

Micaela Elvira Martinez,* Ph.D.

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Education & Positions

2021–current	Emory University (USA), Dept. of Biology, Assistant Professor
2021–current	Columbia University (USA), Dept. of Population and Family Health, Mailman School of Public Health, Adjunct Assistant Professor
2018–2021	University of Surrey (UK), Faculty of Health and Medical Sciences, Visiting Professor
2017–2021	Columbia University (USA), Dept. of Environmental Health Sciences, Assistant Professor
2016–2017	Princeton University (USA), Dept. of Ecology & Evolution, Associate Research Scholar
2015–2016	Princeton University (USA), Dept. of Ecology & Evolution, NSF Postdoctoral Fellow
2015	Ph.D. Ecology & Evolutionary Biology, University of Michigan (USA)
2009	B.S. in Biology, University of Alaska Southeast (USA), Magna Cum Laude
2009	B.S. in Mathematics, University of Alaska Southeast (USA), Magna Cum Laude

Service Positions

2021–current	MIDAS (Models of Infectious Disease Agent Study) Steering Committee Chair
2021–current	New Yorkers for Social Justice: A Citizens Commission Making Recommendations to Eric Adams. Commission Member.
2020–2021	MIDAS (Models of Infectious Disease Agent Study) Steering Committee Member.

Personal Statement

I am a quantitative ecologist. My research and scholarship aims to understand how ecology, social determinants of health, immunology, Climate Change, and demography intersect to shape health and disease. A focus of my lab is deconstructing epidemics and seasonal phenomena. The shape, frequency, and magnitude of epidemics collectively contain information about transmission, immunity in the population, and importation of infection. I work at the intersection of computational disease ecology, clinical chronobiology (the study of biological rhythms), and immunology. My traditional training in biology, coupled with my research in computational and applied mathematics and statistical inference, has allowed me to develop my unique expertise: leveraging epidemiological and clinical data to unmask population-level biological processes. My ongoing research falls into five themes: (1) seasonal disease transmission, (2) maternal immunity, (3) the realized effects of vaccines, (4) human biological rhythms, and (5) social justice and health. During the pandemic, I began working on how environmental racism and social inequities manifest COVID-19 health disparities, with particular emphasis on Black and Latinx communities in New York City.

*formerly Micaela Elvira Martinez-Bakker

Courses

planned Fall 2022	Human Flourishing: Imagine A Just City (freshman undergraduate course). Dept. of Biology, Emory University.
2020–current	Mathematical Models of Infectious Diseases (graduate and postdoctoral students). Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID), University of Washington.
2019–2021	Climate Change & Human Health (graduate class). Mailman School of Public Health, Columbia University

Publications

2022	Kevin M Bakker, Marisa C Eisenberg, Robert Woods, and Micaela E Martinez . Identifying optimal vaccination scenarios to reduce varicella zoster virus transmission and reactivation. (<i>in submission</i>)
2021	Tessa K. J. Haining Michael R. Retchin Yarden Golan Maor Riley S. Drake Kellie Kolb Benjamin E. Mead Nadav Ahituv Micaela E. Martinez Bonnie Berger Alex K. Shalek Brittany A. Goods Sarah K. Nyquist, Patricia Gao. Cellular and transcriptional diversity over the course of human lactation. Available on medRxiv at: https://doi.org/10.1101/2021.11.13.468496
2021	Dennis Khodasevich, Susan Tsui, Darwin Keung, Debra J. Skene, and Micaela E. Martinez . Characterizing the modern light environment and its influence on circadian rhythms. Available at: http://doi.org/10.1098/rspb.2021.0721 . <i>Proceeding of the Royal Society B: Biological Sciences</i>
2021	J Shearston, M Martinez , Nunez Y, and M Hilpert. Social-distancing Fatigue: Evidence From Real-time Crowd-sourced Traffic Data. Available at: https://doi.org/10.1016/j.scitotenv.2021.148336 . <i>Science of the Total Environment</i> .
2021	Kevin M Bakker, Marisa C Eisenberg, Robert Woods, and Micaela E Martinez . Exploring the Seasonal Drivers of Varicella Zoster Virus Transmission and Reactivation. <i>American Journal of Epidemiology</i>
2021	N Kronfeld-Schor, T. J. Stevenson, S. Nickbakhsh, E. S. Schernhammer, X. C. Dopico, T. Dayan, M. Martinez , and B. Helm. Drivers of Infectious Disease Seasonality: Potential Implications for COVID-19. <i>Journal of Biological Rhythms</i>
2020	L Symul, P. Hsieh, A. Shea, C.R.C. Moreno, D.J. Skene, S. Holmes, and M. Martinez . Unmasking Seasonal Cycles in Human Fertility: How holiday sex and fertility cycles shape birth seasonality. Available on medRxiv at: https://doi.org/10.1101/2020.11.19.20235010 . (<i>in revision</i>)

Publications Continued...

