

**Harvard Medical School/Harvard School of Dental Medicine  
Format for the Curriculum Vitae**

**Date Prepared:** 7/01/2017  
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**Place of Birth:** Maryland

**Education**

1998	BA <i>Magna cum Laude</i>	Economics	Francis Marion University Florence, SC
2003	PhD	Economics (Advisor: Dwight R. Lee)	University of Georgia Athens, GA
2006	PhD	Ecology (Advisor: Pejman Rohani)	University of Georgia Athens, GA

**Postdoctoral Training**

2006-2008	Postdoctoral Fellow	Sustainable Development (Mentor: Jeffrey Sachs)	Earth Institute at Columbia University New York, NY
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**Faculty Academic Appointments**

2008-2010	Research Associate	François Xavier Bagnoud Center for Health and Human Rights	Harvard School of Public Health Boston, MA
2009-2012	Lecturer	Health Policy, Economics and Management	National University of Rwanda School of Public Health Kigali, Rwanda
2010-2015	Research Associate	Department of Global Health and Social Medicine	Harvard Medical School Boston, MA
2015-	Assistant Professor	Department of Global Health and Social Medicine	Harvard Medical School Boston, MA

2015-2016	Blaustein Visiting Assistant Professor	Earth Systems Science	School of Earth, Energy, and Environmental Sciences, Stanford University
2015-2017	Visiting Assistant Professor	Program for Disease Ecology, Health, and Development,	Woods Institute for the Environment, Stanford University
2015-2017	Fellow	Center for Innovation in Global Health	School of Medicine, Stanford University
2016-2017	Visiting Assistant Professor	Department of Medicine	Stanford School of Medicine

### **Other Professional Positions**

2009	Director of Research	Partners in Health Rwanda
2013-	Cofounder/Co-Chief Executive Officer	PIVOT Works, Inc.

### **Major Administrative Leadership Positions**

2008-2009	Co-organizer Workshop and Advanced Study Institute on Economic Epidemiology Makerere University, Uganda	African Biomathematics Initiative Center for Discrete Mathematics and Theoretical Computer Science Rutgers University
2009	Moderator Economics Core Metrics Population Health Implementation and Training	African Health Initiative Doris Duke Charitable Foundation
2009-2012	Course leader Applied Health Economics	Department of Health Policy, Economics and Management National University of Rwanda School of Public Health Kigali, Rwanda
2013-	Principle Investigator and Co-organizer Working Group Series Land Use Change and Infectious Diseases	National Center for Ecological Analysis and Synthesis Santa Barbara, CA
2013-	Principle Investigator and Co-organizer Working Group Series Land Use Change and Infectious Diseases	National Socio-Environmental Synthesis Center Annapolis Maryland
2014	Co-organizer Working Group Ecology of Poverty and Economic Development	Paris School of Economics Universite Paris I Pantheon-Sorbonne Paris, France

2015	Co-organizer Working Group Ecology of Poverty and Economic Development	Institute for Advanced Studies Aix-Marseille School of Economics Marseille, France
2015	Co-organizer Symposium on Global Change and Infectious Disease Dynamics	Ecological Society of America Annual Meeting Baltimore, MD USA
2016	Organizer Natural Capital, Human Health, and the Environment	Natural Capital Symposium Stanford University Stanford, CA
2017	Co-Organizer Madagascar: A Crucible for Science, Health, and the Environment	Stanford Global Health Research Symposium Stanford University Stanford, CA
2017	Co-Organizer Ecological Levers for Health: State of the Science Summit	Science for Nature and People Partnership UC Santa Barbara Santa Barbara, CA

### **Committee Service**

#### **National and International**

2006	Scope Meeting Biodiversity and Health Madison, WI	Member DIVERSITAS Paris, France
2007	Expert Panel Challenges of the Drylands Dubai, UAE	Member Global Humanitarian Forum Geneva
2007	Panel on Markets, Freedom, and the Environment Colloquium	Member Political Economy Research Center Bozeman, MT
2007	Panel on the Contributions of Armen A. Alchian Liberty Fund Conference	Panelist Political Economy Research Center Emigrant, MT
2009-2010	Data Collaborative Team Population Health Implementation and Training Lusaka, Zambia Rwinkwavu, Rwanda	Member Africa Health Initiative Doris Duke Charitable Foundation
2010	Steering Committee	Member

		Rwanda Demographic and Health Survey-IV
2010	Technical Committee Environmental Health and Social and Demographic Characteristics	Member Rwanda Demographic and Health Survey-IV
2010	Working Group Infectious Diseases at the Wildlife/Livestock/Human Interface Emory University	Member Research and Policy for Infectious Disease Dynamics NIH Fogarty International Center
2013	Search Committee for Director	Member Global Health Institute Stony Brook University Stony Brook, NY
2013-	Working Group Series Land Use Change and Infectious Diseases	Member National Center for Ecological Analysis and Synthesis Santa Barbara, CA
2013-	Working Group Series Land Use Change and Infectious Diseases	Member National Socio-Environmental Synthesis Center Annapolis, MD
2013-	Board of Directors	Executive Committee Member PIVOT Works, Inc. Boston, MA
2015	Panel on Global Change and Infectious Disease Dynamics	Panelist Ecological Society of America Special Symposium Baltimore, MD
2016	Panel on Natural Capital, Human Health, and the Environment	Panelist Natural Capital Symposium Stanford University Stanford, CA
2017	Ecological Levers for Health Working Group	Member Science for Nature and People Partnership/National Center for Ecological Analysis and Synthesis, Santa Barbara, CA

