

*Important discovery of new serological markers for *P. vivax* malaria elimination*

Blood-based antibody tests (also known as serological testing) have become a focus of public interest with the new COVID-19 pandemic. During an immune response, humans develop specific antibodies binding to antigens presented by pathogens labeling them for destruction by the immune system. Due to their high specificity, antibodies can be used as interesting markers to diagnose the spreading of infectious diseases for surveillance and taking preventive actions in support of patients. Serological or antibody tests for COVID-19 build on our long experience developing such tests for other diseases.

Today, Rhea J. Longley, Michael White et al. report in a publication in *Nature Medicine* new serological markers with great potential for malaria surveillance and targeted treatment of infected people. This study addressed specific needs to reduce *P. vivax* malaria, the predominant parasite in South-East Asia and the Americas. In infected people, individual *P. vivax* parasites can remain in the liver forming a dormant stage, the so-called hypnozoite. Only weeks or even several months after the initial infection, hypnozoites can initiate a relapse starting a new malaria episode and causing further spreading of the disease. As of today, silent hypnozoites cannot be directly detected in the liver by any available technology. Therefore, the study selected new markers to identify patients having been recently infected with *P. vivax* malaria using clinical samples from Brazil, Thailand, and the Solomon Islands. Since these markers identify patients with infections within approximately the last 9 months, it is most likely that most of the identified patients are carrying also hypnozoites. Hence, patients with recent *P. vivax* infections can be selected for treatment with dedicated drugs known to kill hypnozoites and protecting them from new malaria episodes.

Besides bringing benefits to patients for treatment of hypnozoites, the new *P. vivax* markers provide effective means for better surveillance of malaria. Rapid tests, microscopy, and the most sensitive PCR assays commonly used in malaria surveillance can only identify people with an acute malaria infection. In contrast to those tests, the new serological markers offer a wider time window to find regions with ongoing malaria transmission. This is becoming even more important as we are making progress towards

the elimination of malaria, where individual cases of acute malaria become less common and the disease is rather spread by asymptomatic patients not seeking medical advice.

This project led by Professor Ivo Müller was conducted in a joint effort by researchers from the Walter and Eliza Hall Institute (WEHI), Australia; Pasteur Institute, France; Ehime University, Japan, CellFree Sciences, Japan, and Foundation for Innovative New Diagnostics (FIND), Switzerland, with the generous support of the Global Health Innovative Technology Fund (GHIT) Fund of Japan.

CFS is deeply grateful for having been part of this important project using our wheat germ cell-free expression system for the preparation of malaria proteins used in the study! We will keep on working together to bring a diagnostic test with the newly discovered markers to people at need as our contribution to eliminating malaria.

Original Article:

Longley, R.J., White, M.T., Takashima, E. et al. Development and validation of serological markers for detecting recent *Plasmodium vivax* infection. *Nat Med* 26, 741–749 (2020).

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