CURRICULUM VITAE

Andreas Handel, Ph.D.
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Academic History

Present rank: Assistant Professor
Tenure status: Tenure-track
Graduate faculty status: Active
Academic Appointment: 9 month

- Current (2012/13 – present): 50% Instruction, 45% Research, 5% Service
- Previous (2009/2010 – 2011/2012): 25% Instruction, 75% Research

EDUCATION

- Ph.D. in Physics with minor in Mathematics, Center for Nonlinear Sciences and School of Physics, Georgia Institute of Technology. Thesis Topic: "Limits of localized control in extended nonlinear systems," Advisor: Dr. Roman Grigoriev (2004)
- B.S. (German equivalent) in Physics, Department of Physics, University of Stuttgart, Germany (1999)

POSITIONS

- Assistant Professor, Department of Epidemiology and Biostatistics, College of Public Health, University of Georgia (2009 – present)
- Faculty, Institute of Bioinformatics, University of Georgia (2009 – present)
- Member, Faculty of Infectious Diseases, University of Georgia (2009 – present)
- Adjunct Assistant Professor, Department of Infectious Diseases, College of Veterinary Medicine, University of Georgia (2010 – present)
- Adjunct Assistant Professor, Department of Epidemiology, Rollins School of Public Health, Emory University (2011 – present)
- Postdoctoral Fellow, Department of Biology, Emory University (2004 – 2008)
- Graduate Research Assistant, School of Physics, Georgia Institute of Technology (2000 – 2004)

Teaching Activity

CLASSES TAUGHT AT THE UNIVERSITY OF GEORGIA

Academic Year 2013/2014 (50% teaching appt., 12 teaching credits required, 11.4 produced*)

* Teaching credits are computed per UGA rules as 1 credit per regular class and 20 credits = 1 regular credit for research/mentoring courses. Courses marked with ^ do not count toward teaching load credits.
Were available and applicable, ratings for each course are given.

Summer 2014:

- EPID 8560 Analysis of Infectious Disease Data, 3 credit course, 10 students, ^
- PBHL 7560 (internship), 6 total credit hours, 1 student

Spring 2014:

- EPID 7010 Introduction to Epidemiology, 3 credit course, 14 students, 4.3/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 37 students, 4.54/5

Fall 2013:

- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 30 students, 4.21/5
- EPID/ECOL/IDIS 8515 Modeling Infectious Diseases, 4 credit course, 7 students, 4.43/5
- PBHL 7800 (MPH capstone), 3 total credit hours, 1 student
- BINF 7300 (masters research), 4 total credit hours, 1 student
- BINF 9000 (doctoral research), 5 total credit hours, 1 student
- BINF 9300 (doctoral research), 30 total credit hours, 2 students

Academic Year 2012/2013 (50% teaching appt., 12 credits required, 17.9 produced)

Summer 2013:

- BINF 9300 (doctoral research), 36 total credit hours, 2 students
- PBHL 7560 (internship), 18 total credit hours, 3 students
- EPID 7005 (TA), 3 credit hours, 1 student

Spring 2013:

- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 19 students, 4.78/5
- PBHL 7560 (internship), 24 total credit hours, 4 students
- PBHL 7800 (MPH capstone), 9 total credit hours, 3 students
- BINF 9300 (doctoral research), 29 total credit hours, 2 students
- BINF 9000 (doctoral research), 5 total credit hours, 1 students
- BINF 7300 (masters research), 4 total credit hours, 1 student
- EPID 7005 (TA), 9 total credit hours, 1 student
- FYOS 1001 Computer Simulations of Infectious Diseases, 1 credit course, 12 students ^

Fall 2012:

- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 34 students, 4.51/5
- EPID 7010 Introduction to Epidemiology, 3 credit course, 47 students, 3.6/5
- EPID/ECOL/IDIS 8515 Modeling Infectious Diseases, 4 credit course, 13 students, 3.73/5
- BINF 9300 (doctoral research), 31 total credit hours, 2 students
- BINF 7300 (masters research), 4 total credit hours, 1 student

- PBHL 7560 (internship), 6 total credit hours, 1 student

Academic Year 2011/2012 (25% teaching appt., 6 credits required, 16.4 produced)

[+] While I was instructor of record for this course, most lectures were delivered by 2 of our DrPH students to allow them to gain teaching experience. I was responsible for everything else.

