

Promising candidates for malaria vaccine revealed

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Dr. James Beeson, from the Walter and Eliza Hall Institute in Melbourne, Australia, has uncovered a group of proteins that could form the basis of an effective vaccine against malaria. Credit: Walter and Eliza Hall Institute

Walter and Eliza Hall Institute researchers have uncovered a group of proteins that could form the basis of an effective vaccine against malaria.

Presently there is no [malaria](#) vaccine available, and these new findings support the development of a vaccine against the blood-stage of malaria.

Malaria is an infection of blood cells and is transmitted by mosquitoes. The most common form of malaria is caused by the parasite *Plasmodium falciparum*. Malaria parasites burrow into [red blood cells](#) by producing specific proteins. Once inside red blood cells, the parasites rapidly

multiply, leading to massive numbers of parasites in the blood stream that can cause severe disease and death.

Dr James Beeson, Dr Freya Fowkes and Dr Jack Richards from the institute's Infection and Immunity division, along with Dr Julie Simpson from the University of Melbourne, have identified proteins produced by malaria parasites during the blood-stage that are effective at promoting immune responses that protect people from malaria illness.

Their findings are published today in the international journal [PLoS Medicine](#).

Drs Fowkes and Beeson identified these proteins by reviewing and synthesising data from numerous scientific studies that had looked at the relationship between antibodies produced by the human immune system in response to malaria infection and the ability of these antibodies to protect against malaria.

Dr Beeson said malaria caused by *Plasmodium falciparum* was a leading cause of death and disease globally, particularly among young children. "As well as presenting an enormous health burden, malaria also has a major impact on social and economic development in countries where the disease is endemic," Dr Beeson said. "Vaccines are urgently needed to reduce the burden of malaria and perhaps eventually eradicate the disease.

"A malaria vaccine that stimulates an efficient immune response against the proteins that malaria parasites use to burrow into red blood cells would stop the parasite from replicating and prevent severe illness."

Dr Fowkes said the review of existing studies had illustrated how little was known about blood-stage malaria proteins and their suitability for use in vaccine development.

"Only about six blood-stage malaria proteins have been well studied out of a potential 100 proteins," she said. "There is an urgent need for malaria researchers to better coordinate their research efforts on these proteins. This will take us one step closer to developing an effective vaccine."

More information: Fowkes FJI, Richards JS, Simpson JA, Beeson JG (2010) The Relationship between Anti-merozoite Antibodies and Incidence of Plasmodium falciparum. Malaria: A Systematic Review and Meta-analysis. PLoS Med 7(1): e1000218.
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