington, DC.

Annual Meeting of IMPACTS Belize: Improving Laboratory Diagnostics, Clinical Care and Surveillance for Arboviral Diseases in Belize. (2019) Belize City, Belize.

I Congreso de Malaria: Ciencia básica, epidemiología y control. (2019) Universidad de Costa Rica. San Juan, Costa Rica. (declined and sent PhD student in my place)

Partnership for Dengue Control Workshop on "Pre-vaccination screening for the use of dengue vaccines with differential performance dependent on serostatus." (2019) Annecy, France. (declined and sent postdoc in my place)

Mathematics of Planet Earth 2013+ Workshop on Global Change and Vector-Borne Diseases: Mapping Emerging Infectious Diseases. (2018) George Mason University. Fairfax, VA. (declined due to illness)

Workshop on Multiscale Dynamics of Infections. (2018) Mathematical Biosciences Institute. Columbus, OH. (declined and sent Research Assistant Professor in my place)

Workshop on Disease Ecology / Eco-Epidemiology. (2018) Mathematical Biosciences Institute. Columbus, OH.

Symposium on the Population Biology of Vector-Borne Diseases. (2018) University of Georgia. Athens, GA.

Plenary speaker at Computational Biology for Infectious Diseases Summer School. (2017) International Center for Interdisciplinary Science and Education. Quy Nhon, Vietnam.

Workshop on Weather, Climate and Health. (2017) Jointly sponsored by National Center for Atmospheric Research and Centers for Disease Control. Boulder, CO.

Society for Mathematical Biology Annual Meeting. (2017) Salt Lake City, UT. (declined due to conflict with another invited conference presentation)

Institute for Disease Modeling Symposium. (2015, 2016, 2017) Institute for Disease Modeling, Bellevue, WA.

“Repellents” Symposium. (2016) XXV International Congress of Entomology, Orlando, FL.

Ecology and Evolution of Infectious Diseases Conference. (2016) Cornell University, Ithaca, NY.

Zika Modeling Coordination Group. (2016) Presented via phone to HHS BARDA in Washington, DC.
Pan American Health Organization. (2016) Presented via phone to PAHO in Washington, DC.
"Modeling Chikungunya Spread and Control" Symposium. (2015) American Society of Tropical Medicine and Hygiene Meeting, Philadelphia, PA.
"Prospects and Need for Targeted Control of Vector-Borne Diseases" Symposium. (2015) American Society of Tropical Medicine and Hygiene Meeting, Philadelphia, PA.
XVI Colombian Conference in Tropical Medicine and Parasitology. (2015) Santa Marta, Colombia.
"Modeling in Vector Ecology Research" Symposium. (2015) Society of Vector Ecology Meeting, Albuquerque, NM.
Institute for Disease Modeling Symposium. (2015) Institute for Disease Modeling, Bellevue, WA.
Pan-American Dengue Network Meeting. (2014) Belem, Para, Brazil.
RAPIDD Workshop on Vector-Borne Disease Mapping and Mobility. (2014) University of Southampton. Winchester, UK.
Workshop to Develop a Research Agenda for Assessing Vector Control to Prevent Dengue. (2014) Fondation Merieux. Annecy France.
Workshop on Rapid Evolution and Sustainability. (2013) Mathematical Biosciences Institute. Columbus, Ohio.
RAPIDD Workshop on Network and Individual-Based Models in Epidemiology. (2013) Princeton University. Princeton, New Jersey.
RAPIDD Workshop on Combining Modeling and Mapping for Policy. (2013) University of Oxford. Oxford, UK
RAPIDD Workshop on Transmission Dynamics of Japanese Encephalitis Virus. (2012) University of Florida. Gainesville, Florida.
RAPIDD Workshop on Quantification of Fine Scale Human Movement. (2012) Emory University. Atlanta, Georgia.
Foreign Animal Disease Threats Interagency Working Group Meeting. (2012) White House Conference Center. Washington, DC.
"Insights from population biology for the application of genetically modified mosquitoes to disease control" DIMACS/MBI Workshop on Genetics and Disease Control. (2011) Cape Coast, Ghana.
"Effects of evolutionarily labile species interactions on spatial spread dynamics of invasions" Synthesis of the Ecology and Evolution of Invasive Species Special Workshop. (2009) Lake Tahoe, California.

