

Rachel J. Oidtman

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HIGHER EDUCATION

University of Notre Dame Ph.D. in Biological Sciences, Advisor: Alex Perkins – Dissertation: “Understanding and forecasting spatiotemporal variation in emerging arboviruses” – Degree conferred January 2021	Notre Dame, IN, USA 2015–2020
Cornell University B.S. in Natural Resources, Advisor: Evan Cooch – Minor: Biometry & Statistics	Ithaca, NY, USA 2011–2015

EXPERIENCE

Department of Ecology and Evolution, University of Chicago Postdoctoral Scholar in Dr. Sarah Cobey’s Group	Chicago, IL, USA 2020–Current
Department of Biology, Colorado State University Visiting Scientist in Dr. Colleen Webb’s Group	Fort Collins, CO, USA 2019–Current
UNICEF Brazil Contract Researcher	Brasilia, Brazil 2019–2020
UNICEF Office of Innovation Digital Epidemiology Researcher	New York, NY, USA Summer 2018
College of Earth, Ocean, & Environment, University of Delaware National Science Foundation REU Intern	Lewes, DE, USA Summer 2014
Human Dimensions of Natural Resources, Cornell University Research Assistant	Ithaca, NY, USA 2012–2013

PUBLICATIONS

* contributed equally; & co-senior author

1. TA Perkins, JH Huber, Q Tran Minh, **RJ Oidtman**, MK Walters, AS Siraj, SM Moore. **Burden is in the eye of the beholder: Sensitivity of yellow fever disease burden estimates to modeling assumptions.** *medRxiv*. doi: <https://doi.org/10.1101/2021.01.06.21249311>. In press at Science Advances. **Link.**
2. **RJ Oidtman**, E Omodei, MUG Kraemer, CA Casteñeda-Orjuela, E Cruz-Rivera, S Misnaza-Castrillón, MP Cifuentes, LE Rincon, Viviana Cañon, P de Alarcon, G España, JH Huber, SC Hill, CM Barker, MA Johansson, CA Manore, RC Reiner, I Rodriguez-Barraquer, AS Siraj, E Frias-Martinez, M García-Herranz, TA Perkins. **Trade-offs between individual and ensemble forecasts of an emerging infectious disease.** 2021. *Nature Communications*. doi: <https://doi.org/10.1038/s41467-021-25695-0>.
3. G España, SM Cavany*, **RJ Oidtman***, C Barbera, A Costello, A Lerch, M Poterek, Q Tran, A Weiler, SM Moore, and TA Perkins. **Impacts of K-12 school reopening on the COVID-19 epidemic in Indiana, USA.** 2021. *Epidemics* 37:100487. doi: <https://doi.org/10.1016/j.epidem.2021.100487>.

4. **RJ Oidtman**, P Arevalo, Q Bi, LM McGough, CJ Russo, M Veira, KM Gostic. **Influenza immune escape under heterogeneous host immune histories**. 2021. Trends in Microbiology. doi: <https://doi.org/10.1016/j.tim.2021.05.009>
5. AF Brito*, LC Machado*, **RJ Oidtman [co-first]***, MC Lima Siconelli*, Q Minh Tranh, JR Fauver, R Dias de Oliveira Carvalho, FZ Dezordi, MR Pereira, L Antunes De Castro-Jorge, EC Manini Minto, LM Romanholi Passos, CC Kalinich, ME Patrone, E Allen, G España, AT Huang, DAT Cummings, G Baele, RF Oliveira Franca[&], BA Lopes da Fonseca[&], TA Perkins[&], GL Wallau[&], ND Grubaugh[&]. **Lying in wait: the resurgence of dengue virus after the Zika epidemic in Brazil**. 2021. Nature Communications 12:2619. doi: <https://doi.org/10.1038/s41467-021-22921-7>.
6. **RJ Oidtman**, G España, and TA Perkins. **Co-circulation and misdiagnosis led to underestimation of the 2015-2017 Zika epidemic in the Americas**. 2021. PLOS Neglected Tropical Diseases 15(3): e0009208. <https://doi.org/10.1371/journal.pntd.0009208>
7. SM Moore, **RJ Oidtman**, KJ Soda, AS Siraj, RC Reiner, CM Barker, TA Perkins. **Leveraging multiple data types to estimate the true size of the Zika epidemic in the Americas**. 2020. PLOS Neglected Tropical Diseases 14(9): e000864. <https://doi.org/10.1371/journal.pntd.0008640>
8. TA Perkins*, SM Cavany*, SM Moore*, **RJ Oidtman**, A Lerch, M Poterek. **Estimating unobserved SARS-CoV-2 infections in the United States**. 2020. Proceedings of the National Academy of Sciences 117 (36) 22597-22602. <https://doi.org/10.1073/pnas.2005476117>
9. N Grubaugh*, S Saraf*, K Gangavarapu*, A Watts, AL Tan, **RJ Oidtman**, JT Ladner, G Oliveira, NL Matteson, MUG Kraemer, CBF Vogels, A Hentoff, D Bhatia, D Stanek, B Scott, V Landis, I Stryker, MR Cone, EW Kopp IV, AC Cannons, L Heberlein-Larson, S White, LG Gillis, MJ Ricciardi, J Kwal, PK Lichtenberger, DM Magnani, DI Watkins, G Palacios, DH Hamer, GeoSentinel Surveillance Network, LM Gardner, TA Perkins, G Baele, K Khan, A Morrison, S Isern[&], SF Michael[&], KG Anderson[&]. **Travel surveillance and genomics uncover a hidden Zika outbreak during the waning epidemic**. 2019. Cell 178:1057-1071. <https://doi.org/10.1016/j.cell.2019.07.018>
10. **RJ Oidtman**, S Lai, Z Huang, AS Siraj, RC Reiner, AJ Tatem, TA Perkins*, H Yu*. **Inter-annual variation in seasonal dengue epidemics driven by multiple interacting factors in Guangzhou, China**. 2019. Nature Communications 10:1148. <https://doi.org/10.1038/s41467-019-09035-x>
11. AS Siraj, **RJ Oidtman**, J Huber, MUG Kraemer, OJ Brady, M Johansson, TA Perkins. **Temperature modulates dengue virus epidemic growth rate through its effect on reproduction numbers and generation intervals**. 2017. PLOS Neglected Tropical Diseases 11:e0005797. <https://doi.org/10.1371/journal.pntd.0005797>
12. **RJ Oidtman**, RC Christofferson, QA ten Bosch, G España, MUG Kraemer, AJ Tatem, CM Barker, TA Perkins. **Pokémon Go and exposure to mosquito-borne diseases: how not to catch ‘em all**. 2016. PLOS Currents Outbreaks. <https://doi.org/10.1371/currents.outbreaks.2d885b05c7e06a9f72e4656d56b043cd>

