Malaria Immunogen

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Technology description

Researchers have developed a targeted virus-like particle (VLP) vaccine that elicits high-titer, long-lasting antibodies against a highly conserved malaria epitope.
In combination with a novel adjuvant (Advax), the CSP-displaying VLPs elicit strong and durable antibody responses against CSP which protect mice from malaria challenge.

Background

Malaria is a high priority global public health concern. According to the World Health Organization, the disease was responsible for 219 million cases and 435,000 deaths in 2017 alone. A majority of the deaths occurred in Africa, due to an infection caused by thePlasmodium falciparumparasite. The infection is initiated when mosquitos inject sporozoites, containing parasites, into the blood stream of the host. These sporozoites are quickly transported to the liver, where they replicate within the hepatocytes and re-enter the bloodstream to infect red blood cells, leading to the symptoms and pathology of malaria. Currently, there are a number of proposed vaccines that effectively inhibit the transmission of malaria and grant immunity. A majority of attempts to develop these vaccines have involved targeting circumsporozoite proteins (CSP), due to anti-CSP antibodies' capability of preventing the parasite from reaching the liver and establishing infection. CSP is the target of RTS,S/AS01, the most advanced malaria vaccine to date. However, complications regarding natural immunity, antigenic variability, and high titer limitations have decreased its overall effectiveness. There is a dire need to develop an adjuvant platform to drive strong and long-lasting humoral and cellular immune responses while being non-reactogenic.

Technology Description

Researchers from the University of New Mexico, Johns Hopkins University, and Vaxine Pty Ltd. have developed a targeted virus-like particle (VLP) vaccine that elicits high-titer, "monoclonal-like" antibodies against a highly conuserved CSP epitope. In combination with a novel adjuvant (Advax), the CSP-displaying VLPs elicit strong and drable antibody responses against CSP which protect mice from malaria challenge.
About STC.UNMAs
As the technology-transfer and economic-development organization for the University of New Mexico,

STC.UNM protects and commercializes technologies developed at the University of New Mexico (UNM) by filing patents and copyrights and transferring the technologies to the marketplace. We connect the business communication (companies, entrepreneurs and investors) to these UNM technologies for licensing opportunities and the creation of startup companies.

Application area

VLP display enhances the immunogenicity of a critical malaria epitope
Vaccine elicits high-titer, long-lasting anti-CSP antibody responses
No rapid immune decline after immunization
Utilized as a stand-alone prophylactic malaria vaccine

Institution

The University of New Mexico

Inventors

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