Characterizing targets of naturally acquired immunity and correlates of clinical protection against malaria

Malaria remains one of the world’s leading causes of morbidity and mortality with 445,000 deaths and 216 million cases in 2016. There are several Plasmodium species causing human malaria. Although Plasmodium falciparum is considered to be the most lethal, Plasmodium vivax is the most widely distributed species accounting for between 71 and 391 million cases per year. Recent studies have shown that P. vivax has significant impact on global health systems and can also cause severe illness and death. However, only two P. vivax candidate vaccines have reached Phase I clinical trials in comparison with more than 25 P. falciparum vaccine candidates in different phases of clinical trials, including the WHO approved RTS,S with around 30% efficacy according to Phase III clinical trials. Passive transfer of sera from clinically immune individuals significantly protects non-immune recipients from high parasite burden and clinical symptoms. These observations have established that antibodies are critical for naturally acquired immunity to malaria infection. This presentation will provide an overview of the epidemiology of P. vivax and then describe work investigating the breadth of antibody responses to a panel of P. vivax proteins in three longitudinal cohorts from Brazil, Thailand and Papua New Guinea with different transmission intensities. Survival analysis was used in these longitudinal cohorts to identify associations of antibodies with reduced incidences of clinical malaria. These results provide a rationale for incorporating a combination of parasite antigens in a P. vivax vaccine.

About Wen-Qiang He

Wen-Qiang He is a Research Fellow in the School of Public Health and Community Medicine in UNSW Sydney. He completed a Bachelor of Medicine in Heilongjiang in 2011, a Master of Science in Medicine focused on the molecular epidemiology of antimicrobial resistant bacteria at Peking University in 2014, and a PhD investigating vaccine candidates for malaria at the Walter & Eliza Hall Institute of Medical Research and the University of Melbourne in 2018. He has experience in infectious diseases, hospital information management, and analysis of large longitudinal cohorts.