

NEWS & VIEWS

Issue 02, Dec. 2020


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3D Structure of PfKelch 13
PDB ID: 4YY8

NIMR Annual Day Celebration

ICMR Malaria Mission
(IMM)

Malaria Scientists
to watch this month

Featured Scientific
Publications in Malaria

MERA-India

Malaria Elimination Research Alliance-India

MERA-India Secretariat,

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MERA India
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MERA-INDIA Newsletter 'News & Views' December 2020

3D Structure of PfKelch 13 (PDB ID: 4YY8)

Structure of PfKelch 13

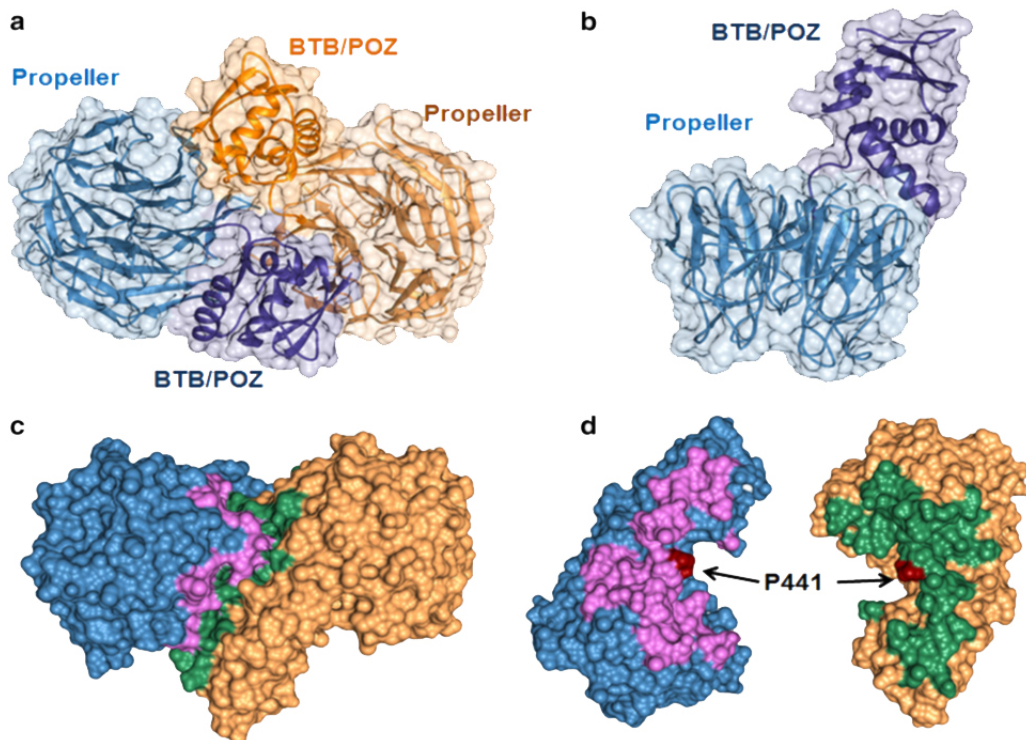


Figure 1: 3D structure of PfKelch 13 (PDB ID: 4YY8): a, b. The two chains of the homodimeric protein are shown in blue and brown. The propeller domain in chain A is colored light blue, while BTB/ POZ domain is colored dark blue. The propeller domain in chain B is colored dark brown, while BTB/POZ domain is colored light brown. c. The molecular surface of PfKelch13 dimer is shown with residues involved in the dimer interface colored

pink and green for chains A and B respectively. **d.** The residue P441 is marked, which the site of resistance mutation P441L. The analyses of dimer interface were performed using PDB ePISA ([Click here for full article](#)).

MERA-India First Newsletter Launch on the Occasion of Annual Day of National Institute of Malaria Research



Figure 2: [NIMR Annual Day Celebration](#) (a-d). The annual day of National Institute of Malaria Research, New Delhi was celebrated on November 2nd, 2020. Professor Balram Bhargava, Director General, Indian Council of Medical Research (ICMR) was invited as the Chief Guest to grace the occasion (a). The above collage has been created to capture the precious moments of the event. In addition, as a part of the celebration, a beautiful portrait from MERA-India was gifted to the DG by the Director, NIMR (b) as a memento. Furthermore, MERA-India also presented another exquisite painting to the Director to make the moment memorable (c). The digitized version of the first newsletter of MERA-India highlighting the history of NIMR, MERA-India aims and objectives, and also the cutting edge global malaria research, was launched by the Director General in the presence of the Director and other malaria scientists (d).

ICMR Malaria Mission

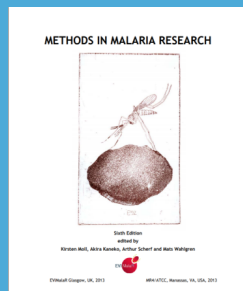
On the same day, the DG-ICMR also announced another program called ICMR Malaria Mission (IMM). ICMR Malaria Mission is a step towards integrating research efforts and coalescing research expertise available across ICMR Institutes working on malaria.