Summer 2012:

- BINF 9000 (doctoral research), 39 total credit hours, 3 students
- BINF 9300 (doctoral research), 9 total credit hours, 1 student

Spring 2012:

- EPID 4070 Fundamentals of Epidemiology, 3 credit course, 61 students [+]
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 28 students, 4.33/5
- EPID 8910 (directed study), 3 total credit hours, 1 student
- BINF 9000 (doctoral research), 51 total credit hours, 3 students

Fall 2011:

- EPID/ECOL/IDIS 8515 Modeling Infectious Diseases, 4 credit course, 11 students, 4.34/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 33 students, 4.49/5
- FYOS 1001 Computer Simulations of Infectious Diseases, 1 credit course, 10 students ^
- PBHL 7800 (MPH capstone), 4 total credit hours, 1 student
- BINF 9000 (doctoral research), 42 total credit hours, 4 students

Academic Year 2010/2011 (25% teaching appt., 6 credits required, 14.3 produced)

Summer 2011:

- BINF 9000 (doctoral research), 47 total credit hours, 4 students

Spring 2011:

- EPID 4070 Fundamentals of Epidemiology, 3 credit course, 64 students, 4.14/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 39 students, 4.28/5
- EPID 3900 Special Topics in Epidemiology (study abroad 12/15/10 – 1/5/11), 3 credits, 32 students^
- EPID 8900 Special Topics in Epidemiology (study abroad 12/15/10 – 1/5/11), 3 credits, 6 students ^
- PBHL 7800 (MPH capstone), 3 total credit hours, 1 student
- PBHL 7560 (internship), 12 total credit hours, 2 students
- BINF 9000 (doctoral research), 22 total credit hours, 3 students

Fall 2010:

- EPID/ECOL/IDIS 8515 Modeling Infectious Diseases, 4 credit course, 9 students, 4.75/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 29 students, 4.49/5
- BINF 9000 (doctoral research), 22 total credit hours, 3 students

Academic Year 2009/2010 (25% teaching appt., 6 credits required, 10.7 produced)

Summer 2010:

- BINF 9000 (doctoral research), 40 total credit hours, 4 students
- PBHL 7560 (internship), 12 total credit hours, 2 students

Spring 2010:

- EPID 4070 Fundamentals of Epidemiology, 3 credit course, 102 students, 4.00/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 8 students, 3.87/5
- EPID 7005 (graduate student seminar), 1 course credit hour, 3 total credits, 1 student
- BINF 7000 (masters research), 5 total credits, 1 student
- BINF 9300 (doctoral research), 7 total credits, 1 student

Fall 2009:

- EPID/ECOL/IDIS 8515 Modeling Infectious Diseases, 4 credits, co-taught with Dr. Park, 7 students, 4.58/5
- EPID 7100 Current Topics in Epidemiology, 1 credit seminar series, 18 students, 4.48/5
- BINF 7000 (masters research), 5 total credit hours, 1 student
- BINF 9000 (doctoral research), 2 total credit hours, 1 student

CLASSES TAUGHT AT OTHER INSTITUTIONS

- Infectious Disease Dynamics (EPI 590R), 2 credit short-term, intensive course, January 2013, Emory University Rollins School of Public Health, 33 students
- An Introduction to Infectious Disease Modeling (EPI 590R), 2 credit short-term, intensive course, January 2012, Emory University Rollins School of Public Health, 21 students

WORKSHOPS TAUGHT

- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 6th Summer Institute in Statistics and Modeling in Infectious Diseases, 7/9 – 7/11/2014, University of Washington, 28 students
- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 5th Summer Institute in Statistics and Modeling in Infectious Diseases, 7/10 – 7/12/2013, University of Washington, 21 students
- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 4th Summer Institute in Statistics and Modeling in Infectious Diseases, 7/9 – 7/11/2012, University of Washington, 27 students
- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 3rd Summer Institute in Statistics and Modeling in Infectious Diseases, 6/13 – 6/15/2011, University of Washington, 31 students
- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 2nd Summer Institute in Statistics and Modeling in Infectious Diseases, 6/16 – 6/18/2010, University of Washington, 18 students
- Workshop on "Infectious Diseases, Immunology and Within-Host Models,", 1st Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID), 6/14-6/16/2009, University of Washington, 7 students

GUEST LECTURES

- "Introduction to the Likelihood" for EPID 8010 (8/2013)
- "Introduction to within-host Infectious Disease modeling" for ECOL/BIOL 4150/6150 (3 times, spring 2010-2012)
- "Descriptive Epidemiology" for EPID 7010 (1/2012)
- "Introduction to Infectious Disease Modeling" for FRES 1010 (2/2010)
- "Introduction to Infectious Disease Modeling" for EPID 8500 (10/2009)

Scholarly Activity

Areas in which research is done

My research focuses on modeling and analysis of infectious diseases at the individual and population levels. My main areas of study are currently study influenza, tuberculosis and norovirus. I am interested in obtaining a better basic understanding of the dynamic processes that occur during an individual infection as well as during spread of an infectious disease in a population. The ultimate goal is to use these new insights to design better intervention and control strategies against infectious diseases, both for individual patients and on the population level.