- 2020 Jeremy J. Hess, Nikhil Ranadive, Chris Boyer, Lukasz Aleksandrowicz, Susan C. Anenberg, Kristin Aunan, Kristine Belesova, Michelle L. Bell, Sam Bickersteth, Kathryn Bowen, Marci Burden, Diarmid Campbell-Lendrum, Elizabeth Carlton, Guladio Ciss, Francois Cohen, Hancheng Dai, Alan David Dangour, Purnamita Dasgupta, Howard Frumkin, Peng Gong, Robert J. Gould, Andy Haines, Simon Hales, Ian Hamilton, Tomoko Hasegawa, Masahiro Hashizume, Yasushi Honda, Daniel E. Horton, Alexandra Karambelas, Ho Kim, Satbyul Estella Kim, Patrick L. Kinney, Inza Kone, Kim Knowlton, Jos Lelieveld, Vijay S. Limaye, Qiyong Liu, Lina Madaniyazi, Micaela Elvira **Martinez**, Denise L. Mauzerall, James Milner, Tara Neville, Mark Nieuwenhuijsen, Shonali Pachauri, Frederica Perera, Helen Pinedo, Justin V. Remais, Rebecca K. Saari, Jon Sampedro, Pauline Scheelbeek, Joel Schwartz, Drew Shindell, Priya Shyamsundar, Timothy J. Taylor, Cathryn Tonne, Detlef Van Vuuren, Can Wang, Nicholas Watts, J. Jason West, Paul Wilkinson, Stephen A. Wood, James Woodcock, Alistair Woodward, Yang Xie, Ying Zhang, and Kristie L. Ebi. Guidelines for Modeling and Reporting Health Effects of Climate Change Mitigation Actions. Available at <https://doi.org/10.1289/EHP6745>. *Environmental Health Perspectives*
- 2020 Karla Therese L. SY, Micaela E. **Martinez**, Benhamin Rader, and Laura F White. Socioeconomic Disparities in Subway Use and COVID-19 Outcomes in New York City. Available at <https://doi.org/10.1093/aje/kwaa277>. *American Journal of Epidemiology (in press)*
- 2020 Jacqueline M. Leung and Micaela E. **Martinez**. Circadian Rhythms in Environmental Health Sciences. Available at <https://doi.org/10.1007/s40572-020-00285-2>. *Current Environmental Health Reports*
- 2020 Kelli Stidham Hall, Goleen Samari, Samantha Garbers, Sara E Casey, Dazon Dixon Diallo, Miriam Orcutt, Rachel T Moresky, Micaela Elvira **Martinez**, and Terry MCGovern. Centring Sexual And Reproductive Health And Justice In The Global Covid-19 Response. Available at: [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(20\)30801-1.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30801-1.pdf). *The Lancet*
- 2019 Samuel Rund, Imelda Moise, John Beier, and Micaela Elvira **Martinez**. Rescuing Troves of Hidden Ecological Data to Tackle Emerging Mosquito-Borne Diseases. Available at <https://mosquito-jamca.org/doi/pdf/10.2987/18-6781.1>. *Journal of the American Mosquito Control Association*, 35:75–83
- 2019 Sandra B. Andersen, B. Jesse Shapiro, Christina Vandenbroucke-Grauls, Marjon G. Consortium who contributed to this review by participating in the Lorentz Center Workshop on Darwinian Microbial Medicine August 2017 J. de Vos, Aldert Zomer (University Utrecht NL) Ashleigh Griffin (Oxford University UK) Bastian Hornung (Leiden University NL) Benno ter Kuile (University of Amsterdam NL) Constance Schultsz (AMC-UVA NL) Craig MacLean (Oxford University UK) Doris van Bergeijk (Leiden University NL) Dries Budding (VUmc NL) Fernanda Paganelli (UMC Utrecht NL) Jakob A. Mller-Jensen (SDU DK) Jakob Stokholm (COPSAC DK) Jennifer Gardy (University British Columbia CA) Jennifer Rohn (University College London UK) Jeroen Geurtsen (Janssen Pharmaceuticals NL) Kimberly Kline (Nanyang Technical University SG) Libusha Kelly (Albert Einstein College of Medicine USA) Luca Freschi (Harvard University USA) Maha Farhat (Harvard University USA) Marceline Tutu van Furth (VU NL) Mathieu Groussin (Massachusetts Institute of Technology USA) Mathilde Poyet (Massachusetts Institute of Technology USA) Melanie Ghouil (Oxford University UK) **Micaela Martinez** (Columbia University USA) Michael Byam (Harvard University USA) Nicole Vega (Emory University USA) Niels Frimodt-Mller (Rigshospitalet DK) Peter van Baarlen (Wageningen University NL) Petra Wolffs (Maastricht University NL) Rasmus Lykke Marvig (Rigshospitalet DK) Victoria Janes (AMC-UVA NL) Wiep Klaas Smits (Leiden University NL) Willem van Schaik (IMI Birmingham UK) commenting on the manuscript: Alan McNally (IMI Birmingham, UK), and NL). Sebastien Matamoros (AMC-UV A. Microbial Evolutionary Medicine from theory to clinical practice. Available at [https://doi.org/10.1016/S1473-3099\(19\)30045-3](https://doi.org/10.1016/S1473-3099(19)30045-3). *The Lancet Infectious Diseases*

Publications Continued...

