

British flu vaccine generates media bubble

# Flu Hullabaloo

European media have been busy hyping “exciting trial data” for a universal flu vaccine. They were ten years too early.

Back away your Kleenex! Flu is no more. At least, that is what you would be forgiven for thinking given recent coverage of an experimental flu vaccine. The European media have been busy hyping preliminary trial data announced by a UK-based biotech company since the data’s release in January. *Nature* published a detailed story on the supposed superstar shot (“Is a universal flu vaccine on its way?”), the German yellow press newspaper *Bild* wrote about a “medical breakthrough”, and a *BBC News* writer even dreamt publicly of “a single jab that could give lifelong protection against all types of flu” (“Universal flu jab works in people”). What is the truth behind this much vaunted wonder drug? Is it worth getting excited about?

Apparently, it isn’t. At present, the acclaimed “holy grail of influenza vaccines” is no more likely to materialise than hundreds of other drugs at the early development stage, including the decade-long awaited ‘magic bullet’ against cancer. Let the facts speak for themselves: the trial, organised by vaccine maker Acambis (Cambridge, UK and US), was just an ordinary phase 1 clinical trial with 79 subjects. Such early-stage trials are done to identify the range of safe dosage, side effects and how the human body copes with the drug. Phase 1 trials, however, reveal nothing about a drug’s efficiency and the permanence of its protection.

## The holy grail of vaccines?

Acambis was established in 1992 and is listed on the London Stock Exchange (ACM). The Anglo-American firm specialises in developing new vaccines, either against diseases for which no vaccine currently exists or as second-generation products to replace existing vaccines. An important part of the company’s know-how is of Belgian origin: the technology used to assemble recombinant vaccine components was invented by Walter Fiers, a professor emeritus at the University of Ghent. Acambis expects to return total revenues

of around €12.5m for 2007. In 2006, the company piled up a loss of €21m. In other words, the British are in dire need of a cash cow.

Their influenza vaccine, ACAM-FLU-A, could be that cow. Acambis intends to develop (according to the company’s website) “the ‘holy grail’ of influenza vaccines



**Acambis researchers know what the safe dose of their vaccine is. They just don’t know if it works yet.**

– a vaccine that targets all strains of the influenza virus, whether pandemic or seasonal”. The crucial component of the vaccine is M2e, an extracellular domain of the flu virus ion channel protein, M2. This protein is highly conserved and should therefore elicit immune responses to all influenza A strains, say Acambis’ scientists. To boost immune response they have linked the M2 protein to a hepatitis B virus protein, a method that results in particles with M2 proteins on the surface resembling normal infections.

## Awaiting the next five-percent killer

Each year a billion people contract influenza, of whom 500,000 die. The disease’s financial toll totals more than 100 billion euros a year worldwide. A flu pandemic, such as the disastrous ‘Spanish’ flu, which killed 50 to 100 million people (up to 5% of the human population) between 1918 and 1920, would result in inconceivable horror. The 1918 pandemic was caused by subtype H1N1 of the influenza A virus strain. Recent outbreaks of avian flu (mainly in Asia) were caused by the

Influenza virus

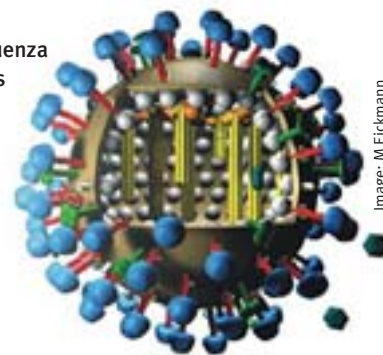


Image: M. Eickmann

highly pathogenic influenza A virus subtype H5N1, which is regarded as a potential pandemic threat and possible origin of the next Spanish flu.

Apart from averting such apocalyptic scenarios, an efficient flu vaccine would be worth a lot of money. Hundreds of millions of vaccine doses, adapted to combat the most recent strain of flu, are produced annually just prior to flu season. A universal vaccine, effective against ordinary epidemics as well as against pandemics, would be an unrivalled license to print money.

## We’ll know the score in ten years

At present nobody knows if, and how well, the new vaccine works. That pivotal question will be answered later, in a larger and longer Phase 2 trial. If successful, there will be more and more difficult hurdles to overcome, such as an expensive Phase 3 trial, complex approval criteria and competing projects (including another experimental flu vaccine from US company Dynavax, which is undergoing testing in pre-clinical studies). There is also



**Spanish flu killed 50 to 100 million people between 1918 and 1920 (depicted is an emergency military hospital at Camp Funston, Kansas, United States).**

the fact that most vaccines are scuppered in Phases 2 and 3 anyway.

So whatever happens, a universal flu vaccine is eight to ten years away. Let’s hope that the next great flu pandemic can bide its time until then!

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