



## FluGen Begins Challenge Study

### FLUGEN BEGINS ENROLLMENT OF CLINICAL TRIAL OF NOVEL INVESTIGATIONAL INFLUENZA VACCINE AGAINST MULTI-SEASON MISMATCHED STRAINS

—Investigational vaccine designed to generate broad and durable immune protection over multiple influenza seasons—

—Subjects challenged with influenza virus genetically drifted by six years from vaccine strain —

—Study supported by U.S. Department of Defense—

MADISON, Wis., May 16, 2018—FluGen, Inc. announced today that the first subject has been dosed in a clinical study in Belgium which will challenge subjects with an influenza virus genetically mismatched by six years from the influenza strain utilized in the vaccine.

“If successful, the results from this challenge study of FluGen’s M2SR vaccine would represent a significant step forward in bringing a novel influenza vaccine to patients; and which responds to the need for broader protection and increased effectiveness, as compared to existing influenza vaccine options,” said Paul Radspinner, chief executive officer of FluGen.

“The potential mismatch between current influenza vaccines and the circulating strains is one of the biggest annual challenges for prevention of influenza. Even in years when we do get a good match with all strains, traditional vaccine effectiveness is often less than 50 percent. In years where we do not closely match the vaccine to circulating virus strains, like this past flu season, it can be much lower, and low efficacy puts people at risk for potentially severe illness,” said Robert Belshe, M.D., chair of the FluGen clinical advisory board and the Diana and J. Joseph Adorjan Endowed Professor of Infectious Diseases and Immunology, Emeritus, at Saint Louis University.

FluGen’s M2SR vaccine seeks to address this challenge. The vaccine utilizes a proprietary M2 deleted, single replication (M2SR) influenza virus. The M2 gene is essential for the influenza virus to spread in the patient and the deletion of the M2 gene restricts the virus to a single replication cycle in the host. The body recognizes M2SR as an influenza infection and activates its robust immune response, but, because the virus can only replicate once, it cannot spread to other cells and cause symptoms of a real-world infection.

Patients naturally infected with wild type influenza often are protected from future influenza illness for many years. By tricking the body into believing it has been infected with influenza, the M2SR vaccine is designed to activate this broad and durable wild type immune response, without causing influenza disease.

“If FluGen’s M2SR vaccine can provide protection against a significantly drifted strain of influenza, it will give

us the potential of increasing influenza vaccine efficacy by broadening immune responses. M2SR has the potential to solve one of the greatest problems for prevention of influenza, selecting the exactly right strain to put in the vaccine. We expect M2SR to mimic the benefits of high protection seen after natural infection, but without causing influenza illness that is associated with community acquired wild type influenza infection,” Belshe added.

## Study Design

In the study, being conducted by SGS in Belgium, subjects will be randomized 1:1 to receive either intranasal placebo, or intranasal M2SR vaccine, manufactured with the A/Brisbane/10/2007, H3N2 strain of influenza, which was utilized in marketed influenza vaccines during the 2008-2010 influenza seasons.

Subjects will then be challenged intranasally with the A/Belgium/4217/2015, H3N2 influenza virus, which is a genetically drifted virus that caused outbreaks of influenza in 2015. Subjects will be followed on an ongoing basis for four months. Target enrollment for the study is 96 total subjects.

The primary endpoint of the study is influenza infectivity in the placebo group compared to the group vaccinated with M2SR. Safety and immunogenicity data also will be evaluated for all subjects.

The study is supported by a \$14.4 million grant from the Department of Defense. The U.S. Army Medical Research Acquisition Activity is the awarding and administering acquisition office and this work was supported by the Office of the Assistant Secretary of Defense for Health Affairs through the Peer Reviewed Medical Research Program under Award No. W81XWH-17-1-0430.

A prior Phase 1a study of FluGen’s M2SR vaccine in 96 subjects showed the vaccine to be generally safe and well tolerated, and to generate a robust immune response.