

**Dr. Sophie Mkawasi Uyoga**

Molecular Immunologist  
KEMRI Wellcome Trust Research Programme  
P.O. Box 230-80108, Kilifi, Kenya

Lecturer,  
Department of Biological Sciences,  
School of Pure and Applied Sciences,  
Pwani University, Kilifi, Kenya.

E-Mail: [suyoga@kemri-wellcome.org](mailto:suyoga@kemri-wellcome.org)

**EDUCATION:**

Ph.D. (Science), University of Heidelberg, Germany, 2012  
M.Sc. (Immunology), University of Manchester, United Kingdom, 2009  
B.Sc. (Science), Jomo Kenyatta University of Agriculture and Technology, Kenya, 2004

**AREAS OF INTEREST**

Interactions between host immunity and genetics in relation to infectious diseases.

Understanding the mechanisms behind the development and treatment of severe anaemia with focus on the role of red blood cell genetics and quality of donor blood on recovery and survival post-transfusion.

**PUBLICATIONS**

1. Opi DH, **Uyoga S**, Orori EN, Williams TN, Rowe JA. Red blood cell complement receptor one level varies with Knops blood group,  $\alpha$ -thalassaemia and age among Kenyan children. *Genes Immun.* 2016 Feb 4. doi: 10.1038/gene.2016.2.
2. Mackinnon MJ, Ndila C, **Uyoga S**, Macharia A, Snow RW, Band G, Rautanen A, Rockett KA, Kwiatkowski DP, Williams TN; MalariaGEN Consortium. Environmental correlation analysis for genes associated with protection against malaria. *Mol Biol Evol.* 2016 Jan 6. pii: msw004
3. Mpoya A, Kiguli S, Olupot-Olupot P, Opoka RO, Engoru C, Mallewa M, Chimalizeni Y, Kennedy N, Kyeyune D, Wabwire B, M'baya B, Bates I, Urban B, von Hensbroek MB, Heyderman R, Thomason MJ, **Uyoga S**, Williams TN, Gibb DM, George EC, Walker AS, Maitland K. Transfusion and Treatment of severe anaemia in African children (TRACT): a study protocol for a randomised controlled trial. *Trials.* 2015 Dec 29;16(1):593. doi: 10.1186/s13063-015-1112-4.
4. **Sophie Uyoga**, Carolyne Ndila, Alexander Macharia, Gideon Nyutu, Shivang Shah, Norbert Peshu, Geraldine M Clarke, Dominic P Kwiatkowski, Kirk A Rockett, Thomas

- Neil Williams. Glucose-6-phosphate dehydrogenase deficiency and the risk of malaria and other diseases in children on the coast of Kenya: a case-control and a cohort study. 2015 Oct;2(10):e437-44.
5. Atkinson SH, **Uyoga S**, Armitage AE, Khandwala S, Mugenyi CK, Bejon PA, Marsh K, Beeson JG, Prentice AM, Drakesmith H, Williams TN. Malaria and age variably but critically control hepcidin throughout childhood in Kenya. *EBioMedicine* 2015
  6. Reappraisal of known malaria resistance loci in a large multicenter study. *Malaria Genomic Epidemiology Network; Malaria Genomic Epidemiology Network. Nat Genet.* 2014 Nov;46(11):1197-204. doi: 10.1038/ng.3107. Epub 2014 Sep 28.
  7. Shah SS, Macharia A, Makale J, **Uyoga S**, Kivinen K, Craik R, Hubbart C, Wellem TE, Rockett KA, Kwiatkowski DP and Williams TN. Genetic determinants of glucose-6-phosphate dehydrogenase activity in Kenya. *BMC Med Genet* 2014 15(93) PMID: 4236593
  8. Olupot-Olupot P, Engoru C, Thompson J, Nteziyaremye J, Chebet M, Ssenyondo T, Dambisya CM, Okuuny V, Wokulira R, Amorut D, Ongodia P, Mpoya A, Williams TN, **Uyoga S**, Macharia A, Gibb DM, Walker AS, Maitland K. Phase II trial of standard versus increased transfusion volume in Ugandan children with acute severe anemia. *BMC Med.* 2014 Apr 25;12(1):67
  9. Atkinson SH, Armitage AE, Khandwala S, Mwangi TW, **Uyoga S**, Bejon PA, Williams TN, Prentice AM, Drakesmith H. Combinatorial effects of malaria season, iron deficiency and inflammation determine plasma hepcidin concentration in African children. *Blood.* 2014 Mar 4. PMID: 24596418
  10. Atkinson SH, **Uyoga SM**, Nyatichi E, Macharia AW, Nyutu G, Ndila C, Kwiatkowski DP, Rockett KA, Williams TN. Epistasis between the haptoglobin common variant and  $\alpha$ -thalassemia influences risk of severe malaria in Kenyan children. *Blood.* 2014 Jan 29. PMID: 24478401
  11. **Uyoga S**, Skorokhod OA, Opiyo M, Orori EN, Williams TN, Arese P, Schwarzer E. Transfer of 4-hydroxynonenal from parasitized to non-parasitized erythrocytes in rosettes. Proposed role in severe malaria anaemia. *Br J Haematol.* 2012 Apr; 157(1):116-24.
  12. Scott JA, Berkley JA, Mwangi I, Ochola L, **Uyoga S**, Macharia A, Ndila C, Lowe BS, Mwarumba S, Bauni E, Marsh K, Williams TN. Relation between falciparum malaria and bacteraemia in Kenyan children: a population-based, case-control study and a longitudinal study. *Lancet.* 2011 Oct 8; 378(9799): 1316-23.
  13. Idro R, Gwer S, Williams TN, Otieno T, **Uyoga S**, Fegan G, Kager PA, Maitland K, Kirkham F, Neville BG, Newton CR. Iron deficiency and acute seizures: results from children living in rural Kenya and a meta-analysis. *PLoS One.* 2010 Nov 16;5 (11): e14001.
  14. McAuley CF, Webb C, Makani J, Macharia A, **Uyoga S**, Opi DH, Ndila C, Ngatia A, Scott JA, Marsh K, Williams TN. High mortality from Plasmodium falciparum malaria in children living with sickle cell anemia on the coast of Kenya. *Blood.* 2010 Sep 9; 116(10): 1663-8.
  15. Thomas N Williams, **Sophie Uyoga**, Alex Macharia, Carolyne Ndila, Charlotte F McAuley, Herbert Opi, Salim Mwarumba, Julie Makani, Albert Komba, Shahnaaz K Sharif, Kevin Marsh, James A Berkley, J Anthony G Scott. Bacteremia in children with sickle cell disease. *Lancet.* 2009 Oct 17; 374(9698): 1364-70.
  16. Idro R, Williams TN, Gwer S, **Uyoga S**, Macharia A, Opi H, Atkinson S, Maitland K, Kager PA, Kwiatkowski D, Neville BG, Newton CR. Haptoglobin 2-2 genotype, alpha