Other Invited Presentations

"Modeling to Support 'Building Out'" to the ***Lancet* Commission** on Arboviral Diseases. (2024) Fondation Brocher, Hermance, Switzerland.
"Projected population-level impact of TAK-003 on hospitalized dengue cases across the world's cities" to the **World Health Organization** Immunization and Vaccines Related Implementation Research Advisory Committee. (2023)

“Projected population-level impact of TAK-003 on hospitalized dengue cases across the world's cities” to the **World Health Organization** Strategic Group of Experts Working Group on the TAK-003 dengue vaccine. (2023)

"Impacts of K-12 school closure on the COVID-19 pandemic in Indiana" to the **Indiana Pandemic Information Collaborative**. (2020)

"Estimating unobserved SARS-CoV-2 infections in the United States" to the **US Government Pandemic Prediction and Forecasting Science and Technology Working Group**. (2020)

"Cost-effectiveness of Dengvaxia in Puerto Rico" at the **Centers for Disease Control and Prevention**, American Committee on Immunization Practices. (2019)

"Model-based projections of Zika virus infections among childbearing women in the Americas" to the **US Government Pandemic Prediction and Forecasting Science and Technology Working Group**. (2016)

"Recasting the transmission dynamics of mosquito-borne pathogens" at the **Foreign Animal Disease Threats Interagency Working Group**. (2012) White House Conference Center, Washington, DC.

Invited Meeting Participation

“Dengue and Other Arbovirus Analytics” Collaboratory (2024) Berlin, Germany. **World Health Organization Pandemic Intelligence Hub.**

"Modeling for Disease Outbreaks: Practical Approaches to Understanding and Using Models" Pre-Meeting Course offered by the **ASTMH Committee on Global Health**. (2020) Panel Moderator.

ZikaPLAN Mathematical Modeling Working Group Meeting. (2017) London, UK. (declined due to conflict with an invited conference presentation)

“Efficacy trials of ZIKV Vaccines: endpoints, trial design, site selection” Workshop. (2017) **World Health Organization**.

“Comparative modelling of dengue vaccine public health impact” Workshop. (2016) **World Health Organization**.

Contributed Presentations

Contributed poster: Epidemics International Conference on Infectious Disease Dynamics. Bologna, Italy. 2023.

Contributed poster: American Society of Tropical Medicine and Hygiene Annual Meeting. Chicago, IL. 2023.

Contributed poster: Ecology and Evolution of Infectious Diseases Conference. State College, PA. 2023.

Contributed talk: Society for Vector Ecology International Congress. Honolulu, HI. 2022.

Contributed poster: Society for Vector Ecology International Congress. Honolulu, HI. 2022.

Contributed talk: Epidemics International Conference on Infectious Disease Dynamics. Charleston, SC. 2019.

Contributed talk: Ecological Society of America Annual Meeting. Louisville, KY. 2019.

Contributed talk: Genomic Epidemiology of Malaria Conference. Wellcome Genome Campus, United Kingdom. 2018.
Contributed talk: Epidemics International Conference on Infectious Disease Dynamics. Sitges, Spain. 2017.
Contributed poster: American Society of Tropical Medicine and Hygiene Annual Meeting. Baltimore, MD. 2017.
Contributed talk: Ecological Society of America Annual Meeting. Portland, OR. 2017.
Contributed talk: Midwest Q-Bio Symposium. Notre Dame, IN. 2017.
Contributed poster: American Society of Tropical Medicine and Hygiene Annual Meeting. Atlanta, GA, 2016.
Contributed talk: Epidemics International Conference on Infectious Disease Dynamics. Clearwater Beach, FL. 2015.
Contributed poster: American Society of Tropical Medicine and Hygiene Annual Meeting. New Orleans, LA. 2014.
Contributed talk: Ecological Society of America Annual Meeting. Baltimore, MD. 2015.
Contributed poster: Ecology and Evolution of Infectious Diseases Conference. Fort Collins, CO. 2014.
Contributed poster: 5th Annual Conference on Genomic Epidemiology of Malaria. Sanger Institute, Cambridge, UK. 2014.
Contributed talk: Epidemics International Conference on Infectious Disease Dynamics. Amsterdam, Netherlands. 2013.
Contributed talk: American Society of Tropical Medicine and Hygiene Annual Meeting. Washington, DC. 2013.
Contributed talk: International Conference on Dengue and Dengue Hemorrhagic Fever. Bangkok, Thailand. 2013.
Contributed talk: Ecological Society of America Annual Meeting. Minneapolis, MN. 2013.
Contributed poster: American Society of Tropical Medicine and Hygiene Annual Meeting. Atlanta, GA. 2012.
Contributed talk: Ecological Society of American Annual Meeting. Portland, OR. 2012.
Contributed talk: Society for Mathematical Biology Annual Meeting. Knoxville, TN. 2012.
Contributed poster: Ecology and Evolution of Infectious Diseases Conference. Ann Arbor, MI. 2012.
Contributed talk: Society for the Study of Evolution Annual Meeting. Portland, OR. 2011.
Contributed poster: Society for the Study of Evolution Annual Meeting. Norman, OK. 2010.
Contributed talk: Ecological Society of America Annual Meeting. Albuquerque, NM. 2009.
Contributed talk: Ecological Society of America Annual Meeting. San Jose, CA. 2007.
Contributed poster: Ecological Society of America Annual Meeting. Memphis, TN. 2006.
Contributed poster: Society for Mathematical Biology Annual Meeting. Ann Arbor, MI. 2004.

