CURRICULUM VITAE

Alex Perkins
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Department of Biological Sciences
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Higher Education
Ph.D., Population Biology, University of California, Davis, 2011
B.A., Computational Ecology, University of Tennessee, Knoxville, 2006

Appointments
Concurrent Assistant Professor, 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 – present
Postdoctoral Fellow, Research and Policy for Infectious Disease Dynamics (RAPIDD) Program, Fogarty International Center, National Institutes of Health, 2011 – 2014

Scholarships and Fellowships
RAPIDD Postdoctoral Fellowship, Fogarty International Center, National Institutes of Health, 2011 – 2014
Computational Sciences Graduate Fellowship, Department of Energy, 2007 – 2011
Barry Goldwater Scholarship, 2005
Morris K. Udall Scholarship, 2004

Distinctions, Honors, Awards
Early Career Fellow, Ecological Society of America, 2017 – 2022
DARPA Director's Fellowship, 2018 – 2019
DARPA Young Faculty Award, 2016 – 2018
Visiting Scholar, Institute for Disease Modeling, 2016
Oak Ridge Associated Universities Powe Junior Faculty Enhancement Award, 2015
Honorable Mention for "Most GEM" Poster, Genomic Epidemiology of Malaria (GEM) Conference, Sanger Institute, 2014
Volterra Award, Best student oral presentation on theory research, Ecological Society of America Annual Meeting, 2009
Honorable Mention, Graduate Research Fellowship Program, National Science Foundation, 2007
University of Tennessee, Knoxville, Outstanding Graduate in Ecology and Evolutionary Biology, 2006
University of Tennessee, Knoxville, Chancellor's Citations for Extraordinary Professional Promise and for Extraordinary Academic Achievement, 2006
Phi Beta Kappa, Epsilon Chapter of Tennessee, 2004

Refereed Publications

Summary statistics. I have published a total of 39 peer-reviewed journal articles, with 25 of those deriving at least in part from work done in the last 4+ years since becoming an Assistant Professor. According to Google Scholar, I have been cited a total of 1,313 times and have an h-index of 19 (as of Dec 6, 2018). According to Web of Science, I have been cited a total of 541 times and have an h-index of 13 (as of May 23, 2018).

Information provided about each publication. For publications involving myself or postdocs or students under my mentorship, I denote the corresponding author with (*) and lab members' statuses as (U) for undergraduate, (G) for graduate, and (P) for postdoc. I have indicated authors with equal contributions by listing (co) after such authors' names.

Conventions for authorship order. In all of my publications, the first author is the person who made the most significant contributions to the work and generally lead the writing of the paper. The last author is generally the senior person who played a more significant role in the work than other senior authors and was in many cases a mentor of the first author. Authors closer to first generally played a more significant role than those listed after them, particularly authors listed second.

39. España, G. (P) (*), C. Hogea, A. Guignard, Q.A. ten Bosch (G), A.C. Morrison, D.L. Smith, T.W. Scott, A. Schmidt, T.A. Perkins (*). (2019) Biased efficacy estimates in phase-III dengue vaccine trials due to heterogeneous exposure and differential detectability of primary infections across trial arms. Accepted at *PLOS ONE.* Impact factor: 2.766. Citations: 0 (GS), 0 (WoS).
38. Wesolowski, A., A. Taylor, H.-H. Change, R. Verity, S. Tessema, J. Bailey, T.A. Perkins, D. Neafsey, B. Greenhouse, C.O. Buckee. (2018) Mapping malaria by combining parasite genomic and epidemiologic data. *BMC Medicine* 16:190. Impact factor: 9.088. Citations: 0 (GS), 0 (WoS).
37. España, G. (P), J. Grefenstette, T.A. Perkins, C. Torres, A. Campo Carey, H. Diaz, F. de la Hoz, D.S. Burke, W.G. van Panhuis. (2018) Exploring scenarios of chikungunya mitigation with a data-driven agent-based model of the 2014-2016 outbreak in Colombia. *Scientific Reports* 8:12201. Impact factor: 4.122. Citations: 0 (GS), 0 (WoS).
36. Moore, S.M. (P) (*), Q.A. ten Bosch (G), A.S. Siraj (P), K.J. Soda (P), G. España (P), A. Campo, S. Gómez, D. Salas, B. Raybaud, E. Wenger, P. Welkhoff, T.A. Perkins (*). (2018) Local and regional dynamics of chikungunya virus transmission in Colombia: the role of mismatched spatial heterogeneity. *BMC Medicine* 16:152. Impact factor: 9.088. Citations: 0 (GS), 0 (WoS).
35. Bershteyn, A., J. Gerardin, D. Bridenbecker, C. Lorton, J. Bloedow, R. Baker, G. Chabot-Couture, Y. Chen, T. Fischle, K. Frey, J. Gauld, H. Hu, A. Izzo, D. Klein, D. Kuacevic, K. McCarthy, J. Miller, A.L. Ouedraogo, T.A. Perkins, J. Steinkraus, Q.A. ten Bosch (G), H.-F. Ting, S. Titova, B. Wagner, P. Welkhoff, E. Wenger. (2018) Implementation and applications of the EMOD individual-based modeling platform: software design and development processes to enable multi-scale modeling. In press at *Pathogens and Disease* 76:fty059. Impact factor: 2.335. Citations: 0 (GS), 0 (WoS).

