

DUKE UNIVERSITY MEDICAL CENTER
CURRICULUM VITAE
For Permanent Record
and the Appointments and Promotions Committee

DUKE UNIVERSITY MEDICAL CENTER
CURRICULUM VITAE

Date Prepared: January 6, 2019

Name: Christopher Vine Plowe, MD, MPH, FASTMH

Primary academic appointment: Department of Medicine

Primary academic department: Infectious Diseases

Secondary appointments: Global Health, Molecular Genetics and Microbiology

Present academic rank and title (if any): Professor with tenure

Date and rank of first Duke Faculty appointment: November 1, 2017 Instructor Temporary

Medical Licensure: Maryland # D0048173 current through 9/30/19

Specialty certification(s) and dates:

Diplomate, Internal Medicine, American Board of Internal Medicine	1989 - present
Diplomate, Infectious Diseases, American Board of Internal Medicine	1996 - 2006
Certificate of Knowledge in Tropical Medicine and Travelers' Health, American Society of Tropical Medicine & Hygiene	2000 - present

Citizen of: United States of America

Education:

<u>Institution</u>	<u>Date</u>	<u>Degree</u>
Cornell University, Ithaca, NY	1982	BA, Philosophy
Cornell University, Ithaca, NY	1986	MD
Columbia University School of Public Health, NY	1991	MPH, Tropical Medicine

Professional training and academic career:

<u>Institution</u>	<u>Position/Title</u>	<u>Dates</u>
St. Luke's Hospital, Columbia College of Physicians & Surgeons	Intern & Resident, Internal Medicine	1986-1989
Columbia University School of International & Public Affairs	International Fellows Program	1989-1990

St. Luke's\ Roosevelt Hospital Center	Attending Physician, Emergency Department	1989-1990
St. Luke's Hospital, Columbia College of and Surgeons	Chief Resident, Internal Medicine	1990-1991
Laboratory of Malaria Research, NIAID, NIH	Fellow, Malaria Research	1991-1994
Johns Hopkins School of Medicine	Fellow, Infectious Diseases	1994-1995
University of Maryland School of Medicine	Assistant Professor, Department of Medicine	1995-2000
University of Maryland School of Medicine	Assistant Professor (secondary appointment) Microbiology and Immunology	1997-2000
University of Maryland School of Medicine	Associate Professor, Medicine, Chief, Malaria Section, Center for Vaccine Development/Division of Geographic Medicine, Department of Medicine	2000-2005
University of Maryland School of Medicine	Associate Professor (secondary appointment) Epidemiology and Preventive Medicine, and Microbiology and Immunology	2000-2005
University of Maryland School of Medicine	Professor with tenure, Medicine, and Chief, Malaria Section, Center for Vaccine Development/Division of Geographic Medicine, Department of Medicine	2005-2010
University of Maryland School of Medicine	Professor (secondary appointment), Epidemiology and Public Health and Microbiology and Immunology	2005-present
Howard Hughes Medical Institute	Investigator	2008-2016
University of Maryland School of Medicine	Professor with tenure, Medicine, Associate Director for Research Training, and Leader, Malaria Group, Center for Vaccine Development/Division of Geographic Medicine, Department of Medicine	2010-2015
University of Maryland School of Medicine	Professor, with tenure, Medicine Founding Director, Institute for Global Health Director, Division of Malaria Research	2015-2016
University of Maryland School of Medicine	Frank M. Calia MD Professor of Medicine, and Founding Director, Institute for Global Health	2016-2017
Duke University	Professor, with tenure, Medicine, Molecular Genetics & Microbiology, and Global Health Director, Duke Global Health Institute	2018-

Publications:

Refereed journals:

1. Friedman R, Shear M, von Bulow B, Sweeney J, Plowe C. Compliance and outcome of patients accompanied by relatives to evaluations. *Hospital & Community Psychiatry* 35(10):1037-1038, 1984.
2. Hoffman S, Moechtar M, Simanjuntak C, Punjabi N, Kumala S, Silasahi P, Sutopo B, Kuncoro Y, Soriano M, Plowe C, Paleologo F, Edman D, Laughlin L. Rehydration and maintenance therapy of cholera patients in Jakarta: Citrate based versus bicarbonate based oral rehydration salt solution. *Journal of Infectious Diseases* 152:1159-1165, 1985.
3. von Bulow B, Sweeney J, Shear M, Friedman R, Plowe C. Family satisfaction with psychiatric evaluations. *Health & Social Work* 12:290-295, 1987.
4. Hoffman S, Oster C, Plowe CV, Woollett G, Beier J, Chulay J, Wirtz R, Hollingdale M, Mugambi M. Naturally acquired antibodies to sporozoites do not prevent malaria: Vaccine development implications. *Science* 237:639-642, 1987.
5. Vaidya A, Morrissey J, Plowe CV, Kaslow D, Wellems T. Unidirectional dominance of cytoplasmic inheritance in two genetic crosses of *Plasmodium falciparum*. *Molecular and Cellular Biology* 13:7349-7357, 1993.
6. Plowe CV, Djimde A, Bouare M, Doumbo OK, Wellems TE. Pyrimethamine and proguanil resistance-conferring mutations in *Plasmodium falciparum* dihydrofolate reductase: Polymerase chain reaction methods for surveillance in Africa. *American Journal of Tropical Medicine & Hygiene* 52:565-568, 1995.
7. Plowe CV, Djimde A, Wellems T, Kouriba B, Diop S, Doumbo OK. Community pyrimethamine use and prevalence of resistant *Plasmodium falciparum* genotypes in Mali: A model for deterring resistance. *American Journal of Tropical Medicine & Hygiene* 55:467-471, 1996.
8. Plowe CV, Cortese J, Djimde A, Nwanyanwu O, Watkins W, Winstanley P, Estrada-Franco J, Mollinedo R, Avila J, Cespedes J, Carter D, Doumbo OK. Mutations in *Plasmodium falciparum* dihydrofolate reductase and dihydropteroate synthase and epidemiologic patterns of pyrimethamine-sulfadoxine use and resistance. *Journal of Infectious Diseases* 176:1590-1596, 1997.
9. Watkins W, Mberu E, Winstanley P. The efficacy of antifolate antimalarial combinations in Africa: a predictive model Plowe CV based on pharmacodynamic and pharmacokinetic analyses. *Parasitology Today* 13:459-464, 1997.
10. Nzila-Mounda A, Mberu E, Sibley C, Plowe CV, Winstanley P, Watkins W. Kenyan *Plasmodium falciparum* field isolates: correlation between pyrimethamine and chlorcycloguanil activity in vitro and point mutations in dihydrofolate reductase. *Antimicrobial Agents and Chemotherapy* 42:164-169, 1998.
11. Kublin J, Witzig R, Shankar A, Quintana Zurita J, Gilman R, Aramburu Guarda J, Cortese J, Plowe CV. Molecular assays for surveillance of antifolate-resistant malaria. *Lancet* 351:1629-1630, 1998.
12. Perry R, Plowe CV, Koumare B, Bougoudogo F, Kotloff K, Losonsky G, Wasserman S, Levine M. A single dose of live oral cholera vaccine CVD 103-HgR is safe and immunogenic in HIV-infected and non-infected adults in Mali. *Bulletins of the World Health Organization* 76:63-71, 1998.
13. Djimde A, Plowe CV, Diop S, Dicko A, Wellems TE, Doumbo OK. Use of antimalarial drugs in Mali: Policy v. Reality. *American Journal of Tropical Medicine & Hygiene* 59:376-379, 1998.

14. Cortese J, Plowe CV. Antifolate resistance due to new and known *Plasmodium falciparum* dihydrofolate reductase mutations expressed in yeast. *Molecular and Biochemical Parasitology* 94:205-214, 1998.
15. Diourte Y, Djimde A, Doumbo OK, Sagara I, Coulibaly Y, Dicko A, Diallo M, Diakite M, Cortese J, Plowe CV. Pyrimethamine-sulfadoxine efficacy and selection for mutations in *Plasmodium falciparum* dihydrofolate reductase and dihydropteroate synthase in Mali. *American Journal of Tropical Medicine & Hygiene* 60:475-478, 1999.
16. Watkins W, Mberu E, Winstanley P, Plowe CV. More on the efficacy of antifolate antimalarial combinations in Africa (Comment). *Parasitology Today* 15:131-132, 1999.
17. Urdaneta L, Plowe C, Goldman I, Lal A. Point mutations in dihydrofolate reductase and dihydropteroate synthase genes of *Plasmodium falciparum* isolates from Venezuela. *American Journal of Tropical Medicine & Hygiene* 61:457-462, 1999.
18. Doumbo OK, Kayentao K, Djimde A, Cortese J, Diourte Y, Konare A, Kublin J, Plowe CV. Rapid selection of *P. falciparum* DHFR mutants in vivo by pyrimethamine prophylaxis. *Journal of Infectious Diseases* 182:993-996, 2000.
19. Agarwal A, Guindo A, Cissoko Y, Taylor J, Coulibaly D, Kone A, Kayentao K, Djimde A, Plowe CV, Doumbo OK, Wellems TE, Diallo D. Hemoglobin C associated with protection from severe malaria in the Dogon country of Mali, a West African population with a low prevalence of Hemoglobin S. *Blood* 96:2358-2363, 2000.
20. Vasconcelos K, Plowe CV, Fontes C, Kyle D, Wirth D, Pereira da Silva L, Zalis M. Mutations in *Plasmodium falciparum* dihydrofolate reductase and dihydropteroate synthase of isolates from the Amazon region of Brazil. *Memorias do Instituto Oswaldo Cruz* 95:721-728, 2000.
21. Djimdé A, Doumbo OK, Cortese J, Kayentao K, Doumbo S, Diourté Y, Coulibaly D, Dicko A, Su X, Fidock D, Nomura T, Wellems TE, Plowe CV. A molecular marker for chloroquine resistant falciparum malaria. *New England Journal of Medicine* 344:257-263, 2001.
22. Salcedo E, Cortese J, Plowe CV, Sims P, Hyde J. A bifunctional dihydrofolate synthetase-folylpolyglutamate synthetase in *Plasmodium falciparum* identified by functional complementation in yeast and bacteria. *Molecular and Biochemical Parasitology* 112:239-252, 2001.
23. Plowe CV, Doumbo OK, Djimde A, Kayentao K, Diourte Y, Doumbo S, Coulibaly D, Thera M, Wellems TE, Diallo D. Chloroquine treatment of uncomplicated *Plasmodium falciparum* malaria in Mali: Parasitological resistance vs. therapeutic efficacy. *American Journal of Tropical Medicine & Hygiene* 64:242-246, 2001.
24. Djimde A, Doumbo OK, Steketee R, Plowe CV. Application of a molecular marker for surveillance of chloroquine-resistant falciparum malaria. *Lancet* 358:890-891, 2001.
25. Iyer J, Milhous W, Cortese J, Kublin J, Plowe CV. *Plasmodium falciparum* cross-resistance between trimethoprim and pyrimethamine. *Lancet* 358:1066-1067, 2001.
26. Kublin J, Dzinjalama FK, Kamwendo D, Malkin E, Cortese J, Martino L, Mukadam R, Rogerson S, Lescano A, Molyneux M, Winstanley P, Chimpeni P, Taylor TE, Plowe CV. Molecular markers for treatment failure of sulfadoxine-pyrimethamine and chlorproguanil-dapsone for falciparum malaria and a model for practical application in Africa. *Journal of Infectious Diseases* 185:380-388, 2002.
27. Mendez F, Munoz A, Carrasquilla G, Jurado D, Arevalo-Herrera M, Cortese J, Plowe CV. Determinants of treatment response to sulfadoxine- pyrimethamine and subsequent transmission potential in falciparum malaria. *American Journal of Epidemiology* 156:230-238, 2002.