Internal Presentations

Seminar. Department of Biological Sciences. 2014.

3-Minute Lightning Talk. Moment to See, Courage to Act. Office of the Provost. 2021.
Seminar. Department of Biological Sciences. 2019.
Summer Scholars Program. Center for Research Computing. 2015, 2016, 2017.
Seminar. Department of Biological Sciences. 2016.
Colloquium. Department of Applied and Computational Mathematics and Statistics. 2014.
Presentation to Indiana Clinical Translational Sciences Institute Videoconference. 2014.

Teaching and Advising

I have taught first-year undergraduate courses that introduce both non-majors and majors to foundational concepts in evolution and how those concepts can be applied to fight infectious diseases. I have taught graduate courses that impart students with improved quantitative skills, in some cases applied to infectious diseases specifically and in other cases to the biological sciences more broadly. In addition, I have maintained an active research lab composed of researchers at the undergraduate, graduate, postdoctoral, and research faculty levels.

Regular Courses Taught

Undergraduate Courses at Notre Dame

How Will Majoring in Biological Sciences Equip You to Fight the Next Pandemic?
BIOS 10169 & 10170
Fall 2021, 2023, 2024
~75 students in each of two half-semester modules
This half-semester course is part of my department's first-semester biology majors course, which introduces students to foundational concepts in biology in the context of a contemporary research topic. My course focuses on applications of evolutionary biology to understanding and fighting pandemics.

Evolution and Medicine
BIOS 10119 & 10120
Spring 2015 - 2018, Fall 2018
~30 students per semester
This course provides non-major students with a survey of key concepts in biology, emphasizing balance and complementarity between topics in evolutionary biology and medicine. Applications such as personal genetic testing, antimicrobial resistance, and tracing the origins of emerging pathogens tie these basic biological concepts together.

Graduate Courses at Notre Dame

Topics in Ecology: Bayesian Statistics for Ecologists and Epidemiologists
BIOS 60552
Fall 2016, 2018, 2024 (Co-Instructor: Jason McLachlan)

Range of ~5-15 students per semester, including some upper-level undergraduates
This course is focused on biologists who have had only a modest amount of previous instruction in statistics (no more than a first-semester introductory course). The objective is to give these students sufficient additional instruction and experience to be more confident in designing statistical analyses appropriate to their research.

Infectious Disease Epidemiology and Ecology
BIOS 40427 / MDSC 40427 / BIOS 60590
Spring 2021 – 2022, 2024
Range of ~5-15 students per semester, including some upper-level undergraduates
The objectives of this course are to understand fundamental concepts and quantities from infectious disease epidemiology, to interpret and implement mechanistic models of pathogen transmission dynamics, to appreciate how different types of data are used to inform these models, and to distinguish between applications of models that involve inference versus prediction.

Topics in Ecology: Infectious Disease Forecasting
BIOS 60552
Fall 2017
~10 students, including some upper-level undergraduates
This course provided an introduction to mathematical modeling of infectious disease dynamics, with an emphasis on applications to forecasting.

