Jessica B. McGillen

Email: j.mcgillen@imperial.ac.uk
Website: jessicamcgillen.com

CURRENT POSITIONS

Postdoctoral Research Associate 2014–present
HIV Modelling Consortium, Dept. of Infectious Disease Epidemiology, Imperial College London, London, UK
Supervised by Prof. Timothy Hallett
- Modelling geospatially heterogeneous HIV transmission to inform HIV response strategies
- Current projects focus on policy implications of real-world constraints on HIV funding across Africa
- Analysed US investment in the global AIDS response to inform 2017–2018 Congressional budget negotiations

Technical Consultant 2014–present
Imperial Consultants, London, UK
- Supported the Global Fund's 2017–2022 investment case and strategy
- Evaluating on-the-ground HIV prevention programs in Zimbabwe and Zambia

EDUCATION

Oxford University, Oxford, UK 2009–2014

DPhil in Mathematics 2010–2014
Wolfson Centre for Mathematical Biology, Mathematical Institute
Supervised by Prof. Philip Maini FRS, Prof. Eamonn Gaffney, and Dr. Natasha Martin
Thesis: *Mathematical modeling of metabolism and acidity in cancer*

Systems Biology Doctoral Training Centre 2009–2010
An initial year of taught coursework in a breadth of subjects across systems biology, followed by two rotation projects prior to beginning doctoral research

Carnegie Mellon University, Pittsburgh, USA 2002–2009

MS in Computational Biology 2007–2009
Thesis: *Differential equation models of long-term untreated HIV infection*
Supervised by Prof. Shlomo Ta'asan
Developed ordinary differential equation models of within-host HIV infection and calibrated them to cohort data with the aim to predict the onset of AIDS

BS in Biological Sciences, BA in Statistics, Minor in Technical Writing 2002–2006
Thesis: *A comparison of methods for determining genetic variation in dechlorinating microbes*
Supervised by Prof. William Eddy and Prof. William Brown
Genetically analysed microbes for bioremediation of chemical contaminants in Hudson and Grasse river sediment

AWARDS

Young Investigator Scholarship from the Conference on Retroviral and Opportunistic Infections, Boston, USA 2016
Overseas Graduate Scholarship from St. Catherine's College, Oxford University 2011–2014
Prize for best talk at the annual Doctoral Training Centre Conference, Oxford University 2013
Landahl travel grant from the Society for Mathematical Biology 2012
Certificate of Merit for Outstanding Undergraduate Research from Carnegie Mellon University 2006
Sciences and Humanities Scholar at Carnegie Mellon University 2002–2006

PUBLIC SPEAKING

Invited talks
- Dean's Seminar Series on Infectious Disease Modelling, Mailman School of Public Health, Columbia University, New York, USA 2016
- Panel, "Using geospatial analysis for effective HIV programming", International AIDS Conference, Durban, South Africa 2016
- Systems Biology seminar series, Stuttgart University, Germany 2013
- Modelling Biological Evolution Conference, Leicester, UK 2013
- St Catherine's College Biochemical Society Inaugural Meeting, Oxford University 2011

Selected other talks and posters
- Panel, "When donors leave...", International AIDS Society Conference on HIV Science, Paris, France 2017 (*upcoming*)
- Poster and themed discussion, "Going to scale with ART and PrEP", Conference on Retroviral and Opportunistic Infections, Boston, USA 2016
- Society for Mathematical Biology Annual Conference, Knoxville, USA 2012
- Poster, 8th European Conference on Mathematical and Theoretical Biology, Krakow, Poland 2011

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PUBLICATIONS

McGillen JB, Anderson S-J, Hallett TB. Voluntary medical male circumcision should be integral to HIV prevention portfolios throughout sub-Saharan Africa. *In preparation*.

McGillen JB, Sharp A, Honermann B, Collins C, Hallett TB. Consequences of a changing U.S. strategy in the global AIDS investment landscape. *Submitted*.

McGillen JB, Anderson S-J, Hallett TB. Introducing optimism to models of resource allocation to reduce HIV incidence—Authors' reply. ***The Lancet HIV*** 2017; 4(1): e12.

McGillen JB, Anderson S-J, Hallet TB. PrEP as a feature in the optimal landscape of combination HIV prevention in sub-Saharan Africa. ***Journal of the International AIDS Society*** 2016; 19 (Suppl 6): 21104.

McGillen JB, Anderson S-J, Dybul MR, Hallet TB. Optimum resource allocation to reduce HIV incidence across sub-Saharan Africa: a mathematical modelling study. ***The Lancet HIV*** 2016; 3: e441–48.

Smith JA, Anderson S-J, Harris KL, McGillen JB, Lee E, Garnett GP, Hallett TB. Maximising HIV prevention by balancing the opportunities of today with the promises of tomorrow: a modelling study. ***The Lancet HIV*** 2016; 3 (7), e289-e296.

McGillen JB, Kelly CJ, Martinez-Gonzalez A, Martin NK, Gaffney EA, Maini PK, Perez-Garcia VM. Glucose–lactate metabolic cooperation in cancer: insights from a spatial mathematical model and implications for targeted therapy. ***Journal of Theoretical Biology*** 2014; 361: 190–203.

McGillen JB, Gaffney EA, Martin NK, Maini PK. A general reaction-diffusion model of acidity in cancer invasion. ***Journal of Mathematical Biology*** 2014; 68 (5): 1199–1224.

McGillen JB, Martin NK, Robey IF, Gaffney EA, Maini PK. Applications of mathematical analysis to tumour acidity modelling. ***RIMS Kokyuroku Bessatsu*** (Proceedings of Kyoto Research Institute for Mathematical Sciences) 2012; 31: 31–59.

PROFESSIONAL WRITING AND EDITING

Freelance Academic Editor 2015–2016
True Editing, London, UK
- Edited academic texts ranging from short reports to doctoral theses, as well as white papers produced by companies
- The degree of editing varied from proofreading to comprehensive reworking for language, clarity, and structure

Peer reviewer 2012–present
- *PLOS One*
- *Bulletin of Mathematical Biology*
- *Applied Mathematics and Computation*
- *Computers and Mathematics with Applications*

Data Analyst and Technical Writer 2007–2009
Centre for Computational Analysis of Social and Organizational Systems, Carnegie Mellon University, Pittsburgh, USA
- Led the collaborative writing of a technical report on educational interventions against US earned income tax fraud (available at http://dx.doi.org/10.2139/ssrn.2728471)
- Overhauled tutorial materials on in-house software for text parsing and network visualisation
- Other duties included building datasets for modelling the 1998 Al Qaeda bombings of US embassies in Africa

Systems Biology Intern 2008
The MathWorks Inc., Boston, USA
- Developed and wrote a tutorial for the Matlab SimBiology package, based on a modelling study of HIV antiretroviral treatment interruption, for inclusion in the online help database

Medical Writer 2006–2007
University of Pittsburgh Medical Center (UPMC), Pittsburgh, USA
- Translated leading medical research taking place at UPMC into engaging language for non-experts
- Regularly contributed on deadline to a biweekly news magazine for the hospital community
- Designed, wrote, and project-managed marketing pieces for affiliated care centres

TECHNICAL SKILLS

Programming languages (from most to least experience): Matlab, R, C++, Java, html

Mathematics: ordinary and partial differential equations, asymptotic analysis, travelling wave analysis, perturbation methods

Computation: numerical solution of differential equations, Bayesian model calibration, Monte Carlo sampling, optimisation