MESA Track:
A malaria research mapping platform

5th New Tools, New Challenges in Vector Control Work Stream meeting
15th RBM Vector Control Working Group Annual Meeting
February 3 — 5, 2020

Maria Tusell (maria.tusell@isglobal.org)
Research: ongoing and completed

Completed research & published results

Ongoing research
Research: ongoing and completed

Completed research & published results

Ongoing research

Relevant
Accessible
Visible
Shareable
“Referenceable”
Research: ongoing and completed

- Completed research & published results
  - Relevant
  - Accessible
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  - Shareable
  - “Referenceable”

- Ongoing research
  - Relevant?
  - Accessible?
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MESA Track: an open and living database of ongoing (and completed) malaria research

- Who is doing what, where, when, how
- Current and planned investments
- When new data will become available
MESA Track: an open and living database of ongoing (and completed) malaria research

- Who is doing what, where, when, how
- Current and planned investments
- When new data will become available

Evidence-based:
- Policy-making
- Implementation
- Funding

www.mesamalaria.org/mesa-track
MESA Track

All Projects

TOTAL PROJECTS: 1327
TOTAL FUNDING: $2.73B
PROJECT SITES: 113
PRINCIPAL INSTITUTIONS: 374

Themes
- Response Strategies: 586
- Challenges in Elimination: 331
- Epidemiology: 206
- Basic Science: 194

Funding Sources
- Bill & Melinda Gates Foundation: 199
- National Institute of Allergy and Infectious Diseases: 198
- Wellcome Trust: 89
- President’s Malaria Initiative (PMI): 85
- Medical Research Council (MRC): 51

Principal Institutions
- Ifakara Health Institute (IHI): 62
- Barcelona Institute for Global Health (ISGlobal): 56
- Liverpool School of Tropical Medicine: 55
- Harvard T.H. Chan School of Public Health: 51
- University of California San Francisco: 46
Project Sites
Search MESA Track

Please enter a search term.

Themes:
All

Project Sites:
All

Project Timeline:
dd/mm/yyyy to dd/mm/yyyy

Principal Institutions:
All

Funding Sources:
All

Principal Investigators:
All

Funding Amounts:

Search
Using machine-learning and mid-infrared spectroscopy for rapid assessment of blood feeding histories and parasite infection rates in field collected malaria mosquitoes

Objectives
This project proposes to couple MIR-spectroscopy with machine-learning algorithms and to validate them for rapid assessment of blood-feeding histories and infectiousness of field-collected Anopheles arabiensis and Anopheles funestus, which dominate malaria transmission in Tanzania.

The research team will calibrate the systems to identify different vertebrate blood meals in mosquito abdomen, and Plasmodium sporozoite in heads and thoraces. This field validation will enable scale-up of MIR based approaches, thereby significantly improving surveillance-responses and intervention monitoring.

Principal Institution(s)
Ifakara Health Institute (IHI)

Rationale and Abstract
Effective surveillance and control of malaria transmitting mosquitoes requires quantitative understanding of key biological attributes, namely: preferred blood-hosts of mosquitoes, proportions infected with parasites, survivalship, indoor/outdoorbiting behaviour and insecticide susceptibility. Currently, identifying mosquito blood meals and Plasmodium infections involves enzyme-linked immunosorbent assays (ELISA), or polymerase chain reactions (PCR), which are time-consuming, laborious and require expensive reagents. However, advances in near-infrared spectroscopy (NIR) suggest the potential for a cheaper, quicker and non-invasive alternative for predicting age and species of mosquitoes, and detecting pathogens e.g Wolbachia and Zika virus in laboratory-infected Aedes. Promisingly, mid-infrared (MIR) can provide even better accuracies since structural identities of bio-molecules are delineated at finer resolutions than in NIR bands. However, the spectroscopy-based methods have not been field validated because entomologist lack comparative field samples of known attributes and advanced computational methods to process large spectral datasets.
MESA Track can support...

- Researchers
- Policy-makers
- Research institutions/research groups
- Funding institutions
MESA Track can support...

- Tool to highlight own work and impact, increase its visibility
- Identify people working in the same area
- Explore collaborations, partnerships, etc.
MESA Track can support...

- Evidence review exercises “Deep Dives”
- Identify new questions being asked
- Foresee emerging evidence
- Plan the timing for future revisions of guidance
Evidence review exercises “Deep Dives”

In-depth profiling of critical topics

Useful for planning for and informing policy-making processes

Tool to analyze the research landscape and identify evidence gaps

[ONGOING] Intermittent preventive treatment in infants (IPTi)
A WHO Technical Consultation to Review the Role of Drugs in Malaria Prevention for People Living in Endemic Settings took place on October 16 - 17, 2019 [16].

[ONGOING] Intermittent preventive treatment in pregnancy (IPTp)
A WHO Technical Consultation to Review the Role of Drugs in Malaria Prevention for People Living in Endemic Settings took place on October 16 - 17, 2019 [16].