34. Kraemer, M.U.G. (co), D. Bisanzio, R.C. Reiner, R. Zakar, J. Hawkins, C.C. Freifeld, D.L. Smith, S.I. Hay, J.B. Brownstein, T.A. Perkins (*). (2018) Inferences about spatiotemporal variation in dengue virus transmission are sensitive to assumptions about intra-urban human mobility. *EPJ Data Science* 7:16. Impact factor: 2.982. Citations: 0 (GS), 0 (WoS).
33. ten Bosch, Q.A. (G), F. Castro-Llanos, H. Manda, A.C. Morrison, J. Grieco, N.L. Achee, T.A. Perkins (*). (2018) Model-based analysis of experimental hut data elucidates multifaceted effects of a volatile chemical on *Aedes aegypti* mosquitoes. *Parasites and Vectors* 11:365. Impact factor: 3.430. Citations: 0 (GS), 0 (WoS).
32. ten Bosch, Q.A. (G), H.E. Clapham, L. Lambrechts, B.M. Althouse, V. Duoung, P. Buchey, A.L. Lloyd, L.A. Waller, A.C. Morrison, U. Kitron, G.M. Vazquez-Prokopec, T.W. Scott, T.A. Perkins (*). (2018) Contributions from the silent majority dominate dengue virus transmission. *PLOS Pathogens* 14:e1006965.
30. Siraj, A.S. (P), T.A. Perkins (*). (2017) Assessing the population at risk of Zika in Asia – is the emergency really over? In press at *BMJ Global Health*. Impact factor: NA. Citations: 0.
29. Siraj, A.S. (P), R. Oidtman (G), J. Huber (U), M.U.G. Kraemer, O.J. Brady, M. Johansson, T.A. Perkins (*). (2017) Temperature modulates dengue virus epidemic growth rates through its effects on reproduction numbers and generation intervals. *PLOS Neglected Tropical Diseases* 11:e0005797. Impact factor: 4.569. Citations: 0.
28. 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), T.A. Perkins (co), I. Dorigatti, D.A.T. Cummings, G. Espana (P), J. Kelso, I. Longini, J. Lourenco, C. Pearson, R.C. Reiner, N.M. Ferguson. (2016) The long-term safety, public health impact, and cost-effectiveness of a routine vaccination with a recombinant, live-attenuated dengue vaccine (Dengvaxia): a model comparison study. *PLOS Medicine* 13:e1002181. Impact factor: 14.429. Citations: 13.
27. Oidtman, R.J. (G), R.C. Christofferson, Q.A. ten Bosch (G), G. España (P), M.U.G. Kraemer, A.J. Tatem, C.M. Barker, T.A. Perkins (*). (2016) *Pokemon Go* and exposure to mosquito-borne diseases: how not to catch 'em all. *PLOS Currents Outbreaks.* Impact factor: NA. Citations: 3.
26. Huber, J.H. (U), G. Johnston, B. Greenhouse, D.L. Smith, T.A. Perkins (*). (2016) Quantitative, model-based estimates of variability in the generation and serial intervals of *Plasmodium falciparum* malaria. *Malaria Journal*. 15:490. Impact factor: 3.079. Citations: 1.
25. Perkins, T.A. (*), C. Boettiger, B.L. Phillips. (2016) After the games are over: life-history trade-offs drive dispersal attenuation following range expansion. *Ecology and Evolution* doi:10.1002/ece3.2314. Impact factor: 2.537. Citations: 2.
24. Perkins, T.A. (*), A.S. Siraj (P), C. Warren Ruktonanchai, M.U.G. Kraemer, A.J. Tatem. (2016) Model-based projections of Zika virus infections in childbearing women in the Americas. *Nature Microbiology* 1:16216. Impact factor: NA. Citations: 37.
23. Perkins, T.A. (*), V. Paz Soldan, S.T. Stoddard, A.C. Morrison, B.M. Forshey, K.C. Long, J. Elder, U. Kitron, T.W. Scott, G.M. Vazquez-Prokopec. (2016) Calling in sick: impacts of fever on human mobility in an urban environment. *Proceedings of the Royal Society B* 283:20160390. Impact factor: 5.051. Citations: 0.

