John Marshall, PhD

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Website: http://www.MarshallLab.com

Short Bio

I am an infectious disease modeler with expertise in malaria epidemiology and the use of novel, genetics-based strategies to reduce the burden of mosquito-borne diseases. I have worked on several aspects of gene drive technology, including the use of mathematical models to inform construct design, fitting models to experimental data, understanding mosquito ecology, and modeling the epidemiology of mosquito-borne diseases. I also have experience in the field and with addressing social, cultural and regulatory aspects of my work. In my current position at UC Berkeley, I teach two courses on mathematical modeling of infectious diseases, consult generally in this field, and direct a laboratory specializing in mathematical models of mosquito-borne diseases and novel strategies for their control and elimination.

Appointments

2015 (January)-:
Assistant Professor in Residence
Divisions of Biostatistics & Epidemiology, School of Public Health, UC Berkeley

- Conducting research on mathematical epidemiology, malaria elimination and novel vector control strategies including the use of genetically modified (GM) mosquitoes
- Designing and teaching graduate level courses on biostatistics and mathematical modelling of infectious diseases
- Mentoring graduate students in epidemiology, biostatistics, computational biology and mathematical modeling

2012 (October)-2014 (December):
Medical Research Council Research Fellow
Department of Infectious Disease Epidemiology, Imperial College London

- Worked towards designing confined field trials of GM mosquitoes on islands off the coast of Africa
- Developed skills in analysis of large data sets – data cleaning, cluster analysis, model fitting and Markov Chain Monte Carlo methods
- Mentored graduate students in global health and mathematical modeling

2013 (October)-2014 (April):
Visiting Scholar
Center for Theoretical Evolutionary Genomics, UC Berkeley

- Investigated methods to determine the structure and demographic history of malaria-transmitting mosquito populations from genomic data
- Developed skills in population genetics and Approximate Bayesian Computation

2010 (August)-2012 (September):
Research Associate
Department of Infectious Disease Epidemiology, Imperial College London

- Conducted surveys of human movement patterns of relevance to malaria transmission in Mali, Burkina Faso, Zambia and Tanzania
- Developed models for mosquito control and malaria epidemiology
- Mentored graduate students in epidemiology and field work
- Co-organized a course on mathematical modeling of infectious diseases for

public health professionals

2009 (July)-2010 (July):
Postdoctoral Scholar
Division of Biology and Biological Engineering, Caltech

- Designed new gene drive systems and developed mathematical models describing their spread
- Developed skills in genetic engineering and maintaining laboratory mosquito lines
- Trained graduate and postdoctoral students in population genetics

2009 (January-June):
Postdoctoral Fellow
Center for Society & Genetics, UCLA

- Analyzed surveys on the perspectives of people in Mali, West Africa to genetically modified mosquitoes for malaria control
- Analyzed international regulations for the environmental release of genetically modified mosquitoes
- Developed and lectured a class entitled "Genetic engineering in developing countries"

2008 (July-December):
Postdoctoral Researcher
Department of Ecology & Evolutionary Biology, UCLA
Based at: Malaria Research and Training Center, University of Bamako, Mali

- Led a research team surveying the perspectives of people in Mali, West Africa to GM mosquitoes for malaria control
- Participated in ecological studies of mosquito dispersal
- Lectured and helped organize a WHO-sponsored workshop on developing a regulatory framework for releasing GM mosquitoes in Africa

2001 (January-December):
Editor
Craccum magazine, Auckland University Students' Association, New Zealand

- Edited a 48-page weekly magazine for students at the University of Auckland
- Managed a staff of ~30 writers, photographers, distributors, designers, webmasters and advertising managers
- Developed excellent skills in written and verbal communication, leadership and time management

Education

2003 (August)-2008 (June):
PhD (Biomathematics)
UCLA
PhD thesis: The dynamics of transposable elements in genetically modified mosquito vectors

2003 (August)-2005 (December):
MS (Biomathematics)
UCLA

2000 (February)-2002 (November):
BTech (Hons) (Optoelectronics)
University of Auckland, New Zealand

1997 (February)-1999 (November):
BSc (Biological sciences)
University of Auckland, New Zealand

Technical Skills and Competences

Mathematics:

- Multivariate calculus, linear algebra, vector calculus
- Ordinary and partial differential equations, reaction-diffusion systems
- Probability theory, Markov chains, branching processes
- Applications to epidemiology, molecular biology, genetics and ecology

Statistics:

- Regression, generalized linear models, maximum likelihood estimation
- Analysing large data sets, cluster analysis
- Bayesian statistics, Markov Chain Monte Carlo methods, Approximate Bayesian Computation
- Applications to epidemiology, demography and population genetics

Software and programming:

- Mathematics: Matlab, Mathematica, Maple, Berkeley Madonna
- Statistics: R, WinBUGS, ABC Toolbox
- Programming languages: C++, Java

Biology:

- Molecular biology: manipulation of DNA, cloning, PCR, gel electrophoresis
- Ecology: mosquito husbandry, mark-release-recapture experiments

Social science and ethics:

- Quantitative and qualitative survey design, questionnaire writing, ethnography
- Research protocols for Institutional Review Boards

Languages:

- English (mother tongue)
- French, Bambara (African language spoken in Mali) (intermediate)
- Spanish (beginner)

Teaching

2015-2017: Lecturer, PB HLTH 252B: Modeling the Dynamics of Infectious Disease Processes, UC Berkeley (Spring semester, 3 units, ~18 students)

2015-2017: Lecturer, PB HLTH 295: Infectious Disease Modeling Seminar, UC Berkeley (Fall semester, 1 unit, ~16 students)

2015-2016: Lecturer, PB HLTH 145: Statistical Analysis of Continuous Outcome Data, UC Berkeley (Fall semester, 4 units, ~45 students)

2011-2014: Co-organizer/lecturer/demonstrator, Short Course in Epidemiology, Imperial College London (Summer, professional course, ~30 students)

2009: Lecturer, Genetic Engineering in Developing Countries, UCLA (Winter quarter, 2 units, ~20 students)

2008-2010: Lecturer, Biosafety training course for Africa related to the potential release of genetically modified disease vectors, University of Bamako (Summer, professional course, ~20 students)

2005: Lecturer/demonstrator, Hidden Markov Models for Bioacoustic Analysis, UCLA (Spring quarter, 2 units, ~15 students)

Awards:

School of Public Health Committee on Teaching Excellence Award (Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017)

Grants Awarded

UC Irvine Malaria Initiative/A. A. James (Subaward PI)
UC Irvine Malaria Initiative ($335,500 sub-award)
2017-2019

Gates Foundation/D. L. Smith (Subaward PI)
Strategic Planning Tools for Staging Malaria Elimination ($18,740 sub-award)
2017

National Institutes of Health/J. Remais (Subaward PI)
Effects of Agricultural Expansion and Intensification on Infectious ($12,194 sub-award)
2017

UC Davis SVM Vector-Borne Disease Pilot Grant Program/Y. Lee (Co-I)
Working toward the eradication of *Aedes aegypti*, an invasive arbovirus vector, in California
2016-2017

Gates Foundation/H. J. W. Sturrock (Subaward PI)
Prototype of technology's role to facilitate surveillance needs for malaria elimination
2015-2017

The University of California Institute for Mexico and the United States #UCMEXUS/CN1547/J. M. Marshall (PI)
Determining optimal strategies for the control of vectors of dengue and other vector borne diseases in Mexico and the United States ($25,000 award)
2015-2016

Sean Parker Foundation/R. G. A. Feachem (Subaward PI)
Malaria Elimination Initiative on a new vector control for malaria elimination
2015-2016

UC Davis Signature Research in Genomics Program Award/Y, Lee (Co-I)
Advanced genomic tools for estimating dispersal of African malaria vectors
2015

Medical Research Council #MR/J012254/1/J. M. Marshall (PI)
Optimal trial design for a confined release of malaria-refractory transgenic mosquitoes (£285,103 award)
2012-2015

Publications

Marshall JM*, Buchman B, Sanchez HM, Akbari OS* (2017) Overcoming evolved resistance to population-suppressing homing-based gene drives. Nature Scientific Reports 7: 3776.
*Co-corresponding authors

Cheng Q, Jing Q, Spear RC, **Marshall JM**, Yang Z, Gong P (2017) The interplay of climate, intervention and imported cases in determining the potential and final epidemic size of dengue outbreak in Guangzhou. PLoS NTDs (in press).

