NEWS RELEASE

Jan7Merck and Instituto Butantan Announce Collaboration Agreement to Develop Vaccines to Protect Against Dengue Infections

12/12/2018

KENILWORTH, N.J.--(**BUSINESS WIRE**)--Merck (NYSE:MRK), known as MSD outside the United States and Canada, and Instituto Butantan, Sao Paulo, Brazil, a non-profit producer of immunobiologic products for Brazil today announced a collaboration agreement to develop vaccines to protect against dengue virus disease, the mosquito-borne infection. Instituto Butantan and Merck have licensed certain rights from National Institute of Allergy and Infectious Diseases (NIAID), part of the United States National Institutes of Health (NIH), for the development of live attenuated tetravalent vaccines (LATV). Instituto Butantan's dengue vaccine candidate, TV003, is currently being evaluated in a large Phase 3 study in Brazil.

"By sharing data from our ongoing vaccine development programs, Instituto Butantan and Merck are better positioned to achieve our goal of reducing the significant human and economic toll of dengue virus in Brazil and around the world," said Dr. Dimas Covas, director, Instituto Butantan. "We look forward to collaborating with Merck, an established global leader in vaccine development."

Under the agreement, Merck and Instituto Butantan have agreed to collaborate to share clinical data and other learnings from their respective dengue vaccine development programs, both derived from licensed materials from the NIAID. Instituto Butantan will receive a $26 million upfront payment from Merck and is eligible to receive up to $75 million for the achievement of certain milestones related to the development and commercialization of Merck's investigational vaccine as well as potential royalties on sales. Instituto Butantan will retain responsibility for the manufacturing and commercialization of their investigational vaccine, TV003, in Brazil.

“This agreement recognizes the tremendous progress that scientists and clinicians at the Instituto Butantan have made in developing their investigational dengue virus vaccine,” said Dr. Roger M. Perlmutter, president, Merck Research Laboratories. “Through our new collaboration, we together have made a commitment to help protect people around the world who are at risk of developing dengue virus disease.”

The agreement builds upon a productive long-term collaboration between MSD Brazil and Instituto Butantan, initiated in 2012, for human papillomavirus (HPV) and Hepatitis-A vaccine products.

About dengue fever

Dengue fever is a mosquito-borne disease that occurs in tropical and subtropical areas of the world. Mild dengue fever is characterized by a high fever, rash, and muscle and joint pain. A severe form of dengue fever, (dengue hemorrhagic fever) can cause severe bleeding, a sudden drop in blood pressure and death. The World Health Organization has estimated that up to 400 million dengue infections occur annually, resulting in 500,000 hospitalizations.

About the dengue LATV candidate

Scientists in the Laboratory of Infectious Diseases at the NIAID of the NIH engineered a candidate live attenuated tetravalent vaccine against the dengue virus. NIAID then supported the development of the candidate vaccine through a series of clinical trials.

Instituto Butantan is sponsoring a placebo-controlled, double blind, multi-center Phase 3 trial evaluating a single dose of LATV produced at the institute in Sao Paulo. The Phase 3 trial aims to enroll almost 17,000 healthy people aged 2 to 59 years in 15 cities. All participants will be monitored for five years through a combination of in-person visits to the health clinic and telephone or text communications from the investigators. The goal of the trial is to determine the efficacy of the vaccine for preventing dengue, and importantly to provide additional information about its safety. The principal investigator is Dr. Esper Kallas, for the University of Sao Paolo.

Additional information about the trial is available at **https://clinicaltrials.gov** using the identifier **NCT02406729**.

About Instituto Butantan

Instituto Butantan is the main producer of immunobiological products and vaccines in Brazil. Instituto Butantan carries out scientific missions domestically and abroad through the Pan American Health Organization, the World Health Organization, UNICEF and the United Nations. The Institute collaborates with other agencies of the São

Paulo State Secretariat of Health and the Brazilian Ministry of Health for the improvement of overall health in Brazil. It acts in partnership with various universities and entities such as the Bill & Melinda Gates Foundation for the achievement of its institutional objectives. For more information please visit the Institute website at **www.butantan.gov.br** or contact the press office at (+55 11) 2627-9606 / 9428 or email to **imprensa@butantan.gov.br**

About Merck

For more than a century, Merck, a leading global biopharmaceutical company known as MSD outside of the United States and Canada, has been inventing for life, bringing forward medicines and vaccines for many of the world's most challenging diseases. Through our prescription medicines, vaccines, biologic therapies and animal health products, we work with customers and operate in more than 140 countries to deliver innovative health solutions. We also demonstrate our commitment to increasing access to health care through far-reaching policies, programs and partnerships. Today, Merck continues to be at the forefront of research to advance the prevention and treatment of diseases that threaten people and communities around the world - including cancer, cardio-metabolic diseases, emerging animal diseases, Alzheimer's disease and infectious diseases including HIV and Ebola. For more information, visit **www.merck.com** and connect with us on **Twitter**, **Facebook**, **Instagram**, **YouTube** and **LinkedIn**.

Forward-Looking Statement of Merck & Co., Inc., Kenilworth, N.J., USA

This news release of Merck & Co., Inc., Kenilworth, N.J., USA (the "company") includes "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are based upon the current beliefs and expectations of the company's management and are subject to significant risks and uncertainties. There can be no guarantees with respect to pipeline products that the products will receive the necessary regulatory approvals or that they will prove to be commercially successful. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements.

Risks and uncertainties include but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company's ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company's patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The company 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 the company's 2017 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**).

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