The concerted research studies would be focused on better understanding of parasite, host

and vector and their interactions, responsible for continued transmission and discovery/evaluation of new tools and strategies for control.

Long term studies would be planned with multiple institutes on specific thematic areas, addressing different aspects of malaria with the expectation of gaining deeper insights in malaria biology.

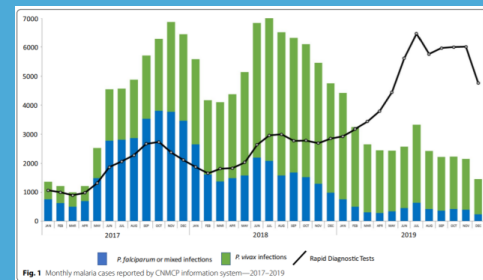
Scientific Contributions by dedicated scientists/researchers in the field of Malaria Research



Sixth Edition edited by Kirsten Moll, Akira Kaneko, Arthur Scherf and Mats Wahlgren

[Another effort made by NIMR to provide a digital version of an important book](#), the sixth edition of *Methods in Malaria Research* penned by Kirsten Moll, Akira Kaneko, Arthur Scherf and Mats Wahlgren (EVIMaR Glasgow, UK, 2 and MR4/ATCC, Manassas, VA, USA, 2013) contains protocols provided by 122 scientists from the global malaria community. The manual is considered a “working document” comprising new and improved methods. The manual provides assistance to the researchers at all stages of their careers in carrying out frontline research in the field of malaria.

Tools to accelerate falciparum malaria elimination in Cambodia: a meeting report

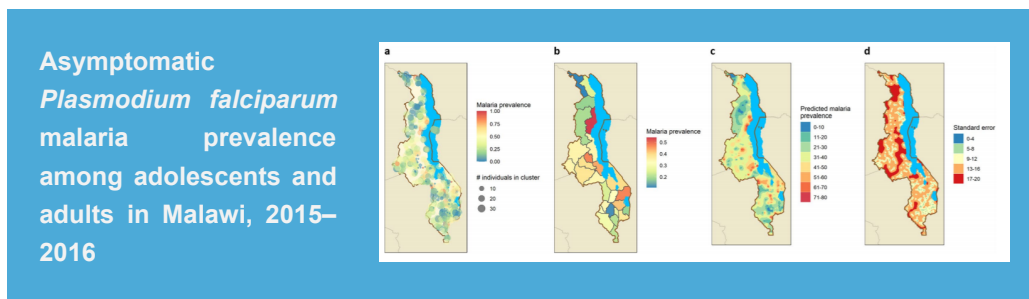


[Lek et al., describes strategies for malaria elimination in Cambodia by 2025](#). Rapid elimination will depend on successfully identifying and clearing malaria foci linked to forests. Expanding and maintaining universal access to early diagnosis and effective treatment remains the key to malaria control and ultimately malaria elimination in the Greater Mekong Sub region (GMS) in the foreseeable future. Mass Drug Administration (MDA) holds some promise in the rapid reduction of *Plasmodium falciparum* infections, but requires considerable investment of resources and time to mobilize the target communities.

Furthermore, the most practical drug regimen for MDA in the GMS—three rounds of DHA/piperaquine—has lost some of its efficacy.



[Cohee *et al.*](#), aimed to assess whether preventive treatment of malaria might be an effective means of reducing *P. falciparum* infection and anaemia in school-aged children and lowering parasite transmission. Preventive treatment of malaria among school-aged children significantly decreases *P. falciparum* prevalence, anaemia, and risk of subsequent clinical malaria across transmission settings. Policy makers and programme managers should consider preventive treatment of malaria to protect this age group and advance the goal of malaria elimination, while weighing these benefits against potential risks of chemoprevention.



[Topazian *et al.*](#), performed quantitative polymerase chain reaction on 7,393 samples, detecting an overall *P. falciparum* prevalence of 31.1% (SE= 1.1). Most infections (55.6%) had parasitemia ≤ 10 parasites/ μ L. While 66.2% of individuals lived in a household that owned a bed net, only 36.6% reported sleeping under a long-lasting insecticide-treated net (LLIN) the previous night. Protective factors included urbanicity, greater wealth, higher education, and lower environmental temperatures. Living in a household with a bed net (prevalence difference 0.02, 95% CI – 0.02 to 0.05) and sleeping under an LLIN (0.01; – 0.02 to 0.04) were not protective against infection. Their findings demonstrate higher parasite prevalence in adults than published estimates among children.

Malaria Scientists to watch:
1. An interview with Prof. (Dr) Subrata Baidya

[Prof. \(Dr\) Subrata Baidya](#) is an **M.D (Community Medicine)** **AIIMS, New Delhi Professor & HOD Department of Community Medicine** Agartala Government Medical College & GBP Hospital Agartala, Tripura



1. Please tell us about your research and what motivated you to become a malaria scientist?

As an active researcher, I have been involved in different types of research activities during my career, and significantly through the role of Nodal Officer of Model Rural Research Unit (MRHRU) of Tripura since 2016. For the MRHRU, research is an essential component and I believe that my expertise and skills in leading the group of scientists posted at the Unit will lead to successful outcomes. Currently, I am focusing mainly on translational and implementation research along with intervention research like drug trials. The malaria outbreak in Tripura in the year 2014 was one of the motivating factors for me to get actively involved in the field of malaria research in the state. Following the outbreak, I undertook field outbreak investigations and observed that behavioural changes and monitoring of field programs could have made a significant impact on the scenario.