- 2018 Roberto Tarquini, Annalucia Carbone, Micaela **Martinez**, and Gianluigi Mazzoccoli. Daylight saving time and circadian rhythms in the neuro-endocrine-immune system: Impact on cardiovascular health. *Internal and Emergency Medicine*
- 2018 Micaela Elvira **Martinez**. The Calendar of Epidemics: Seasonal Cycles of Infectious Diseases. *PLoS Pathogens*. *PLoS Pathogens Top 5 Most Viewed Press Released Articles of 2018*
- 2018 A Winter, ME **Martinez**, FT Cutts, WJ Moss, M Ferrari, A McKee, AJ Lessler, K Hayford, J Wallinga, and CJE Metcalf. Benefits and challenges in using seroprevalence data to inform models for measles and rubella elimination. Available at: <https://doi.org/10.1093/infdis/jiy137>. *The Journal of Infectious Diseases*
- 2016 Micaela Elvira **Martinez**. Preventing Zika Virus Infection during Pregnancy using a Seasonal Window of Opportunity for Conception. Available at: <http://dx.doi.org/10.1371/journal.pbio.1002520>. *PLoS Biology*
- 2016 Kevin Bakker, Micaela Elvira **Martinez-Bakker**, Barbara Helm, and Tyler Stevenson. Digital Epidemiology Reveals Global Childhood Disease Seasonality and the Effects of Immunization. Available at <http://www.pnas.org/cgi/content/long/113/24/6689>. *Proceedings of the National Academy of Sciences*, page 201523941
- 2015 Micaela **Martinez-Bakker**, Aaron A King, and Pejman Rohani. Unraveling the Transmission Ecology of Polio. Available at <http://dx.doi.org/10.1371/journal.pbio.1002172>. *PLoS Biology*, 13(6):e1002172
- 2015 Micaela **Martinez-Bakker** and Barbara Helm. The Influence of Biological Rhythms on Host-Parasite Interactions. Available at: <http://dx.doi.org/10.1016/j.tree.2015.03.012>. *Trends in Ecology and Evolution*, 30(6):314–326
- 2015 TJ Stevenson, ME Visser, W Arnold, P Barrett, S Biello, A Dawson, DL Denlinger, D Domini, FJ Ebling, S Elton, N Evans, H Ferguson, RG Foster, M Hau, DT Haydon, DG Hazlerigg, P Heideman, JGC Hopcraft, NN Jonsson, N Kronfeld-Schor, V Kumar, GA Lincoln, R MacLeod, S Martin, M **Martinez-Bakker**, RJ Nelson, T Reed, JE Robinson, D Rock, WJ Schwartz, I Steffan-Dewenter, E Tauber, SJ Thackeray, C Umstatter, T Yoshimura, and B Helm. Disrupted Seasonal Biology Impacts Health, Food Security, and Ecosystems. Available at: <http://rspb.royalsocietypublishing.org/content/282/1817/20151453>. *Proceedings of the Royal Society B: Biological Sciences*, 282(20151453):1–10
- 2015 Jessica Metcalf, Andrea L Graham, Micaela **Martinez-Bakker**, and Dylan Childs. Opportunities and Challenges of Integral Projection Models for Modeling Host-parasite Dynamics. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/1365-2656.12456/full>. *Journal of Animal Ecology*
- 2014 Micaela **Martinez-Bakker**, Kevin Bakker*, Aaron A King, and Pejman Rohani. Human Birth Seasonality: Latitudinal Gradient and Interplay with Childhood Disease Dynamics. Available at <http://rspb.royalsocietypublishing.org/content/281/1783/20132438>. *Proceedings of the Royal Society B: Biological Sciences*, 281(1783):20132438,*shared first author
- 2013 Micaela E **Martinez-Bakker**, Stephanie K Sell, Bradley J Swanson, Brendan P Kelly, and David Tallmon. Combined Genetic and Telemetry Data Reveal High Rates of Gene Flow, Migration, and Long-Distance Dispersal Potential in Arctic Ringed Seals (*Pusa hispida*). Available at <http://dx.doi.org/10.1371/journal.pone.0077125>. *PLoS One*, 8(10):e77125
- 2010 Brendan P Kelly, Oriana H Badajos, Mervi Kunnasranta, John R Moran, Micaela **Martinez-Bakker**, Douglas Wartzok, and Peter Boveng. Seasonal Home Ranges and Fidelity to Breeding Sites Among Ringed Seals. Available at: <https://link.springer.com/article/10.1007/s00300-010-0796-x>. *Polar Biology*, 33(8):1095–1109

Grants & Fellowships

2016–2022	NIH Director's Early Independence Award. (\$1,802,109)
2020–2021	NSF COVID-19 RAPID (\$199,992)
2019–2020	Columbia University Irving Medical Center Grants Program For Junior Faculty Who Contribute to the Diversity Goals of the University (\$25,000)
2019–2020	Columbia University Calderone Award for Junior Investigators (\$25,000)
2018–2019	NIEHS Center for Environmental Health in Northern Manhattan (\$30,000)
2017–2019	NIH Loan Repayment Program: NIAID Pediatric Extramural (\$24,044)
2015–2017	National Science Foundation Postdoctoral Fellowship in Biology (\$120,000)
2010–2015	National Science Foundation GRPF (\$135,000)
2010–2015	University of Michigan, Rackham Merit Fellowship (\$70,400)

Book Chapters, Scientific Journalism, & Manuscripts in Preparation

2018	Micaela Martinez and Kevin Bakker. Tis The Season for Conception. Available at https://theconversation.com/tis-the-season-for-conception-106663 . <i>The Conversation</i>
2015	Micaela E Martinez-Bakker . The Drivers of Acute Seasonal Infectious Diseases. <i>A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy (Ecology and Evolutionary Biology) in The University of Michigan</i>
2013	Micaela Martinez-Bakker . The Low Arctic Tundra, book chapter in Encyclopedia of Biomes and Ecosystems, Salem Press. ISBN: 978-1-4298-3813-9.
2013	Micaela Martinez-Bakker . The High Arctic Tundra, book chapter in Encyclopedia of Biomes and Ecosystems, Salem Press. ISBN: 978-1-4298-3813-9.
in prep	Micaela E Martinez , Liubov Kozlovskaya, Pejman Rohani, and Aaron A. King. Both Salk and Sabin Vaccines Effectively Reduce Polio Transmission in Epidemic Settings. (Published in dissertation, in preparation for peer-reviewed publication). Available at https://deepblue.lib.umich.edu/handle/2027.42/113643
in prep	Micaela E Martinez , Rob van Binnendijk, Hayley Gans, Andrea Graham, and Jacco Wallinga. Flipping the Infant Measles Vaccination Schedule.

Students Mentored

2021–current	Emory undergraduates Grace Ward, Charlie Decker, and Danielle Mangabat.
2020–2021	Dennis Khodasevich (EHS MPH), Salwa Najmi (undergraduate), Emma Gorin (Columbia EHS PhD student)
2019	Columbia University Master's of Public Health Students: Darwin Keung (EHS), Susan Tsui (Epi), and Dennis Khodasevich (EHS).
2018	Columbia University Master's of Public Health Students: Zining Zhang (Bio Stats), Darwin Keung (EHS), Susan Tsui (Epi). Princeton University Undergraduate thesis students: Aria Alexander and Daniel Navarrete.
2015–2017	Undergraduate students: Jesus Cantu, Aria Alexander, Daniel Navarrete, Mallika Viswanath, and Annalise Russo. (Princeton University).
2013	Emilia Iglesias, University of Michigan, Summer Research Student. Characterizing the Seasonality of Alzheimer's Disease. (Now a first year graduate student)
2011	Busola Alabi, University of Michigan, Summer Research Student. The Seasonality of Contemporary Polio Epidemics in Africa. (Now a Ph.D. candidate)

