

2 December 2008

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## **Chem-Bio News– Pandemic Influenza Edition # 38**

**1. HOSPITAL PANDEMIC DRILL REVEALS MAJOR SUPPLY CHALLENGES:** *“Hospital workers who followed official infection control guidelines for pandemic influenza for 1 day used 10 times as many gloves as usual, generated three times as much clinical waste, and found that many tasks took longer than normal, according to a new report.”*

**2. GUILLAIN-BARRÉ SYNDROME AND INFLUENZA VIRUS INFECTION:** *“Influenza viruses are infrequent triggering agents of GBS but may play a significant role during major influenza outbreaks.”*

**3. WHAT IS THE FATE AND EFFECTS OF INFLUENZA DRUG TAMIFLU IN ENVIRONMENT?:** *“The research council FORMAS, Sweden, has granted 5.9 million SEK to a new research project that will study the environmental fate and effects of the anti-viral drug Tamiflu on the development on influenza resistance.”*

**4. DUMONT [CA] LAB TO LEAD PROVINCE'S INFLUENZA PANDEMIC WORK:** *“New designation will give lab resources, equipment to handle huge number of cases if an influenza pandemic breaks out in N.B. [New Brunswick, Canada]”*

**5. CROSS-PROTECTION BETWEEN SUCCESSIVE WAVES OF THE 1918-1919 INFLUENZA PANDEMIC: EPIDEMIOLOGICAL EVIDENCE FROM US ARMY CAMPS AND FROM BRITAIN:** *“Pandemic preparedness plans should consider that immune protection could be naturally acquired during a first wave of mild influenza illnesses.”*

**6. STRUCTURAL BASIS FOR SUPPRESSION OF A HOST ANTIVIRAL RESPONSE BY INFLUENZA A VIRUS:** *“The crystal structure also reveals that two amino acids outside of this pocket, F103 and M106, which are highly conserved (>99%) among influenza A viruses isolated from humans, participate in key hydrophobic interactions with F2F3 that stabilize the complex.”*

# **CB Daily Report**

**Chem-Bio News**

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## **HOSPITAL PANDEMIC DRILL REVEALS MAJOR SUPPLY CHALLENGES**

By Robert Roos

CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)

November 25, 2008

“Hospital workers who followed official infection control guidelines for pandemic influenza for 1 day used 10 times as many gloves as usual, generated three times as much clinical waste, and found that many tasks took longer than normal, according to a new report.

The 24-hour exercise in a British hospital also revealed various other challenges, including that hospital workers lacked confidence in their ability to follow infection control guidelines, felt uncomfortable wearing surgical masks, and felt that wearing personal protective equipment (PPE) hindered communication, according to the report, published online by the Journal of Infection Control.

“Healthcare in a pandemic situation is not simply a case of applying pandemic influenza infection control guidance to current practice; hospitals need to consider changing the way care and services are delivered,” states the report by N. F. Phin of Cheshire and Merseyside Health Protection Unit, Chester, UK, and colleagues.”

The full article can be found at: [http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/news/nov\\_2508ppe-jw.html](http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/news/nov_2508ppe-jw.html)

[Return to Top](#)

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## **GUILLAIN-BARRÉ SYNDROME AND INFLUENZA VIRUS INFECTION**

By Valérie Sivadon-Tardy, David Orlikowski, Raphaël Porcher, Tarek Sharshar, Marie-Christine Durand, Vincent Enouf, Flore Rozenberg, Christiane Caudie, Djillali Annane, Sylvie van der Werf, Pierre Lebon, Jean-Claude Raphaël, Jean-Louis Gaillard, and Elyanne Gault

Clinical Infectious Diseases

November 24, 2008

“In Western countries, the cause of 60% of all Guillain-Barré syndrome (GBS) cases remains unidentified.”

“We found a positive association between the monthly incidence of GBS caused by an unidentified agent and reported influenza-like illnesses.”

“Conclusions. Influenza viruses are infrequent triggering agents of GBS but may play a significant role during major influenza outbreaks. Influenza-related GBS displays specific features and is not associated with antiganglioside antibody response, which suggests the presence of underlying immune mechanisms.”

The full article can be found at: <http://www.journals.uchicago.edu/doi/abs/10.1086/594124>

[Return to Top](#)

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## **WHAT IS THE FATE AND EFFECTS OF INFLUENZA DRUG TAMIFLU IN ENVIRONMENT?**

ScienceDaily

November 25, 2008

"The research council FORMAS, Sweden, has granted 5.9 million SEK to a new research project that will study the environmental fate and effects of the anti-viral drug Tamiflu on the development on influenza resistance."