**Editorial Activities**

Ad hoc Reviewer:  
 Acta Tropica  
 The American Naturalist  
 Bulletin of Mathematical Biology  
 EcoHealth  
 Ecology Letters  
 Ecosphere  
 Evolutionary Applications  
 Integrative and Comparative Biology  
 Journal of Economic Dynamics and Control  
 Journal of Health Economics  
 Journal of the Royal Society Interface  
 Journal of Theoretical Biology  
 Natural Resources Modeling  
 Philosophical Transactions of the Royal Society  
 PLoS Biology  
 PLoS Medicine  
 PLoS Neglected Tropical Diseases  
 Proceedings of the National Academy of Sciences  
 Proceedings of the Royal Society, B

**Honors and Prizes**

1994	Francis Marion Elmore Memorial Scholarship	Francis Marion University	Academic Merit
1996	Knights of Columbus Scholarship	Francis Marion University	Academic Merit
1994	Jay Boone Aiken Scholarship	Francis Marion University	Academic Merit
1997	<i>Phi Kappa Phi</i>	Francis Marion University	Academic Merit
1997	Alumni Association Scholarship	Francis Marion University	Academic Merit
1997	Sigma Phi Epsilon/ Jay Williams Scholarship	Francis Marion University	Academic Merit
1998	Free Market Environmentalism Scholarship	Political Economy Research Center	Academic Merit
1998	Tropical Ecology Scholarship	Francis Marion University Pee Dee Sierra Club	Academic Merit
1999	Ramsey Center for Private Enterprise	Department of Economics University of Georgia	Academic Merit

	Foundation Scholarship		
2002	Graduate Fellowship	Political Economy Research Center	Academic Merit
2003	Eugene Odum Fellowship	Odum School of Ecology University of Georgia	Academic Merit
2004-2005	ARCS Foundation Fellowship	ARCS Foundation and Sarain Lanier Foundation	Academic Merit
2005	Best Oral Presentation	Southeastern Ecology and Evolution Conference Athens, GA	
2013	Keynote Speaker	One Health Symposium University of Georgia Athens, GA	
2013	Top 10 Article of First Ten Years	<i>PLOS Biology</i> Tenth Anniversary	
2015	Keynote Speaker	Ecology and Evolution of Infectious Diseases Annual Meeting Athens, GA	

### **Media Coverage**

National Public Radio, Nature, Science, LA Times, New Scientist, PLoS Biology, The Guardian, National Geographic, Der Spiegel, Wired, Nature Ecology & Evolution News and Views, Global Health NOW, Xinnua, Meteo Web, El Confidencial,

### **Report of Funded and Unfunded Projects**

#### **Funding Information**

##### **Previous**

- 2010-2015     The Economic Impacts of Community-Based Integrated Health Care in Rural Rwanda  
NIH/FIC K01TW008773  
PI (\$669,470)  
This was a mentored International Research Career Development Award. The goal is to build a broad research program around estimating economic effects of health care in Rwanda. Mentors: Megan Murray (HMS), Sir Partha Dasgupta (U. of Cambridge), and Agnes Binagwaho (Minister of Health of Rwanda).
- 2013-2015     The Economic Burden of Human and Livestock Diseases in Madagascar  
Grand Challenges Explorations, Phase I

Bill and Melinda Gates Foundation

PI (\$100,000)

This is a pilot grant to develop a new metric of measuring the economic burden of disease that is inclusive of human and livestock diseases in Madagascar.

- 2014 Baseline Assessment of Health and Economic Conditions for Ifanadiana District, Madagascar  
PIVOT Works (PI: A. Miller) (\$178,000)  
Co-PI  
This is a baseline study of 1600 households in Ifanadiana District in Madagascar – the catchment district of PIVOT. The survey is in partnership with the Madagascar Institute of Statistics, which is a subcontractor on the grant.
- 2009-2011 Strengthening and Studying Community Based Integrated Primary Health Care Systems in Rural Rwanda  
Doris Duke Charitable Foundation (Co-PIs: M. Rich, P. Basinga) (\$8,500,000)  
Co-Investigator  
The goal of this grant was to expand health care delivery programs in concert with implementation research in Rwanda. It included a range of operations and population-level research initiatives.

### **Current**

- 2016-2017 Improving Zika control through models of transmission, vector control, and public health interventions  
National Science Foundation #1640780 (PI: Courtney Murdoch) (\$200,000)  
Co-PI
- 2012-2016 Poverty Traps and the Ecology of Economic Development  
Scholar Award in Complex Systems Science  
James S. McDonnell Foundation  
PI (\$450,000)  
This is a scholar award in support of a broad research platform associated with developing mathematical frameworks for understanding relationships between poverty traps and ecology.
- 2013-2018 Ranomafana Area Health System Strengthening Project: Technical Assistance  
Jim and Robin Herrnstein Foundation  
Co-PIs: M. Bonds and M. Rich (\$850,000)  
This as technical assistance implementation grant to support the incubation of a new health care service and research organization in Madagascar. The organization is now called PIVOT.

