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Specialization: Malaria, NTDs, Diagnostics, Innovations

Research Interests

I am a molecular parasitologist focused on studying malaria and neglected tropical diseases impacting the African continent. In addition, I have a keen interest in the development and evaluation of diagnostic tools for these infectious diseases. This is part of my passion to better understand the molecular basis for pathogenesis of these parasitic diseases so as to contribute to innovations for their control and elimination.

Research Activities

My research career began with molecular investigations for novel trypanosome vaccine antigens at the International Livestock Research Institute (ILRI, Kenya). I then progressed to genotyping of circulating parasites among children in a malaria vaccine trial conducted by the Walter Reed Project, in Western Kenya. At the University of Medicine and Dentistry of New Jersey (UMDNJ) I used conditional mutagenesis techniques in a malaria mouse model, to investigate kinase genes that were putative malaria drug targets. Subsequently I studied the role of erythrophagocytosis in a mouse model of malaria anemia at the Penn State College of Medicine.



Visualizing LAMP assay results with UV



New Small Animal House (SAFARI)



Soy bean extracts have anti-malaria activity

Currently I supervise Masters and PhD students' research within the College of Health Sciences at JKUAT. These studies have included demonstration of the anti-malarial properties of Soy bean extracts in *P. bergheii* murine malaria infections. The purpose of the study was to identify novel anti-malarial plant-derived drug candidates in response to need for new drugs to combat the growing problem of malaria drug resistance. In addition other research focused on evaluating a high throughput loop-mediated isothermal amplification (HT-LAMP) assay for the detection of low intensity *Plasmodium falciparum* infections. The intention is to develop and deploy a new sensitive molecular tool to complement the growing efforts to realize malaria elimination. Both these projects were supported by research funds from the Africa-ai-JAPAN Project at JKUAT. Other projects have included the comparison of different methods for screening of donated blood at the Kenyatta National Hospital for malaria, a transfusion-transmissible infection (TTI) that is not part of the infections routinely screened. In addition to research activities I contributed as Project Manager, to the design, renovation, naming and operationalization of the Small Animal Facility for Research and Innovation (SAFARI), the new JKUAT rodent housing facility for research and training.

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