22. Reiner, R.C., N.L. Achee, R. Barrera, T. Burkot, D. Chadee, G. Devine, T. Endy, D. Gubler, J. Homback, I. Kleinschmidt, A. Lenhart, S. Lindsay, I. Longini, M. Mondy, A.C. Morrison, T.A. Perkins, G.M. Vazquez-Prokopec, P. Reiter, S. Ritchie, D.L. Smith, D. Strickman, T.W. Scott. (2016) Quantifying the epidemiological impact of vector control on dengue. *PLOS Neglected Tropical Diseases* 10:e0004588. Impact factor: 4.569. Citations: 12.
21. Brady, O.J., H.C.J. Godfray, A.J. Tatem, P.W. Gething, J.M. Cohen, F.E. McKenzie, T.A. Perkins, R.C. Reiner, L.S. Tusting, M.E. Sinka, C.L. Moyes, P.A. Eckhoff, T.W. Scott, S.W. Lindsay, S.I. Hay, D.L. Smith. (2016) Vectorial capacity and vector control: reconsidering sensitivity to parameters for malaria elimination. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 110:107-117. Impact factor: 1.931. Citations: 19.
20. Vazquez-Prokopec, G.M., T.A. Perkins, L. Waller, A. Lloyd, R.C. Reiner, T.W. Scott, U. Kitron. (2016) Coupled heterogeneities and their impact on parasite transmission and control. *Trends in Parasitology* 32:356-367. Impact factor: 6.204. Citations: 6.
19. Reiner, R.C., A. Le Menach, S. Kunene, N. Ntshalintshali, M. Hsiang, T.A. Perkins, B. Greenhouse, A.J. Tatem, J.M. Cohen, D.L. Smith. (2015) Mapping residual transmission for malaria elimination. *eLife* 4:e09520. Impact factor: 8.303. Citations: 8.
18. Kraemer, M.U.G., T.A. Perkins, D.A.T. Cummings, R. Zakar, S.I. Hay, D.L. Smith, R.C. Reiner. (2015) Big city, small world: density, contact rates, and transmission of dengue across Pakistan. *Journal of the Royal Society Interface* 12:20150468. Impact factor: 3.917. Citations: 13.
17. Lai, S., Z.Huang, H. Zhou, K.L. Anders, T.A. Perkins, W. Yin, Y. Li, D. Mu, Q. Chen, Z. Zhang, Y. Qiu, L. Wang, H. Zhang, L. Zeng, X. Ren, M. Geng, Z. Li, A.J. Tatem, S.I. Hay, H. Yu. (2015) The changing epidemiology of dengue in China, 1990-2014: a descriptive analysis of 25 years of nationwide surveillance data. *BMC Medicine* 13:100. Impact factor: 9.088. Citations: 59.
16. Achee, N.L., F. Gould, T.A. Perkins, R.C. Reiner, A.C. Morrison, S.A. Ritchie, D.J. Gubler, R. Teyssou, T.W. Scott. (2015) A critical assessment of vector control for dengue prevention. *PLOS Neglected Tropical Diseases* 9:e0003655. Impact factor: 4.569. Citations: 97.
15. Brady, O.J., H.C.J. Godfray, A.J. Tatem, P.W. Gething, J.M. Cohen, F.E. McKenzie, T.A. Perkins, R.C. Reiner, L.S. Tusting, T.W. Scott, S.W. Lindsay, S.I. Hay, D.L. Smith. (2015) Adult vector control, mosquito ecology, and malaria transmission. *International Health* 7:121-129. Impact factor: 1.129. Citations: 13.
14. Perkins, T.A. (*), C.J.E. Metcalf, B.T. Grenfell, A.J. Tatem. (2015) Estimating drivers of autochthonous transmission of chikungunya virus in its invasion of the Americas. *PLOS Currents Outbreaks* 2015 Feb 10. Impact factor: NA. Citations: 23.
13. Phillips, J.E., D. Stallknecht, T.A. Perkins, N. McClure, D. Mead. (2014) Evolutionary dynamics of West Nile virus in Georgia, 2001-2011. *Virus Genes* 49:132-136. Impact factor: 1.285. Citations: 4.
12. Perkins, T.A. (*), A.J. Garcia, V.A. Paz Soldan, S.T. Stoddard, R.C. Reiner, G.M. Vazquez-Prokopec, D. Bisanzo, E.S. Halsey, T.J. Kochel, A.C. Morrison, D.L. Smith, T.W. Scott, A.J. Tatem. (2014) Theory and data for simulating fine-scale