28. Cortese J, Caraballo A, Contreras C, Plowe CV. Origin and dissemination of *Plasmodium falciparum* drug-resistance mutations in South America. *Journal of Infectious Diseases* 186:999-1006, 2002.
29. Sulo J, Chimpeni P, Hatcher J, Kublin J, Plowe CV, Molyneux M, Marsh K, Taylor T, Watkins W, Winstanley P. Randomised clinical trial of chlorproguanil-dapsone (LAPDAP) versus sulfadoxine-pyrimethamine for sequential episodes of uncomplicated falciparum malaria in Kenya and Malawi. *Lancet* 360:1136-1143, 2002.
30. Contreras C, Cortese J, Caraballo A, Plowe CV. Genetics of drug-resistant falciparum malaria in the Venezuelan state of Bolivar. *American Journal of Tropical Medicine & Hygiene* 186:999-1006, 2002.
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32. Rowe J, Diallo D, Baby M, Poudiougou B, Coulibaly D, Cockburn I, Middleton J, Lyke K, Plowe CV, Doumbo OK, Moulds J. Erythrocyte complement receptor one expression level does not correlate with a Hind III restriction fragment length polymorphism in Africans; implications for studies on malaria susceptibility. *Genes and Immunity* 3:497-500, 2002.
33. Coulibaly D, Diallo D, Thera M, Dicko A, Guindo A, Koné A, Cissoko Y, Coulibaly S, Djimé A, Lyke K, Doumbo OK, Plowe CV. Impact of pre-season treatment on incidence of falciparum malaria and parasite density at a site for testing malaria vaccines in Bandiagara, Mali. *American Journal of Tropical Medicine & Hygiene* 67:604-610, 2002.
34. Kublin J, Cortese J, Njunju E, Mukadam R, Wirima J, Kazembe P, Djimé A, Kouriba B, Taylor T, Plowe CV. Reemergence of chloroquine-sensitive *Plasmodium falciparum* malaria following cessation of chloroquine use in Malawi. *Journal of Infectious Diseases* 187:1870-1875, 2003.
35. Lyke KE, Diallo D, Dicko A, Kone A, Coulibaly D, Guindo A, Cissoko Y, Sangare L, Coulibaly S, Dakouo B, Taylor TE, Doumbo OK, Plowe CV. Association of intraleukocytic *Plasmodium falciparum* malaria pigment with disease severity, clinical manifestations and prognosis in severe malaria. *American Journal of Tropical Medicine & Hygiene* 69:253-259, 2003.
36. Djimé A, Doumbo OK, Traore O, Guindo A, Kayentao K, Diourté Y, Niare-Doumbo S, Coulibaly D, Koné A, Cissoko Y, Tekete M, Fofana B, Dicko A, Diallo D, Wellems TE, Kwiatkowski D, Plowe CV. Clearance of drug-resistant parasites as a model for protective immunity in falciparum malaria. *American Journal of Tropical Medicine & Hygiene* 69:558-563, 2003.
37. Moulds J, Thomas B, Doumbo OK, Diallo D, Lyke KE, Plowe CV, Rowe J, Birmingham D. Identification of the Kna/Knb polymorphism and a method for Knops genotyping. *Transfusion* 44:164-169, 2004. PMID: PMC2877259.
38. Plowe CV, Kublin J, Dzinjalama FK, Kamwendo D, Mukadam R, Chimpeni P, Molyneux M, Taylor TE. Sustained sulfadoxine-pyrimethamine efficacy for uncomplicated falciparum malaria in Malawi after ten years as first line therapy. *British Medical Journal* 328:545-548, 2004.
39. Cao K, Moormann A, Lyke KE, Masaberg C, Sumba O, Doumbo OK, Koech D, Lancaster A, Nelson M, Meyer D, Single R, Hartzman R, Plowe CV, Kazura J, Mann D, Sztein M, Thomson G, Fernandez-Vina M. Differentiation between African populations is evidenced by the diversity of Alleles and Haplotypes of HLA class I Loci. *Tissue Antigens* 63:293-325, 2004.
40. Diallo D, Doumbo OK, Dicko A, Guindo A, Coulibaly D, Kayentao K, Djimé A, Thera M, Fairhurst R, Plowe CV, Wellems TE. A comparison of anemia in hemoglobin C and normal hemoglobin A children with *Plasmodium falciparum* malaria. *Acta Tropica* 90:295-299, 2004.

41. Lyke KE, Dicko A, Kone A, Coulibaly D, Guindo A, Cissoko Y, Traoré K, Plowe CV, Doumbo O. Incidence of severe *Plasmodium falciparum* malaria as a primary endpoint for vaccine efficacy trials in Bandiagara, Mali. *Vaccine* 22:3169-3174, 2004.
42. Djimde A, Dolo A, Ouattara A, Diakite S, Plowe CV, Doumbo OK. Molecular diagnosis of resistance to antimalarial drugs during epidemics and in war zones. *Journal of Infectious Diseases* 190:853-855, 2004.
43. Lyke KE, Burges R, Cissoko Y, Sangare L, Dao M, Diarra I, Kone A, Harley R, Plowe CV, Doumbo OK, Sztein M. Serum levels of pro-inflammatory cytokines interleukin-1 beta, IL-6, IL-8, IL-10, Tumor necrosis factor-alpha and IL-12p70 in Malian children with severe *Plasmodium falciparum* malaria and uncomplicated malaria or healthy controls. *Infection and Immunity* 72:5630-5637, 2004. PMID: PMC517593.
44. Dzinjalama FK, Macheso A, Kublin J, Taylor TE, Barnes K, Molyneux M, Plowe CV, Smith P. Blood folate concentrations and in vivo sulfadoxine-pyrimethamine failure in Malawian children with uncomplicated malaria. *American Journal of Tropical Medicine & Hygiene* 72:267-272, 2005.
45. Diallo D, Doumbo OK, Plowe CV, Wellems TE, Emanuel E, Hurst S. Community permission for medical research in developing countries. *Clinical Infectious Diseases* 41:255-259, 2005.
46. van Oosterhout J, Laufer MK, Graham S, Thumba F, Perez M, Chimbiya N, Wilson L, Chagomerana M, Molyneux M, Zijlstra E, Taylor TE, Plowe CV. A community-based study of the incidence of trimethoprim-sulfamethoxazole-preventable infections in Malawian adults living with HIV. *Journal of Acquired Immune Deficiency Syndrome* 39:626-631, 2005.
47. Lyke KE, Burges R, Cissoko Y, Sangare L, Kone A, Fernandez-Vina M, Plowe CV, Doumbo O, Sztein M. HLA-A2 supertype-restricted cell-mediated immunity by peripheral blood mononuclear cells derived from Malian children with severe or uncomplicated *Plasmodium falciparum* malaria and healthy controls. *Infection and Immunity* 73:5799-5808, 2005. PMID: PMC1231120.
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49. Thera M, Sehdev P, Coulibaly D, Traore K, Garba M, Cissoko Y, Kone A, Guindo A, Dicko A, Beavogui A, Djimde A, Lyke KE, Diallo D, Doumbo OK, Plowe CV. Impact of trimethoprim-sulfamethoxazole prophylaxis on falciparum malaria infection and disease. *Journal of Infectious Diseases* 192:1823-1829, 2005. PMID: PMC2740817.
50. Lyke KE, Dicko A, Dabo A, Sangare L, Kone A, Coulibaly D, Guindo A, Traore K, Daou M, Diarra I, Sztein M, Plowe CV, Doumbo OK. Association of *Schistosoma haematobium* infection with protection against acute *Plasmodium falciparum* malaria in Malian children. *American Journal of Tropical Medicine & Hygiene* 73:1124-1130, 2005. PMID: PMC2738948.
51. Laufer MK, van Oosterhout J, Thesing P, Thumba F, Zijlstra E, Graham S, Taylor T, Plowe CV. Impact of HIV-associated immunosuppression on malaria infection and disease in Malawi. *Journal of Infectious Diseases* 193:872-878, 2006.
52. Deans A, Lyke KE, Thera M, Plowe CV, Kone A, Doumbo OK, Kai O, Marsh K, Mackinnon M, Raza A, Rowe J. Low multiplication rates of African *Plasmodium falciparum* isolates and lack of association of multiplication rate and red blood cell selectivity with malaria virulence. *American Journal of Tropical Medicine & Hygiene* 74:554-563, 2006. PMID: PMC2738946.

53. Takala SL, Smith D, Stine O, Coulibaly D, Thera M, Doumbo O, Plowe CV. A high-throughput method for quantifying alleles and haplotypes of the malaria vaccine candidate *Plasmodium falciparum* merozoite surface protein-1 19kDa. *Malaria Journal* 5:31, 2006. PMID: PMC1459863.
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55. Cissoko Y, Daou M, Lyke KE, Dicko A, Diarra I, Kone A, Guindo A, Traore K, Krishnegowda G, Diallo D, Doumbo OK, Plowe CV, Gowda D, Sztein M. Glycosylphosphatidylinositols (GPIs) in specimens derived from matched Malian children with severe or uncomplicated *Plasmodium falciparum* malaria and health controls. *American Journal of Tropical Medicine & Hygiene* 75:199-204, 2006.
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60. Thera MA, Doumbo OK, Coulibaly D, Diallo D, Sagara I, Dicko A, Diemert D, Heppner Jr. DG, Stewart V, Angov E, Soisson L, Leach A, Tucker K, Lyke KE, Plowe CV and the Mali FMP1 Working Group. Randomized, double-blind controlled trial of the safety and allele-specific immunogenicity of the *Plasmodium falciparum* merozoite surface protein-142/AS02A malaria vaccine in Malian adults exposed to intense seasonal malaria. *PLoS Clinical Trials* 1:e34, 2006.
61. Rowe JA, Handel IG, Thera MA, Deans AM, Lyke KE, Kone A, Diallo DA, Raza A, Kai O, Marsh K, Plowe CV, Doumbo OK, Moulds JM. Blood group O protects against severe *Plasmodium falciparum* malaria through the mechanism of reduced rosetting. *Proceedings of the National Academies of Science U S A* 104:17471-17476, 2007. PMID: PMC2077280.
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63. Takala SL, Coulibaly D, Thera M, Dicko A, Smith D, Guindo A, Kone A, Ouattara A, Djimde A, Sehdev P, Lyke K, Diallo D, Doumbo OK, Plowe CV. Dynamics of polymorphism in a malaria vaccine antigen at a vaccine-testing site in Mali. *PLoS Medicine* 4:e93, 2007. PMID: PMC1820605.
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69. Takala SL, Ouattara A, Coulibaly D, Thera MA, Dicko A, Guindo A, Kone A, Traore K, Djimde A, Lyke KE, Diallo DA, Doumbo OK, Plowe CV. Dynamics of polymorphism in *Plasmodium falciparum* apical membrane antigen-1 over three years at a vaccine-testing site in Mali. American Journal of Tropical Medicine & Hygiene 77:14, 2007.
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2. Plowe CV. Review of Vaccine Design: Innovative Approaches and Novel Strategies. Clinical Infectious Diseases 53:318, 2011.

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1. Plowe CV. The Danger of Untreatable Malaria is Real and Present. A Report of the Center for Strategic and International Studies (CSIS) Global Health Policy Center, December 2014.
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1. Plowe CV. Malaria. Red Book: Report of the Committee on Infectious Diseases, 24th Ed., American Academy of Pediatrics. Peter G (ed.) 1997.

2. Plowe CV. Folate antagonists and mechanisms of resistance. Antimalarial Chemotherapy, Infectious Diseases Series, Humana Press. Rosenthal P (ed.) 2001.
3. Cao K, Lyke KE, Masaberg C, Doumbo O, Ng J, Hartzman R, Plowe CV, Sztein M, Fernández-Viña M. Distribution and association of alleles at the HLA class I-A, B and C loci in a Malian population. HLA 2002. Immunobiology of the Human MHC. Hansen, J and Dupont, B, (eds.) 2003.
4. Nyunt M, Plowe CV. Malaria. Pharmacology and therapeutics: principles to practice. Saunders. Waldman SA, Terzic A (eds.) 2009.
5. Berry A, Nyunt M, Plowe CV. Malaria: Clinical and epidemiological aspects. Immunology of Infectious Diseases. ASM Press. Kaufmann S, Rouse B, Sacks D (eds.), 2010.
6. Tapia MD, Kotloff KL, Plowe CV, Sow SO. Special issues in performing vaccine trials in developing countries. New Generation Vaccines. Informa Healthcare. Levine MM, Dougan G, Good MF, Liu MA, Nabel GJ, Nataro JP, Rappuoli R (eds.) 2010.
7. Weijer C, Lanata CF, Plowe CV. Ethical considerations in the conduct of vaccine trials in developing countries. New Generation Vaccines. Informa Healthcare. Levine MM, Dougan G, Good MF, Liu MA, Nabel GJ, Nataro JP, Rappuoli R (eds.) 2010.
8. Jacob C, Plowe CV. Malaria genomics and the developing world. Genomics Applications for the Developing World. Nelson KE, Jones-Nelson, B (eds.) 2012.
9. Plowe CV. Malaria vaccines. Encyclopedia of Sustainability Science and Technology. Springer. Kanki P, Meyers R (eds.) 2013.

