

29 December 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 #92

1. COMPOUND FOUND TO SAFELY COUNTER DEADLY BIRD FLU: *“Known as T-705, the compound even works several days after infection, according to Yoshihiro Kawaoka, a University of Wisconsin-Madison virologist and the senior author of the new PNAS study.”*

2. [PK] GOVT TO FORM RESPONSE TEAM TO COMBAT PANDEMICS: *“The Punjab government has decided to form an Epidemic Response Team to take steps to combat pandemics like swine flu, bird flu and dengue fever in an effective manner.”*

3. HOW FLU SUCCEEDS: *“Investigators at Burnham Institute for Medical Research (Burnham), Mount Sinai School of Medicine (Mount Sinai), the Salk Institute for Biological Studies (Salk) and the Genomics Institute of the Novartis Research Foundation (GNF) have identified 295 human cell factors that influenza A strains must harness to infect a cell, including the currently circulating swine-origin H1N1.”*

4. ASSISTANT SECRETARY JONES APPOINTED AS SPECIAL REPRESENTATIVE ON AVIAN AND PANDEMIC INFLUENZA AND PANDEMIC INFLUENZA COORDINATOR: *“In this capacity she will execute the Department's mission under the National Strategy for Pandemic Influenza to lead the U.S. Government's international engagement on avian and pandemic influenza.”*

5. MODELLING MITIGATION STRATEGIES FOR PANDEMIC (H1N1) 2009: *“School closure was effective in reducing the attack rate, especially if applied early in the outbreak, but this is not necessary if vaccine is available early or if pre-existing immunity is strong.”*

6. MATRIX PROTEIN 2 OF INFLUENZA A VIRUS BLOCKS AUTOPHAGOSOME FUSION WITH LYSOSOMES: *“We propose that influenza A virus, which also encodes proapoptotic proteins, is able to determine the death of its host cell by inducing apoptosis and also by blocking macroautophagy.”*

CB Daily Report

Chem-Bio News

COMPOUND FOUND TO SAFELY COUNTER DEADLY BIRD FLU

Medical News Today
December 22, 2009

"Now, however, a study published this week (Dec. 21) in the Proceedings of the National Academy of Sciences (PNAS) suggests that a new compound, one on the threshold of final testing in humans, may be more potent and safer for treating "bird flu" than the antiviral drug best known by the trade name Tamiflu.

Known as T-705, the compound even works several days after infection, according to Yoshihiro Kawaoka, a University of Wisconsin-Madison virologist and the senior author of the new PNAS study."

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"The Wisconsin research was conducted in mice and demonstrated that the compound was effective and safe against H5N1 virus, the highly pathogenic bird flu virus, which some scientists fear could spark a global epidemic of deadly influenza. The compound is also effective against seasonal flu and more worrisome varieties such as the H1N1 virus, and has already been tested against circulating seasonal influenza in humans in Japan where it is on the brink of Phase III clinical trials in people."

The full article can be found at: <http://www.medicalnewstoday.com/articles/174656.php>

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[PK] GOVT TO FORM RESPONSE TEAM TO COMBAT PANDEMICS

By By Amer Malik
The News
December 22, 2009

"The Punjab government has decided to form an Epidemic Response Team to take steps to combat pandemics like swine flu, bird flu and dengue fever in an effective manner.

This was proposed during a brainstorming session in connection with devising an effective strategy to combat the latest threat of swine flu virus. The event, organized by the Punjab Health Department in collaboration with Allama Iqbal Medical College/Jinnah Hospital, Lahore, was held here at the Committee Room of AIMC on Monday.

MNA Sardar Ayaz Sadiq chaired the meeting and Health Anwaar secretary Ahmad Khan and AIMC/JHL principal Prof Javed Akram were present as the guests of honor. MPAs Dr Saeed Elahi, Dr Asad Ashraf and Dr Zamurad Yasmin Rana, Director General Health Services, Punjab, Dr Muhammad Aslam Chaudhry, Director CDC Dr Mubashar Attique, Mayo Hospital Medical Superintendent Dr Zahid Pervaiz, consultants, doctors and others were also present.

Speaking on the occasion, MNA Sardar Ayaz Sadiq gave approval of the project, directing

the Health secretary to form and notify an Epidemic Response Team comprising of DG Health Dr Aslam Chaudhry, AIMC/JHL Principal Prof Javed Akram, senior professors of relevant specialties as well as representatives of the departments concerned.

He said the Punjab government would also formally ask the Pakistan Railways to give Railways Caron Hospital, Lahore, under the control of the Punjab Health Department to make full use of this health facility in an effective manner. He observed that Railways Caron Hospital, which was a large hospital comprising of 120 beds, was under-utilized than its actual capacity to provide diagnostic and healthcare services to the patients.

