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The PATH Malaria Vaccine Initiative, Merck and NYU Langone Medical Center collaborate to research potential malaria vaccine

Researchers seek to block activity of key protein in order to stop malaria parasite from entering the liver

BETHESDA, MD, WHITEHOUSE STATION, NJ, NEW YORK, December 14, 2010 —

Development of a vaccine to prevent the malaria parasite from entering the human liver is the goal of a new collaboration announced today by global leaders in malaria research and vaccine development. The PATH Malaria Vaccine Initiative (MVI), Merck (known outside the US and Canada as MSD), and NYU Langone Medical Center are working together to evaluate an approach targeting a novel part of a major surface protein on the malaria parasite. Malaria is estimated to kill close to 900,000 people each year with the majority of deaths occurring in children under the age of five in sub-Saharan Africa.

The circumsporozoite protein (CSP) has been recognized as a potential target in the development of vaccines focused on the earlier stages of malaria infection. The researchers working on this project are focusing on a new approach that targets a region of CSP important to a critical function of the protein. By blocking this function, it is hoped that invasion of the parasite into the liver, an essential step in causing malaria disease, can be prevented.

“We think we can improve the way sub-unit vaccines are designed by strategically targeting this critical protein function,” noted Dr. Elizabeth Nardin, professor in the Department of Medical Parasitology at NYU Langone Medical Center. “Other vaccine approaches targeting CSP have required extremely high levels of antibody, which are difficult to elicit and to maintain. This approach has the potential to address that problem.”

The rationale for pursuing this targeted “peptide protein conjugate” approach is based on knowledge of both the vaccine technology to be used and the targeting of a particular malaria protein known to elicit an immune response. CSP has already been shown to have significant protective efficacy in the field, in the context of RTS,S, the most advanced malaria vaccine candidate, now in a Phase 3 clinical trial. Additionally, other conjugate based vaccines developed against bacterial pathogens have been incorporated into licensed, widely used pediatric vaccines by Merck.

“History has shown that vaccines can be a powerful tool against disease,” said Dr. John Shiver, vice president of vaccines discovery at Merck. “We recognize that new methods and partnerships, like this collaboration with MVI and NYU Langone Medical Center, are important to continue innovation in the battle against the malaria parasite.”

“With the availability of a first-generation malaria vaccine on the horizon, we are ramping up our efforts to seek out and invest in scientific approaches for malaria vaccines that could potentially be even more effective and protect more people,” said Dr. Christian Loucq, director of MVI. “We are very pleased that one of the world’s largest pharmaceutical companies and a major academic medical center have committed to testing a promising new way to defend children against malaria.”

Although this vaccine approach is being tested primarily for use in children younger than one year of age, it could be used to help prevent disease in all populations vulnerable to *Plasmodium falciparum*, the most deadly species of the parasite, and could potentially be adapted to prevent *P. vivax* as well. Approximately 40 percent of the world’s population lives at risk of contracting malaria caused by *P. vivax* and/or *P. falciparum*.

“Though it is quite early, we are excited to have the opportunity to explore the promise of this innovative vaccine approach with Merck and MVI,” said Dr. Photini Sinnis, associate professor in Medical Parasitology at NYU Langone Medical Center.

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About the PATH Malaria Vaccine Initiative (MVI)

The PATH Malaria Vaccine Initiative (MVI) is a global program established at PATH in 1999 through an initial grant from the Bill & Melinda Gates Foundation. MVI's mission is to accelerate the development of malaria vaccines and ensure their availability and accessibility in the developing world. MVI's vision is a world free from malaria. For more information, please visit www.malariavaccine.org.

About PATH

PATH is an international nonprofit organization that creates sustainable, culturally relevant solutions, enabling communities worldwide to break longstanding cycles of poor health. By collaborating with diverse public- and private-sector partners, PATH helps provide appropriate health technologies and vital strategies that change the way people think and act. PATH’s work improves global health and well-being. For more information, please visit www.path.org.

About NYU Langone Medical Center

NYU Langone Medical Center, a world-class patient-centered integrated academic medical center, is one of the nation’s premier centers for excellence in health care, biomedical research, and medical education. Located in the heart of Manhattan, NYU Langone is comprised of three hospitals—Tisch Hospital, a 705-bed acute-care tertiary facility, Rusk Institute of Rehabilitation Medicine, the first rehabilitation hospital in the world, with 174 beds and extensive outpatient rehabilitation programs, and the 190-bed Hospital for Joint Diseases, one of only five hospitals in the world dedicated to orthopedics and rheumatology—plus the NYU School of Medicine, one of the nation’s preeminent academic institutions. For more information, visit <http://www.med.nyu.edu/>.

About Merck

Today's Merck is a global healthcare leader working to help the world be well. Merck is known as MSD outside the United States and Canada. Through prescription medicines, vaccines, biologic therapies, and consumer care and animal health products, Merck works with customers and operates in more than 140 countries to deliver innovative health solutions. Merck also demonstrates commitment to increasing

access to healthcare through far-reaching policies, programs and partnerships. For more information, visit www.merck.com.

Merck Forward Looking Statement

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Merck undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in Merck's 2009 Annual Report on Form 10-K and the company's other filings with the Securities and Exchange Commission (SEC) available at the SEC's Internet site (www.sec.gov).