Topics in Infectious Disease: Population Biology of Infectious Disease
BIOS 60568
Fall 2015 (Co-Instructor: Elizabeth Archie)
~10 students
This course surveys a variety of key concepts about the ecology and evolution of infectious diseases and involves a combination of lectures, paper discussions, and work on a final project.

Special Teaching

Instructor (Workshop)

Quant Camp, for incoming Biological Sciences PhD students
UND Environmental Research Center, Summer 2017 – 2019,
UND, Summer 2024, 2025

Computational Biology for Infectious Diseases Summer School
Epidemic Forecasting Module
International Center for Interdisciplinary Science and Education, Quy Nhon, Vietnam, Fall 2017

Teaching Assistant (Prior to ND)

An Introduction to Evolution and Animal Diversity
University of California, Davis, Winter 2007
Humankind in the Biotic World
University of Tennessee, Knoxville, Spring 2005
Biodiversity
University of Tennessee, Knoxville, Fall 2004

Guest Lecturer

Vaccine evaluation and mathematical modeling: dengue as a case study
Global Health Challenges
University of Notre Dame, Fall 2016
Week-long series of lectures on model-guided fieldwork
Topics in Biology: Quantitative Thinking in Ecology
University of Puerto Rico, Rio Piedras, Spring 2016
Lecture on HIV epidemiology for a design class working on an HIV awareness project
Design for Social Good
University of Notre Dame, Fall 2014
Lectures on stability analysis of dynamical systems models in ecology
Mathematical Methods in Population Biology
University of California, Davis, Fall 2012
Lectures on stability analysis of dynamical systems models in ecology
Mathematical Methods in Population Biology
University of California, Davis, Fall 2011
Lecture on modeling the spatial spread of invasive species
Conservation Biology Research Seminar
University of California, Davis, Winter 2010

Undergraduate Students Supervised

Ethan Holland, Biological Sciences major, Fall 2014 – Spring 2015
Status after graduation: MD student at University of Florida
John Huber, ACMS major, Fall 2014 – Summer 2017
Status after graduation: MPhil in Veterinary Sciences with Olivier Restif at University of Cambridge
Adam Haydel, Science-Business major, Spring 2015 – Spring 2016
Status after graduation: MD student at Louisiana State University
Caleb Johnson, ACMS major, Spring 2015 – Spring 2016
Status after graduation: Data Scientist at Booz Allen Hamilton
Yaohan Ding, International Summer Undergraduate Research Experience (iSURE), Notre Dame International, Summer 2017
Yutong Yao, Pre-professional and Economics major, Fall 2016 – Fall 2019
Status after graduation: MPH Student at Emory University

Marya Poterek, Science-Computing major, Fall 2016 – Spring 2019
Status after graduation: PhD student in Biological Sciences at Notre Dame
Katherine Koh, ACMS major, Fall 2016 – Summer 2019
Maggie Walters, Biological Sciences major, Fall 2016 – Summer 2019
Status after graduation: Post-Bachelor Fellowship at the Institute for Health Metrics and Evaluation at the University of Washington, Seattle
Henri Chung, Biological Sciences major, Fall 2017 – Fall 2019
Status after graduation: PhD student in Bioinformatics and Computational Biology at Iowa State University
Cassandra Miller, ACMS major, Spring 2019 – Spring 2020
Status after graduation: MS student in ACMS at Notre Dame
Carson Hartlage, Biological Sciences major, Summer 2019 – Summer 2020
Status after graduation: MD/PhD student at University of Cincinnati
Georgia Mudd, ACMS major, Spring 2019 – Spring 2021
Kathryn Strimbu, Biological Sciences major, Summer 2019 – Fall 2020
Status after graduation: MPP student at University of Chicago
Maggie O'Connor, Biological Sciences major, Fall 2019 – Spring 2022
Status after graduation: Clinical Research Assistant at Cohen Children's Hospital
Maggie Elliott, Biological Sciences major, Fall 2019 – Spring 2022
Status after graduation: PhD student in Biostatistics at UC San Diego
Brooke Rodriguez, Mathematics major, Fall 2021 – Spring 2022
Amir Khouzam, Neuroscience and Behavior major, Fall 2021 – Spring 2022
Nadim Khouzam, Neuroscience and Behavior major, Fall 2021 – Spring 2022
Jonathan Daly, Neuroscience and Behavior major, Spring 2022
Erin Coyne, ACMS major, Spring 2021 – Spring 2023
Abby Nguyen, ACMS major, Spring 2021 – Spring 2024
Status after graduation: PhD student in Biostatistics at University of Rochester
Holly Bill, ACMS major, Spring 2021 – present
Liam Emerick, ACMS major, Fall 2023 – present
Ryan Kelley, Science-Business and ACMS major, Spring 2024 – present
Ava Schwan, ACMS major, Spring 2024 – present