- thalassemia and acute seizures in children living in a malaria endemic area. *Epilepsy Res.* 2008 Oct; 81(2-3): 114-8.
17. Beeson JG, Ndungu F, Persson KE, Chesson JM, Kelly GL, **Uyoga S**, Hallamore SL, Williams TN, Reeder JC, Brown GV, Marsh K. Antibodies among men and children Antibodies among Men and Children to Placental-Binding Plasmodium falciparum-Infected Erythrocytes that Express var2csa. *Am J Trop Med Hyg.* 2007 Jul; 77(1): 22-28.
  18. Atkinson SH, Mwangi TW, **Uyoga SM**, Ogada E, Macharia AW, Marsh K, Prentice AM, Williams TN. The Haptoglobin 2-2 Genotype Is Associated with a Reduced Incidence of Plasmodium falciparum Malaria in Children on the Coast of Kenya. *Clin Infect Dis.* 2007 Mar 15; 44(6):802-9.
  19. Wambua S, Mwacharo J, **Uyoga S**, Macharia A, Williams TN. Co-inheritance of alpha<sup>+</sup>-thalassaemia and sickle trait results in specific effects on haematological parameters. 2006 *Br J Haematol*: 133(2); 206-9.
  20. Sammy Wambua, Tabitha Mwangi, Moses Kortok, **Sophie Uyoga**, Alex Macharia, Jedidah K. Mwacharo, David J. Weatherall, Robert W. Snow, Kevin Marsh, Thomas N. Williams. The effect of  $\alpha^+$  thalassaemia on the incidence of malaria and other diseases in children living on the coast of Kenya. 2006. *PLOS*: 3: 5; e158.
  21. Thomas N. Williams, Sammy Wambua, **Sophie Uyoga**, Alex Macharia, Jedidah K. Mwacharo, Charles R.J.C. Newton, Kathryn Maitland. Both heterozygous and homozygous  $\alpha^+$  thalassaemia protect against severe and fatal *Plasmodium falciparum* malaria on the coast of Kenya. 2005. *Blood*: 106; 368-371  
Thomas N. Williams, Tabitha Mwangi, Sammy Wambua, Timothy E.A. Peto, David J. Weatherall, Suneptra Gupta, Mario Recker, **Sophie Uyoga**, Alex Macharia, Jedidah K. Mwacharo, Robert W. Snow, Kevin Marsh. Negative epistasis between the malaria-protective effects of  $\alpha^+$  thalassaemia and the sickle

## RESEARCH WORK

Contribution of non-parasitized red blood cell loss to development of severe malaria anaemia. **2009-2012**

Effect of lucose-6-phosphate dehydrogenase deficiency in the development of severe malaria. **2009-2012**

Role of host genetic factors in the development of severe malaria and other infections among children living within the Kilifi Health and Demographic Surveillance System (KHDSS). **(2006-2016)**

Transfusion and Treatment of Severe Anaemia in African Children: a randomized controlled Trial (TRACT) **2014-2017**

IDEAL Mid Career Research fellowship: The quality and safety of donor blood or its effect on outcome. **2016-2020**

## **SUPERVISION**

**Rop Jesse Cheruiyot:** January – August 2015 Post Graduate Diploma Pwani University  
Project title: The effect of Glucose-6-phosphate dehydrogenase deficiency on red blood cell morphology

**Charles Kamau:** January – August 2016 Post Graduate Diploma Pwani University  
Project title: Blood Transfusion Services – A situational analysis of the Coastal region of Kenya.

**Eva Mwangome:** January – August 2017 Post Graduate Diploma Pwani University  
Project title: Blood Transfusion Services – A situational analysis of the donor mobilization and service delivery in Coastal Kenya.

## **AFFILIATIONS**

1. Member: International Society of Blood Transfusion
2. Member – African Society for Blood Transfusion (ASBT)
3. Member - International Union of Immunological Societies (IUIS)

**Referees available upon request**