

## The New Roles and Challenges of Technology in the Fight Against Malaria

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**Brief Bio**  
*Session Leader(s)*

Walter Karlen is an Assistant Professor in the Department for Health Sciences and Technology heading the Mobile Health Systems Laboratory at ETH Zurich since October 2014. He received an MSc degree in micro-engineering and a PhD in Computer, Communication and Information Sciences from the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

He has worked extensively on mobile phone implementations of biomedical sensors for global health applications and developed novel algorithms for the automated analysis of biomedical signals and diagnosis of infectious diseases.

**Abstract**  
*Short description, including alignment with conference themes and objectives*

More than 500'000 deaths are caused by malaria annually. Current in-field diagnostic devices have limited sensitivity and inconsistent performance. Preventive technology (e.g., mosquito nets) has been shown to have limited effectiveness. New developments are sought to fight malaria. Pre-symptom diagnostic tests that allow for early screening of infections must address apart from improved sensitivity also other challenges such as distinguishing the species of Plasmodium parasites. Furthermore, to have impact and allow scalable implementation in low resource settings, novel interventions have to satisfy the ASSURED (Affordable, Sensitive, Specific, User-friendly, Rapid and robust, Equipment free and Delivered) criteria set out by the World Health Organisation (WHO) for rapid diagnostic tests.

While research focuses largely in satisfying sensitivity and specificity, other aspects of ASSURED such as low cost, usability, robustness and implementation strategies are often neglected during the initial development stages. The goal of this session is to bring together researchers and implementers from various fields to discuss common strategies to address challenges that new technologies must meet in the new goal of malaria eradication.

**Description**  
*Proposed discussion focus*

The WHO has defined three pillars to eliminate and eventually eradicate malaria in the next 15 years: 1) universal access to prevention, diagnosis, and treatment; 2) acceleration towards elimination; and 3) malaria surveillance. We will discuss the following questions:

1. Where and how can emerging technologies assist the elimination and eventual eradication of malaria?
2. What are specifications and requirements for ideal screening tools and procedures?
3. How can implementation strategies be brought to scale?
4. How do we combine different strategies (e.g. early screening, vaccines, prevention and surveillance)
5. What are the current limitations and challenges of technologies that are developed in "first class" research environments, but targeting limited resource settings?
6. What are the business models for these technologies?
7. How can we foster engagement of the local communities and empower users?

**[SE06-MED]**

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### Objectives

*Justification and expected impact during and after the conference*

We expect a cross-disciplinary discussion regarding new diagnostic technologies, specifically input from technology developers, health workers and implementers. This type of interaction and dialog is often underestimated due to the lack of appropriate communication at the early stage of development.

We would like to provide a discussion panel focusing on developing for locally-driven needs, in contrast to the common technology-driven approach.

We will establish a forum to connect participants at all levels, particularly young researchers and foster international and cross-disciplinary collaborations.

### Target Audience

The session targets researchers from all fields (biology, epidemiology, engineering, policy, health care, ...) as well as representatives from industries and organizations who are interested in developing new strategies for malaria eradication.