Publications

PEER-REVIEWED JOURNAL ARTICLES
(30 published, 4 in review. * indicates a student or postdoc mentee)

- Nicola Bird, Aeron Hurt, Christine Oshansky, Oh Ding, Patrick Reading, Matthew Olson, Yilun Sun, Li Tang, **Andreas Handel**, Stephen Turner, Paul Thomas, Katherine Kedzierska. Oseltamivir prophylaxis reduces inflammation-induced morbidity while facilitates establishment of cross-strain protective CD8+ T cell memory to influenza viruses. (Under review at Nature Medicine).
- Theresa Devasia*, Benjamin Lopman, Juan Leon, **Andreas Handel.** Association of host, agent and environment characteristics and the duration of incubation and symptomatic periods of norovirus gastroenteritis. (Under review at Epidemiology & Infection)
- Juliet Sekandi, Justin List, Nibiao Zheng*, **Andreas Handel**, Christopher Whalen. Undetected Seronegative Cases May be 'Hidden' Drivers of the Tuberculosis Epidemic in an Urban African Setting with High HIV Prevalence. (Under review at International Epidemiology)
- Nibiao Zheng*, Christopher Whalen, **Andreas Handel.** Modeling the potential impact of host population survival on the evolution of M. tuberculosis latency. (Under review at PLoS One).

1. **Andreas Handel**, Camille Barbenchon, Justin Brown, David Stallknecht, Pejman Rohani (2014). Trade-offs between and within scales: Environmental persistence and in-host fitness of avian influenza viruses. Proc Royal Soc B 281, 20133051.
2. Thi H. O. Nguyen, Louise C. Rowntree, Daniel G. Pellicci, Nicola L. Bird, **Andreas Handel**, Lars Kjer-Nielsen, Katherine Kedzierska, Tom C. Kotsimbos and Nicole A. Mifsud (2014). Recognition of distinct cross-reactive virus-specific CD8+ T cells reveals a unique TCR signature in a clinical setting. Journal of Immunology, doi:10.4049/jimmunol.1303147.
3. Yan Li***, Andreas Handel** (2014). Modeling inoculum dose dependent patterns of acute virus infections. Journal of Theoretical Biology 347, 63–73
4. Tania Cukalac, Jesseka Chadderton, **Andreas Handel**, Peter Doherty, Stephen Turner, Paul Thomas, Nicole La Gruta (2014). Reproducible selection of high avidity CD8+ T-cell clones following secondary acute virus infection. Proceedings of the National Academy of Sciences 111 (4), 1485–1490
5. **Andreas Handel,** Victoria Akin***,** Sergei S. Pilyugin, Veronika Zarnitsyna, Rustom Antia (2014). How sticky should a virus be? The impact of virus binding and release on transmission fitness using influenza as an example. Journal of the Royal Society Interface 11: 20131083.
6. **Andreas Handel,** Justin Brown, David Stallknecht, Pejman Rohani (2013). A multi-scale analysis of influenza A virus fitness trade-offs due to temperature-dependent virus persistence. PLoS Computational Biology 9(3): e1002989
7. Paul Thomas, **Andreas Handel**, Peter Doherty, Nicole La Gruta (2013). Ecological analysis of antigen-specific CTL repertoires defines the relationship between naive and immune T-cell populations. Proceedings of the National Academy of Sciences, PMID: 23319654
8. Mark Jackwood, David Hall**, Andreas Handel** (2012). Molecular evolution and emergence of avian gammacoronaviruses. Infection, Genetics and Evolution 12, 1305–1311
9. Rishi Desai, Christal Hembree*, **Andreas Handel**, et al. (2012). Severe outcomes are associated with

genogroup 2 genotype 4 norovirus outbreaks: A systematic literature review. Clinical Infectious Diseases, 10.1093/cid/cis372

