*3 March 2009*

*This supplement has been prepared to present scientific and technical news items that may be of more interest to technical personnel at RDT&E activities and the labs, or the medics rather than the broader readership of the basic CB Daily. Due to the nature of the material, the articles, if available online, are usually only available through subscription services thus making specific links generally unavailable. Thus, usually only the bibliographic citation is available for use by an activity's technical library.*

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## Chem-Bio News- Pandemic Influenza Edition #50

**1. MILITARY STUDY: FLU SHOT YIELDS LESS ILLNESS THAN MIST:** *"In one of the largest head-to-head studies comparing two different seasonal flu vaccines in a healthy, adult population, those who received trivalent inactivated vaccine (TIV) had fewer medical visits for respiratory illnesses compared to those who received the live attenuated influenza vaccine (LAIV)."*

**2. EXPERTS FIGHT H5N1 BIRD FLU USING SMALLPOX VACCINE:** *"Scientists in Hong Kong and the United States have developed an experimental H5N1 bird flu vaccine for people by piggybacking it on the well-tested and highly successful smallpox vaccine."*

**3. H1N1 VIRUSES GAIN TAMIFLU RESISTANCE WITHOUT LOSING FITNESS:** *"Studies published today confirm that influenza A/H1N1 viruses have become widely resistant to oseltamivir (Tamiflu), the leading flu drug, without losing their ability to make people sick—thereby underlining the need for new antiviral drugs."*

**4. SHELF-LIFE FOR BIRD FLU VACCINE EXTENDED:** *"Japan plans to hold talks with countries which stock its bird flu vaccine Tamiflu about ways to extend its shelf-life, an official said last week."*

**5. PATHOLOGICAL LESIONS AND VIRAL LOCALIZATION OF INFLUENZA A (H5N1) VIRUS IN EXPERIMENTALLY INFECTED CHINESE RHESUS MACAQUES: IMPLICATIONS FOR PATHOGENESIS AND VIRAL TRANSMISSION:** *"The predilection of the H5N1 virus to infect the lower airway suggests that the failure of the virus to attach to the ciliary epithelium of the trachea and bronchi may be a limiting factor in human-to-human transmissibility of the H5N1 virus."*

# CB Daily Report

## Chem-Bio News

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### MILITARY STUDY: FLU SHOT YIELDS LESS ILLNESS THAN MIST

By Lisa Schnirring
CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
March 2, 2009

“In one of the largest head-to-head studies comparing two different seasonal flu vaccines in a healthy, adult population, those who received trivalent inactivated vaccine (TIV) had fewer medical visits for respiratory illnesses compared to those who received the live attenuated influenza vaccine (LAIV).

The difference between the injected TIV vaccine and the nasal-spray LAIV vaccine, however, was not as great for those who hadn't been vaccinated in the past season or two.

The study, which was posted ahead of print and will appear in the Mar 4 issue of the Journal of the American Medical Association (JAMA), was conducted in military personnel who were stationed in the United States during three flu seasons, from 2004 through 2007.”

The full article can be found at: http://www.cidrap.umn.edu/cidrap/content/influenza/general/news/mar0209flumist-jw.html

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**EXPERTS FIGHT H5N1 BIRD FLU USING SMALLPOX VACCINE**
By Tan Ee Lyn
Reuters
March 1, 2009

“Scientists in Hong Kong and the United States have developed an experimental H5N1 bird flu vaccine for people by piggybacking it on the well-tested and highly successful smallpox vaccine.

Initial tests on mice showed the vaccine to be highly effective, they told a news conference in Hong Kong on Sunday.

"It produced a lot of (H5N1) antibodies and the speed of antibody response was far higher with this strategy than the Sanofi one," said Malik Peiris, a microbiologist and bird flu expert at the University of Hong Kong.

Peiris was referring to Sanofi-Aventis's H5N1 bird flu vaccine for humans, which has been approved for use in the United States.