human movement in an urban environment. *Journal of the Royal Society Interface* 11:20140642. Impact factor: 3.917. Citations: 19.

11. Guerra, C.A., R.C. Reiner, T.A. Perkins, S.W. Lindsay, J. Midega, O.J. Brady, C.M. Barker, W.K. Reisen, L.C. Harrington, W. Takken, U. Kitron, A.L. Lloyd, T.W. Scott, D.L. Smith. (2014) A global assembly of adult female mosquito mark-release-recapture data to inform vector-borne pathogen transmission models. *Parasites and Vectors* 7:276. Impact factor: 3.234. Citations: 18.
10. Smith, D.L., T.A. Perkins, R.C. Reiner, C.M. Barker, T. Niu, L.F. Chaves, A.M. Ellis, D.B. George, A. Le Menach, J.R.C. Pulliam, D. Bisanzio, C. Buckee, C. Chiyaka, D.A.T. Cummings, A.J. Garcia, M.L. Gatton, P.W. Gething, D.M. Hartley, G. Johnston, E.Y. Klein, E. Michael, S.W. Lindsay, A.L. Lloyd, D.M. Pigott, W.K. Reisen, N. Ruktanonchai, B.K. Singh, J. Stoller, A.J. Tatem, U. Kitron, S.I. Hay, T.W. Scott. (2014) Recasting the dynamics of mosquito-borne pathogen transmission and control. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 108:185-197. Impact factor: 1.931. Citations: 54.
9. Liebman, K.A., S.T. Stoddard, R.C. Reiner, T.A. Perkins, H. Astete, M. Sihuincha, E.S. Halsey, T.J. Kochel, A.C. Morrison, T.W. Scott. (2014) Heterogeneous blood feeding patterns of *Aedes aegypti* in Iquitos, Peru. *PLOS Neglected Tropical Diseases* 8:e2702. Impact factor: 4.569. Citations: 20.
8. Perkins, T.A. (*), T.W. Scott, A. Le Menach, D.L. Smith. (2013) Heterogeneity, mixing, and the spatial scales of mosquito-borne pathogen transmission. *PLOS Computational Biology* 9:e1003327. Impact factor: 4.62. Citations: 58.
7. Smith, D.L., T.A. Perkins, L.S. Tusting, T.W. Scott, S.W. Lindsay. (2013) Mosquito population regulation and larval source management in heterogeneous environments. *PLOS ONE* 8:e71247. Impact factor: 3.234. Citations: 22.
6. Reiner, R.C. (co) (*), T.A. Perkins (co) (*), C.M. Barker, T. Niu, L.F. Chaves, A.M. Ellis, D.B. George, A. Le Menach, J.R.C. Pulliam, D. Bisanzio, C. Buckee, C. Chiyaka, D.A.T. Cummings, A.J. Garcia, M.L. Gatton, P.W. Gething, D.M. Hartley, G. Johnston, E.Y. Klein, E. Michael, S.W. Lindsay, A.L. Lloyd, D.M. Pigott, W.K. Reisen, N. Ruktanonchai, B.K. Singh, A.J. Tatem, U. Kitron, S.I. Hay, T.W. Scott, D.L. Smith. (2013) A systematic review of mathematical models of mosquito-borne pathogen transmission: 1970-2010. *Journal of the Royal Society Interface* 10:20120921. Impact factor: 3.917. Citations: 134.
5. Perkins, T.A. (*), B.L. Phillips, M.L. Baskett, A. Hastings. (2013) Evolution of dispersal and life history interact to drive accelerating spread of an invasive species. *Ecology Letters* 16:1079-1087. Impact factor: 10.689. Citations: 57.
4. Perkins, T.A. (*) (2012) Evolutionarily labile species interactions and spatial spread of invasive species. *American Naturalist* 179:E37-E54. Impact factor: 4.725. Citations: 19.
3. Perkins, T.A. (*), H.I. Jager. (2011) Falling behind: delayed growth explains life-history variation in Snake River fall Chinook salmon. *Transactions of the American Fisheries Society* 140:959-972. Impact factor: 1.47. Citations: 9.
2. Perkins, T.A. (*), W.R. Holmes, J.F. Weltzin. (2007) Multi-species interactions in competitive hierarchies: new methods and empirical test. *Journal of Vegetation Science* 18:685-692. Impact factor: 3.151. Citations: 12.