### **Unfunded Projects**

- 2010 The Latitudinal Gradient in Income and the Ecology of Infectious Diseases  
National Science Foundation, Economics  
This was a collaboration with Andy Dobson and Donald Keenan that has since been

published in *PLoS Biology* and ranked as one of the their top ten publications of the journals first decade.

- 2011 Collaborative Research: Computational and Empirical Analysis of Disease-Driven Poverty Traps in Rwanda  
National Science Foundation, Economics  
This was a collaboration with Megan Murray and Ann Miller to start a longitudinal cohort study to measure economic and health impacts of health system activities.
- 2011 Poverty Traps and the Ecology of Infectious Diseases in Rwanda  
National Science Foundation, Ecology and Evolution of Infectious Diseases  
This was a collaboration among Megan Murray, Ann Miller, James Robins, Peter Drobac, and Gunther Fink to start a longitudinal cohort study to evaluate poverty trap dynamics in the context of health system strengthening.
- 2012 The Effect of Integrated Health Care on Intergenerational Poverty Traps in Rwanda  
National Institutes of Health, NICHD  
This was a collaboration among Megan Murray, Ann Miller, James Robins, Peter Drobac, and Gunther Fink to start a longitudinal cohort study of economics and child development indicators to measure effects of health system activities.
- 2012 Poverty Traps and the Ecology of Infectious Diseases in Madagascar  
National Science Foundation, Ecology and Evolution of Infectious Diseases  
This is an emerging collaboration between Patricia Wright (Stony Brook U.) and Tom Gillespie (Emory U.) to start a longitudinal cohort study to understand ecological drivers of disease and their dynamic impacts on poverty in Madagascar
- 2012 Poverty Traps and Conservation in a Biodiversity Hotspot  
National Science Foundation, Coupled Natural-Human Systems  
This is an emerging collaboration between Patricia Wright (Stony Brook U.) and Tom Gillespie (Emory U.) to start a longitudinal cohort study to study effects of land use on poverty dynamics in Madagascar.
- 2013 Poverty Traps and Land Use Change in a Biodiversity Hotspot  
National Science Foundation, Coupled Natural-Human Systems  
This was a resubmission of the previous year's well-reviewed proposal, but was returned without review due to a technicality.
- 2015 Poverty Traps and Land Use Change in a Biodiversity Hotspot  
National Science Foundation, Coupled Natural-Human Systems  
PI (\$1,900,000)  
This was a resubmission of the previous year's well-reviewed proposal
- 2015 Poverty Traps and the Ecology of Infectious Diseases  
National Science Foundation, Ecology and Evolution of Infectious Diseases  
PI: T. Gillespie (\$2,400,000)  
Co-PIs: M. Bonds P. Wright, A. Miller. T  
his is an emerging collaboration start a longitudinal cohort study to study effects of disease



ecology and healthcare delivery on poverty dynamics in Madagascar.

**Report of Local Teaching and Training**

**Teaching of Students in Courses**

2000-2003	Principles of Macroeconomics 50-300 undergraduate students	Department of Economics University of Georgia Athens, GA 3-hrs per week for 16 weeks
2001-2003	Economics of Environmental Quality 50-300 Upper-level undergraduate students	Department of Economics University of Georgia Athens, GA 3-hrs per week for 16 weeks
2009-2012	Applied Health Economics 30-35 MPH Students	National University of Rwanda School of Public Health Kigali, Rwanda 4hrs per day for 10-day modules
2010-2011	Seminar on Health and Economic Development FAMCO Residency	Partners in Health Rwanda 2 sessions
2011	Seminar on Poverty Traps HEB 1333 Primate Ecology and Evolution	Harvard College, Cambridge, MA Course Instructor: Charlie Nunn 90 min session
2012	Seminar on Health Economics Seminar Series in MMSc in Global Health Delivery	Harvard Medical School Course Instructor: Joia Mukherjee 2-hr session
2016	Seminar on Planetary Health in Madagascar History of Life Internship Program	School of Earth, Energy, and Environmental Sciences Course Instructor: Noel Heim.
2016	Seminar on Health and Economic Development in Rwanda and Madagascar BIOHOPK 168H/268H Disease Ecology: From Parasite Evolution to the Socio- Economic Impacts of Pathogens on Nations	Department of Biology Stanford University Course Instructor: Giulio De Leo
2016	Seminar on Health Systems in Madagascar ANP 391 Topics in Physical Anthropology	Stony Brook University Study Abroad Centre ValBio Course Instructor: Patricia Wright
2017	Tutorial on Economic Epidemiology EnvRes 399: Winter Quarter	Emmitt Interdisciplinary Program in Environment & Resources

2016-2017      Monthly Tutorial in Global Health      Friends School of Baltimore  
Camp Fellows