International Collaborations

- 2018–current **Universidad de Murcia (Murcia, Spain).** I have begun a collaboration with the chronobiology lab of Juan Antonio Madrid Perez. We are using their new wearable device technology to study circadian rhythms, sleep-wake cycles, light-exposure, and activity in humans throughout the seasons.
- 2018–current **Universidade de So Paulo (So Paulo, Brazil).** The Universidade de So Paulo has awarded funds for me to spend time at their School of Public Health. I have a collaboration with Prof. Claudia Roberta de Castro Moreno focused on human birth seasonality in the tropics and Southern Hemisphere.
- 2016–current **University of Surrey Clinical Research Centre (Surrey, United Kingdom).** I am the PI on a funded grant in collaboration with colleagues from the University of Surrey. We are conducting a clinical investigation of unprecedented scope to advance our understanding of seasonal biological rhythms in humans.
- 2015–current **Netherlands National Institute for Public Health and the Environment, RIVM (Bilthoven, Netherlands).** I am working with scientists at RIVM to determine the optimal dose timing of the measles, mumps, and rubella vaccine (MMR) with regard to maternally-derived antibodies in infants. I am using RIVM's extensive cross-sectional immunological survey, which contains the antibody profiles for ~ 8000 individuals, including over 400 infants.
- 2014–2017 **University of Glasgow (Glasgow, Scotland).** I have a long-standing collaboration with chronobiologist Barbara Helm. We have co-authored three manuscripts together, including a manuscript recently published in PNAS. In 2018 we were awarded a grant to study the effects of light pollution on human health.
- 2015–2016 **Chumakov Institute for Poliomyelitis & Viral Encephalitides (Moscow, Russia).** The Chumakov Inst. conducted the trials for the live polio vaccine (OPV) in 1959. I am working with the Chumakov Inst. to improve estimates of the efficacy of OPV in epidemic settings (using their vaccine trial data). This research is timely because worldwide withdrawal of trivalent OPV began in 2016, and OPV will be reserved for epidemic response.

International Presentations

- 2020 Society for Research on Biological Rhythms International Conference. Darwinian Medicine & Disease Ecology: Understanding Biological Rhythms & Infection
- 2020 Consulate General of Israel New York. Non-Communicable Disease in Low Income Communities. A Special Challenge in the Time of COVID-19. (moderator)
- 2020 Consulate General of Israel New York. Three International Experts' Mathematical Models for Lifting Lockdowns. (moderator)
- 2020 Chronobiology and COVID-19 popup workshop run by the European Biological Rhythms Society. (Panel speaker during seasonality session).
- 2020 Society for Research on Biological Rhythms International Conference. Darwinian Medicine & Disease Ecology: Understanding Biological Rhythms & Infection.
- 2019 United Nations International Conference on Population Health, Nairobi Summit 2019 (Nairobi, Kenya). Environment For Justice: Following the Leadership of Grassroots Women at the Intersection of Reproductive + Climate Justice.
- 2019 University of Aberdeen (Aberdeen, U.K.). Annual Symposium on Seasonality. Integrated Rhythms: Core and Peripheral Clocks from the Circadian to the Circannual
- 2018 Max Planck Institute for Ornithology (Seewiesen, Germany). Wild Clocks 2018. Equatorial/tropical rhythms, session leader.
- 2018 Universidade de So Paulo, School of Public Health (So Paulo, Brazil). The Finest Tuned Clocks: Biological Rhythms & Epidemics.
- 2017 Oxford University (Oxford, United Kingdom). Biological Rhythms in Health & Disease. Oxford Chronobiology and Sleep Medicine Summer School.
- 2017 Lorentz Center (Leiden, Netherlands). Microbial Darwinian Medicine: A Workshop at the Interface of Medicine and Microbial Eco-Evolutionary Biology. Opportunities for Integrating Biological Rhythms into Evolutionary Medicine
- 2017 University of Tokyo (Tokyo, Japan). UTokyo-Princeton International Workshop of Infectious Disease Modeling: Infectious Diseases in Aging Populations: Unifying Statistical and Dynamical Approaches. New Ways of Deploying Old Tools: Maternal Immunity & Infant Vaccination
- 2016 Netherlands National Institute for Public Health and Environment (RIVM), Epidemiology Seminar. Dynamics of maternal antibodies against measles, consequences for an optimal vaccination schedule.
- 2016 University of Groningen, Biology Seminar. Biological Rhythms & Infection Dynamics Across Scales.
- 2016 ETH Zurich Theoretical Biology Seminar. Biological Rhythms & Infection Dynamics Across Scales.
- 2015 Center for Immunity, Infection and Evolution Winter Symposium: Circadian Rhythms in Health & Disease, invited talk (Edinburgh, Scotland). The Seasonality of Infectious Diseases: Disease Ecology meets Chronobiology.
- 2015 Chumakov Institute of Poliomyelitis and Viral Encephalitides, Seminar (Moscow, Russia). Polio from Past to Present: Ecology Informs the Polio Endgame.
- 2014 University of Glasgow, Institute of Biodiversity, Animal Health and Comparative Medicine, Seminar (Glasgow, Scotland). The Role of Demography, Seasonality, and Spatial Structure in Disease Dynamics: Unraveling the Ecology of Polio.
- 2014 Imperial College London, Department of Infectious Disease Epidemiology, Seminar (London, England). Using Historical Epidemics to Unravel the Transmission Dynamics of Polio.