Adelman Z, Akbari O, Bauer J, Bier E, Bloss C, Carter SR, Callender C, Costero-Saint Denis A, Cowhey P, Dass B, Delborne J, Devereaux M, Ellsworth P, Friedman RM, Gantz V, Hay BA, Hoddle M, James AA, James S, Jorgenson L, Kalichman M, **Marshall JM**, McGinnis W, Newman J, Pearson A, Quemada H, Rudenko L, Shelton A, Vinetz JM, Weisman J, Wong B, Wozniak C (2017) Rules of the road for insect gene drive research and testing. Nat. Biotech. (in press).

Killeen GF, **Marshall JM**, Kiware SS, Andy S, Chaki PP, Govella NJ (2017)

Measuring, manipulating and exploiting behaviors of adult mosquitoes to optimize malaria vector control impact. BMJ Global Health 2: e000212.

Killeen GF, Tatarsky A, Diabate A, Chaccour CJ, **Marshall JM**, Okumu FO, Brunner S, Newby G, Williams YA, Malone D, Tusting LS, Gosling RD (2017) Developing an expanded vector control toolbox for malaria elimination. BMJ Global Health 2: e000211.

Killeen GF, Kiware SS, Okumu FO, Sinka ME, Moyes CL, Massey NC, Gething PW, **Marshall JM**, Chaccour CJ, Tusting LS (2017) Going beyond personal protection against mosquito bites to eliminate malaria transmission: population suppression of malaria vectors that exploit both human and animal blood. BMJ Global Health 2: e000198.

Buchman AB, Ivy T, **Marshall JM**, Akbari OS, Hay BA (2016) Engineered reciprocal chromosome translocations drive high threshold, reversible population replacement in Drosophila. bioRxiv doi: http://dx.doi.org/10.1101/088393.

Marshall JM, Bennett A, Kiware SS, Sturrock HJW (2016) The hitchhiking parasite: Why human movement matters to malaria transmission and what we can do about it. Trends Parasitol. 32: 752–755.

Marshall JM, Touré MB, Ouédraogo AL, Ndhlovu M, Kiware SS, Rezai A, Nkhama E, Griffin JT, Hollingsworth TD, Doumbia S, Govella NJ, Ferguson NM, Ghani AC (2016) Key traveller groups of relevance to spatial malaria transmission: A survey of movement patterns in four sub-Saharan African countries. Malar. J. 15: 200.

Cheng Q, Jing Q, Spear RC, **Marshall JM**, Yang Z, Gong P (2016) Climate and timing of imported cases as determinants of the dengue outbreak in Guangzhou, 2014: Evidence from a mathematical model. PLoS NTDs 10: e0004417.

Zhu L, **Marshall JM**, Qualls WA, Schlein Y, McManus JW, Arheart KL, Hlaing WM, Traore SF, Doumbia S, Müller GC, Beier JC (2015) Modelling optimum use of attractive toxic sugar bait stations for effective malaria vector control in Africa. Malar. J. 14: 492.

Zhu L, Qualls WA, **Marshall JM**, Arheart KL, DeAngelis DL, McManus JW, Traore SF, Doumbia S, Schlein Y, Müller GC, Beier JC (2015) A spatial individual-based model predicting a great impact of copious sugar sources and resting sites on survival of *Anopheles gambiae* and malaria parasite transmission. Malar. J. 14: 59.

Marshall JM, Hay BA (2014) *Medusa*: A novel gene drive system for confined suppression of mosquito populations. PLoS ONE **9**: e102694.

Okorie PN, **Marshall JM**, Akpa MO, George AO (2014) Perceptions and recommendations by scientists for a potential release of genetically modified mosquitoes in Nigeria. Malar. J. 13: 154.

White MT, Lwetoijera D, **Marshall JM**, Caron-Lormier G, Bohan DA, Denholm I, Devine GJ (2014) Negative cross resistance mediated by co-treated bed nets: A potential means of restoring pyrethroid-susceptibility to malaria vectors. PLoS ONE 9: e95640.

Marshall JM, White MT, Ghani AC, Schlein Y, Muller GC, Beier JC (2013) Quantifying the mosquito's sweet tooth: Modelling the effectiveness of attractive toxic sugar baits (ATSB) for malaria vector control. Malar. J. 12: 291.

