



EUROPEAN  
COMMISSION

Community Research

## EU-FUNDED RESEARCH PROJECT

### **Novel vaccination strategies and vaccine formulations for epidemic and pandemic influenza control (Novaflu)**

**Time of action:** NOVAFLU started in October 2002 and was scheduled to end in September 2005

**EU budget (funding):** €1.765 million

#### **Abstract**

The rapid and effective development of effective influenza vaccines is currently hindered by a number of technological barriers. For example, it can take months of intensive laboratory studies just to select the virus subtypes that will give the best immune responses in recipients. In addition, the standard industrial production method for influenza vaccines relies on growing the virus in chicken eggs; it is difficult to scale up production quickly if demand increases, for example during a pandemic. At this moment it is not clear which vaccine formulation would be safe and effective for a pandemic influenza vaccine.

The NOVAFLU project has tackled several of these issues, developing a variety of techniques that should improve both the effectiveness of vaccines, and the efficiency of their production.

First, the partners have produced computer models that use the results of laboratory tests into the immunogenicity of different virus subtypes to suggest which one would make the best vaccines. A library of DNA segments from the highly variable antigenic haemagglutinin (HA) and neuraminidase (NA) genes of wild-type avian influenza subtypes has also been produced. This collection will allow the rapid generation of influenza vaccine viruses expressing all possible combinations of the HA and NA proteins. The project has also produced a number of engineered vaccine candidates that grow in cell culture instead of chicken eggs.

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.

#### **Status (January 2006)**

Overall project achievements:

- (1) The development of a novel mathematical method to study variation of influenza virus strains as they emerge
- (2) The establishment of a reverse genetics system and new molecular systems for the rapid

production of influenza vaccines

- (3) The establishment of a European surveillance system for influenza viruses in migratory birds
- (4) Results on the importance of influenza virus-specific T lymphocytes as a so far poorly studied arm of the specific immune response to influenza

**Project coordinator**

Dr A.D.M.E. Osterhaus  
Institute of Virology  
Erasmus University Rotterdam  
Dr Molewaterplein 50  
3015 GE Rotterdam  
The Netherlands

**List of partners (listed countrywise). Coordinator will only give out names and other contacts upon request.**

NL - Institute of Virology, Erasmus University, Rotterdam  
UK - Department of Zoology, University of Cambridge, Cambridge  
FR - Unité de Génétique Moléculaire des Virus Respiratoires, Department of Virology, Institut Pasteur, Paris  
UK - Retroscreen Ltd, Queen Mary School of Medicine, London  
NL - Solvay Pharmaceutical BV, Business Group Influenza, Weesp  
DE - Institut für Molekulare Virologie, GSF-Research Center for Environment and Health, Munich

**Website**

None