1. Perkins, T.A., S.E. Riechert, T.C. Jones. (2007) Interactions between the social spider *Anelosimus studiosus* (Araneae, Theridiidae) and foreign spiders that frequent its nests. *Journal of Arachnology* 35:143-152. Impact factor: 0.624. Citations: 24.

Unrefereed Publications

5. Perkins, T.A. (*), J. Rohr. Disease Ecology. In: *Theoretical Ecology: Concepts and Applications, 4th edition.* (K. McCann and G. Gellner, eds.) Oxford University Press. In preparation.
4. Perkins, T.A. (*), G. España (P), S.M. Moore (P), R.J. Oidtman (G), S. Sharma, B. Singh, A.S. Siraj (P), K.J. Soda (P), M. Smith, M.K. Walters (U), E. Michael. Spatial Epidemiology of Vector-Borne Diseases. In: *Population Biology of Vector-Borne Diseases* (J. Drake, ed.). Oxford University Press. In review.
3. Perkins, T.A. (*) Retracing Zika's footsteps across the Americas with computational modeling. *Proceedings of the National Academy of Sciences* 114:5558-5560. Impact factor: 9.661. Citations: 0.
2. 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), T.A. Perkins (co), I. Dorigatti, D.A.T. Cummings, G. España (P), J. Kelso, I. Longini, J. Lourenco, C. Pearson, R.C. Reiner, N.M. Ferguson. (2016) Comparative modelling of dengue vaccine public health impact. World Health Organization. Citations: 5.
1. Perkins, T.A. (co) (*), R.C. Reiner (co), I. Rodriguez-Barraquer, D.L. Smith, T.W. Scott, D.A.T. Cummings. (2014) A review of transmission models of dengue: a quantitative and qualitative analysis of model features. In: *Dengue and Dengue Hemorrhagic Fever*, eds. D.J. Gubler, E.E. Ooi, and J. Farrar. pp. 99-114. CABI Publishing. Citations: 9.

Invited Presentations

Invited seminars

Pacific Southwest Center of Excellence in Vector-Borne Diseases. (2018) University of California, Davis. Davis, CA.
Department of Biological Sciences. (2017) Virginia Tech, Blacksburg, VA.
Theoretical Biology and Biophysics Group. (2017) Los Alamos National Laboratory, Los Alamos, NM.
Department of Pathobiology. (2016) University of Illinois, Urbana, IL.
College of Global Public Health. (2016) New York University, New York, NY.
Department of Epidemiology. (2016) Indiana University - Purdue University Indianapolis, Indianapolis, IN.
Department of Biology. (2016) University of Puerto Rico, Rio Piedras, San Juan, PR.
Department of Biological Sciences. (2015) Florida State University, Tallahassee, FL.
Public Health Dynamics Laboratory. (2014) University of Pittsburgh. Pittsburgh, PA.
Disease Modeling Group. (2014) Princeton University. Princeton, NJ.
Department of Biology. (2014) Georgetown University. Washington, DC.
Department of Biological Sciences. (2014) University of Notre Dame. Notre Dame, IN.
Department of Ecology and Evolutionary Biology. (2014) University of Toronto. Toronto, Ontario, Canada.