10. Isaac Fung*, Rustom Antia, **Andreas Handel** (2012). How to minimize the attack rate during multiple influenza outbreaks in a heterogeneous population. PLoS ONE 7(6): e36573
11. Catherine Beauchemin and **Andreas Handel** (2011). A review of mathematical models of influenza A infections within a host or cell culture: Lessons learned and challenges ahead. BMC Public Health 11:S7
12. Jessica Moffat, **Andreas Handel**, Peter Doherty, Stephen Turner, Paul Thomas, Nicole La Gruta (2010). Influenza Epitope-Specific CD8+ T Cell Avidity, but Not Cytokine Polyfunctionality, Can Be Determined by TCRβ Clonotype. Journal of Immunology 185, 6850-6856
13. **Andreas Handel**, Ira M. Longini Jr., Rustom Antia (2010). Towards a quantitative understanding of the within-host dynamics of influenza A infections. Journal of the Royal Society Interface 7, 35-47. PMID: 19474085.
14. **Andreas Handel**, Ira M. Longini Jr., Rustom Antia (2009). Intervention strategies for an influenza pandemic taking into account secondary bacterial infections. Epidemics 1, 185-195
15. **Andreas Handel** and Daniel E. Rozen (2009). The impact of population size on the evolution of asexual microbes on smooth versus rugged fitness landscapes. BMC Evolutionary Biology 9:236
16. **Andreas Handel**, Andrew Yates, Sergei S. Pilyugin, Rustom Antia (2009). Sharing the burden: Antigen transport and firebreaks in immune responses. Journal of the Royal Society Interface 6, 447-454. PMCID: PMC2659692.
17. **Andreas Handel**, Elisa Margolis, Bruce R Levin (2009). Exploring the role of the immune response in preventing antibiotic resistance. Journal of Theoretical Biology 256 (4), 655-662. PMID: 19056402.
18. **Andreas Handel**, Ira M. Longini Jr., Rustom Antia (2009). Antiviral resistance and the control of pandemic influenza: The roles of stochasticity, evolution and model details. Journal of Theoretical Biology 256 (1), 117-125. PMCID: PMC2624577.
19. **Andreas Handel** and Matthew Bennett (2008). Surviving the bottleneck: Transmission mutants and the evolution of microbial populations. Genetics 180 (4), 2193–2200. PMCID: PMC2600951.
20. **Andreas Handel** and Rustom Antia (2008). A Simple Mathematical Model Helps To Explain the Immunodominance of CD8 T Cells in Influenza A Virus Infections. Journal of Virology 82 (16), 7768-7772. PMCID: PMC2519595.
21. Daniel E. Rozen, Michelle G. J. L. Habets, **Andreas Handel**, J. Arjan G. M. de Visser (2008). Heterogeneous Adaptive Trajectories of Small Populations on Complex Fitness Landscapes. PLoS One 3 (3): e1715
22. **Andreas Handel**, Andrew Yates, Sergei S. Pilyugin, Rustom Antia (2007). Gap junction-mediated antigen transport in immune responses. Trends in Immunology 28, No. 11, 463-466. PMID: 17951108
23. **Andreas Handel**, Ira M. Longini Jr., Rustom Antia (2007). Neuraminidase Inhibitor Resistance in Influenza: Assessing the Danger of its Generation and Spread. PLoS Computational Biology 3 (12): e240. PMCID: PMC2134965.
24. **Andreas Handel**, Ira M. Longini Jr., Rustom Antia (2007). What is the best control strategy for multiple infectious disease outbreaks? Proceedings of the Royal Society B 274, 833-837. PMCID: PMC2093965
25. Cecile Viboud, Theresa Tam, Douglas Fleming, **Andreas Handel**, Mark A. Miller, Lone Simonsen (2006). Transmissibility and mortality impact of epidemic and pandemic influenza, with emphasis on the unusually deadly 1951 epidemic. Vaccine 24, 6701. PMID: 16806596.
26. **Andreas Handel**, Roland R. Regoes, Rustom Antia (2006). The Role of Compensatory Mutations in the Emergence of Drug Resistance. PLoS Computational Biology 2(10): e137. PMCID: PMC1599768.
27. **Andreas Handel** and Roman O. Grigoriev (2006). Transient dynamics and nonlinear stability of spatially extended systems. Physical Review E 74, 036302
28. **Andreas Handel** and Roman O. Grigoriev (2005). Pattern selection and control via localized feedback. Physical Review E 72, 066208
29. Roman O. Grigoriev and **Andreas Handel** (2002). Spectral theory for the failure of linear control in a nonlinear stochastic system. Physical Review E 66, 065301(R)
30. Roman O. Grigoriev and **Andreas Handel** (2002). Non-normality and the localized control of extended systems. Physical Review E 66, 067201

BOOK CHAPTERS

- Roman O. Grigoriev and **Andreas Handel** (2007). Localized Control of Spatiotemporal Chaos. Handbook of Chaos Control, Chapter 8, Wiley-VCH

OTHER PUBLICATIONS

- **Andreas Handel** (2004). Limits of localized control in extended nonlinear systems. Ph. D. Thesis, School of Physics, Georgia Institute of Technology

Creative contributions other than formal publications

ORAL PRESENTATIONS (* indicates invited presentations)