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1. Plowe CV, Wellems T. Molecular approaches to the spreading problem of drug resistant malaria. Advances in Experimental Medicine and Biology 390:197-209, 1995.
2. Plowe CV, Kublin JG, Doumbo OK. *P. falciparum* DHFR and DHPS mutations: Epidemiology and role in clinical resistance to antifolates. Drug Resistance Updates 1:389-396, 1998.
3. Carlton JM, Fidock DA, Djimde A, Plowe CV, Wellems T. Conservation of a novel vacuolar transporter in Plasmodium species and its central role in chloroquine resistance of *P. falciparum*. Current Opinions in Microbiology 4:415-420, 2001.
4. Wellems TE, Plowe CV. Chloroquine-resistant malaria. Journal of Infectious Diseases 184:770-776, 2001.
5. Sibley C, Hyde J, Sims P, Plowe C, Kublin J, Mberu E, Cowman A, Winstanley P, Watkins W, Nzila A. Pyrimethamine/sulfadoxine resistance in *Plasmodium falciparum*: What next? Trends in Parasitology 17:582-588, 2001.
6. Plowe CV. Monitoring antimalarial drug resistance: making the most of the tools at hand. Journal of Experimental Biology 206:3745-3752, 2003.
7. Laufer MK, Plowe CV. Withdrawing antimalarial drugs: Impact on parasite resistance and implications for malaria treatment policies. Drug Resistance Updates 7:279-288, 2004.
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18. Sibley CH, Barnes KI, Watkins WM, Plowe CV. A network to monitor antimalarial drug resistance: a plan for moving forward. *Trends in Parasitology* 24:43-48, 2008.
19. Plowe CV. The evolution of drug-resistant malaria. *Transactions of the Royal Society of Tropical Medicine & Hygiene*, 103:S11-14, 2009.
20. Takala SL, Plowe CV. Genetic diversity and malaria vaccine design, testing and efficacy: preventing and overcoming 'vaccine resistant malaria'. *Parasite Immunology* 31:560-573, 2009.
21. Plowe CV, Alonso P, Hoffman SL. The potential role of vaccines in the elimination of falciparum malaria and the eventual eradication of malaria. *Journal of Infectious Diseases* 200:1646-1649, 2009.
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29. Plowe CV. The Jeremiah Metzger lecture: new additions to the toolbox for global malaria eradication. *Transactions of the American Clinical and Climatological Association* 125:271-280, 2014.
30. Ouattara A, Barry AE, Dutta S, Remarque EJ, Beeson JG, Plowe CV. Designing malaria vaccines to circumvent antigen variability. *Vaccine* 33:7506-7512, 2015.

c: Editorials, position, and background papers:

1. Laufer MK, Plowe CV. Cotrimoxazole prophylaxis and malaria in Africa: Have the important questions been answered? *American Journal of Tropical Medicine & Hygiene* 75:373-374, 2006.
2. Plowe CV. Combination therapy for malaria: Mission accomplished? *Clinical Infectious Diseases* 44:1075-1077, 2007.
3. Breman JG, Plowe CV. A malaria vaccine for control: more progress. *Journal of Infectious Diseases* 200:317-320, 2009.
4. Plowe CV, Alonso P, Hoffman SL. The potential role of vaccines in the elimination of falciparum malaria and the eventual eradication of malaria. *Journal of Infectious Diseases* 200:1646-1649, 2009.
5. Dondorp AM, Fairhurst RM, Slutsker L, MacArthur JR, Breman JG, Guerin PJ, Wellems TE, Ringwald P, Newman RD, Plowe CV. Perspective: The threat of Artemisinin-resistant malaria. *New England Journal of Medicine* 365:1075-1077, 2011.
6. Plowe CV. Resistance nailed. *Nature News & Views* 505:30-31, 2014.
7. Plowe CV. Vaccine-resistant malaria. *New England Journal of Medicine* 373:2082-2083, 2015.
8. Nyunt MM and Plowe C. Malaria as a Catalyst for Change in Myanmar [Commentary]. Roll Call, August 18, 2015.
9. Nyunt MM and Plowe C. Pursuing disease diplomacy in Myanmar [Op-Ed]. *The Los Angeles Times*, December 14, 2015.
10. Plowe CV. Presidential Address: Tropical medicine in war and peace. *American Journal of Tropical Medicine & Hygiene* 95:5-9, 2016.
11. Plowe CV. In Memoriam: A Tribute to Alan Magill. *Trends in Parasitology* 32:265-266, 2016.

12. Rosenthal PJ, Hill DR, Bausch DG, Goraleski KA, Higgs S, Walker PF, Plowe CV. The (International) American Society of Tropical Medicine & Hygiene. American Journal of Tropical Medicine & Hygiene 95:980-982, 2017.
13. Rosenthal PJ, Bausch DG, Higgs S, Rabinovich NR, Hill DR, Plowe CV, Goraleski KA, Walker PF. Evidence-based policies on migration and global health are essential to maintain the health of those inside and outside the United States. American Journal of Tropical Medicine & Hygiene 96:5-6, 2017.
14. Djimdé A, Miller LH, Plowe CV. Professor Ogobara K. Doumbo (1956-June 9, 2018). Am J Trop Med Hyg. 2018 Nov;99(5):1118-1119. doi: 10.4269/ajtmh.18-1956. PMID: 30350778

Professional awards and special recognitions:

1998	Wall of Fame Outstanding Faculty Award in Host Defenses & Infectious Diseases, awarded by Class of 2001, University of Maryland School of Medicine
2002	Bailey K. Ashford Medal, American Society of Tropical Medicine & Hygiene, awarded for distinguished work in tropical medicine
2005	Elected to American Society for Clinical Investigation, National Honor Society of Physician-Scientists
2007	Doris Duke Distinguished Clinical Scientist Award, Doris Duke Charitable Foundation
2007	Howard Hughes Medical Institute Investigator in Patient-Oriented Research, Howard Hughes Medical Institute
2007	Teaching Commendation in Host Defenses & Infectious Diseases awarded by Class of 2010, University of Maryland School of Medicine
2008	Mary Betty Stevens Award for Excellence in Clinical Investigation, awarded by Maryland Chapter, American College of Physicians
2008	Teaching Commendation in Host Defenses & Infectious Diseases, awarded by Class of 2011, University of Maryland School of Medicine
2010	Faculty Teacher of the Year Award, Department of Medicine, Division of Geographic Medicine, University of Maryland School of Medicine
2010, 2012, 2013	Clinical Publication of the Year Award, Department of Medicine, University of Maryland School of Medicine
2013	Award for Outstanding Work in Science as Related to Medicine, American College of Physicians
2013	Fellow, American Society of Tropical Medicine & Hygiene
2013	Champion of Excellence, University of Maryland Baltimore
2014-2015	President, American Society of Tropical Medicine & Hygiene
2015	Elected to American Clinical and Climatological Association
2016	Faculty Teacher of the Year, Department of Medicine, Division of Geographic Medicine, University of Maryland School of Medicine

Organizations and participation:

American Society of Tropical Medicine & Hygiene
American Public Health Association
American Committee on Clinical Tropical Medicine and Travelers Health
American Society for Clinical Investigation
American Association for the Advancement of Science
American Clinical and Climatological Association

Invited Speeches and Grand Rounds:Local

1. Molecular epidemiology of pyrimethamine and proguanil resistant *P. falciparum* in Mali. 638th meeting of The Helminthological Society of Washington, November 1993.
2. Drug resistance and malaria in Africa: Molecular field epidemiology is not an oxymoron. Tropical Medicine Association of Washington, February 1994.
3. Malaria. Medical Grand Rounds, Department of Medicine, University of Maryland School of Medicine, May 1996.
4. Clinical Malaria. Emergency Medicine Grand Rounds, University of Maryland School of Medicine, July 1996.
5. Drug resistant malaria: Evolutionary genetics and new tools for surveillance. Tropical Medicine Dinner Club of Baltimore, December 1997.
6. A molecular marker for chloroquine resistant falciparum malaria. The Helminthological Society of Washington, 669th Meeting, Rockville, Maryland, March 2000.
7. Molecular markers for drug resistance: From genetic sequence to malaria control. Invited speaker, Malaria: Progress, Problems & Plans in the Genomic Era, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, January 2002.
8. From herbs to genomics: Malaria chemotherapy and drug resistance in the last twenty-one centuries, Tropical Medicine Dinner Club of Baltimore, Annual Banquet, April 2002.
9. Malaria: Global disaster, local liability. Medical Grand Rounds, Department of Medicine, University of Maryland School of Medicine, May 2003.
10. Antigenic diversity and malaria vaccine efficacy. Baltimore-Washington Malaria Meeting, Johns Hopkins Malaria Research Institute, February 2007.
11. From bench to bedside: Antimalarial drug resistance in Africa. Fifth Annual Clinical Investigator Student Trainee (CIST) Forum, Bethesda, Maryland, October 2007.
12. Vaccine resistant malaria. National Institutes of Health Twinbrook Seminar Series, Rockville, Maryland, January 2009.
13. A 36 year-old woman with fever, chills, and myalgias. Clinicopathologic Conference, Medical Grand Rounds, Department of Medicine, University of Maryland School of Medicine, January 2009.

14. Clinical research in Africa: Interacting with local study populations and local scientists. Student National Medical Association Culture Competence Talk, University of Maryland, Baltimore, Maryland, January 2009.
15. Application of genomics to evaluation of malaria vaccine clinical trials. National Foundation for Infectious Diseases (NFID) Twelfth Annual Conference on Vaccine Research, Baltimore, Maryland, April 2009.
16. Extreme polymorphism in a malaria vaccine antigen is associated with clinical illness: Vaccine development implications. University of Maryland School of Medicine Council Meeting, May 2009.
17. Can malaria be eradicated? World Malaria Day Keynote Lecture. Walter Reed Army Institute of Research and Navy Medical Research Center, Silver Spring, Maryland, April 2011.
18. Research toward malaria eradication at the University of Maryland. University of Maryland Medical System (UMMS) Board of Directors Meeting, Baltimore, Maryland, November 2011.
19. Can malaria be eradicated? Medical Grand Rounds, Department of Medicine, University of Maryland School of Medicine, December 2011.
20. Wrestling with malaria. Food for Thought Internal Talk Series, Howard Hughes Medical Institute, Chevy Chase, Maryland, April 2012.
21. Malaria Vaccines. University of Maryland School of Medicine 2014 Festival of Science: Infections, Inflammation & Vaccines, Baltimore, Maryland, December 2014.
22. Plans for Synergy between the New Institute Dedicated to Vaccine Development and Malaria Treatment and Local and Regional Organizations. The Atlantic Vaccines & Immunotherapeutics Summit, Bethesda, Maryland, May 2015.
23. Panel Moderator, The Myanmar National Plan. Conference on Malaria Elimination in Myanmar, convened by the Institute for Global Health (IGH) at the University of Maryland School of Medicine, the Center for Strategic and International Studies (CSIS), and the American Society of Tropical Medicine & Hygiene (ASTMH), Washington, DC, August 2015.
24. The School of Medicine's role in global health: Ending malaria. Mini-Medical School, University of Maryland School of Medicine, Baltimore, Maryland, October 2015.
25. Global health in war and peace, University of Maryland Baltimore County, Guest Lecture, Department of Sociology and Anthropology, Baltimore, Maryland, November 2015.
26. Drug resistant malaria: using genomic epidemiology & population genetics to guide malaria elimination. Johns Hopkins Bloomberg School of Public Health, Malariology, Baltimore, Maryland, March 2016.
27. Global health in war and peace: A case for global health diplomacy. Think Global lecture series, Duke Global Health Institute, Duke University, Durham, North Carolina, September 2018.
28. Eradicating human diseases: opportunities and risks. Panel, Duke at Home in the World, Duke University, Durham North Carolina, November 2018.
29. Strategic partnerships in global health, 14th Annual Center for AIDS Research Retreat, Duke University, Durham, North Carolina, September 2018.
30. Achieving the health SDGs. Panel moderator, Duke Conference on International Development, The New Building Blocks of Development, Duke University, Durham North Carolina, November 2018.