Masters Students Supervised

Michael Prough, MS in Global Health, 2016
Thesis: "Analysis of *Aedes aegypti* Hotspots and Hot Zones in Two Neighborhoods of Santo Domingo, Ecuador"
Status after graduation: clinical research coordinator at University of Miami
Jonah Barreto, MS in Global Health, 2017
Thesis: "Evaluating Effects of Spatial Repellents on *Aedes aegypti* Behavior and Bionomics in Rural Thailand"
Status after graduation: employed at Epic Systems Corporation in Madison, WI

Doctoral Students Supervised

John Huber, PhD in Biological Sciences, defended 2021
Thesis: "Jointly leveraging mathematical models and data to understand malaria transmission and control"
Awards: NSF Graduate Research Fellowship
Status after graduation: MD student at Washington University in St. Louis

Rachel Oidtman, PhD in Biological Sciences, defended 2020
Thesis: "Understanding and forecasting spatiotemporal variation in emerging arboviruses"
Awards: NSF Graduate Research Fellowship Honorable Mention
Status after graduation: Postdoc at University of Chicago with Sarah Cobey
Current status: Associate Principal Scientist, Merck

Quirine ten Bosch, PhD in Biological Sciences, defended 2017
Thesis: "Insights from mathematical modeling into the natural history, dynamics, and control of dengue"
Status after graduation: Postdoc at Institut Pasteur in Paris, France with Simon Cauchemez and Henrik Salje
Current status: Associate Professor with Tenure, Wageningen University

Quan Tran, PhD in Biological Sciences, Jan 2019 – July 2023
Thesis: “Considering the biological context to improve models for estimating the global disease burden of yellow fever”
Status after graduation: CDC Steven M. Teutsch Prevention Effectiveness Fellow, CDC Dengue Branch, San Juan, PR

Annaliese Wieler, PhD in Biological Sciences, Aug 2018 – Oct 2024
Thesis: “Mathematical modeling to support the interpretation of spatial repellent clinical trials and cost-effectiveness projections”
Status after graduation: Research Statistician at Metrum Research Group

Alan Costello, PhD in Biological Sciences, Spring 2019 – present (co-advised with Moore)

Marya Poterek, PhD in Biological Sciences, Fall 2019 – present

Carly Barbera, PhD in Biological Sciences, Fall 2019 – present (co-advised with Rohr)

Stacy Mowry, PhD in Biological Sciences, Fall 2021 – present

Manar Alkuzweny, PhD in Biological Sciences, Fall 2021 – present

Carol de Souza Moreira, PhD in Biological Sciences, Fall 2022 – present

Yuxin Meng, PhD in Biological Sciences, Fall 2024 – present

Postdoctoral Researchers Supervised

James Soda, June 2017 – July 2019
PhD in Computational Sciences, Florida State
Status after departure: Assistant Professor, Quinnipiac University

Amir Siraj, August 2015 – February 2020
PhD in Geography, University of Denver
Status after departure: Research and Data Analyst, Malaria and Neglected Tropical Diseases Department, PATH

Morgan Smith, June 2020 – August 2020

PhD in Biological Sciences, University of Notre Dame
Status after departure: Epidemiological Data Analyst, CDC Foundation

Guido España, January 2016 – November 2020
PhD in Electrical Engineering, Universidad Nacional de Colombia
Status after departure: Research Assistant Professor, University of Notre Dame

Sean Cavany, June 2018 – July 2022
PhD in Epidemiology, London School of Hygiene and Tropical Medicine
Status after departure: Postdoctoral Researcher, University of Oxford

Anita Lerch, August 2018 – June 2023
PhD, Swiss Tropical and Public Health Institute
Status after departure: Research Assistant Professor, University of Notre Dame

Jennifer Peterson, May 2022 – July 2023
PhD in Ecology and Evolutionary Biology, Princeton University
Status after departure: Assistant Professor, University of Delaware