National Presentations

- scheduled 2022 Tenth Annual Conference to Increase Diversity in Mathematical Modeling and Public Health hosted by the MIDAS Coordination Center.
- 2021 Reproductive Justice and Environmental Justice Convening held in New Orleans (Organized by the Columbia University Global Health Justice and Governance Program). I was the moderator for the scientific evidence panel.
- 2021 NIH Conference: Identifying Research Directions in Sleep, Circadian Biology, and COVID-19. Circadian Rhythms, Seasonality, and Infectious Disease. Available at: <https://www.nhlbi.nih.gov/events/2021/identifying-research-directions-sleep-circadian-biology-and-covid-19>
- 2021 NIH High-Risk, High-Reward Research Symposium. Biological Rhythms in Human Health and Infectious Disease
- 2020 Columbia University Global Health Justice and Governance Program (GHJG) and Chelsea Clinton present Fracking, Environmental Health, and Gender Justice: State of the Evidence: What do we know and what is missing? (moderator)
- 2020 UCI Infectious Disease Science Initiative and Center for Virus Research present COVID-19 Dynamics: State of the Science. Social Distancing Inequity & Racial Disparities in COVID-19.
- 2020 MIDAS Webinar: Emerging Evidence and Remaining Uncertainty in SARS-CoV-2 Immunopathology. Available at <https://midasnetwork.us/midas-webinar-confronting-the-unknown-immunopathology-verses-protective-immunity-in-sars-cov-2/>
- 2020 Virtual Conference COVID-19 Impacts in the Arctic. Hosted by the US Naval War College, the Wilson Center's Polar Institute, and the US Arctic Research Commission. Panel member for session titled Arctic Climate and Environmental Change.
- 2020 Darwin Festival hosted by Salem State University (Salem, Massachusetts). Darwinian Medicine and Disease Ecology: Understanding Biological Rhythms and Infection
- 2020 The Santa Fe Institute. Fast & Slow Immunology: Can we frame predictable temporal trajectories in immunity?
- 2020 The Santa Fe Institute. The Tempo of Our Planet: Biological Rhythms & Health.
- 2019 The Santa Fe Institute. The arrow of time as seen through the immune system and the physiological internalization of time.
- 2018 Harvard Center for Communicable Disease Dynamics Conference to Increase Diversity in Mathematical Modeling and Public Health. Integrating Clinical, Cross-sectional, and Time Series Data to Infer Cross-Scale Disease Dynamics and Inform Control
- 2018 Ecological Society of America, National Conference. Integrating Clinical, Cross-sectional, and Time Series Data to Infer Cross-Scale Disease Dynamics and Inform Control
- 2018 The Santa Fe Institute, Working Group: Aging and Adaptation in Infectious Diseases. Anticipating Complex Time.
- 2017 Harvard T.H. Chan School of Public Health Annual Conference to Increase Diversity in Mathematical Modeling & Public Health. New Ways of Deploying Old Tools: Using Maternal Immunity to Improve Infant Vaccination.
- 2017 American Mosquito Control Association Annual Meeting. Reconstructing Spatiotemporal Patterns of Vector Abundance via Online Data Sources.
- 2016 Harvard University T.H. Chan School of Public Health, Outreach Conference to Increase Diversity in Mathematical Modeling & Public Health. Seasonality of Infectious Diseases: Individuals to Populations.

National Presentations Continued...

- 2016 Harvard University T.H. Chan School of Public Health, Outreach Conference to Increase Diversity in Mathematical Modeling & Public Health. Navigating Grad School and Beyond.
- 2015 Ecology and Evolution of Infectious Diseases (EEID) Conference. Both Salk and Sabin Vaccines Effectively Reduce Polio Transmission in Epidemic Settings.
- 2014 Ecology and Evolution of Infectious Diseases (EEID) Conference. Perpetuation of Polio: Silent Infections and Source-Sink Dynamics.
- 2013 Ecology and Evolution of Infectious Diseases (EEID) Conference. Seasonality of Births in the US & Worldwide and its Role in Childhood Disease Dynamics. Co-presented with Kevin M. Bakker.
- 2012 EEID Conference. Can Human Phenology Drive Infectious Disease Dynamics?
- 2011 EEID Conference. Spatiotemporal Dynamics of Polio Virus: Epidemics of the Past and Eradication for the Future.
- 2010 Ecological Society of America National Conference. Disease Emergence in a Changing World: Ecological Dynamics of Polio in the US 1910–1980.
- 2010 Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference. Disease Emergence in a Changing World: A Historical Investigation of the Ecological Dynamics of Polio in the US 1910-1980.
- 2009 SACNAS National Conference. Population Structure of an Arctic Ice Seal.
- 2009 American Society of Mammalogists. Population structure of an Arctic Ice Seal: Support for Conservative Management
- 2008 Ecological Society of America Annual Conference. Impact of Climate Change on Ice-associated Seals: Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2008 American Institute of Biological Sciences Annual Conference. Seasonal Haulout Patterns of Ringed Seals and the Possible Impacts of Climate Change.
- 2006 National Oceanic and Atmospheric Administration Educational Partnership Program Annual Meeting. Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).

Departmental Seminars & Regional Presentations

- scheduled 2022 Fred Hutch Vaccine and Infectious Disease Division
- scheduled 2022 UGA Odum School of Ecology
- scheduled 2022 Penn State Center for Infectious Disease Dynamics
- scheduled 2022 Emory Immunology and Molecular Pathogenesis Program Seminar
- 2021 Virginia Tech Ecology and Evolutionary Biology Departmental Seminar. Biological Rhythms: Wild Clocks in the Anthropocene & Human Health
- 2021 Cornell University Department of Ecology and Evolutionary Biology Seminar. Biological Rhythms: Wild Clocks in the Anthropocene & Human Health
- 2021 Florida Atlantic University - America Runs on STEM (panel member)
- 2021 Emory University Population Biology, Ecology, and Evolution Program Seminar. Circadian Rhythms, Seasonality & Infectious Disease
- 2021 Columbia University Earth Institute Summer Program. Health Disparities in Climate Change & COVID
- 2021 Emory University Department of Biology Seminar. Human Health & Ecology in the Anthropocene

Departmental Seminars & Regional Presentations Continued...