PREPRINTS AND MANUSCRIPTS

1. EY Cramer, EL Ray, VK Lopez, ..., **RJ Oidtman**, ... RB Slayton, M Johansson, M Biggerstaff, NG Reich. **Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the US**. *medRxiv*. doi: <https://doi.org/10.1101/2021.02.03.21250974>. In review at PNAS. **Link**.
2. K Shea*, RK Borchering*, WJM Probert*, E Howerton*, TL Bogich*, S Li*, WG van Panhuis*, C Viboud*, ..., **RJ Oidtman**, ... MC Runge*. **COVID-19 opening strategies at the county level in the face of uncertainty: Multiple Models for Outbreak Decision Support**. *medRxiv*. doi: <https://doi.org/10.1101/2020.11.03.20225409>. In review at PNAS. **Link**.

UNREFEREED PUBLICATIONS

1. TA Perkins, G España, SM Moore, **RJ Oidtman**, S Sharma, B Singh, AS Siraj, KJ Soda, M Smith, MK Walters, E Michael. **Seven Lessons for Spatial Analyses of Vector-Borne Diseases**. In: Population Biology of Vector-Borne Diseases (J Drake, M Strand, M Bonsall, eds.). Oxford University Press, Oxford, UK.

2. **RJ Oidtman**, TA Perkins, MUG Kraemer, M García-Herranz, E Omodei. **From hurricanes to mosquitoes: How epidemic forecasting can support UNICEF's fight against infectious diseases**. 2019. UNICEF Office of Innovation. <https://www.unicef.org/innovation/stories/epidemicforecasting>

FELLOWSHIPS AND SCHOLARSHIPS

- **Eck Institute for Global Health, Graduate Student Fellowship**, Competitive graduate fellowship within University of Notre Dame that provided full funding for two academic years. 2018–2020
- **Arthur J. Schmitt Leadership Fellowship in Science and Engineering**, Merit-based fellowship awarded to top 10% of incoming graduate students at University of Notre Dame that provided full-tuition scholarship and increased stipend. 2015–2020
- **Kappa Kappa Gamma Graduate Student Scholarship**, Merit- and service-based scholarship awarded to graduate students who are Kappa Kappa Gamma alumna. 2018, 2019, 2020

DISTINCTIONS, HONORS, AND AWARDS

- **Notre Dame Biological Sciences, Exemplary Graduate Career Award** 2020
– Annually awarded to one graduate student.
- **E.C. Pielou Award for best oral presentation, Statistical Ecology Section of ESA** 2020
- **UNICEF Brazil Grant, \$32,400** 2019–2020
– Institutional contract to develop a simulation model of Dengue, Chikungunya, and Zika incorporating spatial mobility data in Brazil.
– Role: Led writing of proposal, coordinated research team, and performed research.
- **GLOBES Certificate in Environment and Society Fellow** 2016–2020
- **GLOBES Grants, \$7,326** 2017–2019
- **ESA Annual Meeting Travel Award, \$500** 2019
- **UGA Population Biology of Vector-borne Disease Symposium** 2018
- **Rapid Exposure to Advanced Computation Training Award, \$950** 2017
- **National Science Foundation Graduate Research Fellowship, Honorable Mention** 2016
- **Reilly Center for Science, Technology, and Value Grant, \$2,724** 2016