Saikanth Ratnavale, January 2022 – August 2023
PhD in Applied Mathematics, Texas Tech University
Status after departure: Assistant Professor, Marshall University

Neda Jalali, January 2023 – August 2023
PhD in Biostatistics, University of Florida
Status after departure: Principal Biostatistician, Regeneron

Alex Meyer, June 2021 – present
PhD in Applied Mathematics, University of California, Davis

Kelsey Shaw, August 2023 – present
DVM, Cornell University
PhD in Population Biology, Ecology, and Evolution, Emory University

Abhijit Majumder, January 2024 – present
PhD in Mathematics, Jadavpur University, India

Albert Akuno, March 2024 – present
PhD in Mathematics, Centro de Investigación en Matemáticas, A.C., México

Daniela Florez-Pineda, August 2024 – present
PhD in Applied Mathematics, Tulane University

Research Assistant Professors Supervised

Sean Moore, PhD in Zoology, Oregon State University. March 2017 – August 2024
Current status: Epidemiologist, NIH Fogarty International Center

Guido España, PhD in Electrical Engineering, Universidad Nacional de Colombia
December 2020 – May 2023
Current status: Team Lead, CDC Center for Forecasting and Outbreak Analytics

Anita Lerch, PhD at Swiss Tropical and Public Health Institute
September 2024 – present

Other Students Supervised

Gibran Anderson Oliveira da Silva, PhD student at Instituto Potosino de Investigación Científica y Tecnológica A.C., México, External committee member, 2024 – present

Ebony Saccento, ND-PREP Postbaccalaureate Student, 2024 – 2025
Kaitlynn Meis, Integrated Biomedical Sciences, rotated for six weeks in Spring 2017
Karlyn Harrod, MS in ACMS, 2016

Graduate Student Committees

Sal Curasi, PhD in Biological Sciences, Rocha advisee, 2021
Jenna Davis, PhD in Biological Sciences, Lobo advisee, 2019
Elizabeth Miller, PhD in Biological Sciences, Archie advisee, 2016
Morgan Smith, PhD in Biological Sciences, Michael advisee, 2019
Casey Ferris, MS in Computer Science & Engineering, Madey advisee, 2017
Morgan Smith, MS in Global Health, Michael advisee, 2015
Sara Benevente, MS in Biological Sciences, Belovsky advisee, 2018
Ian Klupar, MS in Biological Sciences, Rocha advisee, 2020
Brittni Bertolet, PhD in Biological Sciences, Jones advisee, 2021
Mauna Dasari, PhD in Biological Sciences, Archie advisee, 2021
Kate Vendrely, PhD candidate in Biological Sciences, 2022
Megan Vahsen, PhD candidate in Biological Sciences, 2023
Chelsea Weibel, PhD candidate in Biological Sciences, 2023
Timothy Burton, PhD candidate in Biological Sciences, 2023
Aurel Holzschuh, PhD student in Biological Sciences, 2023
Camille Mosley, PhD student in Biological Sciences, 2024
Tiffany Huwe, PhD student in Biological Sciences, Koepfli advisee
Alexis Korotasz, PhD student in Biological Sciences, Rohr advisee
Patrick Heffernan, PhD student in Biological Sciences, Rohr advisee
Carly Dickson, PhD student in Biological Sciences, Archie advisee
Emily Selland, PhD student in Biological Sciences, Rohr advisee
Nicholas Galle, PhD student in Biological Sciences, Rohr advisee

Service

Internal Service

University Committees and Other Service

- University Committee on Internationalization (2024 – 2027)
- Bioengineering and Life Sciences (BELS) Initiative Research Strategy Committee (2024 – present)
- BELS Mission, Values, and Objectives Subcommittee (2024)
- College Council (2023 – 2026)
- Research Strategy Committee, Bioengineering & Life Sciences (BELS) Initiative (2024 – present)
- Hesburgh Lecturer, Chico / Northern California Alumni Chapter (2024)
- Hesburgh Lecturer, Northeastern New York Alumni Chapter (2023)
- Hesburgh Lecturer, Houston Alumni Chapter (2022)
- College of Science Dean Search (2020 – 2021)

COVID-19 Reopening, Epidemiology Working Group (2020)
Task Force on Grand Challenges, Scientific Wellness Initiative (2018)