- 2020 Stanford University Dept. of Biology Seminar. Human Biological Rhythms in the Anthropocene
- 2020 Rutgers University. Darwinian Medicine & Disease Ecology: Biological Rhythms in the Anthropocene
- 2020 Columbia University, First-generation Experience: A Roundtable with Columbia Faculty.
- 2019 Emory University Population Biology, Ecology, and Evolution Program. The Tempo Of Our Planet: Biological Rhythms and Infectious Disease in the Anthropocene.
- 2019 The NIEHS Center in Northern Manhattan Annual Retreat. The Influence of Light Pollution & Light-at-night on the Circadian Clock.
- 2019 University of Massachusetts Amherst, Department of Environmental Conservation. Flipping Conservation Concepts for Disease Eradication
- 2019 University of Chicago, Dept. of Ecology & Evolution. Of Clocks and Seasons: Interrogating Epidemics and Modern Human Ecology.
- 2018 Princeton University, Global Health Colloquium. Hacking Epidemics: Leveraging Clinical, Cross-sectional, and Time Series Data to Infer Cross-scale Disease Dynamics
- 2017 Columbia University Mailman School of Public Health, Dean's Grand Rounds Seminar. Eradicating Epidemic Diseases.
- 2017 The NIEHS Center for Environmental Health in Northern Manhattan Annual Retreat. New Ways of Deploying Old Tools: Revisiting the Infant Vaccination Schedule.
- 2017 University of Alaska Southeast, Evening-at-Egan Lecture Series. The Clockwork of Epidemics, Health & Disease.
- 2017 Columbia University Dept. of Environmental Health Sciences. Environment, Rhythms & Disease: Exploring Intra- and Intergenerational Infectious Disease Dynamics.
- 2017 Harvard School of Public Health. The Finest Tuned Clocks: Biological Rhythms & Epidemics.
- 2017 The Hutchinson Institute. The Finest Tuned Clocks: Biological Rhythms & Epidemics.
- 2017 Department of Ecology and Evolutionary Biology at Princeton University, Colloquium on the Biology of Populations Seminar Series. The Finest Tuned Clocks: Biological Rhythms & Epidemics.
- 2017 Department of Public Health at Columbia University. The Finest Tuned Clocks: Biological Rhythms & Epidemics.
- 2016 Princeton Strategic Partnership Grant Workshop in collaboration with the University of Tokyo. Seasonality of Infectious Diseases: Individuals to Populations.
- 2015 University of Michigan School of Public Health MAC-EPID Symposium Workshop: Eradicating Polio: Scientific Opinion and Political Will. The Efficacy of Salk and Sabin Polio Vaccines during Vaccine Roll-out in the US and USSR.
- 2015 US Centers for Disease Control and Prevention (CDC) Division of Viral Diseases. The Efficacy of Salk and Sabin Polio Vaccines during Vaccine Roll-out in the US and USSR.
- 2015 University of Georgia, Odum School of Ecology, Computational Ecology and Epidemiology Group. When Google got Chickenpox.
- 2015 Princeton Dept. of Ecology and Evolutionary Biology Disease Group. Digital Epidemiology Reveals Global Childhood Disease Seasonality and the Effects of Immunization.
- 2015 University of Michigan Department of Ecology and Evolutionary Biology. Polio from Past to Present: Ecology Informs the Polio Endgame (Dissertation Defense).
- 2014 Princeton University Ecology and Evolution Department. Human Phenology in the Context of Infectious Disease Dynamics.

Departmental Seminars & Regional Presentations Continued...

- 2014 | Princeton University Ecology and Evolution Department. Using Historical Epidemics to Inform Polio Eradication.
- 2014 | University of Michigan Ecology & Evolutionary Biology Theory Group Lunch Seminar. Using Historical Epidemics to Inform Polio Eradication.
- 2013 | University of Michigan Early Career Scientist Symposium. Can Human Phenology Drive Infectious Disease Dynamics?
- 2012 | University of Michigan Ecology & Evolutionary Biology Lunch Seminar. Seasonality in Human Ecology as the Force Behind Polio Epidemics.
- 2010 | University of Michigan Ecology & Evolutionary Biology Theory Group Lunch Seminar. The Dynamics of Polio in the US 1910–1980.
- 2009 | University of Georgia Odum School of Ecology, Computational Ecology Luncheon. The Dynamics of Polio in the US 1951–1980.
- 2008 | NIH Intramural NIAID Research Opportunities 2008 Summer Student Research Symposium. A Survey of Relapsing Fever near Flathead Lake, MT.
- 2008 | West Coast Biological Sciences Annual Undergraduate Research Conference. Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2007 | North Slope Borough Fish & Wildlife Management Annual Meeting. Ringed Seal Population Structure; Impacts of Diminishing Snow Cover.
- 2007 | A Joint Meeting of the Alaska Chapter of the Wildlife Society and the 12th Northern Furbearer Conference. Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2007 | University of Alaska Southeast Global Information Systems Student Research Showcase. Breeding site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2007 | University of Alaska Southeast 50th Anniversary Faculty Research Showcase. Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2006 | University of Alaska Southeast Fall Convocation Faculty Research Showcase. Breeding Site Fidelity and Philopatry in Ringed Seals (*Phoca hispida*).
- 2006 | University of Alaska Southeast NSF REU Program Research Showcase. Satellite Tracking of Ringed Seals (*Phoca hispida*).
- 2005 | National Institutes of Health & the University of Colorado Cancer Center Student Fellowship Forum. P-element Mutagenesis in *Drosophila melanogaster* for the study of Segregation Distortion.
- 2005 | Colorado State University Pueblo Student Research Symposium. P-element Mutagenesis: Identifying Mutations that Interact with Segregation Distortion in *Drosophila melanogaster*.

Workshops & Working Groups

- 2020 | Santa Fe Institute, New Mexico, US. Aging & Adaptation in Infectious Diseases.
- 2019 | Santa Fe Institute, New Mexico, US. Aging & Adaptation in Infectious Diseases.
- 2019 | Wellcome Trust, the University of Washington, and the World Health Organization, London, UK. Workshop on Climate Change Mitigation Health Co-Benefits.
- 2018 | Santa Fe Institute, New Mexico, US. Aging & Adaptation in Infectious Diseases.
- 2017 | Lorentz Center, Netherlands. Microbial Darwinian Medicine: A Workshop at the Interface of Medicine and Microbial Eco-Evolutionary Biology