- "A TB Model for post 2015 WHO Interventions in South Africa", 6/2/2014, Gates Foundation, Seattle, WA*
- "Flu in Ducks and Water: A Multiscale Modeling Study", 4/9/2014, Mathematical Biosciences Institute, Columbus, Ohio*
- "Introduction to Mechanistic Modeling", 2/25/2014, CDC, Atlanta, GA*
- "Modeling the role of inoculum dose on infection dynamics", 2/11/2014, Georgia Tech, Atlanta, GA*
- "Inference for infectious disease modeling", 2/7/2014, CDC, Atlanta, GA*
- "Flu in Ducks and Water: A Multiscale Modeling Study", 11/14/2013, OneHealth Talk, UGA, Athens, GA*
- "A mathematical model shows that prolonged latency can improve population-level survival of Mycobacterium tuberculosis", 10/11/2013, USC Beaufort, Beaufort, SC*
- "How to further improve our influenza models - some thoughts" (keynote address), 7/15/2013, Frankfurt, Germany*
- "How Sticky should a virus be? The impact of binding and detachment on virus fitness using influenza as an example", 6/21/2013, St. Jude, Memphis, TN*
- "A multi-scale analysis of influenza A virus fitness trade-offs due to temperature-dependent virus persistence", 4/3/2013, Ecology Department, UGA, Athens, GA
- "A multi-scale analysis of influenza A virus fitness trade-offs due to temperature-dependent virus persistence", 3/11/2013, USC Beaufort, Beaufort, SC*
- "Parallel Computation using the R software platform", UGA, 5/2/2012
- "Modeling the impact of drug-based intervention strategies for pandemic influenza", CDC, 2/8/2012, Atlanta, GA*
- "Introduction to Infectious Disease Modeling", 10/27/2011, Emory University, Atlanta, GA*
- "Model fitting and model selection", Evolution of Infectious Diseases: Integrating Empirical Data and Modeling Approaches, NESCent Catalysis Meeting, 3/23/2011, Raleigh, NC*
- "Influenza & Immunity", RAPIDD workshop on Generation and Maintenance of Immune Memory, 3/8/2011, Seattle, WA*
- "Mathematical and computational modeling of infectious disease dynamics", 10/ 20/2010, Institute of Bioinformatics, University of Georgia, Athens, GA*
- "How sticky should a virus be? The impact of attachment and detachment rates on virus fitness using influenza as example", 8/30/2010, Viral Dynamics Workshop, Santa Fe, NM*
- "How sticky should a virus be? The impact of attachment and detachment rates on virus fitness using influenza as example", 7/20/2010, Fields Institute Workshop on the Mathematics of Drug Resistance in Infectious Diseases, Toronto, Canada*
- "Modeling influenza infection in vivo", 1/13/2010, Los Alamos National Laboratory, Los Alamos, NM*
- "How sticky should a virus be? Optimal Infection Strategies and the Balance Between Hemagglutinin and Neuraminidase for Influenza A Virus" 10/12/2009, Department of Infectious Diseases, University of Georgia, GA*
- "Modeling Influenza infection in vivo", 7/28/2009, Conference on Immunobiology of Influenza Virus

Infection, Athens, GA*

- "Within-host ecology: Virus spread, gap-junctions and firebreaks", 3/6/2009, Ecology of Infectious Diseases Seminar Series, University of Georgia, Athens, GA*
- "Mathematical Modeling of Immunodominance in influenza infections", 2/13/2009, Institute of Bioinformatics, University of Georgia, Athens, GA*
- "Mathematical Modeling of Infections: CD8 T Cell Dynamics During Influenza Infections as an Example", 11/11/2008, Department of Cell Biology, University of Georgia, Athens, GA*
- "Within-host dynamics of Influenza infections: When details matter", 6th Annual Conference on Ecology and Evolution of Infectious Diseases, 6/05/2008, Fort Collins, CO*
- "The dynamics of drug resistance emergence", 10/05/2007, Center for Interdisciplinary Applied Mathematics, University of North Carolina, Chapel Hill, NC*
- "Influenza resistant to neuraminidase inhibitors: the danger of its generation and spread", Immunobiology of Influenza Virus Infection: Approaches for an Emerging Zoonotic Disease, 7/31/2007, Athens, GA
- "Mathematical models of drug resistance emergence", 1/24/2007, Department of Mathematics, Georgia Institute of Technology, Atlanta, GA*
- "Two stochastic strolls through pathogen land", 11/17/2006, Seminar in Population Biology and Evolutionary Ecology, Emory University, Atlanta, GA*
- "The Role of Compensatory Mutations for the Emergence of Drug Resistance", 4th Annual Conference on Ecology and Evolution of Infectious Diseases, 5/18 - 5/20/2006, State College, PA

POSTER PRESENTATIONS

- "A multi-scale analysis of influenza A virus fitness trade-offs due to temperature-dependent virus persistence", 5/21/2013, 11th Annual Conference on Ecology and Evolution of Infectious Diseases, State College, PA
- "Cooperation and competition determine CD8 T-cell immunodominance hierarchies", Swine Origin H1N1 Virus: The First Pandemic of the 21st Century, 4/18 - 4/20/2010, Atlanta, GA
- "Cooperation and competition determine CD8 T-cell immunodominance hierarchies", 1st International Workshop in Systems Approaches in Immunology, 1/10 – 1/12/2010, Santa Fe, NM
- "A simple mathematical model helps explain immunodominance of CD8 T-cells in influenza A infections", Conference on Theoretical Biology and Biomathematics, 6/22 – 6/27/2008, Barga, Italy
- "Influenza resistant to neuraminidase inhibitors: the danger of its generation and spread", Viral Paradigms: Molecules, Populations, Ecosystems and Infectious Disease, 1/14-1/16/2008, Atlanta, GA
- "Influenza resistant to neuraminidase inhibitors: the danger of its generation and spread", Conference on Immunobiology of Influenza Virus Infection: Approaches for an Emerging Zoonotic Disease, 7/29/2007 - 7/31/2007, Athens, GA

