

# **Program & Abstracts**

# Peter Doherty Institute The University of Melbourne

## Melbourne, Australia

# 26<sup>th</sup> & 27<sup>th</sup> October 2017

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## Program at a Glance

## Day 1

08:30 - 09:15	Registration
09:15 - 09:30	Welcome and Housekeeping
09:30 - 10:30	Plenary Session
10:30 - 11:00	Morning Tea
11:00 - 12:30	Session 1: Immunology
12:30 - 13:00	Short Talk Session I
13:00 - 14:00	Poster Session I (odd numbers) & Lunch
14:00 - 15:30	Session 2: Molecular & Cellular Parasitology
15:30 - 16:00	Afternoon Tea
16:00 - 17:30	Session 3: Mathematical Modelling & New Tools
18:00	Conference Dinner at The Loft

## Day 2

08:30 - 09:00	Career Development Workshop
	with Professor Jean Langhorne
09:00 - 10:30	Session 4: Host-Parasite Interactions & Transmission
10:30 - 11:00	Morning Tea
11:00 - 12:30	Session 5: Systems Biology & Metabolism
12:30 - 13:00	Short Talk Session II
13:00 - 14:00	Poster Session II (even numbers) & Lunch
14:00 - 15:30	Session 6: Epidemiology
15:30 - 16:00	Afternoon Tea
16:00 - 17:30	Session 7: Antimalarial Drugs
17:30 - 18:00	Awards Ceremony & Closing Remarks

### Welcome

#### Dear conference delegate,

Welcome to a new edition of the *Malaria in Melbourne* conference, hosted this year by the Peter Doherty Institute for Infection and Immunity.

Malaria in Melbourne is now a well-established biennial meeting that brings together the malaria research community in Melbourne and Australia, providing the opportunity to learn about recent developments in the field in one of the most recognizable centres of malaria research in the world. Giving a representative picture of the current state of the research on malaria, session topics will range from the study of the parasite and its biology to the host's response to infection, the latest advances of anti-parasitic drug development and the current state of malaria control in endemic areas.

In addition to this, we have invited Professor Jean Langhorne, from the Francis Crick Institute in London, to be our keynote speaker. Jean is a world leader in malaria research and she will update us with her latest work on the study of parasite gene families involved in the establishment of chronic *Plasmodium* infections.

Malaria in Melbourne 2017 offers multiple opportunities for data presentation, all done by early career researchers: 35 talks divided in 7 sessions, 2 extra sessions comprising 14 short talks and almost 60 posters. Moreover, in this year's edition of the conference we will have a separate career development workshop with Jean Langhorne, in which she will describe her career and will provide valuable insight into the elements that were most important for her success. By focusing on the new generation of malaria scientists, our conference stimulates the development of critical skills for their future, it promotes their integration in our community, and it helps to enhance their CV at an important stage of their career. This contributes to keeping the malaria community strong for the years to come.

The *Malaria in Melbourne* conference relies entirely on the efforts of the organising committee and the support of sponsors to keep registration fees affordable. We thank all organisations in academia and industry that are sponsoring *MiM2017* and would like to encourage you to visit the trade displays in the poster room, as this will promote support in future editions of the conference.

We warmly welcome you to *Malaria in Melbourne* 2017 and hope you will enjoy the conference.



Daniel Fernández-Ruiz Chair Peter Doherty Institute



Dean Goodman Chair University of Melbourne





Elizabeth Aitken Simon Cobbold Jakub Gruszczyk Peter Doherty Institute Bio21 WEHI B



yk Herbert Opi Burnet Institute



Ghizal Siddiqui MIPS



ui Simona John von Freyend Monash University

### Program

09:15 - 09:30 Welcome and Housekeeping

09:30 - 10:30 Plenary Session Sponsored by the Georgina Sweet Laureate Fellowship Chairs: Daniel Fernandez-Ruiz and Dean Goodman

> "Chronicity, virulence and the *pir* multigene family" Prof. Jean Langhorne - Francis Crick Institute, London, UK

10:30 - 11:00 Morning Tea

11:00 - 12:30 Session 1: Immunology Sponsored by the Biomedicine Discovery Institute, Monash University Chairs: Lynette Beattie and James O'Connor

- T1 B cell responses to Plasmodium CSP are helped by T cells specific to alternative parasite antigens Hayley A. McNamara - John Curtin School of Medical Research, Australian National University
- T2 Behaviour of resident memory T cells in the liver after malaria infection

Lauren E. Holz - Peter Doherty Institute

- T3 The most effective functional responses against *P. falciparum* merozoite invasion ligands are mediated by IgG3 subclass antibodies Vashti Irani - Burnet Institute
- T4 Opsonic phagocytosis of sporozoites is an important mechanism in immunity against *Plasmodium falciparum* infection

