



# Vectors, Pathogens and Diseases: Current Trends and Emerging Challenges

September 10–14, 2017 | Southern Sun Elangeni & Maharani | Durban, KwaZulu-Natal | South Africa

## Scientific Organizers:

**Maureen Coetzee**, University of Witwatersrand, South Africa

**Josiane Etang**, Institut de Recherche de Yaoundé, Cameroon

**Stephen Torr**, Liverpool School of Tropical Medicine, UK

**Scott L. O'Neill**, Monash University, Australia

*Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation*

*The elimination or eradication of several vector-borne diseases – including malaria, lymphatic filariasis, onchocerciasis and trypanosomiasis – is high on the agenda of the World Health Organization. Sustainable vector control is currently the only mass prevention strategy. However, success is hampered by many challenges posed by both the vectors and the pathogens. These challenges include insecticide resistance in mosquitoes and drug resistance in parasites, with little on the immediate horizon to alleviate these problems. Insecticide and drug resistance are two parallel phenomena in vectors and parasites. While combination drugs have been developed to overcome parasite resistance to monotherapies, only four classes of insecticides are available for vector control. The unexpected emergence of arboviruses, such as Zika in Brazil and southeast Asia, yellow fever in southern Africa, and Dengue and Chikungunya, pose their own unique challenges. This conference will address the difficulties in “going the final mile” to achieve elimination, in terms of surveillance, capacity and funding. Key goals of the conference are to: 1) Review the latest scientific knowledge on vectors and pathogens that are responsible for emerging or re-emerging diseases; 2) Address innovative methods for the control or elimination of vector-borne diseases; and 3) Enhance awareness of the landscape of vector-borne diseases and related new scientific knowledge aimed at improving the health of vulnerable human populations. It also seeks to break down the “insect silos” in which the vector-borne disease research community too commonly operates, providing a forum for researchers to interact, create networks and partnerships, exchange ideas, and think creatively across disciplines.*

## Session Topics:

- Workshop 1: Is Climate Change Really Affecting Vectors?
- Vector-Pathogen Interactions
- Aedes-Borne Viruses
- Workshop 2: Vector Biology – Do We Really Know Enough?
- Trypanosomiasis and Filariasis
- Insecticide and Drug Resistance
- Other Vector-Borne Diseases
- New Developments in Vector-Borne Disease Control I & II
- Workshop 3: Arbovirus Disease Around the World – What Is the True Burden?

**Scholarship Application & Discounted Abstract Deadline: May 11, 2017**

**Abstract Deadline: June 13, 2017**

**Discounted Registration Deadline: July 11, 2017**



Note: A limited number of subsidized registrations covering just the registration fee but not travel or lodging will be available for local participants based in South Africa who can commute to the conference. Scholarships are available for graduate students and postdoctoral fellows. Global Health Travel Awards are for LMIC investigators. Abstracts submitted by the abstract deadline will be considered for short talks on the program.

Meeting Hashtag: #KSvector

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## Vectors, Pathogens and Diseases: Current Trends and Emerging Challenges (T1)

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Global Health Travel Award Deadline: April 11, 2017 / Abstract & Scholarship Deadline: May 11, 2017 / Abstract Deadline: June 13, 2017 / Discounted Registration Deadline: July 11, 2017

### SUNDAY, SEPTEMBER 10

#### Arrival and Registration

### MONDAY, SEPTEMBER 11

#### Welcome and Keynote Address

**Dirk Engels**, World Health Organization, Switzerland  
*Overview of Trends in Vector-Borne Diseases*

#### Changes in Burden of Disease

**Josiane Etang**, Institut de Recherche de Yaoundé, Cameroon  
*Malaria, Decreasing or Increasing?*

**Stephen Torr**, Liverpool School of Tropical Medicine, UK  
*Contributions of Vector Control to the Elimination of Human African Trypanosomiasis*

**Neil Ferguson**, Imperial College London, UK  
*Modelling *P. falciparum* Transmission in Africa: Feasibility of Elimination*

#### Short Talk(s) Chosen from Abstracts

#### Workshop 1: Is Climate Change Really Affecting Vectors?

##### Short Talks Chosen from Abstracts

#### Vector-Pathogen Interactions

**Anna Cohuet**, Institut de Recherche pour le Développement, France  
*Despite Insecticide Resistance, Malaria Vector Control Still Matters*