2. What are research gaps that you think require urgent attention in eliminating malaria from India?

We have identified certain knowledge gaps in the eco-epidemiological and behavioural activity related research which needs to be addressed in the future. Even though Tripura is a small state, eco-epidemiology, vector bionomics, human behaviour and ethnicity vary widely from district to district. Therefore, it is imperative that small scale area specific research is planned and executed to identify effective intervention strategies for elimination.

3. Please share your experience in Agartala Medical College and research environment.

Agartala Government Medical College, Tripura was established in 2005, and research activity started since inception but we gained definite momentum after establishment of Viral Diagnostics Research Laboratory, MRHRU, MRU, which are all ICMR institutes. For smooth functioning of this institute college authorities have eliminated the hardship of red ribbon binding. The college authorities have also established separate accounts section, transparent financial transactions and audit processes to ensure a rich environment and scope for interested faculties to take up different research project.

4. What is your wish list for next year as a malaria researcher keeping current pandemic in mind?

COVID 19 pandemic has changed the direction of research. Already 2 (two) studies related to COVID 19 have been completed; one study is in the pipeline. Another one study which has been approved by the Ethics Committee is waiting for funding. For Malaria, one multicentric study of drug trial was planned before pandemic, in the meantime all formalities have been completed, and I am awaiting funding confirmation. For Malaria, new research definitely will be based on impact of COVID pandemic on Malaria elimination as it is a widely known fact that the pandemic had an adverse impact on the implementation and execution of national programmes for disease eradication.

2. An interview with Dr. Kuldeep Singh



[Dr. Kuldeep Singh](#) is presently working as 'Scientist B' & Officer Incharge at ICMR-National Institute of Malaria Research, Field Station, Guwahati (Assam) on basic and field oriented epidemiological and entomological aspects of malaria.

1. Your origin story: Can you please describe your research background?

I have obtained graduate (2005) and post-graduate degrees (2008) in Pharmaceutical Sciences from G. J. University of Science & Technology (Hisar, Haryana). In 2015, I received my PhD from Punjabi University (Patiala, Punjab) under the supervision of Dr. Vikas Rana, wherein I had worked on development of microemulsion and self nanoemulsifying drug delivery system of antimalarial (Primaquine) and antifungal (Amphotericin B) which are BCS II and BCS Class IV compounds.

2. What was the biggest motivation in your life that made you become a scientist?

The research environment during doctoral research and after joining in the industry, I felt that every commercial product has a history and after crossing quality and regulatory hurdles, it reaches in the hands to cure people. So, I had decided to work in such a way that the people should get advanced benefits whatever they are getting today. A similar environment was also felt when I have started working as scientist in ICMR-NIMR.

3. Enlighten us about your line of research and what has been the importance/impact of your research?

Presently, I am working in field based research activities as PI and Co-PI of the projects of national importance. Therapeutic efficacy of ACT study was completed in Lawngtlai (Mizoram), Udalgiri (Assam) and West Garo Hills (Meghalaya) and Dhalai (Tripura) in 2019. The burden of submicroscopic and asymptomatic malaria which may act as a reservoir with implications for malaria elimination strategies was studied in Assam and Meghalaya during 2016-17. In entomology, monitoring of insecticide resistance in malaria vectors study was conducted in Assam and Meghalaya. Further, we have made interaction with state health authorities for collection of malaria epidemiology data, need of the state health department and joint identification of gaps in malaria control and elimination. Before joining ICMR-NIMR, I was in industry and two products were commercialized and one product has entered in Phase III trial during my tenure. It gives me immense pleasure in sharing that US patent was granted in 2020.

4. What got you interested in starting a career at ICMR-NIMR and how has been your journey till date?

I was selected for the post of scientist B and joined ICMR-NIMR in November, 2016. I was posted to ICMR-NIMR, field station Guwahati in December, 2016. My journey since then has been challenging as most of the research work was in difficult terrain of North eastern states of India. I was an F& D scientist and after joining I was deputed to field station Guwahati to take over the charge as Officer in charge. I have handled projects both in epidemiology and entomology. The support of the field staff, colleagues and senior scientists helped me to complete the projects successfully.

5. Other than malaria research, did/do you have any other research interests?

I am interested in developing target /site-specific nanotechnology based Novel drug delivery systems that help in curtailing multidrug-resistant *P. falciparum* malaria. Understanding of vector biology is itself a new field for me. I think we should also focus on other vector borne diseases like dengue, Chikungunya fever, Filariasis, etc.

6. Finally, on a lighter note, do you have any hobbies other than science that keeps you going on even during challenging times during your research career?

Apart from the research activities, I am trying to spare time for travelling to new places and exploring the culture and food habits of local community, reading books (history) and cooking. Watching news channels in the morning and evening and history related documentaries during travel are also preferred.



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