

## **Phase III study showed Xofluza (baloxavir marboxil) is effective at preventing influenza infection**

- **Compared with placebo, Xofluza treatment significantly reduced the likelihood of people developing influenza (flu) after exposure to an infected household member**
- **Data from the phase III BLOCKSTONE study will be submitted to health authorities globally**

Basel, 4 June 2019 - Roche (SIX: RO, ROG; OTCQX: RHHBY) today announced that the phase III BLOCKSTONE study, conducted by Shionogi & Co., Ltd., met its primary endpoint showing that people exposed to a household member with influenza (flu) and treated preventively with Xofluza™ (baloxavir marboxil) were significantly less likely to develop the disease compared to those treated with placebo (1.9% versus 13.6%,  $p < 0.0001$ ). Furthermore, Xofluza was well tolerated with no safety signals identified. Full results from the BLOCKSTONE study will be presented at an upcoming medical meeting.

“This positive phase III study adds to robust existing clinical data for Xofluza, and is the first to show that a single treatment with Xofluza reduced the likelihood that people living with an infected household member would develop flu,” said Sandra Horning, M.D., Roche’s Chief Medical Officer and Head of Global Product Development. “Preventing otherwise healthy people from developing the flu virus will reduce the overall societal burden of disease, and we look forward to sharing these data with health authorities around the world.”

Xofluza is the first and only one-dose oral medicine approved to treat flu, and the first new flu medicine with a novel proposed mechanism of action in nearly 20 years. Xofluza is also the only flu treatment with a new mechanism of action shown to be efficacious in both otherwise healthy people with the flu (in the CAPSTONE-1 study), and people at high risk of flu complications (in the CAPSTONE-2 study).<sup>[1,2]</sup>

Xofluza is currently approved in Japan for the treatment of influenza types A and B in children, adolescents and adults, and in the United States (US) for the treatment of acute, uncomplicated influenza in people 12 years of age and older. In addition, the FDA recently accepted a supplemental New Drug Application (sNDA) for Xofluza as a one-dose oral treatment for people at high risk of complications from the flu, which includes adults 65 years of age or older, or those who have conditions such as asthma, chronic lung disease, morbid obesity or heart disease – for these people the flu can be particularly serious or deadly. The FDA is expected to decide on whether to approve this additional indication by 4 November 2019.

### **About BLOCKSTONE**

BLOCKSTONE is a phase III, randomised, placebo-controlled, post-exposure prophylaxis study that evaluated a single dose of Xofluza compared with placebo in household members (adults and children) in

Japan who are living with someone with an influenza infection confirmed by a rapid influenza diagnostic test (the 'index patient'). The study was conducted by Shionogi & Co., Ltd. during the 2018-2019 flu season in Japan.

Participants enrolled in the study were household members of someone who had been diagnosed with influenza. The participants were randomised to receive a single dose of Xofluza (dose according to body weight) or placebo as a preventive measure against developing influenza. The primary endpoint of the study was to evaluate the proportion of participants who tested positive for the influenza virus and had fever, and one or more respiratory symptoms between day one and ten.

Xofluza showed a significant prophylactic effect on influenza infection after a single oral dose in people exposed to an infected family member. The proportion of household members who became infected with flu was significantly lower in those treated preventively with Xofluza compared to those treated with placebo (proportion of subjects with influenza virus infection, fever and other influenza symptoms in the 10-day observation period: 1.9% versus 13.6%,  $p < 0.0001$ ). The incidence of adverse events was 22.2% and 20.5% in Xofluza and placebo respectively. No serious adverse events were reported for Xofluza. Secondary objectives were clinical efficacy, pharmacokinetics and safety and tolerability.

#### **About Xofluza™ (baloxavir marboxil)**

Xofluza is a first-in-class, one-dose oral medicine with a novel proposed mechanism of action that has demonstrated efficacy in a wide range of influenza viruses, including in vitro activity against oseltamivir-resistant strains and avian strains (H7N9, H5N1) in non-clinical studies.<sup>[3,4]</sup> Unlike other currently available antiviral treatments, Xofluza is the first in a new class of antivirals designed to inhibit the cap-dependent endonuclease protein, which is essential for viral replication.<sup>[3]</sup>

Xofluza is being further studied in a phase III development programme, including paediatric populations and severely ill, hospitalised people with influenza, as well as to assess the potential to reduce transmission in otherwise healthy people.