31. Global health in war and peace: A case for global health diplomacy. Institute for Global Health & Infectious Diseases, University of North Carolina, Chapel Hill, North Carolina, November 2018.

National

1. Video imaging of emergence & exflagellation of *Plasmodium falciparum* sexual stages. 41st Annual Meeting of The American Society of Tropical Medicine & Hygiene, Seattle, November 1992. (Video also excerpted on television series ARCHEOLOGY, episode "A Roman Plague", broadcast on The Learning Channel, October 1995).
2. Epidemiology of drug-resistant malaria: Impact of treatment policies and drug availability. Keystone Symposium on the Molecular Basis for Drug Resistance in Bacteria, Parasites and Fungi, Park City, Utah, March 1996.
3. Molecular and epidemiologic mapping of antifolate resistant *Plasmodium falciparum*. International Workshop on Molecular Epidemiology and Evolutionary Genetics of Pathogenic Microorganisms, Centers for Disease Control and Prevention, Atlanta, Georgia, June 1996.
4. Molecular epidemiology of antifolate resistant malaria. Symposium: How to manage the resistance developing to Fansidar. 46th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Orlando, Florida, December 1997.
5. Antifolate resistant malaria: Molecular mechanisms, epidemiology and control strategies. Symposium: Malaria Chemotherapy. 46th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Orlando, Florida, December 1997.
8. Genetic heterogeneity and drug resistance. Malaria Genome Meeting, Washington DC, December 1999.
9. A molecular marker for chloroquine resistant falciparum malaria. Division of Infectious Diseases, University of California, San Francisco, California, July 2000.
10. Clearance of drug-resistant parasites as a model for protective immunity in falciparum malaria. Division of Geographic Medicine, Case Western Reserve University School of Medicine, Cleveland, Ohio, November 2000.
11. A molecular marker for chloroquine-resistant falciparum malaria. Division of Microbiology & Immunology MCP Hahnemann University School of Medicine, Philadelphia, Pennsylvania, November 2000.
12. International biomedical research: Perspectives from a U.S. investigator working in Africa. Annual Retreat, Division of Extramural Affairs, National Institutes of Health, Bethesda, Maryland, October 2000.
13. Application of a molecular marker for surveillance of chloroquine-resistant falciparum malaria. NIAID International Centers for Tropical Disease Research Network, Tenth Anniversary Meeting, National Institutes of Health, Bethesda, Maryland, May 2001.
14. Biomedical ethics in the real world: Perspective from a U.S. investigator working in Africa. International Training in Emerging and Infectious Diseases Annual Directors' Meeting, Fogarty International Center, National Institutes of Health, Bethesda, Maryland, May 2001.
15. Malaria. 13th Annual Symposium on Frontiers of Science, National Academy of Sciences, Irvine, California, November 2001.
16. International Research Ethics. Meet the Professor session, 50th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Atlanta, Georgia, November 2001.

17. A practical model for using molecular markers to monitor chloroquine- and sulfadoxine-pyrimethamine resistant falciparum malaria in sub-Saharan Africa. Plenary speaker, 50th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Atlanta, Georgia, November 2001.
18. Monitoring antimalarial drug resistance: Making the most of the tools at hand. Speaker and Symposium Chair, Anti-Malarial Drugs. 52nd Annual Meeting of the American Society of Tropical Medicine & Hygiene, December 2003.
19. Antimalarial drug treatment in Africa: Is what's good for the goose good for the gander? Pediatric Grand Rounds, Vanderbilt University School of Medicine, Nashville, Tennessee, May 2004.
20. Antimalarial drug resistance in Africa: Strategies for monitoring and deterrence. New York Academy of Science, New York, New York, April 2005.
21. Drug resistant malaria: Mechanisms, surveillance and strategies for deterrence. Division of Infectious Diseases, New York University, New York, New York, October 2005.
22. The use of longitudinal study design for the assessment of antimalarial drug efficacy. Keynote Speaker, Medicines for Malaria Venture/NIAID Meeting on the Design of Phase III Clinical Trials for Malaria, Bethesda, Maryland, December 2005.
23. Benjamin H. Kean Memorial Lecture: Malaria. Cornell University Medical College, New York, New York, March 2006.
24. Genetic diversity and malaria vaccine efficacy. Department of Medical Parasitology, New York University, New York, New York, March 2006.
25. Genetic diversity of *Plasmodium falciparum* malaria vaccine antigens MSP-1 and AMA-1 at a malaria vaccine trial site in Mali. Division of Microbiology and Infectious Disease International Research in infectious Diseases Meeting, Bethesda, Maryland, May 2006.
26. Return of chloroquine anti-malarial efficacy in Malawi. Division of Microbiology and Infectious Disease International Research in Infectious Diseases Meeting, Bethesda, Maryland, May 2006.
27. Application of genetic diversity to human infection with *Plasmodium falciparum*. Symposium: Malaria Genetic Diversity. 56th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, Pennsylvania, November 2007.
28. The role of molecular markers in surveillance for antimalarial drug efficacy. Symposium: World Antimalarial Resistance Network: Steps to Implementation. 56th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, Pennsylvania, November 2007.
29. Genetic diversity and drug-resistant malaria. Symposium: Bridging Pathogenesis and Pathology in Malaria: Addressing Drug Resistance and Tolerance in Malaria Parasites. 56th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, Pennsylvania, November 2007.
30. Malaria vaccines. New York Academy of Sciences, New York, New York, December 2007.
31. Drug resistant malaria. St. Jude/PIDS Pediatric Infectious Diseases Research Conference, Memphis, Tennessee, February 2008.
32. Toward malaria eradication: Research and development frontiers. Malaria Day, Capitol Hill, Washington DC, April 2008.
33. Resistance to malaria drugs. Resources for the Future Consultative Forum on the Affordable Medicines Facility- malaria (AMFm), Washington DC, September 2008.

34. The evolution of drug-resistant malaria. Howard Hughes Medical Institute/National Institutes of Health Research Scholars Meeting, Bethesda, Maryland, October 2008.
35. Genetic diversity and blood-stage malaria vaccine efficacy: Overcoming vaccine resistant malaria. Doris Duke Charitable Foundation Clinical Scientist Meeting, Newport, Rhode Island, October 2008.
36. Antimalarial resistance monitoring: Using surveillance to inform decisions. Symposium: Global Strategies for Using Antimalarial Drugs: Making the Most of a Precious Resource. 57th Annual Meeting of the American Society of Tropical Medicine & Hygiene, New Orleans, Louisiana, December 2008.
37. The evolution of drug-resistant malaria. University of Pennsylvania Institute for Translational Medicine and Therapeutics Seminar, Philadelphia, Pennsylvania, January 2009.
38. Clinical research through the R34 – U01 process. National Institute of Allergy and Infectious Diseases Consultation on Developing Clinical Research Infrastructure for Infectious Diseases, Bethesda, Maryland, July 2009.
39. Defining the knowledge gap: Vaccines and drugs. 58th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Washington DC, November 2009.
40. Malaria Eradication. 14th International Congress on Infectious Diseases, Miami, Florida, March 2010.
41. Global Health: Can we eradicate malaria? Critical Unsolved Problems in BioMedicine: Michael Bishop Symposium, University of California, San Francisco, June 2010.
42. Vaccine Resistant Malaria. Yale School of Public Health Epidemiology of Microbial Diseases Seminar, New Haven, Connecticut, March 2011.
43. Molecular and immune correlates of protection by a blood stage malaria vaccine. Division of Microbiology and Infectious Disease International Research in Infectious Diseases Meeting, Bethesda, Maryland, May 2011.
44. A malaria vaccine: How close are we? The New York Academy of Sciences Malaria Symposium: Drugs, Vaccines and Pathogenesis, New York, New York, April 2012.
45. A genome-wide association study of the genetic basis of resistance to artemisinin treatment of clinical *Falciparum* malaria in Southeast Asia. Translational Medicine Science Meeting, Howard Hughes Medical Institute Janelia Farm Research Campus, Ashburn, Virginia, April 2012.
46. New Blood Stage Concepts: Molecular and Immune Correlates of Strain-Specific Efficacy. NIAID Workshop, Rockville, Maryland, June 2012.
47. Drug Resistant Malaria. Keynote Speaker, Meeting the Challenges of Rare Disease Drug Review, U.S. Food and Drug Administration. Silver Spring, Maryland, April 2013.
48. Progress towards identification of artemisinin resistance molecular markers. Symposium: Mapping Artemisinin Resistance in the Mekong Region. 61st Annual Meeting of the American Society of Tropical Medicine & Hygiene meeting, Atlanta Georgia, November 2012.
49. New additions to the toolbox for global malaria eradication. The Jeremiah Metzger Lecture, 126th Meeting of the American Clinical and Climatological Association, Charleston, South Carolina, October 2013.
50. Malaria eradication: Prospects, pitfalls and new tools. 51st Annual William J. Holloway Infectious Disease Symposium, Christiana Health Care, Newark, Delaware, May 2014.

51. Malaria elimination and drug resistance containment in Asia. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Washington, DC, September 2014.
52. Malaria vaccines. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Washington, DC, September 2014.
53. Panels: Evolving Technologies in the Push for Elimination; The Threat of Artemisinin and Pyrethroid Resistance. A Strategic Approach to Malaria, Center for Strategic and International Studies (CSIS), Washington, DC, December 2014. Videos available at:
<http://csis.org/multimedia/strategic-approach-malaria-interview-dr-plowe>;
<http://csis.org/event/strategic-approach-malaria>
54. Applying Genomics to Malaria Elimination. Gordon Research Conference, Galveston, Texas, March 2015.
55. Panel Moderator, The Myanmar National Plan. Conference on Malaria Elimination in Myanmar, convened by the Institute for Global Health at the University of Maryland School of Medicine, the Center for Strategic and International Studies, and the American Society of Tropical Medicine & Hygiene, Washington, DC, August 2015.
56. Jumping and popping resistance: Mapping malaria parasite networks and migration patterns in Myanmar. Symposium: Political Will and New tools for National Malaria Elimination in Myanmar. 64th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, Pennsylvania, October 2015.
57. Tropical medicine in war and peace. Presidential Address, 64th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia, Pennsylvania, October 2015.
58. International Collaborations in Infectious Disease Research (ICIDR): Answering questions relevant to lower-income countries. 7th Annual Consortium of Universities for Global Health (CUGH) Conference, San Francisco, California, April 2016.
59. Fulfilling the legacy and vision of Alan Magill: Malaria Delenda Est. Alan Magill Malaria Symposium, Walter Reed Army Institute of Research, Silver Spring, Maryland, June 2016.

International

1. Molecular Assays for Drug-Resistant Malaria. Kenya Medical Research Institute/Wellcome Trust Research Laboratories, Kilifi, Kenya, July 1993.
2. Polymerase Chain Reaction (PCR): Une Technique pour la Detection des Parasites du Paludisme Resistant aux Antifolates. Malaria Research & Training Program, National School of Medicine & Pharmacy, Bamako, Mali, August 1993.
3. Pyrimethamine resistance mutations and community antimalarial drug use patterns in Mali. Institute of Molecular Medicine, Oxford University, United Kingdom, August 1994.
4. The selective effect of antifolate drug use on resistance-conferring mutations in *P. falciparum* dihydrofolate reductase. Department of Biochemistry and Applied Molecular Biology, University of Manchester Institute of Science and Technology, Manchester, United Kingdom, August 1994.
5. Bases moléculaires de la résistance à la sulfadoxine-pyriméthamine: Intérêt épidémiologique d'une technique de PCR. The First Scientific Congress of the African Society of Microbiology, Bamako, Mali, January 1996.
6. Epidemiology of drug resistant malaria: Impact of treatment policies and drug use. Malaria Research and Training Center, University of Mali, April 1996.