Research & Professional Experience

2021–current	Emory University, Dept. of Biology Assistant Professor.
current	Reviewer Ad hoc reviewer for the US National Science Foundation (NSF), PLoS Biology, PNAS, Proceedings of the Royal Society B: Biological Sciences, Journal of the Royal Society Interface, Emerging Infectious Diseases, The American Naturalist, BMC Medicine, American Journal of Human Biology, among other journals. Also reviewed COVID-19 grants for the state of California and Chan Zuckerberg Biohub.
2018–2021	University of Surrey, Faculty of Health and Medical Sciences Visiting Researcher.
2017–2021	Columbia University, Dept. of Environmental Health Sciences Assistant Professor.
2015–2017	Princeton University, Ecology & Evolution, Associate Research Scholar Professional researcher appointment.
2015–2016	Princeton University, Ecology & Evolution, Postdoctoral Fellow NSF postdoctoral fellow. Research project: “Effects of maternal antibodies on offspring survival and health.”
2010–2015	University of Michigan, Ecology & Evolution, PhD Program Graduate student under the advisement of Pejman Rohani and Aaron A King. Dissertation committee members: Pejman Rohani, Aaron A King, Mercedes Pascual, and Betsy Foxman.
2013–2014	University of Michigan, Ecology & Evolution, Grad Student President President of EEB graduate students for the 2013–2014 academic year.
2011–2012	University of Michigan, Ecology & Evolution, Admissions Committee Student representative on the EEB PhD admission committee.
2011	University of Michigan, Graduate Student Instructor EEB/ENVIRON 315: Ecology and Evolution of Infectious Diseases
2010	University of Michigan, Graduate Student Instructor BIOL 130: Animal Behavior
2009–2010	Research Assistant, University of Georgia & University of Michigan Lab of Pejman Rohani University of Georgia Odum School of Ecology, followed by the University of Michigan Ecology & Evolutionary Biology Department.
2010	Summer Field Assistant Assisted Daniel Streicker (University of Georgia) with field research on vampire bat rabies in Peru.
2006–2009	Research Assistant, University of Alaska Southeast Labs of David Tallmon and Brendan P. Kelly, Department of Biology.
2008	Summer Research Assistant, National Institutes of Health Lab of Tom Schwan, Medical Entomology Section of the Laboratory of Zoonotic Pathogens, Rocky Mountain Laboratories, National Institutes of Allergies and Infectious Diseases, National Institutes of Health
2008	Field Research Course, Interdisciplinary Sea-Ice Research, University of Alaska Fairbanks Field techniques in geophysical, biological, and biogeochemical sea-ice research
2007	Research Assistant, National Oceanic & Atmospheric Administration NOAA Living Marine Resources Cooperative Science Center biodiversity research cruise in the North Atlantic Ocean, NOAA Vessel Albatross IV.

Research & Professional Experience Continued...

- 2007 **Field Assistant**
Assisted Andrew Whiteley (University of Alaska) with field research on phenotypic plasticity in coast range sculpin in Glacier Bay National Park.
- 2006 **NSF REU Summer Research Student, University of Alaska Southeast**
Lab of Brendan P. Kelly
- 2005–2006 **Research Assistant, Colorado State University - Pueblo**
Lab of Janna McLean
- 2004 **Summer Research Student, Colorado State University - Pueblo**
National Institutes of Health Bridges to Biomedical Careers Program

TV, Film, Radio, etc.

- 2019 Panelist for Eureka Day, A Comedy About The Vaccination Debate, run by Colt Coeur Theater Company (NYC).
- 2019 Featured as a science advisor in the Dutch documentary “Man Mad” by De Familie Film & TV. Filmed January 2019, European release April 2019. U.S. release TBD.
- 2019 Two live interviews on The Weather Channel discussing my research on birth seasonality.
- 2018 Interview on *Science Friday* about article “The Calendar of Epidemics: Seasonal Cycles of Infectious Diseases”. Listen at <https://www.sciencefriday.com/segments/sick-tis-the-season/>.
- 2018 Interview about article “Tis the Season for Conception” on *Central Time* on Wisconsin Public Radio. Listen at <https://www.wpr.org/one-reason-you-might-be-sending-more-birthday-wishes-summer>
- 2017 Interviews about “University of Alaska Southeast, Evening-at-Egan Lecture Series. The Clockwork of Epidemics, Health & Disease” Juneau Alaska public radio programs KTOO *Juneau Afternoon* and KINY *Capital Chat*

News Interviews & Outreach

- 2021 COVID-19 interview with The Atlantic <https://www.theatlantic.com/health/archive/2021/12/omicron-soft-lockdown/621121/>
- 2020 Fall 2020, conducted dozens of interviews on COVID-19, disease seasonality, and biological rhythms for major media outlets. Including New York Magazine, National Geographic, The Gothamist, and New York Public Radio. New York Magazine interview available at <https://nymag.com/intelligencer/2020/10/the-third-wave-of-covid-19-is-here.html>, The Gothamist available at <https://gothamist.com/news/nyc-expects-more-450k-coronavirus-vaccines-month>
- 2020 Sisters Who Vote presents Diverse Women Speak: Science, Policy and Civic Engagment Forum: Bringing scientists and advocates together to discuss the importance of science in the 2020 Election.
- 2020 Interviews, photos and data collation for featured in Science article titled “Sick Time: Dozens of Diseases Wax and Wane with Seasons. Will COVID-19?” <https://science.sciencemag.org/content/sci/367/6484/1294.full.pdf>
- 2020 Moderator for the Consulate General of Israel in New York and the Israeli Embassy in the UK international panel titled “No Exit? Three International Experts’ Models on Lifting the Lockdown ”
- 2020 Judge for New York Academy of Medicine COVID Innovation Challenge: Tracking Coronavirus <https://www.nyas.org/challenges/tracking-coronavirus/>
- 2020 Spring 2020, conducted 40+ interviews on COVID-19 for major media outlets. Including a live interview on BBC World News April 9th 2020. Additional highlights included below
- The New York Times interview “Where Chronic Health Conditions and Coronavirus Could Collide <https://www.nytimes.com/interactive/2020/05/18/us/coronavirus-underlying-conditions.html>
 - Weather.com interview “Heres Why Some Viruses Are Seasonal <https://weather.com/health/coronavirus/video/heres-why-some-viruses-are-seasonal>
 - ABC News interview “Social distancing isn’t a nuisance it’s a privilege An analysis of subway data showed usage declined less in poorer neighborhoods. <https://abcnews.go.com/Health/social-distancing-nuisance-privilege/story?id=71436612>
 - Smithsonian Magazine interview “Why Warmer Weather Probably Wont Stop COVID-19 <https://www.smithsonianmag.com/science-nature/why-warm-weather-probably-wont-snuff-out-covid-19-180974482/>
 - The New Yorker interview “When SARS Ended: The viral spell broke, and Hong Kong seemed to wake from a fever dream. <https://www.newyorker.com/culture/personal-history/when-sars-ended>
 - CBC News interview “Will COVID-19 become a seasonal disease like the flu? It’s too early to tell, experts say <https://www.cbc.ca/news/health/covid19-seasonal-1.5516685>
 - The Wall Street Journal interview “Coronavirus Outbreaks Could Become Seasonal Woe, Some Researchers Suggest <https://www.wsj.com/articles/coronavirus-outbreaks-could-become-seasonal-woe-some-researchers-find-11584955802>
 - Nunatsiaq News coverage of my talk at the COVID-19 Impacts in the Arctic conference, which was open to the public. “Arctic conference considers the challenges posed by COVID-19 <https://nunatsiaq.com/stories/article/covid-19-adds-new-layer-of-challenges-on-the-arctic-conference/>
 - The Guardian “Scientists ask: could summer heat help beat Covid-19? <https://www.theguardian.com/world/2020/apr/05/scientists-ask-could-summer-heat-help-beat-covid-19>
 - Columbia Public Health Podcast <https://soundcloud.com/columbiapublichealthnow/covid-19-the-dangerous-stories-we-tell>

