

Malaria research: from basic insights into parasite migration to new intervention methods

Prof. Dr. Friedrich Frischknecht

Heidelberg University Medical School, Center for Infectious Diseases, Professor for Integrative Parasitology, Heidelberg, Germany

Malaria parasites undergo a complex life cycle between mosquitoes and vertebrates. Yet, this complexity allows a number of intervention methods that can target mosquitoes and parasites alike. Current malaria control tools are insecticides and insecticide treated bed nets as well as drugs. No efficient vaccine is available but several are being tested and two have already been approved. These are based on a single antigenic protein, while work using attenuated parasites has also progressed to clinical trials. Our lab studies the way malaria parasites migrate with a main focus on the transmission to and from the mosquito. Parasite migration is essential for the parasite and based on an actin-myosin motor that is modulated by a number of proteins. To understand the basis of migration we employ reverse genetic methods, advanced microscopy and biophysics. In the talk I will highlight our motivation to study parasites in general, malaria in particular and guide through a number of recent studies focusing on specific proteins involved in different aspects of parasite migration. I will reflect on how these studies have led through serendipity to a novel approach using attenuated parasites that might aid malaria control.