[ONGOING] Novel uses of chemoprevention for malaria
A WHO Technical Consultation to Review the Role of Drugs in Malaria Prevention for People Living in Endemic Settings took place on October 16 - 17, 2019 [16].

[ONGOING] Seasonal Malaria Chemoprevention (SMC)
A WHO Consultation on Seasonal Malaria Prevention (SMC) will take place in October 14 - 15, 2019 [16], with the aim of reviewing the state of the art in malaria vaccine development including new developments in the field, key challenges and opportunities, and a possible role as a surveillance tool as sanctioned by WHO in June 2019 [17].

mAce for malaria vaccine development
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Genetic Epidemiology
A WHO technical consultation to discuss what genetic epidemiology of malaria parasites and mosquito species can tell us about malaria transmission, antimalarial drug resistance, and a possible role as a surveillance tool as sanctioned by WHO in June 2019 [17].

www.mesamalaria.org/mesa-track/deep-dives
Evidence review exercises “Deep Dives”

Technical consultation on the role of parasite and anopheline genetics in malaria surveillance

5–7 June 2019, Geneva, Switzerland
Evidence review exercises “Deep Dives”

Genetic Epidemiology

A WHO technical consultation to discuss what genetic epidemiology of malaria parasite and Anopheline mosquitoes can tell us about malaria transmission, antimalarial drug resistance, and a possible role as a surveillance tool was convened by WHO in June 2019 [ref].

To facilitate the technical consultation’s work, MESA is compiling a landscape of recent and ongoing research in genetic epidemiology and its role in malaria surveillance. Additional information and inputs are welcome, please do not hesitate to contact us (mesa@isglobal.org) to add your research project to this ongoing Deep Dive.

TOTAL PROJECTS | TOTAL FUNDING | PROJECT SITES
---|---|---
42 | $34.7M | 53

Research Area | Total Projects | Project Timeline
---|---|---
Parasite gene flow | 18 | 2007-2025
Transmission intensity | 12 | 2007-2025
Resistance in the parasite | 11 | 2007-2025
Elimination | 9 | 2007-2025
Anopheles gene flow | 6 | 2007-2025
Applications to the field | 4 | 2007-2025
Resistance in Anopheles | 2 | 2007-2025

www.mesamalaria.org/mesa-track/deep-dives
MESA Track can support...

- Identify the next issues to tackle
- Make smart investments
- Illustrate funding strategies
MESA Track can support...

- Increase the visibility of your work
- Illustrate your institution’s research strategy
- Track your institution’s work and progress
RBM Vector Control Working Group (VCWG)

The purpose of the Vector Control Working Group (VCWG) is to align RBM partners on best practices to reach and maintain universal coverage with effective vector control interventions.

**VCWG Work Streams**

- IRS IRM Priorities
- LLIN Priorities
- Larval Source Management
- New Tools, New Challenges in Vector Control
- IVM, Evidence and Capacity
- VBDs and Built Environment

*This page is periodically updated to reflect the research led by the VCWG members. Inputs about new projects are welcome, please contact us at mesa@isglobal.org.*

**RBM Vector Control Working Group Webpage**

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<td>$173M</td>
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[VIEW ALL]
VCWG Portfolio in MESA Track

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VIEW ALL
VCWG Portfolio in MESA Track

**Themes**
- Response Strategies
- Health Systems & Op. Research
- Epidemiology
- Challenges in Elimination
- Basic Science

**Funding Sources**
- Bill & Melinda Gates Foundation (BMGF)
- President’s Malaria Initiative (PMI)
- Medical Research Council (MRC)
- Department for International Development
- Global Fund to Fight AIDS, Tuberculosis

**Principal Investigators**
- Steven W. Lindsay
- Fredros Okotcho Okumu
- Sarah J. Moore
- Adamu Addisie
- Arnold Mmbando

**Project Sites**

[Map of project sites with project totals categorized into 1-3, 4-5, 7-9, 10-12]
VCWG Portfolio in MESA Track

After the meeting, we aim to:

- Update with 2020 presentations
- Validate with PIs
- Send form to all participants to add additional research
- Ask for feedback
MESA Track is a unique platform that can help stakeholders to **recognize the challenges most in need of a response** and the potential **knowledge gaps** enabling the malaria community to respond accordingly.

www.mesamalaria.org/mesa-track
Thanks for your attention!

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Kate Whitfield
Elisabet Martí

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www.mesamalaria.org
www.isglobal.org

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Bill & Melinda Gates Foundation
MESA Track: Methodology

**Data collection** on funded and current research projects

**Validation and gap-filling** with the Principal Investigators

**Publication in MESA Track**
## MESA Track: Methodology

### Data sources
- Research grants databases
- Research institutions websites
- Clinical trials databases
- Abstract books
- Other sources of information
- Consultation with experts in the area

### Information collected
- Title
- Objectives
- Principal institution(s)
- Principal Investigator(s)
- Funding source(s)
- Abstract
- Funding amount
- Partners
- Timeframe
- Country
- Study design
- Others