**Marcelo Jacobs-Lorena**, Johns Hopkins Bloomberg School of Public Health, USA  
*Fighting Malaria with Engineered Symbiotic Bacteria from Vector Mosquitoes*

**Flaminia Catteruccia**, Harvard School of Public Health, USA  
*Determining the Physiological Processes Regulating Plasmodium Development in the Anopheles Mosquito*

#### Short Talk Chosen from Abstracts

#### Poster Session 1

### TUESDAY, SEPTEMBER 12

#### Aedes-Borne Viruses

**Birkinesh Ameneshewa**, World Health Organization, Congo, Republic of the  
*Arboviral Transmission Risk and Recent Outbreaks in the African Region*

#### Speaker to be Announced

**Matthew B. Thomas**, Pennsylvania State University, USA  
*The Influence of Environment on Transmission*

**Scott L. O'Neill**, Monash University, Australia  
*The Use of Wolbachia to Control the Transmission of Aedes Aegypti associated Viruses: The Eliminate Dengue Program*

#### Short Talk(s) Chosen from Abstracts

#### Poster Session 2

#### Workshop 2: Vector Biology – Do We Really Know Enough?

##### Short Talks Chosen from Abstracts

#### Trypanosomiasis and Filariasis

**Lisa Reimer**, Liverpool School of Tropical Medicine, UK  
*Lymphatic Filariasis Transmission Ecology and Vector Behavior*

**Annette MacLeod**, University of Glasgow, UK  
*The Skin Is a Significant but Overlooked Anatomical Reservoir for Vector-Borne African Trypanosomes*

**Enock Matovu**, Makerere University, Uganda  
*Human African Trypanosomiasis*

#### Short Talk Chosen from Abstracts

### WEDNESDAY, SEPTEMBER 13

#### Insecticide and Drug Resistance

**Karen I. Barnes**, University of Cape Town, South Africa  
*Sustaining Malaria Treatment Efficacy in the Shadow of Increasing Antimalarial Drug Resistance*

**Immo Kleinschmidt**, London School of Hygiene & Tropical Medicine, UK  
*Assessing the Impact of Insecticide Resistance on Malaria Vector Control*

**Martin James Donnelly**, Liverpool School of Tropical Medicine, UK  
*New Mechanisms of Insecticide Resistance in Malaria Vectors*

**Maureen Coetzee**, University of Witwatersrand, South Africa  
*Insecticide Resistance and Surveillance*

#### Short Talk(s) Chosen from Abstracts

#### Poster Session 3

#### Other Vector-Borne Diseases

**Paul A. Bates**, Lancaster University, UK  
*Advances in Sandfly Research and Leishmaniasis Control*

**Matthew Baylis**, University of Liverpool, UK  
*Impact of Climate on the Transmission Risk of Culicoides-Borne Viruses*

**Chris Drakeley**, London School of Hygiene & Tropical Medicine, UK  
*Plasmodium Knowlesi – Epidemiology of a Zoonotic Malaria from a Multidisciplinary Study*

#### Short Talk Chosen from Abstracts

### THURSDAY, SEPTEMBER 14

#### New Developments in Vector-Borne Disease Control I

**Lizette Leonie Koekemoer**, University of the Witwatersrand, South Africa

*Will SIT Really be Useful as a Vector Control Tool?*

**Stephen L. Dobson**, University of Kentucky, USA  
*Autocidal Techniques against Aedes Mosquitoes in the USA*

**Nick Hamon**, Innovative Vector Control Consortium, UK  
*What's New on the Horizon of Innovative Vector Control?*

**Austin Burt**, Imperial College London, UK  
*Modified Mosquitoes for Malaria Control – Current Status, Requirements for Success, and a Step-Wise Approach for Getting There*

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### Workshop 3: Arbovirus Disease around the World – What Is the True Burden?

#### Short Talks Chosen from Abstracts

#### New Developments in Vector-Borne Disease Control II

**Gerry F. Killeen**, Liverpool School of Tropical Medicine, UK  
*Made-to-Measure Vector Control Packages for Eliminating Malaria Transmission*

**Marc F. Schetelig**, Justus-Liebig University Giessen, Germany  
*Molecular Strategies to Compare and Improve Genetic Vector Control Systems*

**Stephanie L. James**, Foundation for the National Institute of Health, USA  
*Creating a Supportive Environment for Novel Vector Control Technologies*

#### Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

### FRIDAY, SEPTEMBER 15

#### Departure