TEACHING

- **Invited Guest Lecturer, Generalized linear mixed models in practice**, Biological Statistics, University of Notre Dame 2021
- **Invited Guest Lecturer, Forecasting based on surveillance data**, Infectious Disease Epidemiology and Ecology, University of Notre Dame 2021
- **Invited Guest Lecturer, Multi-population and disease models**, Theory of population and evolutionary ecology, Colorado State University 2020
- **Invited Guest Lecturer, Real-time modelling of arbovirus outbreaks**, CADDE Genomic Epidemiology Workshop, Sao Paulo, Brazil 2019
- **Teaching Assistant, Biostastics**, University of Notre Dame 2017, 2018

PRESENTATIONS

- Invited: Trade-offs between individual and ensemble forecasts of an emerging infectious disease. **The 2nd International Workshop on Forecasting for Social Good, Remote**, June 2021.
- Invited: Disentangling relative roles of importation and local conditions in driving inter-annual variation in vector-borne disease epidemics in Guangzhou, China. **Fudan University, Shanghai, China**, July 2019.
- Invited: Retrospective to real-time forecasting for Zika epidemics in Colombia. **UNICEF Office of Innovation, New York, NY**, August 2018.
- Invited: Great Lakes to Great Lakes: Common challenges, common solutions?. **Department of State, Washington, DC**, June 2016.
- Contributed Oral: Characterizing longitudinal dynamics of influenza infection and immune protection from a pediatric cohort study. **Epidemics, Virtual**, December 2021.
- Contributed Oral: Actionable forecasting for emerging infectious diseases: A case study of the 2015-2017 Zika epidemic in Colombia. **ESA Annual Meeting, Virtual**, August 2020.
 - *Awarded E.C. Pielou Award for best oral presentation for the Statistical Ecology Section of ESA*
- Contributed Oral: Inter-annual variation in seasonal dengue epidemics driven by multiple interacting factors in Guangzhou, China. **ESA Annual Meeting, Louisville, KY**, August 2019.
- Contributed Oral: Disentangling relative roles of importation and local conditions in driving inter-annual variation in vector-borne disease epidemics in Guangzhou, China. **AGU Annual Meeting, Washington, DC**, December 2018.
- Contributed Oral: Disentangling relative roles of importation and local conditions in driving inter-annual variation in dengue epidemics in Guangzhou, China. **Epidemics, Sitges, Spain**, December 2017.
- Contributed Poster: Co-circulation and misdiagnosis of Zika, dengue, and chikungunya led to underestimation of the 2015-2017 Zika epidemic in the Americas. **EEID Conference, Princeton, NJ**, June 2019.
- Contributed Poster: Co-circulation and misdiagnosis of Zika, dengue, and chikungunya led to underestimation of the 2015-2017 Zika epidemic in the Americas. **ASTMH Annual Meeting, New Orleans, LA**, October 2018.
- Contributed Poster: Disentangling relative roles of imported cases and weather in driving interannual variation in dengue transmission in Guangzhou, China. **EEID Conference, Ithaca, NY**, June 2016.

OUTREACH

- 500 Women Scientists 2019–Current
Led workshops on ‘Predicting a Pandemic’ to introduce high school STEM girls to eco-epi modeling and the power of coding.
- Ecological Society of America, Inclusive Ecology Board 2020–2021
Attend board meetings aimed at promoting ways to support all ecologists and provide feedback generally to ESA.
- Graduate Students Against Racial Injustice at Notre Dame 2020
Helped establish a graduate student working group to promote anti-racist actions in academia and question status quo hiring and tenure practices.
- Big Brothers Big Sisters, St. Joseph County 2016–2019
Mentored a high school student, working closely with her and her family to address behavioral issues in high school, promote learning, and apply for college.
- AAUW-Notre Dame Women Leaders in STEM 2017–2018
Participated in monthly meetings and workshops to promote and empower women leaders in the scientific community at Notre Dame.
- Association for Women in Science Notre Dame STEMentorship Program 2016–2017
Mentored a college student in mathematics for one year and advised her in applying for summer research opportunities.
- John Templeton Foundation Virtuous Scientist Working Group 2015–2017

Collaborated with biologists and sociologists to create surveys for undergraduate students to get feedback regarding internal motivations for undergraduate science courses. The goal of these programs and surveys was to increase scientific curiosity.

ACADEMIC SERVICE

- **Reviewer**, *Scientific Reports*, *Journal of Medical Entomology*, *Parasites & Vectors*, *npj Climate and Atmospheric Science*, *EcoHealth*, *BMC Infectious Diseases*, *PLOS Neglected Tropical Diseases*, *PLOS Computational Biology*, *PLOS One*, *Journal of Theoretical Biology*, *Epidemics*
- **Memberships**, 500 Queer Scientists, 500 Women Scientists, American Society of Tropical Medicine and Hygiene, Ecological Society of America, MIDAS
- **Internal Service**, Faculty search committee student leader (ND, 2018), Schmitt Fellows Society Professional Development Chair (ND, 2017), Biological Graduate Student Organization Social Media Chair (ND, 2017-2018), Biology Graduate Student Organization Recruitment Chair (ND, 2016-2017)