7. Molecular epidemiology of drug-resistant malaria. 2nd International Workshop on Molecular Epidemiology and Evolutionary Genetics of Pathogenic Microorganisms, ORSTOM/CNRS, Montpellier, France, May 1997.
8. Molecular assays for drug-resistant malaria. Second Global Meet on Parasitic Diseases, Hyderabad, India, August 1997.
9. Drug-resistant malaria. Medical Grand Rounds, Queen Elizabeth Central Hospital and University of Malawi School of Medicine, Blantyre, Malawi, February 1998.
10. Molecular markers for drug-resistant malaria. Plenary speaker, Gordon Research Conference on Malaria, Somerville College, University of Oxford, United Kingdom, July 1998.
11. Molecular mechanisms of drug-resistant malaria: New tools for surveillance? XXV Annual Meeting on Basic Research in Chagas Disease & XIV Meeting of Brazilian Society of Protozoology, Caxambu, Brazil, November 1998.
12. Development of malaria trials: The Mali experience. U.S. / European Commission Workshop on Curriculum Development for Clinical Trials Monitoring, Veyrier-du-Lac, France, March 1999.
13. In vivo chloroquine responses and Pfcrt polymorphisms in Bandiagara, Mali. (Speaker and session organizer) 4th International Meeting on Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases, Dakar, Senegal, June 1999.
14. Potential for trimethoprim-sulfamethoxazole to facilitate Fansidar-resistant malaria. The second conference on Global Strategies for the Prevention of HIV Transmission from Mothers to Infants, Montreal, Canada, September 1999.
15. Malaria, the growing problem of drug resistance. Plenary speaker, Swiss Society of Tropical Medicine Parasitology, Annual Congress, Solothurn, Switzerland, November 1999.
16. Drug resistant malaria. Department of Medical Biochemistry, University of Stellenbosch Medical School, Cape Town, South Africa, November 1999.
17. Update on molecular markers for drug-resistant malaria: Implementation and implications for clinical immunity. Invited speaker, Gordon Research Conference on Malaria, Queen's College, Oxford, United Kingdom, August 2001.
18. Monitoring antimalarial drug resistance: Making the most of the tools at hand. Quinto Simposio de Investigaciones en Salud, Escuela de Salud Publica, Universidad del Valle, Cali, Colombia, October 2003.
19. Antimalarial drug treatment in Africa: Is what's good for the goose good for the gander? Annual Scientific Meeting of the Wellcome Trust Tropical Centre, Zomba, Malawi, October 2004.
20. Dynamics of *P. falciparum* sensitivity to chloroquine and sulfadoxine-pyrimethamine during 7 years of sentinel site surveillance in Bandiagara, Mali. Medicine and Health in the Tropics, Marseille, France, September 2005.
21. Assessing antimalarial efficacy in Africa: Longitudinal trials as a public health tool. 4th Multilateral Initiative on Malaria Pan-African Malaria Conference, Yaounde, Cameroon, November 2005.
22. Clinical efficacy of chloroquine in Malawi in 2005. Malaria Alert Centre, University of Malawi College of Medicine, April 2006.
23. Assessing treatment efficacy in vivo: What should we follow? 12th International Society for Infectious Diseases meeting, Lisbon, Portugal, June 2006.

24. Antimalarial resistance and how it's affecting therapeutic strategies. IDSA/ICAAC Joint Symposium: Susceptibility, Infectious Diseases Society of America 44th Annual Meeting, Toronto, Canada, October 2006.
25. Genetic diversity and malaria drug and vaccine efficacy. Malaria Parasite Diversity Meeting, Wellcome Trust Sanger Institute, Hinxton, United Kingdom, January 2007.
26. Drugs and resistance. Antimalarial Treatment Strategies: Getting the Most from Malaria Drugs, Kruger National Park, South Africa, April 2008.
27. Artemisinin resistance? Confirmation, characterization, containment (ARC3). 2008 Next Steps for Plasmodium Post-Genomic Research: A Strategy Meeting, London, United Kingdom, April 2008.
28. Genetic diversity and malaria vaccine efficacy. 2008 Next Steps for Plasmodium Post-Genomic Research: A Strategy Meeting, London, United Kingdom, April 2008.
29. Public health application of Plasmodium genomics: Drug resistance markers. Genomic Epidemiology of Malaria, Wellcome Trust Sanger Institute, Hinxton, United Kingdom, June 2008.
30. The evolution of drug-resistant malaria. Annual Scientific Meeting of the Wellcome Trust Tropical Centre, Liverpool University, Liverpool, United Kingdom, September 2008.
31. Defining the genotype of artesunate resistance. World Health Organization ARC3 Investigators' Meeting, Bangkok, Thailand, September 2009.
32. Defining the knowledge gaps: Tools. 5th Multilateral Initiative on Malaria Pan African Malaria Conference, Nairobi, Kenya, November 2009.
33. Update in the global effort to identify artemisinin resistance markers. Genomic Epidemiology of Malaria, Wellcome Trust Sanger Institute, Hinxton, United Kingdom, June 2010.
34. Genetic diversity and malaria drug and vaccine efficacy. Frontiers in Genomics, National University of México, Campus Cuernavaca, Mexico, September 2010.
35. Progress on Drug Resistant Malaria: Use of Genomics to Identify Artemisinin Resistance Markers. National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Shanghai, China, February 2011.
36. Putting the malaria genome to good use. Opening Plenary Lecture, Genomic Epidemiology of Malaria, Wellcome Trust Sanger Institute, Hinxton, United Kingdom, June 2011.
37. Genomic analysis of *P. falciparum* diversity: Implications for vaccine development. 2012 Grand Challenges Meeting, Ottawa, Canada, December 2012.
38. Malaria vaccines: Update. Department of Medical Research-Lower Myanmar, Yangon, Myanmar, September 2013.
39. Malaria. Continuing Medical Education lecture for Myanmar Medical Association, Yangon, Myanmar, September 2013.
40. A case study of the benefits of research for public health: Malaria elimination in the Greater Mekong Sub-region. 5th International Conference on Public Health among Greater Mekong Sub-region Countries, Yangon, Myanmar, September 2013.
41. The role of vaccines in malaria elimination. Symposium: The role of vaccines in malaria elimination, 6th Multilateral Initiative on Malaria Pan-African Malaria Conference "Moving towards malaria elimination: Investing in research and control", Durban, South Africa, October 2013.

42. The Great Malaria Debate: Elimination of artemisinin-resistant malaria from Southeast Asia – is it possible? Joint International Tropical Medicine Meeting, Bangkok, Thailand, December 2013.
43. New tools for the surveillance of malaria in Myanmar. Department of Medical Research-Lower Myanmar, Yangon, Myanmar, February 2014.
44. The molecular basis of artemisinin resistant malaria. Delaying Artemisinin Resistance in India: A Consultation Convened by the Public Health Foundation of India and National Institute of Malaria Research, Delhi, India, March 2014.
45. New tools for malaria elimination in Myanmar. 22nd Myanmar Military Medical Conference, Yangon, Myanmar, February 2015.
46. Molecular surveillance for malaria elimination in Myanmar. Emerging Infectious Diseases: Current Practices and Strategic Approaches to Future Challenges, Defence Services Medical Research Center, Nay Pyi Taw, Myanmar, February 2015.
47. New tools for malaria elimination. 23rd Myanmar Military Medical conference, Yangon, Myanmar, February 2016.
48. New progress for artemisinin resistance surveillance in Asia. 3rd Symposium on Surveillance Response System Leading to Tropical Diseases Elimination, Shanghai, P.R.C., June 2016.
49. Drug resistant malaria - emergence, selection, spread: Global health implications. 7th Multilateral Initiative on Malaria Conference, Dakar, Senegal, April 2018.
50. Molecular prevalence of malaria in Myanmar and neighboring regions in Bangladesh and China. Genomic Epidemiology of Malaria 2018, Hinxton, United Kingdom, June 2018.
51. Drug resistant malaria - emergence, selection, spread: Global health implications. Institut für Tropenmedizin, University of Tübingen, Tübingen, Germany, June 2018.
52. Drug resistant malaria - emergence, selection, spread: Global health implications. Kilimanjaro Christian Medical College, Moshe, Tanzania, June 2018.

Administrative Service:

Institutional Service

1995 - 1999	Head, Molecular Parasitology and Malaria Field Studies Unit Center for Vaccine Development, University of Maryland School of Medicine
1999 - 2010	Chief, Malaria Section, Center for Vaccine Development University of Maryland School of Medicine
2000 - 2003	Research Advisory Committee University of Maryland School of Medicine
2005 – 2010	Global Health Multidisciplinary Research Committee University of Maryland Baltimore
2005 – 2010	Global Health Educational Committee University of Maryland Baltimore

2009 Subcommittee on Individualizing the Curriculum, Part of the new Education Roadmap
University of Maryland School of Medicine

2010 Faculty Excellence Recognition and Awards Committee
University of Maryland School of Medicine

2010 – 2015 Leader, Malaria Group, Center for Vaccine Development
University of Maryland School of Medicine

2010 – 2015 Associate Director for Research Training, Center for Vaccine Development
University of Maryland School of Medicine

2015 Interim Director, Center for Vaccine Development
University of Maryland School of Medicine

2015 – 2016 Chief, Division of Geographic Medicine, Department of Medicine
University of Maryland School of Medicine

2015 – 2017 Founding Director, Institute for Global Health
Director, Division of Malaria Research
University of Maryland School of Medicine

2018 – present Director, Duke Global Health Institute

Local Service

1990 Volunteer Physician, New York City Marathon

1992 Organizer, Combined Malaria Seminar, Bethesda, Maryland

1994 Volunteer Physician, Washington Free Clinic, Washington D.C.

2001 – 2003 Board Member, Tropical Medicine Dinner Club of Baltimore

2010 Panel Member, Commercial Opportunities for Global Health
TechCouncil of Maryland

National and International Service

1983 - 1985 Member, Cornell University Board of Trustees

1994 - 1996, 2001
2003 - 2005
2013 - 2014 Expert consultant to law firms on malpractice cases involving malaria

1995 - present Reviewer of manuscripts for scientific journals including: *Science*, *Nature*, *New England Journal of Medicine*, *Lancet*, *Proceedings of the National Academy of Sciences USA*, *PLoS Medicine*, *Journal of Clinical Investigation*, *Journal of Infectious Diseases*, *Clinical Infectious Diseases*, *Annals of Internal Medicine*, *American Journal of Epidemiology*, *Journal of Clinical Microbiology*, *Experimental Parasitology*, *Journal of Parasitology*, *Epidemiologic Reviews*, *Antimicrobial Agents and Chemotherapy*, *American Journal of Tropical Medicine & Hygiene*, *Trends in Parasitology*, *Drug Resistance Updates*, *Infection and Immunity*, *Annals of Tropical Medicine and Parasitology*, *Malaria Journal*

1997 - 2004 Expert consultant to International Atomic Energy Agency, Division on Human Health, Regional Program on Malaria Control in Africa, to transfer technology for molecular diagnosis of drug-resistant malaria to laboratories in Africa

1997 - 2009 Founding Chairman, Benjamin H. Kean Traveling Fellowship Committee, American Society of Tropical Medicine & Hygiene

1997 Member, Advisory group on establishment of Malaria Research Reference and Reagent Resource, NIAID

1997 Grant reviewer, Department of Veterans Affairs, Merit Review

1998 Member, NIAID Special Emphasis Panel for review of RFA "Human Immune Resistance to Malaria in Endemic Areas"

1998 Member, NIAID Special Emphasis Panel for review of RFA "Tropical Diseases Research Units"

1998 Grant reviewer, Conservation, Food & Health Foundation, Inc.

1998 Reviewer, Wellcome Trust, Wellcome Research Training Fellowship in Tropical Medicine

1999 Grant reviewer, UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases / Multilateral Initiative on Malaria Task Force on Malaria Research Capability Strengthening in Africa grant

1999 Technical Advisor, Meeting on Markers of Antimalarial Drug Resistance World Health Organization

1999 Technical advisor on malaria research priorities, USAID Bureau for Africa

1999, 2002 Ad hoc reviewer, NIAID study section, Tropical Medicine & Parasitology

1999 - 2003 Councilor, American Society of Tropical Medicine & Hygiene

1999 Reviewer, Wellcome Trust International Research Development Award

2000 Panelist on Ethical Issues in International Health Research President's National Bioethics Advisory Commission

2000 Joint UNAIDS/WHO Consultation on Prophylactic Use of Cotrimoxazole to Prevent Opportunistic Infections among People Living With HIV/AIDS in Africa, Harare, Zimbabwe

2000 - 2006 Editorial Board, *Infection and Immunity*

2000 - 2008 Scientific Program Committee American Society of Tropical Medicine & Hygiene