### **Formally Supervised Trainees**

- 2016-      Charles Brummitt, PhD, Research Associate, Department of Global Health and Social Medicine, HMS.  
I currently supervise Dr. Brummitt on new modeling techniques for coupled natural systems. Our first publication together is in *Nature Human Behaviour*.
- 2015-2017      Andres Garchitorena, PhD, DVM, MPhil, Postdoctoral Fellow, Department of Global Health and Social Medicine, HMS. Dr. Garchitorena currently as a permanent appointment at the University of Montpellier and the French Institute for International Recherche for Development.  
I supervised Dr. Garchitorena research on impact evaluation, and economic and environmental drivers of disease in Madagascar. We have published two book chapters and eight peer-reviewed publications in scientific journals such as *Health Affairs*, *Trends in Parasitology*, and *Phil Trans Roy Soc B*.
- 2014-2015      Cassidy Rist, DVM, MPH Postdoctoral Fellow, Department of Global Health and Social Medicine, HMS. Dr Rist now is an Assistant Professor, Virginia Tech Veterinary School. I co-supervised Dr. Rist with Dr. Tom Gillespie, Departmental of Environmental Studies, Emory University. Her work focused on the economic burden of human and livestock diseases in Madagascar. We have publications in *Trends in Parasitology* and *One Health*.
- 2013-2016      Calistus Ngonghala, Ph.D. Postdoctoral Fellow, Department of Global Health and Social Medicine, HMS. Dr. Ngonghala is now an Assistant Professor of Mathematics at University of Florida.  
I was Dr. Ngonghala's mentor. We have ten publications together, highlights include articles in *PLoS Biology* and *Nature Ecology & Evolution*.
- 2012-2014      Fernet Leandre, MD, MMSc. Global Health Delivery  
Department of Global Health and Social Medicine, HMS. Dr. Leandre is currently the Co-Executive Director of Zanmi Lasante  
I served as Dr. Leandre's advisor. His Master's thesis was titled, "Comparative evaluation of household economic metrics for monitoring impacts of health programs on livelihoods in Haiti".

### **Local Invited Presentations**

- 2007      Breaking the Disease-Driven Poverty Trap in Rwanda: Theory and Evidence  
Department of Social Medicine, Harvard Medical School
- 2009      Poverty Trap Formed by the Ecology of Infectious Diseases  
Francois-Xavier Bagnoud Center for Health and Human Rights, Harvard School of Public Health
- 2011      Poverty and Disease as Coupled Economic-Ecological Systems

Center for Population and Development Studies, Harvard University

- 2011 How Health Care Can Break Cycles of Poverty and Disease  
Partners in Health
- 2011 How Health Care Can Break Cycles of Poverty and Disease  
Department of Global Health and Social Medicine, Harvard Medical School
- 2013 Introducing PIVOT: Breaking Cycles of Poverty and Disease  
Partners in Health
- 2014 Poverty, Disease, and Health Care Delivery  
Department of Global Health and Social Medicine, Harvard Medical School
- 2014 PIVOT: Breaking Cycles of Poverty and Disease  
Partners In Health
- 2014 PIVOT: Breaking Cycles of Poverty and Disease  
Next Mile Project
- 2017 Advancing a Science of Sustaining Health: A Model Health District in Madagascar  
Department of Global Health and Social Medicine, Harvard Medical School
- 2017 PIVOT's Integrated Approach to Health System Strengthening  
Partners In Health, Boston, MA
- 2017 PIVOT's Response to Plague Outbreak in Madagascar  
Partners In Health, Boston, MA

### **Report of Regional, National and International Invited Teaching and Presentations**

#### **Regional**

- 2013 Ecology of Poverty and Disease: From Theory to Practice  
Department of Ecology and Evolutionary Biology  
Brown University, Providence, RI
- 2017 Breaking Down Barriers to Care: PIVOT's Integrated Approach to Health System  
Strengthening in Madagascar  
Unite For Sight Conference, New Haven, CT

#### **National**

- 2002 Measuring Technical Efficiency of School Trust Timber Production  
Political Economy Research Center, Bozeman, MT
- 2005 On Long-term Consequences of Selfish Behavior, A Game-Theoretic Approach to Host-  
Pathogen Coevolution  
Southeastern Ecology and Evolution Conference, Athens, GA

- 2005 Infectious Diseases Can Induce Greater Sociality  
National Science Foundation, Human and Social Dynamics Grant Meeting, Arlington, VA
- 2006 Reducing Fertility Better Than Vaccinating for Improving Global Health and Economic Development: A Simple Ecological Framework  
Ecological Society of America Annual Meeting, Memphis, TE
- 2006 Sociality, Sterility, and Poverty: Host-Pathogen Coevolution with Implications for Human Ecology  
Consortium for Conservation Medicine Meeting, Madison, WI
- 2007 The Economics and Ecology of Poverty Traps  
Berry College, Rome GA
- 2007 Health Analysis in the Rwanda Millennium Villages  
Millennium Villages Project, Columbia University New York, NY
- 2008 Poverty Traps: Theory and Practice  
Earth Institute Fellows Symposium, Columbia University, New York, NY
- 2009 The Ecology of Poverty, Disease, and Economic Development in Rwanda: Reconciling Science and Social Justice  
Francis Marion University, Florence, SC
- 2010 Economics of the Livestock/Wildlife/Human Disease Interface  
Research and Policy on Infectious Disease Dynamics (RAPIDD), Fogarty International Center, Emory University, Atlanta, GA
- 2010 Poverty Trap Formed by the Ecology of Infectious Diseases  
Program in Interdisciplinary Biological and BioMedical Sciences (PiBBs)  
University of New Mexico, Albuquerque, NM
- 2011 Can Health Care Break Cycles of Poverty and Disease? Theory and Implementation Research in Rwanda  
Institute of Health Metrics and Evaluation  
University of Washington, Seattle, WA
- 2011 Health and the Ecology of Economic Development  
Woodrow Wilson School, and Department of Ecology and Evolutionary Biology,  
Princeton University, Princeton, NJ
- 2013 Ecology of Poverty and Disease  
Center for Infectious Disease Dynamics  
Penn State University, State College, PA
- 2013 Ecology of Poverty and Disease  
One Health Symposium (Keynote Address)