Grant Activity

GRANTS - FUNDED

- 7/2014 – 6/2019 “Research Coordination Network - Infectious Disease Evolution Across Scales“, NSF $500K, PI Graham, Princeton. My role: Network Member.
- 7/2012 – 6/2015 “REU Site - Population Biology of Infectious Diseases”. NSF, $283K, PI Drake, UGA. My role: Senior Personnel.
- 7/2012 – 7/2017 "Georgia Veterinary Scholar Summer Research program". NIH T35, $259K, PI Sanchez, UGA. My role: Mentor.
- 9/2011 – 8/2013 “Quantifying and modeling influenza viral dynamics and host responses”. NIH R56, $648K, PI Thomas, St. Jude. My role: PI on UGA sub-contract, $266K.
- 7/2011 – 6/2012 “Developing an agent-based model to study tuberculosis transmission and vaccination”. UGA Faculty Research Grant, $11K. My role: PI.
- 5/2007 – 4/2012 “Quantitative studies of CD8 T-cell dynamics”. NIH K25, $358K. My role: PI.

GRANTS - PENDING

- 7/2014 “Computational and Molecular Epidemiology Training in TB and HIV in Uganda”. NIH D43, $1.4M. My role: Co-I.
- 7/2014 “Dynamics and evolution of immune responses to influenza”. NIH U19, $8.7M. My role: PI on UGA sub-contract, $592K.

GRANTS - UNFUNDED

1. 2/2014 “Network based TB transmission model as decision tool for TB vaccine trials“. NIH R01, $2.9M. My role: PI.
2. 2/2014 “Studying the impact of inoculum dose on immune response, morbidity and mortality”, UGA Faculty Research Grant, $8K. My role: PI.
3. 11/2013 “Evolution of an RNA virus in its natural host”. NSF/NIH EEID, $1.7M, PI Jackwood, UGA. My role: Co-I.
4. 10/2013 “Mechanistic models of cooperation to study CD8 T-cell immunodominance”. NIH R03, $149K, PI.
5. 8/2013, “Improving Self-Care and Triage of Acute Respiratory Tract Infections in Adults” (PCORI, Co-I, $)
6. 7/2013 “Understanding And Controlling Influenza Dynamics, Spread, And Disease Severity” (NIH U01, Co-I, $3.9M)
7. 6/2013 “Quantifying Norovirus incubation and symptomatic periods and transmissibility” (NIH R03, PI, $148K)
8. 12/2012, “Evolution of an RNA virus in its natural host” (NIH EEID Co-I, $1.7M)
9. 11/2012, “Improving Self-Care for Acute Respiratory Tract Infections in Adults” (PCORI, Co-I, $1.4M)
10. 10/2012 “Modeling the impact of inoculum dose on pathogen and immune responses dynamics” (NIH R01, PI, $1.8M).
11. 8/2012 “Estimating the impact of ecological covariates on the transmissibility of norovirus”, (UGA-CDC, co-PI, $100K)
12. 3/2012 “Host cell responses to influenza virus infection”, (NIH R01, PI on UGA sub-contract, 5y, $2.8M, resubmission)
13. 1/2012, “Evolutionary dynamics of an RNA virus in its natural animal host”, NSF (4y, $400K, Co-I).
14. 11/2011 “The Interplay Between Animal Health And Salmonella Transmission In Poultry” (USDA, Co-I, $2.5M)
15. 10/2011 “Analysis And Modeling of Norovirus Outbreak Dynamics And Intervention Strategies” (NIH R01, PI, $1.7M)
16. 8/2011 "REU Site: Population Biology of Infectious Diseases" (NSF REU, Co-I, $495K)
17. 7/2011 “Evolutionary dynamics of an RNA virus in its natural host” (NSF, Co-I, $592K)
18. 6/2011 “Host cell responses to influenza virus infection” (NIH R01, PI on UGA sub-contract, $3.4M)
19. 2/2011 “Disentangling the mechanisms of CD8 T-cell immunodominance” (NIH R01, PI, $2.9M)