2001 Expert witness testimony on behalf of American Society of Tropical Medicine & Hygiene for Committee on Appropriations, Subcommittee on Labor, Health and Human Services, Education, and Related Agencies, United States House of Representatives

2001 Consultation on Monitoring Resistance to Antimalarial Drugs World Health Organization

2002 International Planning Workshop for the FY 2004 NIH Plan for HIV-Related Research, National Institute of Allergy and Infectious Diseases

2002 Meeting on Tuberculosis, AIDS and Equity, National Tuberculosis Control Programme, Lilongwe, Malawi

2002 – 2006 Member, Scientific Advisory Committee, Malaria Research and Reference Resource Center (MR4), American Type Culture Collection

2002, 2003 Grant reviewer, Wellcome Trust Tropical Medicine Programme

2003 Scientific Review Panel, Malaria in Pregnancy Consortium Bill & Melinda Gates Foundation, London, UK

2003 Consultation on the Goal of Antimalarial Treatment Policy in the WHO Africa Region, Harare, Zimbabwe

2003 Grant Reviewer, AAAS Women’s International Science Collaboration Program

2003 - 2005 Nominations Committee, American Society of Tropical Medicine & Hygiene

2004 Grant Reviewer, Wellcome Trust Career Development Fellowship in Clinical Tropical Medicine

2005 Ad hoc member, National Institute of Allergy and Infectious Diseases, Microbiology and Infectious Diseases Review Committee, Institutional National Research Service Award Research Training Grants and Career Development/Research Career Development (K) Awards

2005 Special Emphasis Panel, National Institute of Allergy and Infectious Diseases Loan Repayment Program

2005 Burroughs Wellcome Fund Next steps for malaria research: Where are we going in the post-genomic era? Broad Institute, Cambridge, MA

2005 Expert Consultation on Co-Trimoxazole Prophylaxis in HIV infection World Health Organization, Geneva

2005 Consultation on the Use of Sulfadoxine-Pyrimethamine for Intermittent Preventive Therapy During Pregnancy in Areas of Moderate to High SP Resistance, World Health Organization-AFRO, Harare, Zimbabwe

2006 – 2011 Editorial Advisory Board, *Journal of Infectious Diseases*

2006 - 2008 *Plasmodium falciparum* Haplotype Map Advisory Committee Broad Institute of MIT and Harvard

2006 World Health Organization Working Group on Measures of Malaria Vaccine Efficacy, Montreux, Switzerland

2007 Special Emphasis Panel, National Institute of Allergy and Infectious Diseases NIAID Clinical Trial Planning (R34) Grants

2008 - 2009 Vice Chair, Board of Directors Worldwide Antimalarial Resistance Network (WWARN)

2008 - 2014 Head, Molecular Module, Worldwide Antimalarial Resistance Network (WWARN)

2008	Study Committee on Intermittent Preventive Therapy for Malaria in Infants Board on Global Health, Institute of Medicine of the National Academies
2008 - 2009	International Scientific Committee and Session Chair, Multilateral Initiative on Malaria 5th Pan-African Malaria Conference, Nairobi, Kenya
2008 - 2010	Chair, Drugs Consultative Group and Member, Steering Committee and Vaccines Consultative Group, Malaria Eradication Research Agenda (malERA)
2008 - 2009	Scientific Advisory Panel, Doris Duke Charitable Foundation Clinical Scientist Development Award
2008	Malaria Disease Scientific Advisory Board, FasterCures Philanthropy Advisory Service, Milken Institute
2009	Expert Consultant, World Health Organization Initiative for Vaccine Research, Scientific Forum: Progress and Challenges with Whole-Organism Malaria Vaccines, Dakar, Senegal
2009	Technical Advisor, World Health Organization Meeting: Define and Validate the Protective Efficacy of SP-IPTi, Geneva, Switzerland
2009	Consultation on Developing Clinical Infrastructure for Infectious Diseases, National Institute of Allergy and Infectious Diseases (NIAID)
2010	Chair, NIH/FIC Conference on Artemisinin Resistant Malaria: Research Challenges, Opportunities, and Public Health Implications
2012 - present	Member, Technical Expert Group on Drug Resistance and Containment, Global Programme on Malaria, World Health Organization (WHO)
2012 - 2015	KAE609 Advisory Board, Novartis Pharma AG
2013 – 2015	Consultant, Provide Scientific Advice on Development in the Field of Malaria, Novartis Pharma AG
2013	Informal Consultation on Operational Research to Support Accelerating Malaria Elimination in the Context of Artemisinin Resistant Falciparum Malaria in the Greater Mekong Sub-Region, Bangkok, Thailand
2014	Delaying Artemisinin Resistance in India, a Consultation Convened by the Public Health Foundation of India and National Institute of Malaria Research, Delhi, India
2014	Expert Review Group on K13, World Health Organization (WHO)
2016	WHO Expert Consultation on Adoption and Operationalization of WHO Global Policies, Guidance and Strategies in Malaria in the South-East Asia Region and the Greater Mekong Sub-region, WHO SEARO, New Delhi, India
2016	CDC Foundation Expert Panel on Addressing Multidrug-Resistant TB, Artemisinin-Resistant Malaria, and Increasing Vaccine Use: Opportunities for Global Action and Approaches on Antimicrobial Resistance, New York, New York
2016	WHO Global Malaria Programme Expert Review Group on the Emergence and Spread of multidrug resistant <i>P. falciparum</i> lineages in the Greater Mekong Sub-Region, Geneva, Switzerland

- 2018 - present Member, Scientific Advisory Board, Johns Hopkins Malaria Research Institute, Baltimore, Maryland
- 2018 - present Member, Scientific Advisory Council, Medical Research Program, Doris Duke Charitable Foundation, New York, New York

Teaching Service:

University of Maryland School of Medicine

- 1995 Tropical Medicine and International Health, Course for 3rd & 4th year students. Course organizer and lecturer. Student contact time: 10 hours/week x 4 weeks/year.
- 1996 summer Research elective supervisor for 4th year medical student Mark Landrum.
- 1996 - 2005 Small group leader for Infectious Diseases section of Host Defenses & Infectious Diseases course for 15-20 medical students. Student contact time: 3 hours/year.
- 1996 - present Research supervisor for visiting fellows from Brazil (1) Colombia (2), China (1), Kenya (1), Mali (13), Malawi (3), Myanmar (1), Pakistan (1), Tanzania (2), Thailand (2), Uganda (1), Venezuela (1) for six weeks to one year each.
- 1996 - 2005, 2007-2008 Lecturer for parasitology block in Host Defenses & Infectious Diseases course for ~150 medical students. Student contact time: 2 hours/week x 1 week/year.
- 1996 - present Small group leader for parasitology block in Host Defenses & Infectious Diseases course for ~150 medical students. Student contact time: 2 hours/week x 1 weeks/year.
- 1997 – 2010 Malaria lecture, Board Review Course for Infectious Diseases Fellows.
- 1996 - 2002 Clinical supervision and teaching of 1-3 medical students, 1-2 medical residents, 0-2 pharmacy students and residents, and 1-2 infectious diseases fellows. Contact time, 20 hours/week, 2 months/year. (2 weeks/year in 2002).
- 1997 - 2002 Ph.D. thesis supervisor for Abdoulaye Djimde in Microbiology & Immunology, Mentor for NIH career development award
- 1998 - 2001 Research supervisor for research fellow James Kublin, M.D., M.P.H. Mentor for NIH K01 Career Development Award
- 1998-present (biennially) Malaria Vaccines lecture, Vaccinology Course, Center for Vaccine Development/Department of Epidemiology & Preventive Medicine. 20-30 graduate students, fellows, & staff. Contact time 1 hour/year.
- 1998 - 1999 Research supervisor for Masters degree student Victoria Kioko
- 1999 summer Research supervisor for visiting medical student Andrew Cole
- 1999 - 2001 Research supervisor for MSc student Jayasree Iyer Department of Microbiology & Immunology
- 1999 - 2006 Supervisor for clinical and research fellow Kirsten Lyke, M.D. Mentor for NIH K23 Career Development Award

1999 - 2002 Supervisor for clinical and research fellow Paul Sehdev, M.D.

2001 Supervisor for Preventive Medicine Resident Ely Mouchahoir, M.D.

2002 - 2004 Ph.D. dissertation committee member for Rhoel Dinglasan, Department of Microbiology & Immunology

2002 - 2004 Ph.D. advisor for Modesta Ndejemi Department of Microbiology & Immunology

2002 - 2006 Ph.D. advisor and committee co-chair for Shannon Takala, Molecular Epidemiology Track Department of Epidemiology and Preventive Medicine

2002 - 2004 Research supervisor for Miriam Laufer, M.D., mentor for NIH K23 Career Development Award

2003 - 2006 Research supervisor for Lorraine Beraho, Meyerhoff Scholar, Howard Hughes Medical Institute Scholar, UMBC undergraduate (full-time Summer 2003; part-time through 2006)

2003 - 2005 Research supervisor for Aric Gregson, M.D., Vaccinology Fellow, Center for Vaccine Development

2004 - 2006 Research supervisor for Jason Nixon NIH Fogarty International Clinical Research Scholar

2004 - 2007 Research supervisor for Phillip Thesing, D.O., post-doctoral fellow

2004 - 2006 Research supervisor for Craig Conard, NIH Fogarty International Clinical Research Scholar

2005 - 2009 Ph.D. dissertation committee member for Calvin Williams, Department of Microbiology and Immunology

2005 - 2009 Ph.D. dissertation committee member for Saranath Lawpoolsri, Department of Epidemiology and Preventive Medicine

2005 - 2012 Research supervisor for Amed Ouattara, Pharm.D., doctoral student in Molecular Epidemiology

2005 - 2008 Research supervisor for Matthew Laurens, M.D., M.P.H., Vaccinology Fellow, Center for Vaccine Development

2006 - 2016 Lecturer, Global Health: Critical Issues (PREV664)

2006 - 2008 Research supervisor for Amber Gaither, Meyerhoff Scholar, Howard Hughes Medical Institute Scholar UMBC undergraduate (part-time)

2006 - 2011 Research supervisor for Kavita Gandhi, graduate student in Molecular Epidemiology

2007 Research supervisor for University of Maryland medical students Katie Bever, Sarah Edekin-Weyer, Nidhi Goel, Robin Goldman, Doris Duke Malaria Research Fellows (Malawi, Mali)

2007 - 2008 Research supervisor for Breanna Barger
NIH Fogarty International Clinical Research Scholar

2007 - 2008 Research supervisor for Chuka Didigu
Villa Julie College undergraduate (part-time)

2008 Research supervisor for University of Maryland medical
students Aaron Hess, Andrea Hebert, Ravindra Gopaul, Marie Shockley,
Doris Duke Malaria Research Fellows (Malawi, Mali)

2008 - 2009 Research supervisor for Jessica Manning, NIH Fogarty
International Clinical Research Scholar

2008 - 2011 Research supervisor for Anissa Alexander
Meyerhoff Scholar, Howard Hughes Medical Institute
Scholar, Ventures Scholar, UMBC undergraduate student in
Biomedical Science (full-time Summer 2008; part-time otherwise)

2008 Research supervisor for Sarah Sauthoff, Villa Julie College
undergraduate (part-time)

2008 - 2010 Research supervisor for Mark Travassos, M.D., M.Sc.,
Vaccinology Fellow, Center for Vaccine Development

2007 - 2009 Research supervisor for Andrea Berry, M.D.,
Vaccinology Fellow, Center for Vaccine Development

2008 - 2011 Research supervisor for Meera Venkatesan, Ph.D.,
Postdoctoral Fellow, Center for Vaccine Development

2009 Research supervisor for University of Maryland medical
students Leah Couture, Elizabeth Gillenwater, Elizabeth Gilliams,
Adam Martin, Doris Duke Malaria Research Fellows (Malawi, Mali)

2009 Research supervisor for Shani Weerakoon, Howard
Hughes Summer Research Intern

2009 - 2010 Research supervisor for Ako Berenger, Robert S. MacNamara Fellow

2009 - 2010 Research supervisor for Anastasia Grivoyannis, NIH
Fogarty International Clinical Research Scholar

2009 - 2010 Research supervisor for Anne Frosch, M.D., M.P.H.,
Vaccinology Fellow, Center for Vaccine Development

2009 - 2010 Research supervisor for Amelia Maiga
NIH Fogarty International Clinical Research Scholar