Global Health Group. (2013) San Francisco General Hospital. San Francisco, California.

Invited conference presentations

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 due to conflict with teaching)

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.

Invited meeting participation
Biosurveillance Roundtable convened by the Nuclear Threat Initiative. (2018) Washington, DC.
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" WHO Workshop. (2017) Geneva, Switzerland.
"Comparative modelling of dengue vaccine public health impact" WHO Workshop. (2016) London, UK.

Other Presentations
Contributed talk: Epidemics International Conference on Infectious Disease Dynamics. Sitges, Spain. 2017.
Contributed presentation: 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 at Notre Dame

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.

Grants and Sponsored Programs

Total external awards to date at Notre Dame = $1,798,687 (as PI = $1,171,227)
Current external
NIH NIAID Subcontract from Johns Hopkins University ($260,027 to ND) 2017-2018
"Methods for Reducing Spatial Uncertainty and Bias in Disease Surveillance"
Role: Leader of one of three independent modeling teams contributing model-based projections to decision making on Zika virus vaccine trial site selection.
DARPA Young Faculty Award and Director's Fellowship ($750,000) 2016 - 2018
"Bridging Gaps Across Multiple Spatial Scales for Models of Mosquito-Borne Viral Disease Dynamics"
Role: Principal Investigator

NIH NIAID Subcontract from UC Davis ($196,105 to ND) 2015 - 2019
"Quantifying Heterogeneities in Dengue Virus Transmission"
Role: Co-Investigator (PI: Thomas Scott, University of California, Davis)
Bill & Melinda Gates Foundation Subcontract ($75,322 to ND) 2014 - 2019
"Strategic Planning Tools for Staging Malaria Elimination"
Role: Co-Investigator (PI: David Smith, University of Washington)

Current internal

Eck Institute for Global Health Pilot Project Award ($40,000) 2016 - 2018
"Characterizing heterogeneity in dengue virus force of infection"
Role: Principal Investigator

Completed external

NSF RAPID Award ($200,000) 2016 - 2017
"Overcoming uncertainty to enable estimation and forecasting of Zika virus transmission"
Role: Principal Investigator (Co-PI: Robert Reiner, University of Washington)
GlaxoSmithKline Contract ($200,000) 2015 - 2017
"Simulating Virtual Vaccine Efficacy Trials via Modeling: Application to Dengue"
Role: Principal Investigator
Bill & Melinda Gates Foundation Subcontract from UCSF ($96,106 to ND) 2015 - 2017
"Applying Molecular Epidemiology to Accelerate to Zero"
Role: Co-Investigator (PI: Bryan Greenhouse, University of California, San Francisco)
Intellectual Ventures Contract ($11,227) 2015
"Institute for Disease Modeling Contract: Dengue Modeling"
Role: Principal Investigator
Oak Ridge Associated Universities Award ($10,000) 2015 - 2016
"Inferring Spatiotemporal Drivers of Vector-Borne Disease Incidence in the U.S."
Role: Principal Investigator

Teaching

Instructor

Evolution and Medicine
University of Notre Dame, Fall 2018
Enrollment: 32 undergraduates
Topics in Biocomputing: Statistics for Biology Graduate Students
University of Notre Dame, Fall 2018
Enrollment: 8 PhD students, 2 undergraduates
Evolution and Medicine
University of Notre Dame, Spring 2018
Enrollment: 26 undergraduates
Topics in Ecology: Infectious Disease Forecasting
University of Notre Dame, Fall 2017
Enrollment: 3 PhD students, 4 undergraduates, 4 auditors
Evolution and Medicine
University of Notre Dame, Spring 2017
Enrollment: 32 undergraduates

Topics in Ecology: Bayesian Statistics for Ecologists and Epidemiologists
University of Notre Dame, Fall 2016 (Co-Instructor: Jason McLachlan)
Enrollment: 16 PhD students, 1 undergraduate, 1 auditor
Evolution and Medicine
University of Notre Dame, Spring 2016
Enrollment: 33 undergraduates
Topics in Infectious Disease: Population Biology of Infectious Disease
University of Notre Dame, Fall 2015 (Co-Instructor: Elizabeth Archie)
Enrollment: 7 PhD students, 1 MS student, 1 auditor
Evolution and Medicine
University of Notre Dame, Spring 2015
Enrollment: 34 undergraduates