Departmental Committees
Graduate Recruitment (2014 – 2018, Chair or Co-Chair 2018 – 2022, 2023 – 2024)
Virology Faculty Search (2023 – 2024)
Visibility (2020 – 2021, 2023 – 2024)
Vector Biology Faculty Search (2019 – 2020, Chair 2021 – 2022)
Inclusive Excellence (2021 – 2022)
Reappointment Committee (2021 – 2022)
Disease Biology Faculty Search (2020 – 2021)
Graduate Curriculum (2015 – 2020)
Global Health Faculty Search (2017 – 2018)
Biocomputing (2015 – 2017)
Ecology, Evolution, and Environmental Change Faculty Search (2015 – 2016)

Co-Organizer and Co-Instructor (2017 – 2019)
Quant Camp at UNDERC for incoming Biological Sciences PhD students

Symposium Co-Organizer (2017)
5th Midwest Q-Bio Symposium held at Notre Dame

Represented Eck Institute for Global Health during Notre Dame Day (2016)

External Service

Service to Scientific Organizations

Steering Committee (2021 – 2023)
Models of Infectious Disease Agents Study (**MIDAS**) Coordination Center

Editorial Activity

Associate Editor (2022 – present)
Epidemics

Associate Editor (2020 – present)
PLOS Computational Biology

Associate Editor (2017 – 2021)
Frontiers in Ecology and Evolution, Population and Evolutionary Dynamics

Guest Editor (2018)
PLOS Computational Biology

Expert Consultation

Consultant (2021 – present)
"Cost-effectiveness of TAK-003 in Puerto Rico" for the **Centers for Disease Control and Prevention**'s American Committee on Immunization Practices

Consultant (2020 – 2023)
Emergent Biosolutions
I was recruited to advise on chikungunya vaccine efficacy trial planning.

Consultant (2019)
"Cost-effectiveness of Dengvaxia in Puerto Rico" for the **Centers for Disease Control and Prevention**'s American Committee on Immunization Practices

Meeting Participant (2017)
"Efficacy trials of ZIKV Vaccines: endpoints, trial design, site selection" Workshop. **World Health Organization**. Geneva, Switzerland.
Consultant (2016 – 2017)
College of Global Public Health, **New York University**
I was recruited to contribute to the development of an agent-based model of Zika virus transmission for an internally funded project at NYU.
Working Group Member (2016)
Zika Modeling Coordination Group convened by **HHS BARDA**
Working Group Member (2015 – 2016)
Comparative Modelling of Dengue Vaccine Public Health Impact Working Group convened and supported by the **World Health Organization**

Grant Reviewer
Reviewer (2024)
Wellcome Trust "Strengthening health and disease modelling for public health decision making in Africa" call for proposals
Study Section Standing Member (2022 – present)
NIH Population-based Research in Infectious Disease Study Section
Study Section Panelist (2015, 2017, 2018, 2019, 2022, 2024)
NSF Program
Reviewer (2023)
European Union ISIDORe Joint Research Activities Program
Reviewer (2023)
Royal Society of London, University Research Fellowship
Reviewer (2022)
Institute for Tropical Medicine, Antwerp, Belgium
Study Section Panelist (2018, 2020, 2021, 2022)
NIH Infectious, Reproductive, Asthma and Pulmonary Conditions Study Section
Reviewer (2021)
L'Agence Nationale de la Recherche, France
Reviewer (2021)
Ralph E. Powe Junior Faculty Enhancement Awards, **Oak Ridge Associated Universities**
Reviewer (2020)
MIDAS COVID-19 Modeling Urgent Grant Program
Study Section Panelist (2020)
NIH Emergency Awards: Rapid Investigation of Severe Acute Respiratory Syndrome Coronavirus 2 and Coronavirus Disease 2019
Reviewer (2020)
Indiana CTSI Translational Sciences Postdoctoral Fellowship
Study Section Panelist (2019)
NIH US-Brazil Collaborative Biomedical Research Program
Study Section Panelist (2019)
Wellcome Trust Climate Change and Health Panel (declined due to conflict)
Grant Proposal Reviewer (2015, 2015, 2018)

Ad hoc proposal review for **Medical Research Council UK**

Grant Proposal Reviewer (2017)

Ad hoc proposal review for **Kansas City Life Sciences Institute**

Study Section Panelist (2016, 2017)