2010 Research supervisor for University of Maryland medical students Adam
Kalwerisky, Matthew Pierce, Robert Sellke, Jennifer Silber, Doris Weyinshet
Gossa, Abbey Masonbrink, Adam Martin, Doris Duke Malaria Research Fellows
(Malawi, Mali)

2010 Research supervisor for Kristin Boulier
Johns Hopkins University undergraduate (summer)

2010 Research supervisor for Atheeth Hiremath, Meyerhoff Scholar, UMBC undergraduate student in Biochemistry & Molecular Biology (part-time)

2010 - 2015 Research supervisor for Jason Bailey, doctoral student in Molecular Epidemiology

2010 - 2015 Research co-supervisor for Elena Artimovich, doctoral student in Human Genetics and Genomic Epidemiology

2010 - 2015 Research supervisor for Christopher Jacob, doctoral student in Molecular Genetics, Genomics, and Bioinformatics

2011 Research supervisor for Gabriel Rangel, HHMI Exceptional Research Opportunities Program participant, Purdue University undergraduate student in Biochemistry (summer)

2011 Research supervisor for Grace Maldarelli, MD PhD student in Molecular Epidemiology (rotation)

2011 Research supervisor for University of Maryland medical students Elizabeth Allan, Sarah Boudova, Erin Haser, Rachel Koch, Jessica Moskowitz, Rachel Shuck, Doris Duke Malaria Research Fellows (Malawi, Mali)

2011 Research supervisor for Kenneth Wayman, Mcdonogh High School

2011 - 2012 Research supervisor for Leo Kenefic, Ph.D., Postdoctoral Fellow, Center for Vaccine Development Malaria Group

2011 - 2013 Research supervisor for Mehul Dhorda, Ph.D., Postdoctoral Fellow, Center for Vaccine Development Malaria Group/Mahidol University, Bangkok, Thailand

2011 - 2013 Research supervisor for Aamer Khattak, visiting fellow from Pakistan

2011 - 2012 Research supervisor for Rafael Sobota, NIH Fogarty International Clinical Research

2011 – present Research supervisor for Mary Sedegah, masters student in Molecular Medicine

2012 - 2015 Research supervisor for Amed Ouattara, Pharm.D. Ph.D., Postdoctoral Fellow, Center for Vaccine Development Malaria Group

2012 Research supervisor for Brittney Naylor, HHMI Exceptional Research Opportunities Program

2012 Research supervisor for Simon Emaikwu University of Maryland Baltimore County undergraduate student in Biochemistry & Molecular Biology (part-time)

2012 Research supervisor for Sarah Schaffer DeRoo, Benjamin H. Kean Traveling Fellowship in Tropical Medicine (Thailand)

2012 Research supervisor for Christian Larsen, Benjamin H. Kean Traveling Fellowship in Tropical Medicine (Myanmar)

- 2012 Research supervisor for Scot Mu, medical student at Thomas Jefferson Medical College (summer)
- 2012 Research supervisor for Rungniran Sug-aram and Thirasak Hoonchaiyaphum, Ministry of Public Health, Thailand
- 2012 Research supervisor for Visiting Scientist Kay Thwe Han, Department of Medical Research Lower Myanmar
- 2012 - 2013 Research supervisor for Theo Abah, UMBC undergraduate student in Biochemistry & Molecular Biology (part-time)
- 2013 - 2017 Research supervisor for Fang Huang, Associate Professor, National Institute of Parasitic Diseases, China CDC
- 2013 - 2014 Research supervisor for Tyler Brown, Howard Hughes Medical Research Fellow
- 2013 Research supervisor for Martin Tinkerhess, HHMI Summer Medical Fellow
- 2013 Research supervisor for Bhavish Manwani, HHMI Summer Research Fellow
- 2013 Research supervisor for University of Maryland medical student Genna Jerrard, Benjamin H. Kean Traveling Fellowship in Tropical Medicine (Myanmar)
- 2013 Research supervisor for Sarah Brown, UMBC undergraduate student in Biochemistry & Molecular Biology (part-time)
- 2014 Research supervisor for University of Maryland medical student Ya Zhou Benjamin H. Kean Traveling Fellowship in Tropical Medicine (Myanmar)
- 2014 Research supervisor for Sara Nelson-Owens, Michael Skaro, and Bettie Wanjeri, Undergraduate Summer Research Fellows
- 2015 Research supervisor for Omar Hadied and Abigail Rosenberger, HHMI Summer Research Fellows
- 2015 Research supervisor for Eliza Calkins and Drew Dinsmore, Undergraduate Summer Research Fellows
- 2015 Research supervisor for Ann Marie Gustafson, Medical Student Summer Research Fellow
- 2015 - 2017 Research supervisor for Andrew Pike, Ph.D., Postdoctoral Fellow, Institute for Global Health, Division of Malaria Research
- 2015 - 2017 Research supervisor for Jason Bailey, Ph.D., Postdoctoral Fellow, Institute for Global Health, Division of Malaria Research
- 2015 - 2017 Research co-supervisor for Kayvan Zainabadi, Ph.D., Postdoctoral Fellow, Institute for Global Health, Division of Malaria Research

Johns Hopkins Bloomberg School of Public Health

- 1994 - 2007 Infectious Diseases and Child Survival, Department of International Health, annual Malaria Lecture. 20-30 graduate students, 2 hours/year.

1997 - present	Evolution and Spread of Drug Resistant Malaria, Department of Molecular Microbiology and Immunology, Malariology course lecture. 20-30 graduate students, 1.5 hours/year.
1997 - 2000, 2004 - 2006	Malaria, Summer Institute on Tropical Medicine lecture 30-40 graduate students & health professionals, 1 hour/year.
1998	Supervisor for Preventive Medicine resident James Kublin, M.D.
1998 - 2000	Thesis advisor to Ph.D. candidate Fabian Mendez, Department of Epidemiology
1999	Supervisor for Preventive Medicine resident Elissa Malkin, M.D.
2001	Supervisor for Preventive Medicine resident Olugbenga Obasanjo, M.D.

University of Bamako Faculty of Medicine, Bamako, Mali

1994	Molecular field epidemiology: PCR detection of pyrimethamine resistant <i>P. falciparum</i> from finger stick blood on filter paper strips. Lecture, laboratory and field exercises in International Atomic Energy Agency sponsored course: Nuclear techniques for malaria research and control, Malaria Research and Training Center, Bamako, Mali. 20 international trainees, 10 contact hours.
1998	Molecular Epidemiology of Drug Resistant Malaria, 11th Annual Course in Epidemiology, Departments of Epidemiology of Parasitic Diseases and Public Health. 40 international trainees, contact time 2 hours.
1999 – present	Co-supervisor for 4-8 training grant fellows for M.Sc. and Ph.D. degrees in Parasitology
2012	Molecular and Genomic Epidemiology of Malaria Learning and teaching parasite cell biology: A route to successful biomedical research in Africa, contact time 40 hours

University of Malawi College of Medicine, Blantyre, Malawi

1998 - 2000	Supervisor for research fellow Deborah Kamwenda, M.Sc.
1998 - 2003	Supervisor and co-thesis advisor for Ph.D. candidate Fraction Dzinjalama (degree awarded by University of Cape Town)
2000 - 2002	Supervisor for research fellows Standwell Nkhoma and Rabia Mukadam
2002 - 2005	Co-thesis advisor for Standwell Nkhoma and Rabia Mukadam, Liverpool University

Other

1997	Lecturer, Regional Training Course on Molecular Biology Techniques and Radionuclide Tracers in the Control of Malaria and Tuberculosis, Stellenbosch University, Cape Town, South Africa
1999	Lecturer, Regional Training Course on Isotopes and Molecular Techniques for Diagnosis and Control of Communicable Diseases, Stellenbosch University, Cape Town, South Africa
2004	Co-Organizer/Facilitator, Regional Training Course on Data Management and Quality Assurance Programme on Radionuclide Based Molecular Techniques in the Detection of Drug Resistant Malaria, University of Bamako, Mali
2005 - 2006	Lecturer, Scientific Writing, Fogarty International Center, for Fogarty International Center / Ellison Medical Foundation Overseas Fellows in Global Health and Clinical Research
2006	Facilitator, Atelier Paludisme (Course on Malaria), Institut Pasteur de Madagascar, Antananarivo, Madagascar
2011	Ph.D. thesis examiner, Rina Pok-Man Wong, University of Western Australia
2013	Lecturer, Genomic Epidemiology of Malaria Course Wellcome Trust Sanger Institute, Bangkok, Thailand

Areas of research interests (basic and applied) - list:

Malaria research - epidemiology, clinical trials, molecular parasitology, immunology, population genetics, genomics, genomic epidemiology, geospatial modeling and mapping, HIV-malaria interactions and ethics of international research

External support - gifts, grants, and contracts:

Completed Grants:

Role Title Source	Amount	Dates
(PI) "Drug resistant malaria in Mali" Interagency Personnel Act Agreement, Laboratory of Parasitic Diseases, NIAID/NIH	Total Direct Costs: \$97,134	11/95 - 11/97
(PI) "Studies of the safety and immunogenicity of live oral cholera vaccine strain CVD 103-HgR in HIV- infected and non-infected adults in Mali." WHO Global Programme on Vaccines grant	Total Direct Costs: \$40,000	4/96 - 4/98
(PI) "Transfection studies of drug resistance due to new mutations in <i>P. falciparum</i> DHFR and DHPS" WHO Committee on Malaria Pathogenesis – UNDP/World Bank/WHO Special Programme in Tropical	Total Direct Costs: \$41,681	11/96 - 10/98

Diseases Research.

(Investigator) PI: O. Doumbo "The epidemiology of <i>var</i> gene expression in naturally acquired <i>Plasmodium falciparum</i> infections from an area of high endemicity" WHO Tropical Diseases Research grant	Total Direct Costs: \$25,000	4/96 - 3/97
(Investigator) PI: O. Doumbo "Malaria epidemiology and entomology in Mali" Tropical Medicine Research Center grant, NIH, NIAID	Total Direct Costs: \$2,750,003	4/96 - 3/01
(PI) "Basis of in vivo <i>Plasmodium falciparum</i> resistance to pyrimethamine-sulfadoxine" University of Maryland School of Medicine Intramural Grant (DRIF Award)	Total Direct Costs: \$11,375	7/96 - 6/97
(Investigator) PI: M. Levine "Multivalent Salmonella typhi-based malaria vaccines" NIH R01 - AI40297	Total Direct Costs: \$536,031	4/97 - 3/00
(PI) " <i>P. falciparum</i> resistance to pyrimethamine-sulfadoxine" NIH R29-AI040539	Total Direct Costs: \$349,997	9/97 - 9/99
(PI) "Expanded International Research on emerging & Re-emerging Diseases" NIH/NIAID	Total Direct Costs: \$140,269	9/97 - 9/98
(Investigator) PI: O. Doumbo "Surveillance and control of drug-resistant malaria" Multilateral Initiative on Malaria – UNDP/World Bank/WHO Special Programme in Tropical Diseases Research Collaboration with University of Mali		1/98 – 12/00
(Program Director) NIH / Fogarty International Center. New and minority scientist training program in Mali. Awarded as supplement to NIH Fellowship Training Program in Emerging Infectious Diseases	Total Direct Costs of supplement: \$801,366	6/98 - 12/03
(PI) "Malaria: Clinical research and trial preparation sites in endemic areas" NIH N01-AI85346	Total Direct Costs: \$9,022,744	9/98 – 10/05
(PI) "Drug resistant malaria in Malawi" NIH R01-AI44824 Renewed as U01-AI044824	Total Direct Costs: \$1,955,879	9/99 - 9/03
(Investigator) PI: M. Levine "Bacterial live vector-based vaccine against malaria" NIH R01-AI40297	Total Direct Costs: \$1,250,000	7/00 - 6/05
(Faculty Mentor) PI: J. Kublin "Impact of TS prophylaxis on antifolate resistant malaria" NIH K01-TW000014 - International research scientist development award.	Total Direct Costs: \$99,795	9/00 – 11/01