Teaching Assistant

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

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

Yaohan Ding, International Summer Undergraduate Research Experience (iSURE), Notre Dame International, Summer 2017

Adam Haydel, Science-Business major, Spring 2015 – Spring 2016
- Current status: Medical student at Louisiana State University
- Honors: College of Science Undergraduate Research Fellowship

Ethan Holland, Biological Sciences major, Fall 2014 – Spring 2015

John Huber, ACMS major, Fall 2014 – Summer 2017
- Current status: M.Phil. in Veterinary Sciences at University of Cambridge
- Honors: Gates Cambridge Scholarship, REU at Stanford University, Outstanding ACMS Graduate, 1 first-authored, peer-reviewed journal paper as undergraduate

Caleb Johnson, ACMS major, Spring 2015 – Spring 2016
- Current status: data scientist at Booz Allen Hamilton

Henri Chung, Biological Sciences and ACMS major, Summer 2017 – present
- Current Status: undergraduate at Notre Dame
- Honors: poster presentation at ASTMH 2018 Annual Meeting

Katherine Koh, ACMS major, Fall 2017 – present
- Current Status: undergraduate at Notre Dame
- Honors: College of Science Summer Undergraduate Research Fellowship, poster presentation at ASTMH 2018 Annual Meeting

Marya Poterek, Science-Computing major, Fall 2016 – present
- Current status: undergraduate at Notre Dame
- Honors: REU at Dartmouth College, College of Science Summer Undergraduate Research Fellowship, poster presentation at ASTMH 2018 Annual Meeting

Maggie Walters, Biological Sciences major, Fall 2016 – present
- Current status: undergraduate at Notre Dame
- Honors: REU at University of Georgia, Summer Research Internship at Cold Spring Harbor Laboratories, poster presentation at ASTMH 2018 Annual Meeting

Yutong Yao, Science-Business and Economics major, Fall 2016 – present
- Current status: undergraduate at Notre Dame
- Honors: College of Science Summer Undergraduate Research Fellowship, Summer Research Internship at MD Anderson Cancer Center, poster presentation at ASTMH 2018 Annual Meeting

Master's Theses Directed

Jonah Barreto, MS in Global Health, 2017
- Thesis: "Evaluating Effects of Spatial Repellents on *Aedes aegypti* Behavior and Bionomics in Rural Thailand"
- Current status: employed at Epic Systems Corporation in Madison, WI

Michael Prough, MS in Global Health, 2016
- Thesis: "Analysis of *Aedes aegypti* Hotspots and Hot Zones in Two Neighborhoods of Santo Domingo, Ecuador"
- Current status: clinical research coordinator at University of Miami

Doctoral Dissertations Directed

Quirine ten Bosch, PhD in Biological Sciences, 2017
Thesis: "Insights from mathematical modeling into the natural history, dynamics, and control of dengue"
Current status: Postdoctoral Researcher at Institut Pasteur, Paris, France
Rachel Oidtman, PhD Student in Biological Sciences, in progress
Honors: Arthur J. Schmitt Graduate Fellowship, NSF GRF Honorable Mention
Annaliese Wieler, PhD Student in Biological Sciences, in progress
John Huber, PhD Student in Biological Sciences, in progress
Quan Tran, PhD Student in Biological Sciences, in progress

Other Graduate Student Supervision

Karly Harrod, MS in Applied and Computational Mathematics and Statistics, 2016
Kaitlynn Meis, Integrated Biomedical Sciences, rotated for six weeks in Spring 2017

Graduate Student Committees

Elizabeth Miller, PhD in Biological Sciences, Archie Lab, defended 2016
Casey Ferris, MS in Computer Science and Engineering, Madey Lab, defended 2017
Morgan Smith, MS in Global Health, Michael Lab, defended 2015
Jenna Davis, PhD candidate in Biological Sciences, Lobo Lab
Sara Benevente, PhD student in Biological Sciences, Belovsky Lab
Brittni Bertolet, PhD student in Biological Sciences, Jones Lab
Sal Curasi, PhD student in Biological Sciences, Rocha Lab
Mauna Dasari, PhD student in Biological Sciences, Archie Lab
Morgan Smith, PhD student in Biological Sciences, Michael Lab

