

Biographical Sketch

Name: Lauren M. Childs	Title: Assistant Professor
Email: lchilds@vt.edu	Department: Mathematics
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Education/Training:

Institution/Location	Degree/Postdoc	Year(s)	Field of Study
Harvard T.H. Chan School of Public Health, Boston, MA	Postdoc/ Research Scientist	2012-2016	Applied Mathematics, Epidemiology
Georgia Tech, Atlanta, GA	Postdoc	2010-2012	Mathematics, Biology
Cornell University, Ithaca, NY	Ph.D.	2010	Applied Mathematics
Cornell University, Ithaca, NY	M.A.	2007	Applied Mathematics
Duke University, Durham, NC	B.S.	2004	Mathematics, Chemistry

Personal Statement:

My research interests involve developing and analyzing mathematical models of biological systems as well as building innovative quantitative methods informed by experimental results. The biological focus of my work is the development of host immune responses to infectious disease and the resulting feedback on pathogen dynamics and transmission at the population level. I study this from two perspectives: the acquisition of immunity to antigenically complex and varying pathogens and pathogen evolution as a response to adaptive immune control.

Selected Publications:

C. Peak, **L. M. Childs**, Y. H. Grad, C. O. Buckee, (2017) Comparing nonpharmaceutical interventions for containing emerging epidemics. *PNAS*, doi:10.1073/pnas.1616438114

<http://www.pnas.org/content/114/15/4023.full.pdf>

L. M. Childs*, F. Y. Cai*, E. G. Kakani*, S. N. Mitchell, D. Paton, P. Gabrieli, C. O. Buckee^S, F. Catteruccia^S, (2016) Disrupting Mosquito Reproduction and Parasite Development for Malaria Control. *PLoS Pathogens*, doi:10.1371/journal.ppat.1006060

<http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1006060>

W. R. Shaw, P. Marcenac, L. M. Childs, C. O. Buckee, F. Baldini, S. P. Sawadogo, R. K. Dabire, A. Diabate, F. Catteruccia, (2016) *Wolbachia* infection in natural *Anopheles* populations affect egg laying and negatively correlate with *Plasmodium* development. *Nature Communications*, 7:11772. doi:10.1038/ncomms11772

<http://www.ncbi.nlm.nih.gov/pubmed/27243367>

J.C. Blackwood* and L. M. Childs*, (2016) The role of interconnectivity in control of an Ebola epidemic. *Scientific Reports*, 6:29262. doi:10.1038/srep29262

<http://www.ncbi.nlm.nih.gov/pubmed/27383118>

L. M. Childs, E. B. Baskerville, and S. Cobey, (2015) Trade-offs in antibody repertoires to complex antigens. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 370(1676). doi:10.1098/rstb.2014.0245

<http://www.ncbi.nlm.nih.gov/pubmed/26194759>

S. K. Nilsson*, L. M. Childs*, C. O. Buckee, and M. Marti, (2015) Targeting human transmission biology for malaria elimination. *PLoS Pathogens*, 11(6):e1004871. doi:10.1371/journal.ppat.1004871

<http://www.ncbi.nlm.nih.gov/pubmed/26086192>

L. M. Childs and C. O. Buckee, (2015) Dissecting the determinants of malaria chronicity: why within-host models struggle to reproduce infection dynamics. *Journal of the Royal Society Interface*, 12(104):20142379. doi:10.1098/rsif.2014.1379

<http://www.ncbi.nlm.nih.gov/pubmed/25673299>

L. M. Childs, N. N. Abuelezam, C. Dye, S. Gupta, M. B. Murray, B. Williams, and C. O. Buckee, (2015) Modelling challenges in context: Lessons from malaria, HIV and tuberculosis. *Epidemics*, 10:102-107. doi:10.1016/j.epidem.2015.02.002

<http://www.ncbi.nlm.nih.gov/pubmed/25843394>

B. I. Coleman, K. M. Skillman, R. H. Y. Jiang, L. M. Childs, L. M. Altenhofen, M. Ganter, Y. Leung, I. Goldowitz, B. F. C. Kafasack, M. Marti, M. Llinas, C. O. Buckee, and M. T. Duraisingh, (2014) A *Plasmodium falciparum* histone deacetylase links parasite persistence and sexual conversion. *Cell Host Microbe*, 16(2):177-86. doi:10.1016/j.chom.2014.06.014

<http://www.ncbi.nlm.nih.gov/pubmed/25121747>

L. M. Childs, N. Held, M. Young, R. Whittaker, and J. Weitz, (2012) Multi-scale Model of CRISPR-induced Coevolutionary dynamics: Diversification at the interface of Lamarck and Darwin. *Evolution*, 66(7):2015--2029. doi:10.1111/j.1558-5646.2012.01595.x

<http://www.ncbi.nlm.nih.gov/pubmed/22759281>

Current and/or Recently Completed Research Grants:

Simons Foundation	Simons Collaboration Grant	PI: Lauren Childs	Sept 2017 – Aug 2022
Title: The Role of Immunity in the Control of Infectious Disease			
The goals of this project are to develop, analyze and simulate a range of mathematical models incorporating immune response dynamics during the course of an infectious with a pathogen.			