In an article published in the current Journal of Immunology, the experts from Hong Kong and the U.S. National Institutes of Health described how they inserted five key components of the H5N1 virus into the smallpox vaccine.”

The full article can be found at: http://www.reuters.com/article/africaCrisis/idUSHKG196430

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**H1N1 VIRUSES GAIN TAMIFLU RESISTANCE WITHOUT LOSING FITNESS**
By Robert Roos
CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
March 2, 2009

“Studies published today confirm that influenza A/H1N1 viruses have become widely resistant to oseltamivir (Tamiflu), the leading flu drug, without losing their ability to make people sick—thereby underlining the need for new antiviral drugs.

The findings also underscore the possibility that H5N1 avian influenza could gain resistance to oseltamivir, calling into question the value of stockpiling the drug in preparation for a potential flu pandemic, according to two experts who comment on the latest findings in an accompanying editorial. The research reports and editorial were released online today by the Journal of the American Medical Association.

To the surprise of many, H1N1 resistance to oseltamivir rose sharply last year, reaching 12.3% in the United States and 16% worldwide. So far this season, it is far higher: more than 98% (321 of 325) of H1N1 isolates tested by the Centers for Disease Control and Prevention (CDC) were resistant to the drug.

None of the H1N1 isolates have shown resistance to zanamivir (Relenza), the other flu drug in the neuraminidase inhibitor class. H1N1 is one of three flu subtypes that circulate each season, along with A/H3N2 and influenza B.”

The full article can be found at: http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/news/mar0209osel.html

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**SHELF-LIFE FOR BIRD FLU VACCINE EXTENDED**
By: Apinya Wipatayotin
The Bangkok Post
March 3, 2009

“Japan plans to hold talks with countries which stock its bird flu vaccine Tamiflu about ways to extend its shelf-life, an official said last week.

Osama Hayakawa, director of the Specialised Agencies Division of the International Cooperation Bureau, said Japan wanted to prolong the shelf-life of Tamiflu stockpiles in those countries, which include members of the Association of Southeast Asian Nations.

"We are going to be consulting with our stakeholders like Asean [and the World Health Organisation] about the issue of shelf-life expansion from five to seven years," he said.”

The full article can be found at: http://www.bangkokpost.com/news/local/12620/shelf-life-for-bird-flu-vaccine-extended

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**PATHOLOGICAL LESIONS AND VIRAL LOCALIZATION OF INFLUENZA A (H5N1) VIRUS IN EXPERIMENTALLY INFECTED CHINESE RHESUS MACAQUES: IMPLICATIONS FOR PATHOGENESIS AND VIRAL TRANSMISSION**
Medical Devices & Surgical Technology Week
March 8, 2009

"Chinese rhesus macaques infected with influenza virus A/Tiger/Harbin/01/2002 (H5N1) developed acute interstitial pneumonia with diffuse alveolar damage. The results of virus isolation, reverse transcriptase polymerase chain reaction, immunohistochemistry, and in situ hybridization showed that the lung was the major target organ of the H5N1 virus infection."

"No virus was detected in the extrapulmonary organs. The results of immunohistochemistry and in situ hybridization also showed that pneumocytes and macrophages of the lower airway, not the ciliary epithelium of the trachea and bronchi, were the chief target cells in the lung tissue of the infected Chinese rhesus macaque. Our data indicate that the Chinese rhesus macaque is suitable as a new primate model for H5N1 virus research, especially for the study of H5N1 virus transmission."

"The predilection of the H5N1 virus to infect the lower airway suggests that the failure of the virus to attach to the ciliary epithelium of the trachea and bronchi may be a limiting factor in human-to-human transmissibility of the H5N1 virus."

The full article can be found at: (Y. Chen, et. al., "Pathological lesions and viral localization of influenza A (H5N1) virus in experimentally infected Chinese rhesus macaques: implications for pathogenesis and viral transmission". Archives of Virology, 2009;154(2):227-33). Link not available.

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