University of Georgia, Athens, GA

- 2013 Ecology of Poverty and Disease  
Institute for African Development  
Cornell University, Ithaca, NY
- 2014 Ecology of Poverty  
Complex Systems Conference  
James McDonnell Foundation  
Emory University, Atlanta, GA
- 2014 Ecology of Poverty Traps  
Hopkins Marine Station  
Stanford University, Monterey, CA
- 2015 Land Use Change and Infectious Diseases  
National Socio-Environmental Synthesis Center  
Annapolis, MD
- 2015 Poverty, Disease, and Healthcare Delivery: From Theory to Practice  
Ecology and Evolution of Infectious Disease Conference (Keynote Address)  
Athens, GA
- 2015 Ecology of Poverty and Disease: From Theory to Practice in Madagascar  
Stanford Medical School, Stanford, CA
- 2015 Ecology of Poverty Traps in Coupled Human-Natural Systems  
Woods Institute of the Environment, Stanford University, Palo Alto, CA
- 2015 A general model for the economics of land–use change and pathogen dynamics  
Ecological Society of America Annual Meeting, Baltimore, Maryland
- 2015 PIVOT: Breaking cycles of Poverty and Disease  
Fortress Investment Group, New York, NY
- 2015 Population-Based Health Research in Ifanadiana, Madagascar  
Global Health Institute, Stony Brook University, Stony Brook, NY
- 2016 Health System Strengthening in Madagascar  
Prakash Lab, Department of Bioengineering, Stanford University
- 2016 Ecology of Poverty and Disease: From Theory to Practice  
Natural Capital Symposium, Stanford University, Stanford, CA
- 2016 Integrating scalable mosquito-borne surveillance to strengthen responsiveness of local health systems  
USAID, Washington, DC

- 2016 PIVOT: Establishing a Model Health District in Madagascar  
Partners In Health West, San Francisco, CA
- 2017 PIVOT: Health as a Human Right in Madagascar  
Friends School of Baltimore, Baltimore, MD
- 2017 Crucible for Science Health and the Environment  
Stanford University, Stanford CA
- 2017 Advancing a Science of Sustaining Health: a New Model Health District in Madagascar  
Associate for Academic Health Centers, Global Issues Forum, Washington DC
- 2017 Ecology of Poverty, Disease and Health Care Delivery: Lessons for Planetary Health  
Department of Integrated Biology, University of California, Berkeley
- 2017 Ecology of Poverty, Disease and Health Care Delivery: Lessons for Planetary Health  
Department of Infectious Disease, University of Georgia, Athens, GA
- 2017 Ecology of Poverty and a Model Health District in Madagascar  
National Institute of Mathematical and Biological Synthesis, University of Tennessee,  
Knoxville, TN
- 2017 Health System Strengthening in Rwanda  
Stanford School of Medicine, Stanford University
- 2017 Ecology of Poverty and Disease, with Lessons for Planetary Health  
School of Public Health, University of California Berkeley

**International**

- 2005 Higher Disease Prevalence Can Induce Greater Sociality  
Department of Zoology, University of Cambridge, UK
- 2005 Higher Disease Prevalence Can Induce Greater Sociality  
Department of Animal and Plant Sciences, University of Sheffield, UK
- 2005 Higher Disease Prevalence Can Induce Greater Sociality  
Department of Integrative and Comparative Biology, University of Leeds, UK
- 2005 Higher Disease Prevalence Can Induce Greater Sociality  
Ecological Society of America Annual Meeting, Montreal, Quebec
- 2008 Poverty Trap Formed by the Ecology of Infectious Diseases  
Centre de Recherche IRD, Infectious Disease Unit, Montpellier, France
- 2008 Infectious Diseases form Poverty Trap  
Partners in Health, Rwinkwavu, Rwanda