20. 11/2010 “Mathematical Modeling of Tuberculosis Vaccine Trials” (NIH R03, Co-I, $148K, resubmission).
21. 11/2010 “Quantifying and modeling influenza viral dynamics and host responses” (NIH R01, PI on UGA sub-contract, $3.3M, resubmission).
22. 11/2010 “Evolutionary dynamics of an RNA virus in its natural host” (NIH R01, Co-I, $2.5M, resubmission)
23. 8/2010 "REU Site: Population Biology of Infectious Diseases" (NSF REU, Co-I, $524K)
24. 8/2010 “Modeling transmission of Norovirus in community and healthcare outbreaks” (UGA-CDC, Co-PI, $99K)
25. 6/2010 “Modeling CD8 T-cell immunodominance after influenza A virus infections” (NIH R21, PI, $371K).
26. 3/2010 “Quantitative methods for global infectious diseases” (NIH R24, Co-I, $250K)
27. 2/2010 “Multiscale modeling of fitness trade-offs in influenza A virus dynamics” (NIH R21, PI, $297K)
28. 2/2010 “Mathematical Modeling of Tuberculosis Vaccine Trials” (NIH R03, Co-I, $148K)
29. 2/2010 “Evolutionary dynamics of an RNA virus in its natural host” (NIH R01, Co-I, $2.8M)
30. 2/2010 “Quantifying and modeling influenza viral dynamics and host responses” (NIH R01, PI on UGA sub-contract, $3.3M)
31. 12/2009 "What factors drive biogeographic patterns among Salmonella serovars and can these explain distinct patterns in human disease trends?” (NSF EEID, Co-I, $2.4M)
32. 11/2009 "Real-time surveillance and control of infectious disease outbreaks" (Gates Foundation, PI, $100K)
33. 11/2009 "Designing clinical trials for TB using agent-based mathematical models" (Gates Foundation, Co-I, $100K)
34. 8/2009 "REU Site: Population Biology of Infectious Diseases" (NSF REU, Co-I, $820K)
35. 7/2009 “Empirical and Mathematical Network Models of TB Transmission” (NIH U01, co-I, $3.2M)
36. 7/2009 “A quantitative, multi-scale study of influenza A virus infections” (Searle Foundation, UGA-internal nomination, PI, $300K)
37. 4/2009 “Computational Methods to Address Health Disparities in TB” (NIH Challenge grant, Co-I, $806K)
38. 4/2009 “Quantitative studies of CD8 T-cell dynamics” (supplement to existing NIH K25 grant, PI, $77K)
39. 3/2009 “Modeling within-host infectious disease dynamics: A multi-scale study of influenza A virus infections” (James S. McDonnell Foundation, PI, $450K)
40. 1/2009 “Spatial simulation of influenza A infection dynamics” (UGA-FID, PI, $24K)
41. 10/2008 “Quantifying the in vitro infection dynamics of influenza A viruses” (UGA-CDC, Co-PI, $80K)
42. 4/2008 “A quantitative, multi-scale study of influenza A virus dynamics” (BWF, PI, $500K)

Research supervision and mentoring

POSTDOCTORAL FELLOWS

Isaac Fung 8/2009 – 8/2011

- Research topic: Modeling control efforts during an influenza pandemic
- Currently an Assistant Professor at Georgia Southern University

MAIN GRADUATE STUDENTS (MAJOR ADVISOR)

Yan Li, Ph.D. in Bioinformatics 8/2009 – 12/2013

- Research Topic: Modeling the impact of inoculum dose on within-host virus dynamics, immune response, and disease
- Currently a bioinformatician, Center for Research Informatics, University of Chicago

Nibiao Zheng, Ph.D. in Bioinformatics 8/2009 – 12/2013

- Research Topic: Mathematical Studies of Persistence and Cost Effectiveness of Active Case Finding of Tuberculosis

Scott Russell, M.S. in Bioinformatics 8/2009 – 12/2013

- Research Topic: Modeling within-host norovirus infection dynamics

UNDERGRADUATE STUDENTS

Theresa Devasia 8/2012 – present
- Research Project: Statistical analysis of incubation and symptomatic periods of norovirus infections

Victoria Akin 5/2009 – 7/2012
- Research Project: Modeling the impact of virus binding and release on influenza fitness
- Currently in the Mathematics Ph.D. program at the University of Chicago

NON-UGA STUDENTS

Alexander Becker 5/2013 – 7/2013 (NSF REU summer program)
- Research Project: Modeling multi-drug treatment regimens for TB infections
- Currently an undergraduate student at NYU

SHORT-TERM GRADUATE STUDENTS

Stephanie Cooke, Ph.D. candidate in Bioinformatics	10/2009 - 12/2009 (rotation student)
Valerie Flint, Ph.D. candidate in Bioinformatics	10/2010 – 12/2011 (rotation student)
Zhen Yan, Ph.D. candidate in Statistics	1/2012 – 5/2012 (short-term project)
Allison Roebling, DVM student	4/2012 (Vet Med externship)
Christal Hembree, MPH student	1/2011 – 5/2011 (capstone project)

OTHER STUDENT MENTORING
- Academic mentoring of 20 Masters of Public Health (MPH) students
- Mentoring of 2 undergraduate students through UGA's honors program
- Nominated for the 2012 Graduate School Outstanding Mentoring Award

Editorship or editorial board member

- Guest Editor for Research Topic "Computational Model Development of Within-Host Respiratory Tract Infections" in Frontiers in Microbiology, 2013 - present

Public service

PROFESSIONAL AFFILIATIONS
- American Society for Microbiology

INTERNATIONAL PROGRAMS
- Study abroad Australia, taught EPID 3900/8900 (Special Topics in Epidemiology – Global Health) during winter break 2011/12 to 38 students.