(PI) "Trimethoprim-sulfamethoxazole prophylaxis and drug-resistant malaria in Malawi" NIH R01-AI47858	Total Direct Costs: \$937,542	9/00 – 5/05
(Faculty Mentor) Co-PI: A. Djimde NIH Mentored Research Scholar Development Award. "Determinants of clearance of drug-resistant malaria" Awarded as supplement to NIH R01-AI44824 for administrative reasons.	Total Direct Costs: \$250,000	9/01 - 8/04
(Faculty Mentor) PI: K. Lyke "Immunologic interaction between schistosomiasis & acute malaria" NIH K23-AI049203 Mentored patient-oriented research career development award	Total Direct Costs: \$424,730	2/02 - 1/06
(Faculty Mentor) PI: M. Laufer "Molecular epidemiology of drug-resistant malaria" NIH K23-AI059316 Mentored patient-oriented research career development award	Total Direct Costs: \$682,848	7/04 - 6/09
(PI) "Clinical trial of chloroquine combinations in Malawi" NIH U01-AI044824 Competitive renewal of R01-AI44824	Total Direct Costs: \$1,977,451	6/04 - 9/10
(PI) Supplement to "Malaria research training in Mali" NIH D43-TW-01589 For new Fogarty International Center / Ellison Medical Foundation Overseas Fellowships in Global Health and Clinical Research to train senior medical students in clinical tropical research in Mali	Total Direct Costs: \$110,710	5/04 - 6/06
(PI) "Trimethoprim-sulfamethoxazole prophylaxis and drug-resistant malaria in Malawi" NIH U01-AI47858 Competitive renewal of R01-AI47858	Total Direct Costs: \$1,154,772	6/05 - 5/09
(PI) "Malaria vaccine trials in Mali" NIH U19-AI065683 International Collaborations in Infectious Diseases Research (ICIDR)	Total Direct Costs: \$3,811,298	9/05 – 4/10
(PI) "Pediatric clinical trials in Mali to determine potential benefit of AMA-1 as a component of a multi-antigen malaria vaccine" U.S. Army X81XWH-06-1-0427 USAMED Research ACQ Activity	Total Direct Costs: \$557,557	3/06 – 10/09
(PI) "Clinical trials in Mali" NIH PO1049 Malaria Vaccine Development Branch	Total Direct Costs: \$67,869	2/06 – 1/07
(PI) "Genetic diversity and efficacy of malaria drugs and vaccines" NAKFI Gen05. National Academies Keck Futures Initiative	Total Direct Costs: \$60,000	7/06 – 7/07
(PI) A longitudinal study of chloroquine as monotherapy or in combination with artesunate, azithromycin or atovaquone-proguanil to treat malaria in children in Blantyre Malawi	Total Direct Costs: \$32,600	10/06 – 6/08

Pfizer IIR GA-0660-IA

(PI)	Total Direct Costs: \$75,000	09/07 – 08/08
“Molecular markers of <i>Plasmodium falciparum</i> resistance to artemisinins” 2008 UMB-UMCP NIH Seed Grant Competition Study		
(PI)	Total Direct Costs: \$1,500,000	1/07 – 12/11
“Genetic diversity and malaria vaccine efficacy” Doris Duke Distinguished Clinical Scientist Award		
(PI)	Total Direct Costs: \$400,000	2/08 – 10/09
“Artemisinin resistance – pilot studies confirm, characterize and plan for containment” WHO 48821		
(Subcontract PI)	Total Direct Costs: \$369,373	5/08 – 4/12
“A global comparative study of the evolution of antimalarial drug resistance” NIH 1R01-GM084320		
(Investigator)		6/08 – 01/16
“Genetic diversity and malaria drug and vaccine efficacy” Howard Hughes Medical Institute Investigator in Patient-Oriented Research		
(Faculty Mentor) PI: S. Takala	Total Direct Costs: \$430,000	7/08 – 6/13
“Genome-wide mapping of artemisinin resistance loci in <i>Plasmodium falciparum</i> malaria” K12 Clinical Research Career Development Program		
(PI)	Total Direct Costs: \$154,000	8/08 – 7/10
“Randomized, controlled trial of daily trimethoprim-sulfamethoxazole for weekly chloroquine among adults on antiretroviral therapy in Blantyre, Malawi” NIH R34-AI079284		
(Co-Investigator) PI: M. Laufer	Total Direct Costs: \$176,150	8/08 – 7/10
“A randomized, controlled clinical trial of chloroquine as chemoprophylaxis versus intermittent preventive therapy to prevent malaria in pregnancy in Malawi” NIH R34-AI079315		
(Subcontract PI)	Total Direct Costs: \$774,681	1/09 – 12/13
“Worldwide antimalarial drug resistance network” University of Oxford R10600/CN006 (WWARN) project		
(Subcontract PI)	Total Direct Costs: \$177,334	7/09 – 6/10
“Malaria research training for US medical student Fogarty Clinical Scholars in Mali” Vanderbilt University R24TW007988 Fogarty international clinical research scholars support center		
(PI)	Total Direct Costs: \$1,138,667	10/09 – 9/12
“Molecular surveillance of drug resistant malaria in the Greater Mekong Subregion” USAID, RDM/A RFP486-09-015		
(PI)	Total Direct Costs: \$116,400	12/12 – 11/15
“Pilot studies of the molecular epidemiology of drug-resistant malaria in Myanmar” NIH R03AI101680		
(PI)	Total Direct Costs: \$46,296	8/12 – 7/13
“Malaria research training in Mali”		

Supplement to this project, for Fogarty International Center / Malaria Research Training for Surveillance of Artemisinin Resistance in Myanmar
NIH D43-TW-01589

(Subcontract PI) PI: Thura	Total Direct Costs: \$230,039	4/14 – 6/15
“Global Fund to Fight AIDS, Tuberculosis and Malaria, UNOPS Regional Artemisinin Initiative Inter-country Component 001-00090794 Community Partners International, Eliminating border based malaria”		
(PI)	Total Direct Costs: \$21,550	10/14 – 12/14
“Calculate prevalence estimates of K13 mutations within sites in Myanmar and Southern China.” WHO Technical Service Agreement		
(PI: 0.24 calendar months)	Total Costs: \$308,989	07/15 – 6/16
“Malaria indicator survey in Myanmar” Malaria Consortium - SCN6 MIS UMB		
(Subcontract PI) PI: S. Hoffman	Total Costs: \$99,899	6/13 – 5/16
“Chloroquine sensitive <i>Plasmodium falciparum</i> for multivalent vaccine & challenge” NIH/NIAID - R43AI108052 Sanaria Subaward		
(Co-investigator) PI: M. Laufer	Total Costs: \$5,266,931	6/10 – 5/16
“Clinical trial of chloroquine weekly or as IPT to prevent malaria in pregnancy in Malawi” NIH - U01AI087624		
(PI)	Total Costs: \$7,712,762	9/05 – 6/16
“Genetic diversity and protective immunity to malaria infection and disease” NIH - U19AI065683/U01AI065683		
(Subcontract PI) PI: Pyne	Total Costs: \$617,702	7/14 – 12/16
“Eliminating border-based malaria” Community Partners International - UNOPS_RAI_ICC_CPI_001_00090794		
(PI)	Total Costs: \$35,934	10/16 – 12/16
“International Training on PCR Analysis for the Equatorial Guinea.” Sanaria Inc.		
(PI)	Total Costs: \$2,284,486	2/12 – 1/17
“Immuno-epidemiological epitope mapping of a blood stage malaria vaccine antigen” NIH - R01AI093635		
(Co-investigator) PI: S. Harrison	Total Costs: \$1,818,352	3/13 – 2/17
“Genome-wide studies to identify markers of artemisinin-resistant malaria” NIH - R01AI101713		
(Coordinating investigator) PI: M. Nyunt	Total Costs: \$4,626,240	10/14 – 03/17
“Evidence and action for malaria elimination in Myanmar” Bill and Melinda Gates Foundation - OPP1109551		
(PI)	Annual Direct Costs: \$20,292	11/16 – 04/17
“To calculate prevalence estimates of K13 mutations within sites in Myanmar and Southern China” WHO 2016/670307-0		

(PI) "International Training on PCR Analysis for the Equatorial Guinea" Sanaria Inc. Subcontract Marathon Oil, MCDI, Equatorial Guinea	Annual Direct Costs: \$23,334	1/17 – 3/17
(PI) "Malaria research training in Mali" FIC/ NIH - D43TW001589	Total Costs: \$2,835,520	9/00 – 7/17
(Co-investigator) PI: M. Nyunt "Defeat Malaria Burma" USAID, RFA-482-16-000001 – University Research Co. LLC subaward	Annual Direct Costs: \$228,668	1/17 – 12/17
(PI) "Eliminating Border-Based Malaria" Community Partners International - GF/2017/UMB/CPI-003	Annual Direct Costs: \$170,879	1/17 – 12/17
(Co-investigator: 1.2 calendar months) PI: M. Laufer "Clinical trial of trimethoprim-sulfamethoxazole or chloroquine in adults on ART" NIH - U01AI089342	Total Costs: \$7,949,031	8/11 – 7/18
(PI: 1.8 calendar months) "Safety and efficacy of PfSPZ malaria vaccine in malaria-exposed adults" NIH - U01AI112367	Total Costs: \$2,520,718	1/15 – 12/18
(Co-investigator: 0.3 calendar months) PI: M. Nyunt "Developing the Evidence for and assessing the Malaria Elimination Efforts among Mobile Migration Workers in Plantation Settings in Cambodia and Myanmar" Bill & Melinda Gates Foundation OPP1132753 Subaward from Population Services International	Annual Direct Costs: \$300,000	2/16 – 01/17
(PI: 0.6 calendar months) "Ultra-dense peptide array analysis of naturally acquired and vaccine-induced <i>P. falciparum</i> immunity" NIH/NIAID – R21AI119733-01A1	Total Costs: \$360,695	7/16 – 6/18
(MPI: C. Plowe/M. Laurens 0.6 calendar months) "Safety, Tolerability, Immunogenicity and Protective Efficacy against Naturally-Transmitted Malaria of Infectious, Cryopreserved <i>Plasmodium falciparum</i> Sporozoites (PfSPZ Challenge) administered by Direct Venous Inoculation under Chloroquine Chemoprophylaxis (PfSPZ-CVac), A Randomized, Double Blind, Placebo-Controlled Trial" NIH - HHSN27200015-15-0052	Total Costs: \$2,791,483	9/16 – 11/18
Active Grants		
(Co-investigator: 0.6 calendar months) PI: Fraser "Host, pathogen, and the microbiome: determinants of infectious disease" NIH - U19AI110820	Annual Direct Costs: \$2,064,652	4/14 – 3/19
(PI: 0.6 calendar months) "Variant surface antigens in cerebral malaria pathogenesis" NIH - R01HL130750	Total Costs: \$1,785,679	9/15 – 5/19

(MPI: C. Plowe/M. Nyunt: 2.16 calendar months) Annual Direct Costs: \$1,097,306 4/17 – 3/24
“Myanmar Regional Center of Excellence for Malaria Research”
NIH/NIAID - U19AI129386

(Co-investigator: 0.24 calendar months) PI: T. Loboda Annual Direct Costs: \$31,890 4/17 – 3/20
“Understanding the Role of Land Cover/Land Use Nexus in Malaria Transmission Under Changing
Socio-Economic Climate in Myanmar”
NASA LCLUC15_2-0025 Subaward from University of Maryland College Park

(Mentor) PI: A. Berry Annual Direct Costs: \$169,448 4/17 – 3/22
“Ultra-dense peptide array analysis of naturally acquired and vaccine-induced *P. falciparum* immunity”
NIH

(Co-investigator: 0.12 calendar months) PI: M. Nyunt Total Direct Costs \$26,590 11/17 – 5/19
“Malaria Elimination Effort among Mobile Migrant Plantation Workers in Cambodia and Myanmar”
Bill & Melinda Gates Foundation Subaward from Population Services International

(Co-investigator: 0.3 calendar months) PI: M. Nyunt Total Direct Costs \$356,193 11/17 – 5/19
“Defeat Malaria Initiative Myanmar”
U.S. President’s Malaria Initiative Subaward from University Research Corporation

(Coordinating Investigator: 0.84 calendar months) PI: M. Nyunt
Total Direct Costs: \$7,192,314 11/17 – 10/21
“Evidence to Action for Malaria Elimination in Myanmar”
Bill & Melinda Gates Foundation OPP1171753

Participation in academic and administrative activities of the University and Medical Center:

Director, Duke Global Health Institute	1/18-present
Member, Medical Center Executive Committee	1/18-present