Akbari OS*, Matzen KD*, **Marshall JM***, Huang H, Ward CM, Hay BA (2013) A synthetic gene drive system for local, reversible modification and suppression of insect populations. Curr. Biol. 23: 671-677.

*Equal contribution

Gatton ML, Chitnis N, Churcher T, Donnelly MJ, Ghani AC, Godfray HCJ, Gould F, Hastings I, **Marshall JM**, Ranson H, Rowland M, Shaman J, Lindsay SW (2013) The importance of mosquito behavioral adaptations to malaria control in Africa. Evolution 67: 1218-1230.

Marshall JM, Hay BA (2012) Confinement of gene drive systems to local populations: A comparative analysis. J. Theor. Biol. 294: 153-171.

Marshall JM, Hay BA (2012) General principles of single-construct chromosomal gene drive. Evolution. 66: 2150-2166.

De Silva P, **Marshall JM** (2012) Factors contributing to urban malaria transmission in sub-Saharan Africa: A systematic review. J. Trop. Med. 2012: 819563.

Akbari OS*, Chen CH*, **Marshall JM***, Huang H, Antoshechkin I, Hay BA (2012) Novel synthetic *Medea* selfish genetic elements drive population replacement in Drosophila; a theoretical exploration of *Medea*-dependent population suppression. ACS Synth. Biol. 3: 915-928.
*Equal contribution

Marshall JM, Pittman GW, Buchman AB, Hay BA (2011) *Semele*: A killer-male, rescue-female system for suppression and replacement of insect disease vector populations. Genetics 187: 535-551.

Marshall JM, Hay BA (2011) Inverse *Medea* as a novel gene drive system for local population replacement: A theoretical analysis. J. Hered. 102: 336-341.

Marshall JM (2011) The toxin and antidote puzzle: New ways to control insect pest populations through manipulating inheritance. Bioeng. Bugs. 2: 1-6.

Marshall JM (2011) The Cartagena Protocol in the context of recent releases of transgenic and *Wolbachia*-infected mosquitoes. AsPac. J. Mol. Biol. Biotechnol. 19: 93-100.

Marshall JM (2010) The Cartagena Protocol and genetically modified mosquitoes. Nat. Biotech. 28: 896-897.

Marshall JM, Toure MB, Traore MM, Famenini S, Taylor CE (2010) Perspectives of people in Mali toward genetically modified mosquitoes for malaria control. Malar. J 9: 128.

Marshall JM, Touré MB, Traore MM, Taylor CE (2010) Towards a quantitative assessment of public attitudes to transgenic mosquitoes: Questions based on a qualitative survey in Mali. AsPac. J. Mol. Biol. Biotechnol. 18: 251-273.

Marshall JM, Taylor CE (2009) Malaria control with transgenic mosquitoes. PLoS Medicine 6: e1000020.

Marshall JM (2009) The effect of gene drive on containment of transgenic mosquitoes. J. Theor. Biol. 258: 250-265.

Marshall JM (2008) A branching process model for the early spread of a transposable element in a diploid population. J. Math. Biol. 57: 811-840.

Marshall JM (2008) The impact of dissociation on transposon-mediated disease control strategies. Genetics 178: 1673-1682.

Marshall JM, Morikawa K, Manoukis N, Taylor CE (2007) Predicting the effectiveness of population replacement strategy using mathematical modeling. J.

Vis. Exp. 5: 227.

Marshall JM, Weiss R (2006) A Bayesian heterogeneous analysis of variance approach to inferring recent selective sweeps. Genetics 173: 2357-2370.

Wills P, **Marshall JM**, Smith P (2004) Genetic information and self-organised criticality. Europhysics Letters 68: 901-907.

Book Chapters

Marshall JM, Akbari OS (2015) Gene drive systems in mosquitoes. In: Adelman ZN (editor) Genetic Control of Dengue and Malaria. Elselvier/Academic Press, New York.

Marshall JM (2015) The Cartagena Protocol and releases of transgenic mosquitoes. In: Tyagi BK (editor) WHO/TDR Training Manual: Biosafety for Human Health and the Environment in the Context of the Potential Use of Genetically Modified Mosquitoes. WHO Press, Geneva.