MEDIA ENGAGEMENT
- Quoted in an article about controversial H5N1 influenza research, Athens Banner Herald, 7/2/2012.
- Public Health Impact TV Show on TB and modeling. Aired 1/2013.
- Prepared multimedia materials for colleague's (Dr. Whalen's) TED talk, 3/2013

OTHER SERVICE & OUTREACH ACTIVITIES
- Judge, 61st Georgia Science and Engineering Fair, 4/09, Athens, GA
- Judge, High School Science Fair, 1/2009, Centennial High School, Roswell, GA
- Judge, Intel International Science and Engineering Fair, 5/2008, Atlanta, GA

REVIEWER FOR THESE JOURNALS
- American Journal of Epidemiology, American Naturalist, Antiviral Therapy, BMC Public Health, Chaos, Ecology Letters, Journal of the Royal Society Interface, Journal of Theoretical Biology, Journal of Virology, Nature, Nonlinear Analysis: Modelling and Control, PLoS Computational Biology, PLoS Medicine, PLoS One, PLoS Pathogens, Proceedings of the Royal Society B, Risk Analysis, Science, Technology and Innovation, Theoretical Population Biology, The Lancet, Trends in Immunology, WIRE Systems Biology and Medicine
- Approximately 5-10 reviews per year

REVIEWER FOR BOOK MANUSCRIPTS
- Book proposal review for Springer Science (1/2012)
- Book proposal review for Cambridge University Press (9/2013)

REVIEWER FOR THESE GRANT ORGANIZATIONS
- Medical Research Council (MRC, United Kingdom)
- National Science Foundation (NSF)
- Biotechnology and Biological Sciences Research Council (BBSRC, United Kingdom)
- University of Georgia (internal grants)

CONFERENCE SERVICE
- Chair of session on "Computational tools and theoretical aspects", 1st Workshop on Virus Dynamics, 7/15 – 7/16/2013, Frankfurt, Germany
- Scientific Program Committee, One Health Symposium, University of Georgia, 3/21-23/2013
- Chair of session on "Modeling infectious disease " at the American Society of Microbiology Southeastern Branch Meeting "Ecology of Infectious Disease", 10/25-10/27/2012, Athens, GA
- Scientific Program Committee for Computational Immunology, Immunoinformatics, Theoretical Immunology, & Systems Immunology, 11th International Conference on Artificial Immune Systems, 8/28-8/31/2012, Taormina, Italy
- Scientific Program Committee, 2012 Spring Symposium & Workshop "Solving important biological problems through modeling", 4/2/2012, Institute of Bioinformatics, University of Georgia

Other services

SERVICE AT UGA – DEPARTMENT LEVEL
- Chair of departmental search committee to hire a new business manager, Summer 2013
- 3 departmental search committees for hires of Zhang, Ezeamama and Wagner
- Currently on search committee for joint hire with the college of engineering
- MPH Curriculum Committee, 2010 – present
- MPH Admission Committee, 2010 – present

SERVICE AT UGA – COLLEGE LEVEL
- College of Public Health DrPH Committee, Fall 2013 – present

SERVICE AT UGA – UNIVERSITY LEVEL
- UGA Graduate Council, 8/2011 – 5/2014
- UGA Graduate Council, Admission and Retention Committee, 8/2011 – 7/2012
- UGA Graduate Council, Program Review Committee, 8/2012 – 5/2014
- UGA Graduate Council, Admission and Retention Committee, ad hoc member, 8/2012 – present
- Institute of Bioinformatics, Development Committee, 8/2011 – 7/2012
- Analysis of UGA Health Center data to help plan for the 2009 H1N1 pandemic, Winter 2009
- Co-founder and core participant of the Computational Ecology & Epidemiology Study Group, UGA, 8/2009 – present
- Administrator of the webpage of the Computational Ecology and Epidemiology Study Group, UGA, 8/2009 – 8/2013
- Administrator of the Computational Ecology and Epidemiology Study Group mailing list, UGA, 8/2009 – present
- Administrator of "flulist", an email list that connects researchers interested in influenza at UGA and surrounding institutes, 8/2009 – present

OTHER ACTIVITIES
- UGA Faculty Learning Community "Globalizing the Curriculum", 8/2010 – 5/2011
- Taught Freshmen Odyssey seminar, Fall 2011, Spring 2013