Gaoqian Feng - Burnet Institute, Melbourne

- T5 Antibody responses to Plasmodium vivax Duffy Binding Proteins are associated with Gerbich homozygote blood type and protection from clinical malaria Wen-Qiang He - Walter and Eliza Hall Institute
- 12:30 13:00 Short Talk Session I Sponsored by Bio21 Institute Chairs: Madi Njie and Evelyn Chou
  - ST1 Genetic origins of *P. falciparum* parasites with *hrp2* gene deletions in Peru and Eritrea Qin Cheng - Australian Army Malaria Institute

ST2	Nationwide genetic surveillance of <i>P. vivax</i> in PNG reveals heterogeneous transmission dynamics and routes of migration amongst subdivided populations Abebe A. Fola - Walter and Eliza Hall Institute
ST3	Quantifying parasite clearance in malaria: Rapid clearance but not easily altered David S. Khoury - Kirby Institute
ST4	Identification and characterisation of novel exported proteins in <i>Babesia bovis</i> William A. Poole - Monash University
ST5	Immunity to <i>Plasmodium falciparum</i> erythrocyte membrane protein1 and severe malaria in PNG Janavi Rambhatla - Peter Doberty Institute
ST6	Targeting CK1 for secretion: Novel mechanisms of vesicular trafficking in <i>Plasmodium falciparum</i> infected red blood cells
ST7	Mitchell Batty - Monash University Hofbauer cells in malaria in pregnancy Isobel Walker - Bunet Institute
13:00 - 14:00	Poster Session I (odd numbers) & Lunch
14:00 - 15:30	Session 2: Molecular and Cellular Parasitology Sponsored by Biomed Central/Malaria Journal Chairs: Paul Sanders and Emma McHugh
Т6	Identification of Gene Regulatory Elements in the Malaria Parasite <i>Plasmodium falciparum</i> Jingvi Tang - The University of Melbourne
Τ7	Promiscuous splicing and sex: alternative splicing is required for gametocyte differentiation in <i>Plasmodium</i> <i>berghei</i> Lee M. Yeoh - The University of Melbourne
Т8	The Mechanism of Malaria Parasite Entry into
	Reticulocytes Kaiseal Sarson-Lawrence - Walter and Fliza Hall Institute
Т9	Delayed death in the malaria parasite: Prenylation dependant disruption of intracellular trafficking Kit Kennedy. The University of Melbourne
T10	Proteostasis in the mechanism of action of artemisinin Jessica L. Bridgford - Bio21 Institute
15:30 - 16:00	Afternoon tea

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16:00 - 17:30	Session 3: Mathematical Modelling and New Tools Chairs: Philippe Boeuf and Leanna Surao
T11	BioStructMap: A Python tool for integration of protein structure and sequence-based features Andrew Guy - Burnet Institute
T12	Development of a decision-tool to guide the optimisation of intravenous artesunate dosing regimens for severe malaria patients
	Sophie Zaloumis - The University of Melbourne
T13	A method for quantifying artemisinin-induced growth retardation in blood-stage <i>Plasmodium falciparum</i> infection
	Pengxing Cao - The University of Melbourne
T14	Infrared research and diagnosis of malaria: From lab to the field
	David Perez-Guaita - Monash University
T15	Super resolution: a closer look at remodelling in <i>Plasmodium falciparum</i> infected red blood cells Oliver Looker - Bio21 Institute
18:00	Conference dinner at <b>The Loft</b> Sponsored by the Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

8:30 - 9:00	Career Development Workshop with Professor Jean Langhorne Chair: Ghizal Siddiqui
09:00 - 10:30	Session 4: Host-Parasite Interactions and Transmission Sponsored by the Australian Society for Parasitology Chairs: Louise Randall and Coralie Boulet
T16	Host erythrocyte phospho-signalling during infection with <i>P. falciparum</i>
T17	Malaria parasites resistant to the macrolide antimalarial azithromycin are not transmissible through mosquitoes
T18	Human to mosquito transmission of <i>P. falciparum</i> and <i>P. vivax</i> during controlled human malaria infection
T19	Association of Endothelial Protein C Receptor gene (procr) polymorphism with severe malaria and Anti- PfEMP1 antibodies
T20	Digjaya Utama - Walter and Eliza Hall Institute Direct quantification of host removal in <i>Plasmodium</i> <i>berghei</i> infection and the effects of antimalarial drugs on removal of parasites Rosemary Aogo - Kirby Institute
10:30 - 11:00	Morning Tea
11:00 - 12:30	Session 5: Systems Biology and Metabolism Sponsored by The Monash Institute of Pharmaceutical Sciences Chairs: David Gillett and Anna Sexton
T21	A systems biology approach indicates novel triazine compounds may impact a nuclear mechanism Katherine M. Ellis - Monash Institute of Pharmaceutical
T22	Elucidating the metabolic proof-reading capacity of <i>P. falciparum</i>
T23	Laure Dumont - University of Melbourne Metabolomics helps to unravel the mode of action of novel anti-malarial compounds Anubhav Srivastava - Monash Institute of Pharmaceutical Sciences