Marshall JM (2015) Measuring public attitudes to releases of transgenic mosquitoes for disease control. In: Tyagi BK (editor) WHO/TDR Training Manual: Biosafety for Human Health and the Environment in the Context of the Potential Use of Genetically Modified Mosquitoes. WHO Press, Geneva.

Scientific Meetings and Invited Presentations

Marshall JM (2017) Gene drive: What is possible at the population level with currently-available molecular components? Invited talk at:

- the Lorentz Center workshop on "Challenges for the Regulation of Gene Drive Technology", Leiden, the Netherlands,
- the 25th International Congress of Entomology, Orlando, Florida,
- the Statistics and Genomics Seminar, Division of Biostatistics, University of California, Berkeley, California,
- the Department of Medicine, University of California, San Francisco, California, and
- the Joint Genome Institute, Walnut Creek, California.

Marshall JM (2017) Parameter estimation in infectious disease epidemiology: Do you have any better ideas? Invited talk at the Workshop in Biostatistics, Department of Biomedical Data Science, Stanford University, Stanford, California.

Marshall JM (2016) Overcoming evolved resistance to population-suppressing homing-based gene drives. Contributed poster at the 65th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia.

Marshall JM (2016) Designing disease control strategies using models and data from multiple sources. Invited talk at the ENAR 2016 Spring Meeting, Austin, Texas.

Marshall JM (2016) Zika virus: Insights from mathematical models. Invited talk at the Preparedness for Zika Virus Symposium, University of California, San Francisco, California.

Marshall JM, Bennett A, Midekisa A, Gosling R, Sturrock HJW (2015) From risk maps to decision maps for malaria elimination. Contributed poster at the 64th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Philadelphia, Pennsylvania.

Marshall JM (2015) Mathematical modeling in a new era of malaria elimination. Invited talk at:

- the Department of Entomology, University of Maryland, College Park, Maryland, and
- the Bay Area World Malaria Day Symposium, University of California,

Berkeley, California.

Marshall JM (2015) The current global policy situation regarding GM insects for disease control. Invited talk at the House of Lords, London, England.

Marshall JM, Touré MB, Ouédraogo AL, Ndhlovu M, Kiware SS, Rezai S, Nkhama E, Griffin JT, Hollingsworth TD, Doumbia S, Govella NJ, Ferguson NM, Ghani AC (2014) Contributions of women with children and youth workers to spatial malaria transmission in sub-Saharan Africa. Contributed talk/poster at:

- the MRC Centre for Outbreak Analysis and Modeling, Imperial College London, London, England, and
- the 63rd Annual Meeting of the American Society for Tropical Medicine and Hygiene, New Orleans, Louisiana.

Marshall JM (2014) Predicting the utility of novel strategies for vector-borne disease control using mathematical models. Invited talk at:

- the Division of Biostatistics, University of California, Berkeley, California, and
- the Department of Medicine, University of California, San Francisco, California.

Marshall JM (2013) What role should mathematical models and transgenic mosquitoes play in dengue control programs in India? Invited talk at Brain Storming Conference on Dengue Scenario in India: Disease Burden, Surveillance and Control, Madurai, India.

Marshall JM (2013) If Mother Teresa was a genetic engineer: From golden rice to GM mosquitoes for malaria control. Invited talk at University College London, London, England.

Marshall JM, White MT, Ghani AC, Schlein Y, Muller GC, Beier JC (2012) Quantifying the mosquito's sweet tooth: Modelling the effectiveness of attractive toxic sugar baits for vector control. Contributed talk at:

- the Malaria Centre, Imperial College London, London, England,
- the 61st Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia, and
- the 6th International Meeting on Molecular and Population Biology of Mosquitoes and Other Disease Vectors, Kolymbari, Greece.

Marshall JM, Hay BA (2012) *Medusa*: A novel gene drive system for confined suppression of mosquito populations. Contributed talk at:

- the Malaria Centre, Imperial College London, London, England, and
- the 61st Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia.

Marshall JM (2012) If Mother Teresa was a Genetic Engineer. Invited talk at TEDx LA Miracle Mile, Los Angeles, California.

Marshall JM (2011) The Cartagena Protocol in the context of transgenic and *Wolbachia*-infected mosquitoes. Contributed talk at the 60th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Philadelphia, Pennsylvania.

