

April 9, 2019

Proteo-Science Center, Ehime University
Sumitomo Dainippon Pharma Co., Ltd.

GHIT Fund Awards Grant for Continuing Development of Malaria Vaccine Discovered by Ehime University and Sumitomo Dainippon Pharma

The Proteo-Science Center at Ehime University (Director: Takafumi Tsuboi, MD, PhD) and Sumitomo Dainippon Pharma (Head Office: Osaka, Japan; Representative Director, President and CEO: Hiroshi Nomura) recently discovered PfRipr5, a new malaria vaccine antigen, based on joint research conducted by the two organisations with the aim to develop a new malaria vaccine antigen to protect against clinical malaria.

In the new project entitled “Further development of a new asexual blood-stage malaria vaccine candidate” funded by Global Health Innovative Technology Fund (GHIT Fund, Japan), Ehime University has joined forces with the European Vaccine Initiative (EVI, Germany) and the Instituto de Biologia Experimental e Tecnológica (iBET, Portugal). The project will be further accompanied with advisory support from Sumitomo Dainippon Pharma, based on their R&D experience in the field of immune adjuvant technologies for vaccine development.

The antigen that will be further developed - PfRipr5- is a new asexual blood-stage malaria vaccine candidate antigen derived from the protein of the malaria parasite *Plasmodium falciparum*. Thanks to the limited antigen polymorphism of PfRipr5, a vaccine based on this antigen is expected to be highly effective. The project partners aim to commence clinical trials as soon as the preclinical characterization and other preparatory work have been conducted and finalized successfully.

Malaria is a parasitic disease transmitted by mosquitos. Although the number of deaths from the disease has been declining since around 2005, it continues to afflict hundreds of millions of people around the world, primarily in developing countries, and still causes more than 400,000 deaths annually. Although efforts to develop malaria vaccines have been ongoing for more than 40 years, first-generation vaccines designed to prevent infection from mosquitos to humans have proved effective in only about 30 percent of the corresponding cases. Thus, there is a pressing need for next-generation vaccines with higher levels of effectiveness. Blood-stage vaccines -that function differently from first-generation vaccines and protect against malaria development by inhibiting the entry of malaria parasites into erythrocytes- could be game changers in protecting populations in areas where the disease is prevalent. In the past, however, such research and development failed to make significant progress because of antigen polymorphism of parasites present in affected areas to the vaccine antigens.

Ehime University has high hopes that the success of the project will accelerate the development of asexual blood-stage malaria vaccines, an effort that has proved extremely difficult, and that the development of

next-generation, multi-stage malaria vaccines capable of preventing the development of malaria parasites at various stages will help combat malaria, which remains a high-priority global health issue.

Sumitomo Dainippon Pharma is eager to use the antigen it developed through joint research with Ehime University and its own innovative immune adjuvant technologies to carry out research and development in the area of next-generation vaccines, thereby contributing to improvements in global health.

Reference Information:

PfRipr5

The PfRipr5 discovered through research by Ehime University in collaboration with Sumitomo Dainippon Pharma is a new asexual blood-stage malaria vaccine candidate antigen for protecting against clinical malaria with partial amino acid sequence of a Rh5-interacting protein (PfRipr) expressed in the malaria parasite *Plasmodium falciparum*. Previous vaccine candidates for protecting against clinical malaria proved ineffective because of antigen polymorphism. However, Ehime University research clearly showed that PfRipr5 has the potential to be highly effective because of its highly conserved sequence in isolates from malaria endemic areas.

The Global Health Innovative Technology Fund (GHIT Fund)

The first of its kind in Japan, the GHIT Fund is an international public-private partnership between the Government of Japan, multiple pharmaceutical companies, the Bill & Melinda Gates Foundation, the Wellcome, and the United Nations Development Programme (UNDP). The GHIT Fund invests and manages a portfolio of development partnerships aimed at neglected diseases, such as malaria, tuberculosis and neglected tropical diseases that afflict the world's poorest people. The GHIT Fund mobilizes Japanese pharmaceutical companies, academic and research organizations to engage in the effort to create new drugs, vaccines, and diagnostics. For more information, please visit <https://www.ghitfund.org>.

European Vaccine Initiative (EVI)

EVI is a non-profit organisation supporting the development of vaccines for diseases of poverty and emerging infectious diseases. EVI will be responsible for overall management of the Project and formulation using adjuvants (immune-potentiating agents).

HP: <http://www.euvaccine.eu>

Instituto de Biologia Experimental e Tecnológica (iBET)

iBET is a private not for profit research intensive SME in the area of biotechnology and life sciences. iBET was established in 1989 and bridges university and industry research, by establishing partnerships in the areas related to Health & Pharma and Food & Health. Key areas of expertise include the production and purification of complex and functionalized biopharmaceuticals, e.g. recombinant proteins and virus like-particles as vaccine candidates, and the development of analytics/tools for process monitoring and control and for product characterization. In the Project structure, iBET is responsible for the synthesis of high-quality PfRipr5 proteins for use in vaccines.

HP: <http://www.ibet.pt>

Contacts:

Mr. Seiichi Matsumoto, Deputy Director (responsible for Proteo-Science Center), Research Support Division, Research Support Department, Ehime University
TEL: +81-89-927-9686; Fax: +81-89-927-8528

Public & Investor Relations Group, Corporate Communications
Sumitomo Dainippon Pharma Co., Ltd.
TEL: +81-6-6203-1407 (Osaka), +81-3-5159-3300 (Tokyo)