News Interviews & Outreach continued...

- 2020 Taught the 6th graders at Washington Heights Expeditionary Learning School about infectious disease transmission.
- 2020 Gave COVID-19 updates at the Columbia University EHS town hall meetings.
- 2020 Spring 2020, I was on a panel for the PI crash course run by CU EHS Dept. I was also on a panel for First-Generation graduate students. The event focused on creating networks among graduate and professional school students from historically marginalized communities.
- 2019 Interview with Healthline to comment on new findings regarding Zika pathology
- 2018 Interviews with reporters regarding publication The calendar of epidemics: Seasonal cycles of infectious diseases. Article covered by 10+ news outlets, including Scientific American <https://www.scientificamerican.com/article/to-every-pathogen-there-is-a-season/>, Discover Magazine <https://www.discovermagazine.com/health/not-just-the-flu-chickenpox-measles-and-polio-are-also-seasonal> and others.
- 2017 Interview with *The Atlantic* regarding my co-authored preprint "Rescuing Hidden Ecological Data to Tackle Emerging Mosquito-Borne Diseases". <https://www.theatlantic.com/science/archive/2017/08/mosquito-data/537735/>
- 2016 On-film interviews with Contagion Live on topics relating to poliovirus and Zika virus <http://www.contagionlive.com/>.
- 2016 Interviews with reporters regarding publication Preventing Zika Virus Infection during Pregnancy Using a Seasonal Window of Opportunity for Conception. Article covered by 20+ news outlets, including Vogue <https://www.vogue.com/article/why-zika-is-scarier-than-donald-trump>.
- 2016 Volunteer with The Last Mile Code.7370 coding school for inmates in San Quentin Prison. The group I work with recently developed interactive disease maps for Project Tycho: Data for Health. <https://www.tycho.pitt.edu/resources/lastmile/>
- 2015 Interviews with reporters from multiple news outlets regarding publication Unraveling the Transmission Ecology of Polio. Article appeared in 5+ news outlets, including Inside Science <https://www.insidescience.org/news/complicated-twists-fight-eradicate-polio> and 142 individuals tweeted about the publication.
- 2015 Taught scientific inquiry workshop attended by 240 6th grade students at DeWitt, Michigan Junior High School.
- 2015 Live Webcast Interview for the The Ellis School Monthly Learning Innovation Institute Panel Discussion on How to Engage Girls in Engineering and Computer Science.
- 2014 Interviews with Fox News, Slate Magazine, LiveScience, Vice, and University of Michigan News on Human Birth Seasonality: Latitudinal Gradient and Interplay with Childhood Disease Dynamics. Articles appeared in 25+ news outlets; including Slate Magazine <https://slate.com/technology/2014/04/birth-rates-vary-by-season-and-latitude-what-explains-the-peaks.html>
- 2011 University of Michigan Women in Science and Engineering, Girls in Science and Engineering Summer Workshop for High School Students. Modeling Human Papilloma Virus Transmission to Help Stop Cervical Cancer.

Awards

- 2015 Rackham Graduate Student Research Grant (\$3000)
- 2015 University of Michigan AGEP Research Travel Award (\$500)
- 2014 University of Michigan Ecology and Evolutionary Biology Dept. Best Student Paper Award (\$500)
- 2014 Rackham Graduate Student Research Grant (\$3,000)
- 2012–2013 University of Michigan, Rackham Travel Grant
- 2011 NSF Ecology and Evolution of Infectious Disease Workshop Scholarship
- 2009 SACNAS National Conference Undergraduate Poster Award for Polar Sciences
- 2009 Alaska EPSCoR Landscape Genetics Scholarship, American Society of Mammalogists Annual Meeting
- 2009 University of Alaska Southeast Outstanding Graduate in Natural Sciences
- 2009 University of Alaska Southeast, Graduated Magna Cum Laude
- 2007–2009 Cooperative Institute for Arctic Research: International Polar Year Fellowship
- 2007–2009 University of Alaska Southeast Arts & Science Student Scholarship
- 2008 NIH, Intramural NIAID Research Opportunities Program Travel Award
- 2006–2007 National Science and Mathematics Access to Retain Talent (SMART) Grant
- 2005–2007 Hispanic Scholarship Fund Scholarship
- 2007 Southeast Alaska Conference Scholarship
- 2007 University of Alaska Student Government Scholarship
- 2007 University of Alaska TRIO Program Grant Recipient