Xofluza was discovered by Shionogi & Co., Ltd. and is being further developed and commercialised globally in collaboration with the Roche Group (which includes Genentech in the US) and Shionogi & Co., Ltd. Under the terms of this agreement, Roche holds worldwide rights to Xofluza excluding Japan and Taiwan, where rights will be retained exclusively by Shionogi & Co., Ltd.

#### **About Roche in influenza**

Influenza, or flu, is one of the most common, yet serious, infectious diseases, representing a significant threat to public health. Globally, annual epidemics result in 3 to 5 million cases of severe disease, millions of hospitalisations and up to 650,000 deaths worldwide.<sup>[5,6,7,8,9]</sup> In the US alone, the total economic burden of the flu is estimated to be \$11.2 billion annually through reduced productivity and healthcare costs.<sup>[10]</sup> Roche has a long heritage in developing medicines that contribute to public health. We are committed to bringing innovation in the field of infectious diseases, including influenza. Tamiflu® (oseltamivir) has made a

significant difference both to the treatment of seasonal influenza as well as in the management of recent pandemics, and we are proud to have brought this innovative medicine to patients. Although vaccines are an important first line of defence in preventing flu, there is a need for new medical options for prophylaxis and treatment. Current antiviral drugs have limitations with respect to efficacy, convenience of dosing, and resistance. Roche is committed to addressing the unmet need in this area through its agreement with Shionogi & Co., Ltd. to develop and commercialise Xofluza.

### **About Roche in infectious disease**

Infectious diseases caused by viral or bacterial pathogens are a major cause of death and morbidity worldwide, and constitute an ever-growing medical need. As such, they form a core area of research and development at Roche, with clinical development programmes focused on hepatitis B, influenza and multi-drug resistant bacterial infections. We are committed to developing medicines that aim to be transformative, personalised, and accessible.

### **About Roche**

Roche is a global pioneer in pharmaceuticals and diagnostics focused on advancing science to improve people's lives. The combined strengths of pharmaceuticals and diagnostics under one roof have made Roche the leader in personalised healthcare – a strategy that aims to fit the right treatment to each patient in the best way possible.

Roche is the world's largest biotech company, with truly differentiated medicines in oncology, immunology, infectious diseases, ophthalmology and diseases of the central nervous system. Roche is also the world leader in in vitro diagnostics and tissue-based cancer diagnostics, and a frontrunner in diabetes management. Founded in 1896, Roche continues to search for better ways to prevent, diagnose and treat diseases and make a sustainable contribution to society. The company also aims to improve patient access to medical innovations by working with all relevant stakeholders. Thirty medicines developed by Roche are included in the World Health Organization Model Lists of Essential Medicines, among them life-saving antibiotics, antimalarials and cancer medicines. Moreover, for the tenth consecutive year, Roche has been recognised as the most sustainable company in the Pharmaceuticals Industry by the Dow Jones Sustainability Indices (DJSI).

The Roche Group, headquartered in Basel, Switzerland, is active in over 100 countries and in 2018 employed about 94,000 people worldwide. In 2018, Roche invested CHF 11 billion in R&D and posted sales of CHF 56.8 billion. Genentech, in the United States, is a wholly owned member of the Roche Group. Roche is the majority shareholder in Chugai Pharmaceutical, Japan. For more information, please visit [www.roche.com](http://www.roche.com).

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## Roche Investor Relations

Dr. Karl Mahler

Phone: +41 61 68-78503

e-mail: [karl.mahler@roche.com](mailto:karl.mahler@roche.com)

Jon Kaspar Bayard

Phone: +41 61 68-83894

e-mail: [jon\\_kaspar.bayard@roche.com](mailto:jon_kaspar.bayard@roche.com)

Dr. Sabine Borngräber

Phone: +41 61 68-88027

e-mail: [sabine.borngraeber@roche.com](mailto:sabine.borngraeber@roche.com)

Dr. Bruno Eschli

Phone: +41 61 68-75284

e-mail: [bruno.eschli@roche.com](mailto:bruno.eschli@roche.com)

Dr. Birgit Masjost

Phone: +41 61 68-84814

e-mail: [birgit.masjost@roche.com](mailto:birgit.masjost@roche.com)

Dr. Gerard Tobin

Phone: +41 61 68-72942

e-mail: [gerard.tobin@roche.com](mailto:gerard.tobin@roche.com)

## Investor Relations North America

Loren Kalm

Phone: +1 650 225 3217

e-mail: [kalm.loren@gene.com](mailto:kalm.loren@gene.com)

Dr. Lisa Tuomi

Phone: +1 650 467 8737

e-mail: [tuomi.lisa@gene.com](mailto:tuomi.lisa@gene.com)