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Malaria vaccine development paves way for protective therapy

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Scientists have made a significant contribution towards the development of a vaccine to prevent malaria.

Researchers have tested a preliminary form of a vaccine against the disease, which is spread by the bite of the mosquito and kills more than 600,000 people each year.

Until now, developing malaria vaccines has been challenging. A vaccine must incorporate key proteins from the malaria parasites, which will trigger production of antibodies by the immune system. These proteins have a complex, intricate structure that is hard to reproduce.

Scientists at the University of Edinburgh have now found a novel way to produce proteins that could lead to malaria vaccines being easy and cheap to manufacture. They have grown them inside a tiny single-celled aquatic creature, whose biological make-up is similar to that of the malaria parasite. The organism, and the protein, can multiply quickly in the lab.

In tests in mice, a vaccine developed using human malaria parasite proteins – known as MSP-1-BBM – enabled the immune system to produce antibodies in the bloodstream. These antibodies were shown to respond to the human malaria parasite, indicating that the vaccine would be likely to trigger an immune reaction if it were used in people.

Researchers now hope to develop the vaccine for further testing, with

the aim of producing a therapy that will be effective in humans. Scientists say there is a pressing need for new treatments, as many forms of the disease are becoming resistant to existing drugs. Children and pregnant women in sub-Saharan Africa are particularly at risk.

The study, carried out in collaboration with the German company Cilia AG and published in the journal *PLoS One*, was funded by the European Union.

Dr. David Cavanagh, of the University of Edinburgh's School of Biological Sciences, who led the study, said: "There is a desperate need for an effective vaccine, which can be made easily in large quantities, to protect against this devastating disease. Our findings meet this challenge and, with more work, could lead to a vaccine to help those most at risk."

Provided by University of Edinburgh