"The full title of the project is "Occurrence and fate of the antiviral drug Oseltamivir in aquatic environments and the effect on resistance development in influenza A viruses." and the applicants are Björn Olsen, Dept. of Medicinal Sciences, Uppsala University, Åke Lundkvist, Dept. of Microbiology Tumour and Cellbiology, Karolinska Institute, Johan Lennerstrand, Dept. of Medicinal Sciences, Uppsala University and Hanna Söderström and Jerker Fick, Dept of Chemistry, Umeå University."

The full article can be found at: <http://www.sciencedaily.com/releases/2008/11/081126163722.htm>

[Return to Top](#)

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## **DUMONT [CA] LAB TO LEAD PROVINCE'S INFLUENZA PANDEMIC WORK**

By Eric Lewis

Times&Transcript [New Brunswick, Canada]

December 2, 2008

"New designation will give lab resources, equipment to handle huge number of cases if an influenza pandemic breaks out in N.B."

"The hospital's lab is to be the centre for testing if a pandemic occurs. It has already been performing influenza and other tests for two years, but yesterday's announcement means it will, over time, receive the staffing and resources it needs to be the central testing and co-ordinating facility for the entire province in the event of a breakout."

The full article can be found at: <http://timestranscript.canadaeast.com/news/article/498837>

[Return to Top](#)

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## **CROSS-PROTECTION BETWEEN SUCCESSIVE WAVES OF THE 1918-1919 INFLUENZA PANDEMIC: EPIDEMIOLOGICAL EVIDENCE FROM US ARMY CAMPS AND FROM BRITAIN**

Hospital Business Week  
December 7, 2008

"We studied monthly hospitalization and mortality rates for respiratory illness in 37 army camps, as well as the rates of repeated episodes of influenza infection during January-December 1918 in 8 military and civilian settings in the United States and Britain. A first wave of respiratory illness occurred in US Army camps during March-May 1918 and in Britain during May-June, followed by a lethal second wave in the fall. The first wave was characterized by high morbidity but had a lower fatality rate than the second wave (1.1% vs. 4.7% among hospitalized soldiers; [Formula: see text]). Based on repeated illness data, the first wave provided 35%-94% protection against clinical illness during the second wave and 56%-89% protection against death ([Formula: see text]). Exposure to influenza in the spring and summer of 1918 provided mortality and morbidity protection during the fall pandemic wave. The intensity of the first wave may have differed across US cities and countries and may partly explain geographical variation in pandemic mortality rates in the fall."

"Pandemic preparedness plans should consider that immune protection could be naturally acquired during a first wave of mild influenza illnesses."

The full article can be found at: (J.M. Barry, et. Al., "Cross-protection between successive waves of the 1918-1919 influenza pandemic: epidemiological evidence from US Army camps and from Britain". *Journal of Infectious Diseases*, 2008;198(10):1427-34). Link not available.

[Return to Top](#)

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## **STRUCTURAL BASIS FOR SUPPRESSION OF A HOST ANTIVIRAL RESPONSE BY INFLUENZA A VIRUS**

Drug Week  
December 5, 2008

"A major function of the viral NS1A protein, a virulence factor, is the inhibition of the production of IFN-beta mRNA and other antiviral mRNAs."

"The NS1A protein of the human influenza A/Udorn/72 (Ud) virus inhibits the production of these antiviral mRNAs by binding the cellular 30-kDa subunit of the cleavage and polyadenylation specificity factor (CPSF30), which is required for the 3' end processing of all cellular pre-mRNAs. Here we report the 1.95-angstrom resolution X-ray crystal structure of the complex formed between the second and third zinc finger domain (F2F3) of CPSF30 and the C-terminal domain of the Ud NS1A protein. The complex is a tetramer, in which each of two F2F3 molecules wraps around two NS1A effector domains that interact with each other head-to-head. This structure identifies a CPSF30 binding pocket on NS1A comprised of amino acid residues that are highly conserved among human influenza A viruses. Single amino acid changes within this binding pocket eliminate CPSF30 binding, and a recombinant Ud virus expressing an NS1A protein with such a substitution is attenuated and does not inhibit IFN-beta pre-mRNA processing. This binding pocket is a potential target for antiviral

drug development."

"The crystal structure also reveals that two amino acids outside of this pocket, F103 and M106, which are highly conserved (>99%) among influenza A viruses isolated from humans, participate in key hydrophobic interactions with F2F3 that stabilize the complex."

The full article can be found at: (K. Das, et. Al., "Structural basis for suppression of a host antiviral response by influenza A virus". Proceedings of the National Academy of Sciences of the United States of America, 2008; 105(35): 13093-13098). Link not available.

[Return to Top](#)

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