- 2009 Economic Evaluation  
Africa Health Initiative, Doris Duke Charitable Foundation, Lusaka, Zambia
- 2009 Ecology of Global Health and Economic Development  
French School of Public Health (EHESP), Paris, France
- 2009 Poverty Trap Formed by the Ecology of Infectious Diseases  
Workshop on Economic Epidemiology, Makerere University, Kampala Uganda
- 2009 Evolution of Virulence  
Advanced Study Institute on Economic Epidemiology, Makerere University, Kampala Uganda
- 2009 Three Paradigms of Global Health  
French School of Public Health (EHESP), Paris, France
- 2010 Poverty Trap Formed by Feedback Between Economics and the Ecology of Infectious Diseases  
French School of Public Health (EHESP), Paris, France
- 2011 Economic Impacts of Community Based Integrated Health Care in Rural Rwanda  
French School of Public Health (EHESP), Paris, France
- 2011 Disease-Driven Poverty Traps and the Ecology of Economic Development  
French School of Public Health (EHESP), Paris, France
- 2012 How Health System Strengthening Breaks Cycles of Poverty and Disease  
Partners in Health, Rwinkwavu, Rwanda
- 2012 Disease-Driven Poverty Traps and the Ecology of Economic Development  
French School of Public Health (EHESP), Paris, France
- 2012 Poverty Traps Formed by the Ecology of Infectious Diseases  
Abdus Salam International Center for Theoretical Physics, Nelson Mandela Institute of Science and Technology, Arusha, Tanzania
- 2012 Disease Ecology and the Latitudinal Gradient in Income  
Abdus Salam International Center for Theoretical Physics, Nelson Mandela Institute of Science and Technology, Arusha, Tanzania
- 2012 Health and the Ecology of Economic Development  
Centre ValBio, Ranomafana, Madagascar
- 2012 Disease Ecology and Poverty Traps  
Institute of Regional Statistics, Pasteur Institute, Yaounde, Cameroon
- 2013 Poverty Trap formed by the Ecology of Infectious Diseases  
The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy

- 2013 Disease Ecology, Biodiversity, and the Latitudinal Gradient in Income  
The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
- 2013 Integrating Disease Ecology and Public Health  
Workshop on Infectious Diseases  
Centre ValBio, Ranomafana, Madagascar
- 2014 Ecology of Poverty and Disease  
Workshop on Infectious Diseases  
Institut Pasteur Madagascar
- 2014 Integrating Ecology and Economics in Economic Development  
Workshop on Ecology of Poverty  
Universite Paris 1 Pantheon-Sorbonne
- 2015 Integrating Ecology and Economics in Economic Development  
Workshop on Ecology of Poverty  
Aix-Marseille School of Economics
- 2015 Ecology of Poverty Traps in Coupled Human-Natural Systems  
Centre ValBio at Stony Brook University, Ranomafana, Madagascar
- 2016 Advancing a Science for Sustaining Health: A New Platform in Madagascar  
Centre ValBio at Stony Brook University, Ranomafana, Madagascar
- 2016 PIVOT: Strengthening Systems of Healthcare and Research To Save Lives and Break  
Cycles of Poverty and Disease  
Workshop on Ecological and Epidemiological Modeling in Madagascar  
Centre Valbio at Stony Brook University, Ranomafana, Madagascar
- 2017 PIVOT: A Model Health District in Madagascar  
PIVOT, Ranomafana, Madagascar
- 2017 Ecology of Poverty, Disease, and Health Care Delivery: A Model District in Madagascar  
“Living On the Precipice: Interdisciplinary Conference on Resilience in Complex Natural  
and Human Systems”, University of Waterloo, Ontario Canada

## **Report of Education of Patients and Service to the Community**

### **Activities**

- 2011 Advised the Maasai Wilderness Conservation Trust on Healthcare Agenda. Coauthor (with Michael Rich).
- 2013 I co-founded and am the Co-CEO of a 501(c)3 health care and research organization called PIVOT. With 200 staff in Madagascar, PIVOT aims to deliver quality care for underserved populations, create impact-driven health systems change, and innovate science to advance health as a human right. In partnership with the Madagascar government, PIVOT has treated over 80,000 patients, decreasing under-five mortality by 20% and neonatal



mortality by 35% in the first two years of operations.