NIH Special Emphasis Panel on "Rapid Assessment of Zika Virus (ZIKV) Complications (R21)"

Grant Proposal Reviewer (2016)

Ad hoc proposal review for Zika Research Grant Initiative by the **Florida Department of Health**'s Biomedical Research Programs

Grant Proposal Reviewer (2016)

Ad hoc proposal reviewer for **UK Royal Society** University Research Fellowship Program

<u>Conference Organizing</u>

Co-Organizer (with Jason Rohr) (2025)

Ecology and Evolution of Infectious Diseases Conference
University of Notre Dame

Scientific Committee (2019, 2023)

Epidemics International Conference on Infectious Disease Dynamics
Charleston, SC; Bologna, Italy

Symposium Organizer (2015)

"Prospects and Need for Targeted Control of Vector-Borne Diseases"
American Society of Tropical Medicine and Hygiene Meeting, Philadelphia, PA

Workshop Organizer (2015)

RAPIDD Workshop on Model-Guided Clinical Trial Design

Symposium Organizer (2015)

Symposium titled "Dengue Research Exemplifies the Interface of Basic and Applied Population Biology" sponsored by the **American Society of Naturalists**
Society for the Study of Evolution Meeting, Guaruja, Brazil

Workshop Organizer (2015)

RAPIDD Workshop on Targeted Control of Vector-Borne Pathogens

<u>Mentorship</u>

Invited Panelist (2024)

MIDAS Webinar on Faculty Job Searches

Invited Panelist (2020)

Water Cooler Chat: Modeling the SARS-CoV-2 Outbreak: Challenges and Opportunities, **Ecological Society of America**, Disease Ecology Section

Panelist for Global Health Peer-to-Peer Networking Event (2016)

American Society of Tropical Medicine and Hygiene Meeting, Atlanta, GA

Mentored an undergraduate from the SEEDS Program (2007)

Ecological Society of America Annual Meeting

Other Reviewing

Evaluator of promotion at four R1 universities, including 3 AAU institutions

Statistical Reviewer (2019 – present)

Lancet Infectious Diseases, Lancet Microbe

Invited to serve in this capacity on an ongoing basis with honorarium

Book Proposal Reviewer (2019, 2023)

CRC Press

Reviewer (2020)

Davidson Fellows Scholarship, **Davidson Institute for Talent Development**

Book Chapter Reviewer (2019)

Oxford University Press

Book Proposal Reviewer (2018, 2019)

Cambridge University Press

Judge for Volterra Award (2013)

Theoretical Ecology Section, **Ecological Society of America**

Manuscript Reviewer

Acta Oecologia (1), *Acta Tropica* (1), *American Journal of Epidemiology* (2), *American Journal of Tropical Medicine and Hygiene* (6), *American Naturalist* (1), *BioSystems* (1), *BMC Medicine* (1), *Bulletin of Mathematical Biology* (4), *EcoHealth* (1), *Ecology* (3), *Ecological Complexity* (1), *Ecology Letters* (4), *Ecological Modelling* (1), *eLife* (5), *Emerging Infectious Diseases* (3), *Epidemics* (2), *Evolution* (1), *Evolution, Medicine, and Public Health* (1), *Frontiers in Physics* (1), *Frontiers in Zoology* (1), *Genetics* (1), *GeoHealth* (1), *Journal of the American Statistical Association* (1), *Journal of Infectious Disease* (1), *Journal of Mathematical Biology* (1), *Journal of Theoretical Biology* (2), *Journal of the Royal Society Interface* (1), *Journal of Vegetation Science* (1), *Lancet Infectious Diseases* (10), *Lancet Microbe* (2), *Malaria Journal* (2), *Mathematical Biosciences* (3), *Mathematical Modeling of Natural Phenomena* (1), *Nature* (2), *Nature Communications* (4), *Nature Microbiology* (3), *Oikos* (1), *Parasites and Vectors* (2), *PLOS Biology* (2), *PLOS Computational Biology* (7), *PLOS Medicine* (3), *PLOS ONE* (3), *PLOS Neglected Tropical Diseases* (11), *Proceedings of the National Academy of Sciences* (9), *Proceedings of the Royal Society B* (5), *Science* (4), *Science Advances* (2), *Science Translational Medicine* (1), *Scientific Reports* (3), *Theoretical Ecology* (4)