



DIVISION OF MALARIA RESEARCH

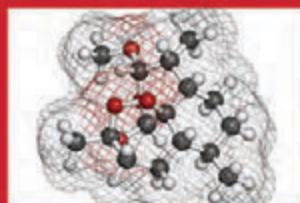
Supporting Global Malaria Eradication Efforts

The Division of Malaria Research aims to support global malaria eradication efforts by developing and deploying innovative tools for improved malaria treatment, prevention and surveillance. In our molecular parasitology and immunology laboratories in Baltimore and at field research sites across Africa and Asia, we lead clinical trials of malaria drugs and vaccines and investigate antimalarial drug resistance, molecular and genomic epidemiology, immuno-epidemiology, pathogenesis, malaria in pregnancy, and interactions between malaria and co-infections including HIV and schistosomiasis.

Recognizing that malaria eradication can only be accomplished by building upon successful local and regional elimination efforts, we work in collaboration with researchers across the globe to train young scientists and clinical investigators and build research capacity in malaria-endemic countries.

RESEARCH HIGHLIGHTS

EMERGENCE AND SPREAD OF DRUG RESISTANT MALARIA



Applying our extensive experience in the molecular basis of antimalarial drug resistance, our researchers have been using genomic approaches to identify genetic markers associated with antimalarial drug resistance.

DEVELOPING AND TESTING A MALARIA VACCINE



We are evaluating the most promising vaccines in our laboratories and clinics in Baltimore and in malaria-endemic regions throughout the world. Our researchers are developing strategies to overcome the complexity and diversity of the malaria parasite.

STUDYING IMMUNE RESPONSES TO MALARIA



Using protein and peptide microarrays, our researchers are studying immune responses to malaria. Our research combines novel genomic approaches with powerful new microarray technology to assess the role of parasite surface antigens in determining the severity of malaria infection. Our results provide insights into the mechanism of severe disease and bring us closer to developing interventions to save lives.



Miriam K. Laufer, MD, MPH
Director, DMR

Dr. Laufer is a Pediatric Infectious Diseases specialist with over 15 years of experience in conducting epidemiological and translational research with a focus of translating scientific discovery into clinically relevant strategies to improve the health of people living in malaria-endemic countries. She leads a team of dynamic and world-renowned researchers who work towards accelerating malaria elimination.

Undergraduate scholars, PhD students, post-doctoral fellows and pediatric infectious disease fellows mentored by Dr. Laufer and faculty work in the DMR laboratory to answer pressing public health questions.

FIELD SITES

Baltimore
Burkina Faso
Malawi
Mali
Myanmar





UNIVERSITY of MARYLAND SCHOOL OF MEDICINE INSTITUTE FOR GLOBAL HEALTH

DIVISION OF MALARIA RESEARCH *An Interdisciplinary Approach to Fighting Malaria*

GENOMIC EPIDEMIOLOGY UNIT

Under the leadership of **Shannon Takala-Harrison, PhD.**, our researchers apply methods from molecular epidemiology, evolutionary biology, and population genomics to understand the evolution of the malaria parasite in response to the human immune system and interventions such as drugs and vaccines.

Ongoing projects include investigating the impact of parasite genetic diversity on the efficacy of subunit and whole-organism malaria vaccines, genome-wide research into the mechanisms of anti-malarial drug resistance and identifying molecular markers to track and contain resistant parasites.

MALARIA VACCINE AND CHALLENGE UNIT

Led by **Kirsten Lyke, MD**, our researchers conduct and participate in field, clinical and immunological studies of *Plasmodium falciparum*, schistosomiasis co-infections and other tropical diseases such as dengue virus, Ebola virus and Zika virus. Studies on sub-unit malaria vaccines as well as whole organism, metabolically active *P. falciparum* sporozoite vaccines are being evaluated, including controlled human challenges in Baltimore.

INTERNATIONAL CLINICAL TRIALS UNIT

Under the leadership of **Matthew Laurens, MD, MPH**, our projects include a clinical study of a novel whole organism malaria vaccine, a trial of a non-attenuated malaria parasites given under prophylaxis as a vaccination strategy, evaluation of malaria prophylaxis in persons living with HIV, studies of malaria risk and burden in vulnerable groups, and a study of genetic determinants of severe malaria.

IMMUNOEPIDEMIOLOGY AND PATHOGENESIS UNIT

Unit Co-Directors, **Andrea Berry, MD**, and **Mark Travassos, MD, MSc**, are leading research on the humoral immune response to malaria infection and vaccination as well as the pathogenesis of clinical malaria syndromes. Ongoing projects include identifying immune responses to key epitopes of diverse malaria antigens, designing surveillance tools in malaria elimination settings, and studying the role of variant surface antigens in the pathogenesis of cerebral malaria.



A COLLABORATIVE APPROACH

The DMR has a long-standing collaboration with international academic and research institutions. In West Africa, where we have been conducting epidemiology research and malaria vaccine trials for over 20 years, we have a very strong collaboration with the the Malaria Research and Training Center (MRTC) of the University of Sciences, Technique, and Technologies of Bamako (USSTB) in Mali. We also collaborate with the Centre National de Recherche et de Formation sur le Paludisme (CNRFP or National Center for Malaria Research and Training) in Burkina Faso.

In Malawi, the University of Malawi College of Medicine and its affiliates Blantyre Malaria Project and Malaria Alert Center have been constant collaborators with us for over 15 years in the conduct of numerous epidemiological studies and clinical trials.

CONTACT US

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THE NEXT GENERATION OF RESEARCH

Training is a central part of our mission in the Division of Malaria Research.

There are three federally supported malaria research training programs for international and U.S. medical students and research fellows that have been in place for decades.

Our trainees work in our laboratories in Africa and Baltimore on a range of projects including antimalarial drug

efficacy trials, examining the molecular epidemiology of malaria in pregnancy and evaluating the effect of different treatment regimens on drug resistance.