Postdoctoral Researchers Supervised

Amir Siraj, PhD in Geography, University of Denver. August 2015 – present
Guido España, PhD in Electrical Engineering, Universidad Nacional de Colombia. January 2016 – present
James Soda, PhD in Computational Sciences, Florida State University. June 2017 – present
Sean Cavany, PhD in Epidemiology, London School of Hygiene and Tropical Medicine. June 2018 – present
Anita Lerch, PhD, Swiss Tropical and Public Health Institute. August 2018 – present

Research Assistant Professors Supervised

Sean Moore, PhD in Zoology, Oregon State University. March 2017 – present
Funding to Sean at ND: Subcontract from BMGF grant to Johns Hopkins ($52,768)

Service

Internal Service

University Committees:
Task Force on Grand Challenges, Scientific Wellness Initiative (2018)
Departmental Committees:
Biocomputing (2015-2017)
Ecology, Evolution, and Environmental Change Faculty Search (2015 – 2016)

Global Health Faculty Search (2017 – 2018)
Graduate Curriculum (2015 – 2019)
Graduate Recruitment (2014 – 2018) (Co-Chair 2018-2019)
Co-Organizer and Co-Instructor (2017 – 2018)
Quant Camp at UNDERC for incoming BIOS grad 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

Associate Editor, 2017 – present
Frontiers in Ecology and Evolution, Population and Evolutionary Dynamics Section
Consultant. College of Global Public Health, New York University (2016, 2017)
Panelist for NIH Special Emphasis Panel (2016, 2017)
"Rapid Assessment of Zika Virus (ZIKV) Complications (R21)"
Panelist for National Science Foundation
Population and Community Ecology Program, ad hoc reviewer (2017)
Graduate Research Fellowship Program (2015, 2017, 2018)
Grant Proposal Reviewer (2016)
Zika Research Grant Initiative
Florida Department of Health's Biomedical Research Programs
Grant Proposal Reviewer (2016)
UK Royal Society University Research Fellowship Program
Panelist for Global Health Peer-to-Peer Networking Event (2016)
American Society of Tropical Medicine and Hygiene Annual Meeting, Atlanta, GA
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
Symposium Organizer (2015)
"Prospects and Need for Targeted Control of Vector-Borne Diseases"
American Society of Tropical Medicine and Hygiene Meeting, Philadelphia, PA
Workshop Co-Organizer (2015)
RAPIDD Workshop on Model-Guided Clinical Trial Design
Grant Proposal Reviewer (2015, 2015)
Medical Research Council UK
Symposium Organizer (2015)
"Dengue Research Exemplifies the Interface of Basic and Applied Population Biology" (Sponsored by 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
Judge for Volterra Award (2013,2017)
Theoretical Ecology Section, Ecological Society of America
Steering Committee Student Representative (2010-2011)

Center for Population Biology, UC Davis
Graduate Student Association Representative (2010-2011)
Population Biology Graduate Group, UC Davis
Coevolution Workshop Organizing Committee Member (2008)
Center for Population Biology, UC Davis
Mentored an undergraduate from the SEEDS Program (2007)
Ecological Society of America Annual Meeting
Reviewer for journals (total number of reviews)
Acta Oecologia (1), *Acta Tropica* (1), *American Journal of Epidemiology* (1), *American Journal of Tropical Medicine and Hygiene* (5), *American Naturalist* (1), *BioSystems* (1), *BMC Medicine* (1), *EcoHealth* (1), *Ecology* (3), *Ecological Complexity* (1), *Ecology Letters* (3), *Ecological Modelling* (1), *eLife* (1), *Emerging Infectious Diseases* (2), Epidemics (1), *Evolution* (1), *Frontiers in Zoology* (1), *Genetics* (1), *Journal of Mathematical Biology* (1), *Journal of Theoretical Biology* (2), *Journal of Vegetation Science* (1), *Lancet Infectious Diseases* (1), *Malaria Journal* (2), *Nature Microbiology* (2), *Oikos* (1), *Parasites and Vectors* (2), *PLOS Biology* (2), *PLOS Computational Biology* (4), *PLOS Medicine* (1), *PLOS ONE* (2), *PLOS Neglected Tropical Diseases* (10), *Proceedings of the National Academy of Sciences* (7), *Proceedings of the Royal Society B* (4), *Science* (3), *Scientific Reports* (2), *Theoretical Ecology* (4)