### Program

T24 T25	Integrative analysis of the micro-RNA and mRNA response to human malaria infection using systems immunology Martha Cooper - James Cook University Glucose and iron metabolism in monocytes exposed to malaria Ricardo Ataide - Burnet Institute
12:30 - 13:00	Short talk session II Sponsored by Bio21 Institute Chairs: Vern Lee and Jasmin Akter
ST8	Investigating the efficacy of triple artemisinin-based combination therapies (TACTs) in treatment of <i>P. falciparum</i> malaria using a mathematical model Saber Dini. The University of Melbourge
ST9	Ozonide antimalarials disrupt haemoglobin catabolism in <i>Plasmodium falciparum</i> Carlo Giannangelo - Monash Institute of Pharmaceutical
ST10	Sciences PlasmoCavalier: Identifying causal variants in haplotypes under selection
ST11	Characterisation of bromodomain proteins in the malaria parasite <i>Plasmodium falciparum</i>
ST12	Hahn H. T. Nguyen - The University of Melbourne Mitochondrial energy metabolism in liver stage of Plasmodium berghei
ST13	Upeksha L. Rathnapala - The University of Melbourne Understanding artemisinin action in <i>Plasmodium</i> falciparum
ST14	Natalie Spillman – The University of Melbourne Single cell analysis of the affinity and fate of CSP- specific B cells Henry J. Sutton – Australian National University
13:00 - 14:00	Poster Session II (even numbers) & Lunch
14:00 - 15:30	Session 6: Epidemiology Sponsored by The Walter and Eliza Hall Institute of Medical Research Chairs: Rhea Longley and Eliza Davidson
T26	Impact of improved malaria control on the epidemiology of malaria in young Papua New Guinean children Maria Ome-Kaius - PNG Institute of Medical Research

T27	<i>Var</i> code: a new molecular epidemiology tool for monitoring <i>Plasmodium falciparum</i> in a high transmission area of Ghana, West Africa
T28	Dynamics of polymorphism in the leading <i>Plasmodium</i> <i>falciparum</i> vaccine candidate Reticulocyte Binding Protein Homologue 5 (RH5)
T29	Elijah M. Martin - Walter and Eliza Hall Institute Defining antibody kinetics and longevity to 40 <i>Plasmodium vivax</i> antigens in individuals from western Thailand
Т30	Effect of malaria infection, malaria exposure and gravidity on the immune response of peripheral blood mononuclear cells (PBMCs) derived from pregnant women Marzieh Jabbarzare - Peter Doherty Institute
15:30 - 16:00	Afternoon Tea
16:00 - 17:30	Session 7: Antimalarial Drugs Sponsored by Medicines for Malaria Venture Chairs: Ben Dickerman and Emily Crisafulli
T31	Retargeting the antibiotic azithromycin as an antimalarial with dual-modality Amy Burns - The University of Adelaide
Т32	Characterization and classification of the MMV Pathogen Box anti-plasmodial compound sub-set Sandra Duffy - Griffith University
Т33	Target validation and identification of novel boronate inhibitors of   P. falciparum proteasome     Stanley Xie - Bio21 Institute
Т34	Drug targets in the apicoplast of malaria parasites Taher Uddin - The University of Melbourne
Т35	Characterisation of the parasitological activity and mechanism of resistance of the aminomethylphenol, jpc-3210 for malaria treatment and prevention Marina Chavchich - Australian Army Malaria Institute

17:30 – 18:00 Awards Ceremony and Closing Remarks

### **Plenary Session**

### Invited speaker: Professor Jean Langhorne

Jean Langhorne is head of the Malaria Immunology Laboratory and a senior programme leader at the Francis Crick Institute, London, UK, She obtained her BSc at Bedford College, London, and MSc at the London School of Hygiene and Tropical Medicine, After her PhD in Immunology the MRC Clinical at Centre/Universitv Research College. London, she carried out her postdoctoral training in malaria immunology with Sydney Cohen at Guy's Hospital Medical School. London. and subsequently became a member of the Basel Institute



for Immunology, Switzerland. She has worked as a Fogarty fellow at the NIAID/NIH, USA, and at the Max Planck Institute for Immunobiology, Freiburg, Germany.

She currently leads a team of 14 scientists at the Francis Crick Institute, investigating the regulation of immune responses, pathogenesis and parasite virulence in experimental mouse malaria models. Her group is also part of a large consortium, which uses systems immunology approaches to investigate the immune response of children to *Plasmodium falciparum*. She is particularly interested in the role of the CD4 T-cell response in the development of immunity.

She has attracted significant funding, has published over 160 peer-reviewed manuscripts and is considered the world leading authority on the host immune response to the malaria parasite. In 2016 she received the Lifetime Achievement Award at the Biology and Pathology of the Malaria Parasite (BioMalPar) conference in Heidelberg, Germany.

We are thankful to the Georgina Sweet Laureate Fellowship for awarding us a GS Travel Grant to fund Jean's visit to Melbourne.



Australian Research Council



Georgina Sweet Award for Women in Quantitative Biomedical Science



The Faculty of Medicine, Dentistry and Health Sciences is commited to training and research for control and elimination of malaria



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