Sardar Ayaz Sadiq also assured to talk to the Ministry of Defence, controlling authority of Civil Aviation Authority (CAA), to install scanners at all airports and conduct screening of all passengers from national and international flights, in order to conduct proper diagnosis of suspected patients of swine flu and viruses with a view to preventing spread of the diseases among local population in the province. "We will also ask Ministry of Defence to establish quarantine at each airport to isolate the suspected patients immediately," he added."

The full article can be found at: <http://www.thenews.com.pk/print1.asp?id=214700>

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HOW FLU SUCCEEDS

Medical News Today
December 22, 2009

"Investigators at Burnham Institute for Medical Research (Burnham), Mount Sinai School of Medicine (Mount Sinai), the Salk Institute for Biological Studies (Salk) and the Genomics Institute of the Novartis Research Foundation (GNF) have identified 295 human cell factors that influenza A strains must harness to infect a cell, including the currently circulating swine-origin H1N1. The team also identified small molecule compounds that act on several of these factors and inhibit viral replication, pointing to new ways to treat flu. These findings were published online on December 21 in the journal Nature.

Influenza A virus contains only enough genetic information (RNA) to produce 11 proteins and must co-opt host cellular machinery to complete its life cycle. Sumit Chanda, Ph.D., of Burnham, Megan Shaw, Ph.D., of Mount Sinai, John Young, Ph.D., of Salk, Yingyao Zhou, Ph.D., of GNF and others used RNAi screening technology to selectively turn off more than 19,000 human genes to determine which human factors facilitate viral entry, uncoating, nuclear import, viral replication and other necessary functions of the virus."

The full article can be found at: <http://www.medicalnewstoday.com/articles/174635.php>

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ASSISTANT SECRETARY JONES APPOINTED AS SPECIAL REPRESENTATIVE ON

AVIAN AND PANDEMIC INFLUENZA AND PANDEMIC INFLUENZA COORDINATOR

US Department of State News Release

December 17, 2009

“Secretary of State Hillary Rodham Clinton is pleased to announce the appointment of Dr. Kerri-Ann Jones, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs as the U.S. Special Representative on Avian and Pandemic Influenza. In this capacity she will execute the Department’s mission under the National Strategy for Pandemic Influenza to lead the U.S. Government’s international engagement on avian and pandemic influenza. The Secretary has also appointed Dr. Jones as the Department of State’s Pandemic Influenza Coordinator. In this role, Dr. Jones will serve as the State Department’s focal point for coordination of all domestic and international pandemic preparedness and response activities.

Dr. Kerri-Ann Jones was sworn-in as Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs on August 20, 2009. Her full biography can be found at <http://www.state.gov/r/pa/ei/biog/130147.htm>.

The full article can be found at: <http://www.state.gov/r/pa/prs/ps/2009/dec/133807.htm>

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MODELLING MITIGATION STRATEGIES FOR PANDEMIC (H1N1) 2009

Drug Week

December 25, 2009

“We developed a simulation model of a pandemic (H1N1) 2009 outbreak in a structured population using demographic data from a medium-sized city in Ontario and epidemiologic influenza pandemic data. We projected the attack rate under different combinations of vaccination, school closure and antiviral drug strategies (with corresponding "trigger" conditions). To assess the impact of epidemiologic and program uncertainty, we used "combinatorial uncertainty analysis." This permitted us to identify the general features of public health response programs that resulted in the lowest attack rates. Delays in vaccination of 30 days or more reduced the effectiveness of vaccination in lowering the attack rate. However, pre-existing immunity in 15% or more of the population kept the attack rates low, even if the whole population was not vaccinated or vaccination was delayed. School closure was effective in reducing the attack rate, especially if applied early in the outbreak, but this is not necessary if vaccine is available early or if pre-existing immunity is strong. Early action, especially rapid vaccine deployment, is disproportionately effective in reducing the attack rate.”

The full article can be found at: (M.Z. Gojovic, et. al., “Modelling mitigation strategies for pandemic (H1N1) 2009”. Canadian Medical Association Journal, 2009;181(10): 673-680). Link not available.

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MATRIX PROTEIN 2 OF INFLUENZA A VIRUS BLOCKS AUTOPHAGOSOME FUSION WITH LYSOSOMES

Biotech Week

December 23, 2009

"Here, we demonstrate that influenza A virus inhibits macroautophagy, a cellular process known to be manipulated by diverse pathogens. Influenza A virus infection causes accumulation of autophagosomes by blocking their fusion with lysosomes, and one viral protein, matrix protein 2, is necessary and sufficient for this inhibition of autophagosome degradation. Macroautophagy inhibition by matrix protein 2 compromises survival of influenza virus-infected cells but does not influence viral replication."

"We propose that influenza A virus, which also encodes proapoptotic proteins, is able to determine the death of its host cell by inducing apoptosis and also by blocking macroautophagy."

The full article can be found at: (M. Gannage, et. al., "Matrix Protein 2 of Influenza A Virus Blocks Autophagosome Fusion with Lysosomes". *Cell Host & Microbe*, 2009;6(4): 367-380). Link not available.

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