## **Report of Scholarship**

### **Peer reviewed publications in print or other media**

#### Research investigations

1. **Bonds, M.H.** and J. Pompe. 2003. "Calculating wetland mitigation banking credits; adjusting for function and location," *Natural Resources Journal* 43(4): 961-977.
2. **Bonds, M.H.** and J. Pompe. 2005. "Improving institutional incentives for public land management; an econometric analysis of school trust land leases," *Journal of Institutional Economics* 1(2): 193-215.
3. **Bonds, M.H.**, D.C. Keenan, Leidner, A., and P. Rohani. 2005. "Higher disease prevalence can induce greater sociality; a game theoretic coevolutionary model," *Evolution* 59(9): 1859-1866.
4. **Bonds, M.H.** 2006. "Host life-history strategy explains pathogen-induced sterility," *The American Naturalist* 168: 433-444
5. **Bonds, M.H.** and D.R. Hughes. 2007. "On the productivity of public forests: a stochastic frontier analysis of school trust timber production," *Canadian Journal of Agricultural Economics* 55: 171-183.
6. **Bonds, M.H.** and J.J. Pompe. 2008. "Public land management and institutional reform: Evidence from Mississippi's School Trust Land history," *Southern Business and Economics Journal* 2:1-18.
7. **Bonds, M.H.**, and P. Rohani. 2010. "Herd immunity acquired indirectly from interactions between the ecology of infectious diseases, demography, and economics," *Journal of the Royal Society Interface*, 7:541-547.
8. **Bonds, M.H.**, D.C. Keenan, P. Rohani, and J. D. Sachs. 2010. "Poverty trap formed by the ecology of infectious diseases," *Proceedings of the Royal Society of London, Series B*, 277:1185-1192.
9. Plucinski\*, M., Ngonghala\*, C.N., and **M.H. Bonds\***, 2011. "Health safety nets break cycles of poverty and disease: a stochastic ecological model." *Journal of the Royal Society Interface* 8:1796-1803.
10. Dhillon, R., **Bonds, M.H.**, Fraden, M., Ndahiro, D., Josh Ruxin. 2012. "The impact of removing financial barriers on utilization of a primary care facility in Rwanda" *Global Public Health*, 7:71-86.
11. **Bonds, M.H.**, Dobson, A. F. and D.C. Keenan. 2012. "Disease ecology, biodiversity and the latitudinal gradient in income," *PLOS Biology* 10: e1001456. (F1000) Reprinted in the Tenth Anniversary *PLOS Biology* Collection, eds Robert R.G. and Alfred, J. 2013 11(10): e1001688.
12. Plucinski, M., Ngonghala, C.N., Getz, W. and **M.H. Bonds**, 2013. "Clusters of poverty and disease emerge from feedbacks on an epidemiological network," *Journal of the Royal Society Interface*, 10:20120656.
13. Golden, C.D. **Bonds, M.H.**, Brashares, J.S., Rasolofoniaina, B.J.R., and C. Kremen, 2014. "An economic valuation of the subsistence harvest of wildlife in Madagascar," *Conservation Biology*, 28:234-243.
14. Ngonghala\*, C.N., Plucinski, M., Murray, M.B., Farmer, P., Barrett, C., Keenan, D.C. and **M.H. Bonds\***, 2014. "Poverty, disease, and the ecology of complex systems," *PLOS Biology*, 12:e1001827.
15. Ivers, L C., Teng, J E., Jerome, J G., **Bonds, M.H.**, Freedberg, K. A., Franke, M. 2014. "A randomized trial comparing ready-to-use-supplementary food and corn-soy-blend as food rations

- for HIV-infected adults on antiretroviral therapy in rural Haiti” *Clinical Infectious Diseases*, 59:1176 doi: 10.1093/cid/ciu028.
16. Binagwaho, A. et al. 2014. “Rwanda twenty years on: investing in life” *Lancet*. 384:371-375. doi:10.1016/S0140-6736(14)60574-2.
  17. Rist CL, Ngonghala CN, Garchitorena AS, Gillespie TR, **Bonds MH**. 2015 “The burden of livestock diseases on the poor” *Trends in Parasitology*. 31:527-530.
  18. Garchitorena, A., Ngonghala, C.N., Guegan J-F, Texier, G., Bellanger, M. **Bonds, M.H.\*** Roche, B.\* 2015. “Economic inequality caused from feedbacks between poverty and the emergence of a rare neglected tropical disease: the case of Buruli Ulcer,” *Proc Roy Soc B* 282:20151426.
  19. Rist CL, Ngonghala CN, Garchitorena AS, Naharimahefa A, Brook C, Miller AM, Ramananjato RH, Rabeza RV, Randrianarivelosia M, Wright PC, Gillespie TR, **Bonds MH**. 2015 “Modeling the Economic Burden of Livestock Disease in the Ifanadiana District of Madagascar” *One Health*, 1:60-65.
  20. Garchitorena, A., Ngonghala, C.N., Texier, G., Landier, J., Eyangoh, S., **Bonds, M.H.**, Guegan J-F., Roche, B. 2015 “Modeling environmental and water bug transmission dynamics of *Mycobacterium ulcerans* in Buruli ulcer endemic regions.” *Scientific Reports*, 5:18055.
  21. Odone, A., Calderon, R. Becerra, MC Zhang, Z., Contreras, CC, **Bonds. MH**. Yataco, R., Galea, J. Lecca, L.<sup>2</sup> Murray, M.M. 2016. “Acquired and transmitted drug resistant tuberculosis: the role of social determinants,” *PLoS ONE* 11(1), e0146642.
  22. Garchitorena, A. et al 2016 “Disease Ecology, Health and Environment: a framework to account for ecological and socio-economic feedbacks in the control of Neglected Tropical Diseases,” *Phil Trans Roy Soc. B*, 372 (1722), 20160128.
  23. Ngonghala, C.N., De Leo, G., Pascual, M., Keenan, D.C., Dobson, A. and **M.H. Bonds**, 2017. “General ecological models for subsistence, health, and poverty,” *Nature Ecology & Evolution*, 1: 1153-1159.
  24. **Bonds, M.**, Garchitorena, A., Cordier, L., Miller, A. C., McCarty, M., Andriamihaja, B., ... & Gillespie, T. 2017. Advancing A Science For Sustaining Health: Establishing A Model Health District in Madagascar. *bioRxiv*, 141549.
  25. Brummitt, C. Huremovic, K., Pin, P. **Bonds, MH**, and Vega Redondo, 2017 “Contagious Disruptions and Complexity Traps in Economic Development,” *arXiv preprint arXiv:1707.05914*.
  26. Brummitt, C. Huremovic, K., Pin, P. **Bonds, MH**, and Vega Redondo, 2017 “Contagious Disruptions and Complexity Traps in Economic Development,” *Nature Human Behaviour*, doi:10.1038/s41562-017-0190-6.
  27. Miller AC, Ramananjato RH, Garchitorena, A. Rabeza VR, Gikic D, Cripps A, Cordier L, Rahaniraka HT, Randriamanambintsoa, M, Alexandre JR, Hall L<sup>2</sup>, , Murray M<sup>1</sup>, Razanavololo S, Rich MR, **Bonds MH** 2016. “Evaluating a Health System Strengthening program in rural Madagascar: Baseline Population Health Conditions in Ifanadiana District, 2014,” *Global Health Action*, 1329961.
  28. Garchitorena A, Miller AC, Cordier L, Ramananjato RH, Rafaralahy VR, Murray MB, Cripps A, Hall L, Farmer PE, Rich ML, Velo OA, Rabemampionona A, Rakotozafy G, Randriantsimaniry D, Gikic D, **Bonds MH**, 2016. “In Madagascar, Use of Health Care Services Increased When Fees Were Removed: Lessons for Universal Health Coverage,” *Health Affairs* 36 (8), 1443-1451.
  29. Thomson, D. et al, 2017, "Catching up to a fast-moving target: Evaluation of a health system strengthening intervention in rural Rwanda 2005-2010 using data from repeated cross-sectional surveys," *in review*.
  30. Bonds MH, Ouenzar MA, Garchitorena A, Cordier, L, McCarty, MG, Rich RL, Andriamihaja, B. Haruna, J., Farmer, P. 2017, "Madagascar can build stronger health systems to fight plague and prevent the next epidemic," *in review*.