Marshall JM (2011) Malaria and human movement: Beyond Newton's theory of gravity. Invited talk at the Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, England.

Marshall JM (2011) The toxin and antidote puzzle: New ways to control insect pest populations through manipulating inheritance. Contributed talk at:

- the Department of Biological Sciences, Imperial College London, London, England, and
- the 5th International Meeting on Molecular and Population Biology of Mosquitoes and Other Disease Vectors, Kolymbari, Greece.

Marshall JM (2011) Genetic engineering of local populations. Invited talk at the Department of Biological Sciences, Stanford University, Stanford, California.

Marshall JM, Hay BA (2010) General principles and novel possibilities for single-construct gene drive. Contributed talk at the 59th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia.

Marshall JM (2010) The Cartagena Protocol and genetically modified mosquitoes. Contributed poster at the 59th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia.

Marshall JM (2009) Can mosquitoes engineered with gene drive systems be contained? Contributed talk at the 58th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Washington, DC.

Marshall JM, Touré MB, Traore MM, Taylor CE (2009) Perspectives of people in Mali, West Africa toward genetically modified mosquitoes for malaria control. Contributed talk at:

- the Center for Society and Genetics, UCLA, Los Angeles, California
- the Malaria Research and Training Center, Bamako, Mali,
- the 4th International Meeting on Molecular and Population Biology of Mosquitoes and Other Disease Vectors, Kolymbari, Greece, and
- the 58th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Washington, DC.

Marshall JM (2009) Releasing GM mosquitoes: Insights from mathematics and Malians. Invited talk at:

- the Department of Infectious Disease Epidemiology, Imperial College, London, England, and
- the Division of Biology, California Institute of Technology, Pasadena, California.

Marshall JM (2008) Modelling the potential outcomes of releasing GM mosquito vectors. Contributed talk at:

- the Malaria Research and Training Center, Bamako, Mali,
- the Department of Mathematics, University of Bamako, Bamako, Mali, and
- the 57th Annual Meeting of the American Society for Tropical Medicine and Hygiene, New Orleans, Louisiana.

Marshall JM (2007) The impact of dissociation on transposon-mediated disease control strategies. Contributed talk at:

- the 3rd International Meeting on Molecular and Population Biology of Mosquitoes and Other Disease Vectors, Kolymbari, Greece,
- the 56th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Philadelphia, Pennsylvania,
- the Workshop for Young Researchers in Mathematical Biology, Columbus, Ohio, and
- the 76th Annual Conference of the Mosquito and Vector Control Association of California, Palm Springs, California.

Marshall JM (2006) Successful conditions for the early spread of a transposable element in a disease vector population. Contributed talk at the 55th Annual Meeting of the American Society for Tropical Medicine and Hygiene, Atlanta, Georgia.

Marshall JM (2005) The dynamics of transposable elements in genetically modified mosquito vectors. Contributed talk at the Institute for Pure and Applied Mathematics Biophysical Modeling Workshop, Los Angeles, California.

Marshall JM, Weiss R (2005) A Bayesian approach to inferring recent selective sweeps in *Anopholes gambiae* populations. Contributed talk at the 2nd International Meeting on Molecular and Population Biology of Mosquitoes and Other Disease Vectors, Kolymbari, Greece.

Memberships

2016-current: American Society for Tropical Medicine and Hygiene (ASTMH)

Professional Service

Reviewer for:
Science; Nature Biotechnology; Proceedings of the National Academy of Sciences USA; Journal of Theoretical Biology; Journal of the Royal Society Interface; Proceedings of the Royal Society B; American Journal of Tropical Medicine and Hygiene; BMC Biology; Mathematical Biosceinces; Acta Tropica; BioSystems; Journal of Computational Science; Transactions of the Royal Society of Tropical Medicine and Hygiene; Infection, Genetics and Evolution; Electronic Journal of Biotechnology; Asia-Pacific Journal of Molecular Biology and Biotechnology; PLoS ONE; British Journal of Medicine and Medical Research; Evolutionary Applications

Grant reviewer for:
European Research Council, UK Medical Research Council

Expert advisor for:
US National Academy of Sciences, The Cartagena Protocol on Biosafety to the Convention of Biological Diversity, Médecins Sans Frontières