Doctor Albert Osterhaus

Head Department of Virology
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Dr. Albert Osterhaus is one of the world's leading virologists and his group was the first to identify human infection with the avian influenza strain H5N1.

After qualifying as a veterinarian, Albert Osterhaus moved into research and graduated from Utrecht University in his native Netherlands in 1978 with a PhD in virology. His first major breakthrough came in 1998 when he identified a new morbilivirus that caused a mass die-off of seals in Northwestern Europe. In 1997, his group discovered that a Hong Kong flu strain that had killed a three-year-old boy belonged to an avian influenza strain called H5N1. He was also the first scientist to show that H5N1 can be transferred into humans.

In 2000 he and his team identified Influenza B virus, a type of virus that normally infects only humans – in seals off the coast of the Netherlands.

In 2001, his group identified human metapneumovirus (hMPV), which causes a spectrum of respiratory illnesses ranging from mild upper respiratory tract infections to severe bronchiolitis and pneumonia. He is currently involved in developing a vaccine and antibodies.

In April 2003, at the height of the panic over SARS (Severe Acquired Respiratory Syndrome) in Hong Kong, he again showed his skill at moving fast to tackle a serious problem. Within three weeks he had proved that the disease was caused by a newly discovered coronavirus that resides in civet cats, other carnivorous animals or bats.

Currently he heads a 100-strong lab at Erasmus MC, Rotterdam, is the co-founder of two biotech companies, and is part of numerous global collaborations. He is particularly interested in viruses that cross species barriers, are highly pathogenic and which cause disease globally – viruses such as HIV, SARS CoV and influenza viruses.

Never one for concentrating on only one virus, Osterhaus is collaborating internationally to develop an HIV vaccine. His group is heavily involved with working on a vaccine against avian flu, as well as studying the pathogenesis and the host range: why the virus crosses the species barrier and under what conditions. Dr. Osterhaus is also investigating the stability of the virus and the possibility for genetic recombination and reassortment between different strains, which could give rise to more dangerous infections.

Dr. Osterhaus considers that another flu pandemic is inevitable, and is constantly campaigning for countries to show greater preparedness. He is calling for the WHO and FAO to join forces with the World Organisation for Animal Health (OIE) and establish a global task force to combat the virus. Dr. Osterhaus would also like to see better monitoring of wild bird populations, the natural reservoir of influenza A viruses.

Dr. Osterhaus has worked on a number of EU-funded projects and is highly appreciative of EU funding, especially because financial support from national organisations can be difficult to obtain. One such EU project was NOVAFLU (€1.76 million). This three-year project began

in Autumn 2002 under the leadership of Dr. Osterhaus, with the goal of developing more effective strategies for vaccination against inter-pandemic and pandemic influenza.

The NOVAFLU project has just ended[1] and Dr. Osterhaus considers that the team has fulfilled all the objectives, namely:

- Developing better strategies for vaccine strain selection
- Exploring alternative approaches for vaccine production in cell culture systems
- Considering several novel vaccine candidates
- Evaluating animal model systems of influenza virus infection to establish better laboratory correlates of clinical protection.

Dr. Osterhaus also works very closely with fellow virologists throughout the world and is a keen "networker," following the progress of other flu-related projects such as FLUPAN with great interest.

Dr. Osterhaus is currently Professor of Virology, Medical Faculty, Erasmus MC, Rotterdam (since 1993); Professor of Environmental Virology, Veterinary Faculty, State University Utrecht (since 1990); Director of the National Influenza Center (NIC), Rotterdam (since 1993); Director of the WHO Collaborating Centre for Arboviruses and Haemorrhagic Fever Reference and Research, Rotterdam (since 1995); Member of the Dutch Health Council (since 1995); Chairman of the European Scientific Working Group on Influenza (ESWI) (since 2000). He also holds leading positions in the two commercial companies he co-founded in The Netherlands: ViroClinics BV and ViroNative BV.

Dr. Osterhaus is a member of numerous professional societies, holds editorial positions for scientific publications, is the winner of scientific awards, holds several patents, has been the supervisor and mentor of more than 30 PhD students, and has held more than 60 consultancy positions. Over the last 20 years, Dr. Osterhaus has identified more than a dozen "new" viral pathogens and has authored more than 650 scientific papers.

NOVAFLU: Novel vaccination strategies and vaccine formulations for epidemic and pandemic influenza control

This project is focusing on developing techniques to improve both the effectiveness of vaccines, and the efficiency of their production.

The partners have developed a novel mathematical method to study variation of influenza virus strains as they emerge. In addition, a reverse genetics system and new molecular systems have been established, which will be useful for the rapid production of influenza vaccines. Other strands of the project have established a European surveillance system for influenza viruses in migratory birds and investigated the important role of certain white blood cells in immune responses to influenza.

Together, these diverse results will help to drive Europe's lead in influenza vaccine research and production, and place industry in a better position to produce a plentiful supply of potent vaccine should a pandemic arise.

Project Coordinator is Dr. A.D.M.E. Osterhaus

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[1] The final NOVAFLU report is now being prepared.

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