31. McCuskee, S. et al. 2017. "Child malnutrition in Ifanadiana district, Madagascar: associated factors, timing of growth faltering, and rationale for a health system strengthening approach," *in review*.
32. Blanka, T., Demakovsky, L., Packiam, H., Mordecai, E., Rodriguez, A., Bonds, MH, Brindley, M., Murdock, C. 2017. "Estimating the effects of variation in viremia on mosquito susceptibility, infectiousness, and R0 of Zika in Aedes aegypti," *in review*.
33. Giordano, R. et al, 2017, "High Rates of Shigella-Associated Antibiotic Resistance in Rural, Forested Madagascar," *in review*.

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### **Book chapters and other peer-reviewed publications**

1. **Bonds, M.H.** 2008. "Notes from the Millennium Villages Project, Rwanda: Breaking the disease-driven poverty trap," *Consilience: The Journal of Sustainable Development* 1: 98-111.
2. **Bonds, MH**, Garchitorena, A., Farmer, PE, Murray, MB, "Ecology of poverty, disease, and health care delivery: Lessons for Planetary Health," in Ecology and Evolution for the Control of Infectious Diseases in Low Income Countries: Broadening the Scope of Public Health eds Roche, Broutin, Guegan. *Oxford University Press*.
3. Garchitorena, A, **Bonds, MH.**, Ngonghala, Guegan, JF, Roche, B. "Interactions between ecological and socio-economic drivers of Buruli ulcer burden in sub-Saharan Africa: Opportunities for improved control," in Ecology and Evolution for the Control of Infectious Diseases in Low Income Countries: Broadening the Scope of Public Health eds Roche, Broutin, Guegan. *Oxford University Press*.

### **Published abstracts and non-peer reviewed scientific or medical publications/materials in print or other media**

1. **Bonds, M.H.** and M.A. Nachbahr. 2005. Review of End of Poverty; Economic Possibilities for Our Time, by Jeffrey Sachs, *Journal of the American Medical Association (JAMA)* 294: 1558.
2. **Bonds, M.H.** Report on Economic Core Metrics. 2010. African Health Initiative, PHIT Data Collaborative Doris Duke Charitable Foundation.
3. **Bonds, MH.** and Rich, M.L. 2012 Madagascar Health System Needs Assessment, Trip Report
4. **Bonds, M.H.**, Gikic, D., Cordier, L.F., Garchitorena, A., Hall, L., McCarty, M.G., Ramananjato, R., Rafaralahy, V., Andriambolamanana, H., Rakotonirina, L. and Raveloson, T., 2016. Advancing a science of sustaining health in Madagascar. *Annals of Global Health*, 82(3), pp.378-379.
5. De Leo, G.A., Sokolow, S.H., Garchitorena, A., Ngonghala, C.N., Lund, A., Barry, M., Burke, K.S., Mordecai, E.A., Daily, G.C., Jones, J.H. and Andrews, J.R.,... **Bonds, M.H.** 2017. A novel framework to account for ecological drivers in the control and elimination of environmentally transmitted disease: a modelling study. *The Lancet*, 389, p.S5.
6. Garchitorena, A., **Bonds, M.H.**, Ngonghala, C.N., Guégan, J.F. and Roche, B., 2017. Modelling ecological and socioeconomic feedbacks of Buruli ulcer in sub-Saharan Africa: results from a field study in Cameroon. *The Lancet*, 389, p.S9.

### **Theses**

Bonds, M.H. 2006. "Sociality, Sterility, and Poverty; Host-Pathogen Coevolution, with Implications for Human Ecology," Ph.D. Dissertation (Ecology), University of Georgia, Athens, GA.

Bonds, M.H. 2003. "An Economic Analysis of the Mississippi School [Land] Trust Program," Ph.D. Dissertation (Economics), University of Georgia, Athens, GA.