

Join Keystone Symposia for  
the 2015 conference on:

# The Arthropod Vector: The Controller of Transmission

May 12–17, 2015

Sagebrush Inn and Conference Center  
Taos, New Mexico, USA

Scientific Organizers: Serap Aksoy, Stephen K. Wikel and David S. Schneider

Organizing Committee: Adriana Costero-Saint Denis, Tonu M. Wali and Wolfgang Leitner

*Vector innate immunity studies have been ongoing for about a decade, and the field has advanced understanding of the complex interactions between pathogens and vectors. Vector **saliva** contains powerful molecules with translational potential, and vectors also ingest various **bioactive factors of human origin** which affect the development and survival of pathogens within the vector. This meeting integrates the multiple levels of influence on disease transmission by the arthropod vector. Its goal is to translate immunological and microbiological insights into new approaches for combating vector-borne diseases, including manipulation of the microbiome and identification of novel, non-traditional vaccine targets, such as arthropod saliva proteins.*

#### Session Topics:

- Innate Immunity: Models and Midguts
- Innate Immunity: From Cells to Host Factors
- Microbiota of Vectors: The New Frontier?
- Microbiome Impact on Innate Immunity
- The Use of Symbionts to Prevent Transmission
- Vector Spit: from Alchemy to Public Health Solutions
- Saliva Proteins to Prevent and Track Transmission
- Novel Approaches to Disease Control



Discounted Abstract/Scholarship Deadline: Jan 13, 2015  
Abstract Deadline: Feb 11, 2015  
Discounted Registration Deadline: March 11, 2015

To see the full program and for additional details,  
visit [www.keystonesymposia.org/15E2](http://www.keystonesymposia.org/15E2).

KEYSTONE  SYMPOSIA™  
on Molecular and Cellular Biology  
*Accelerating Life Science Discovery*

# KEYSTONE SYMPOSIA on Molecular and Cellular Biology

## The Arthropod Vector: The Controller of Transmission (E2)

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### TUESDAY, MAY 12

#### Arrival and Registration

### WEDNESDAY, MAY 13

#### Keynote Address

Shirley Luckhart, University of California Davis, USA  
*Six Degrees of Separation: Shared Biology to Empower Novel  
Translational Approaches to Vector-Borne Disease Control*

#### Innate Immunity: Models and Midguts

David S. Schneider, Stanford University School of Medicine, USA  
*What Drosophila Can Teach Us about Infectious Diseases Systems*  
Bruno Lemaitre, École Polytechnique Fédérale de Lausanne,  
Switzerland  
*How the Insect Gut Repairs Itself after Pathogen Infection*  
Carolina V. Barillas-Mury, NIAID, National Institutes of Health, USA  
*Anopheles/Plasmodium Interactions: The Tale of the Invisible Parasite!*  
Short Talk(s) Chosen from Abstracts

#### Workshop 1

Short Talks Chosen from Abstracts

#### Innate Immunity: From Cells to Host Factors

Michael R. Strand, University of Georgia, USA  
*Cellular Immunity of Arthropods and its Role in the Defense Against  
Vector-Borne Pathogens*  
Kristin Michel, Kansas State University, USA  
*Immunomodulation Therapy to Control Mosquito Vectors*  
Michael A. Riehle, University of Arizona, USA  
*The Effects of Ingested Mammalian Blood Factors on Vector Arthropod  
Immunity and Physiology*  
Short Talk Chosen from Abstracts

#### Poster Session 1

### THURSDAY, MAY 14

#### Microbiota of Vectors: The New Frontier?

Angela E. Douglas, Cornell University, USA  
*How the Taxonomic and Functional Diversity of Gut Microbiota Shapes  
Insect Traits*  
Serap Aksoy, Yale University School of Medicine, USA  
*Insights into the Microbiome of a Viviparous Dipteran*  
George Dimopoulos, Johns Hopkins University, USA  
*Exploring the mosquito microbiome for disease control*  
Sassan Asgari, University of Queensland, Australia  
*Role of MicroRNAs in Regulation of Symbiont-Pathogen Interactions in  
a Vector System*  
Short Talk(s) Chosen from Abstracts

#### Microbiome Impact on Innate Immunity

Nicole M. Gerardo, Emory University, USA  
*The Intersection of Symbionts, Pathogens and Immunity in Insect  
Systems*

Zhiyong Xi, Michigan State University, USA  
*Wolbachia and ROS Interaction in Mosquito and Its Impact on Vector  
Competence for Malaria and Dengue Virus*

Rod Dillon, Lancaster University, UK  
*The Gut Microbiome of Lutzomyia Sand Flies*  
Short Talk Chosen from Abstracts

#### Poster Session 2

### FRIDAY, MAY 15

#### The Use of Symbionts to Prevent Transmission

Marcelo Jacobs-Lorena, Johns Hopkins Bloomberg School of Public  
Health, USA  
*Fighting Malaria with Engineered Symbiotic Bacteria from Vector  
Mosquitoes*  
Ulrike Munderloh, University of Minnesota, USA  
*Paratransgenic Approaches to Manipulate Tick Infectivity*  
Pamela Pennington, Universidad del Valle de Guatemala, Guatemala  
*Applying Paratransgenic Approaches to Control Disease*  
Jason Rasgon, Pennsylvania State University, USA  
*Microbiome as a Driving Mechanism for Gene Spread*  
Short Talk(s) Chosen from Abstracts

#### Vector Spit: From Alchemy to Public Health Solutions

Stephen K. Wikel, Quinnipiac University, USA  
*Vector Saliva: A Powerful Immuno-Modulator*  
José M. C. Ribeiro, NIAID, National Institutes of Health, USA  
*Vector Salivary Proteins: Diversity and Evolution*  
João H. F. Pedra, University of Maryland School of Medicine, USA  
*A Tick Salivary Protein Alters Inflammasome Signaling during  
Pathogen Infection*  
Short Talk Chosen from Abstracts

#### Poster Session 3

### SATURDAY, MAY 16

#### Saliva Proteins to Prevent and Track Transmission

Esther von Stebut-Borschitz, Johannes Gutenberg-University  
Mainz, Germany  
*How Vector Saliva affects Immune Cells in the Human Skin*  
Jan Van den Abbeele, Institute of Tropical Medicine Antwerp, Belgium  
*Using Tsetse Fly Saliva Proteins as Biomarkers of Vector Exposure*  
Franck Remoue, UMR 224 MIVEGEC, France  
*Epidemiological Applications of Assessing Mosquito Exposure in a  
Malaria Endemic Area*  
Jesus Valenzuela, National Institutes of Health, USA  
*Impact of Immunity to Sand Fly Salivary Proteins in Leishmaniasis*  
Short Talk(s) Chosen from Abstracts

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### Workshop 2

Short Talks Chosen from Abstracts

### Novel Approaches to Disease Control

Erol Fikrig, Yale University, USA

*Keynote Address: The Translation of Saliva Proteins into Tools to Prevent Vector-Borne Disease Transmission*

Scott L. O'Neill, Monash University, Australia

*Keynote Address: Using Wolbachia Infections of Mosquitoes to Control Dengue*

Short Talk Chosen from Abstracts

### SUNDAY, MAY 17

Departure