The 6th International Symposium

Advanced Lecture on One Health

Hokkaido University
Leading Graduate School
Veterinary Science for One Health

13 : 30～16 : 30
September 2(Mon), 2013
Lecture Hall, Graduate School of Veterinary Medicine, Hokkaido University, JAPAN

Dr. Ruben Donis
Centers for Disease Control and Prevention

"Disease control at the animal-human-ecosystems interface: the influenza experience"

Dr. Subhash Morzaria
FAO Regional Office for Asia and the Pacific

"One Health approach to FAO's action plan to implement multi-sectoral and multi-disciplinary approach to controlling high impact infectious diseases"

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Program

13:30～14:30

Dr. Ruben Donis

Centers for Disease Control and Prevention

"Disease control at the animal-human-ecosystems interface: the influenza experience"

14:35～15:35

Dr. Subhash Morzaria

FAO Regional Office for Asia and the Pacific

"One Health approach to FAO's action plan to implement multi-sectoral and multi-disciplinary approach to controlling high impact infectious diseases"

15:35～15:50

Break

15:50～16:30

Discussion

Ruben O. Donis

Associate Director for Policy Evaluation and Preparedness
Influenza Division
National Center for Immunization and Respiratory Diseases
Centers for Disease Control & Prevention
Department of Health and Human Services
United States

ACADEMIC DEGREES:

DVM University of Buenos Aires, Argentina.

Ph.D. Cornell University, Ithaca, NY. 1987

PROFESSIONAL APPOINTMENTS:

1980-1981	Assistant Research Scientist, New York State Dept. of Health, Division of Laboratories and Research, Albany, New York
1986-1989	Postdoctoral Fellow, St. Jude Children's Hospital, Memphis, Tennessee. Advisor: Robert G. Webster
1989-1995	Assistant Professor, University of Nebraska-Lincoln, Department of Veterinary and Biomedical Sciences Lincoln, NE
1995-2001	Associate Professor, University of Nebraska-Lincoln, Department of Veterinary and Biomedical Sciences, Lincoln, NE
2001-2003	Professor, University of Nebraska-Lincoln, Department of Veterinary and Biomedical Sciences, Lincoln, NE
2003-2009	Adjunct Professor, University of Nebraska-Lincoln, Department of Veterinary and Biomedical Sciences Lincoln, NE
2004-present	Adjunct Professor, Emory University School of Medicine, Department of Immunology and Microbiology, Atlanta, GA,
2003-2007	Chief, Molecular Genetics Section, Influenza Branch, Centers for Disease Control and Prevention, Atlanta, GA
2007-2012	Chief, Molecular Virology and Vaccines Branch, Influenza Division, Centers for Disease Control and Prevention, Atlanta, GA
2012-present	Associate Director for Policy, Evaluation and Preparedness,, Influenza Division, National Center for Immunization and Respiratory Diseases, Centers for Diseases Control and Prevention. Atlanta, GA

RESEARCH INTERESTS:

The major emphasis of our research is to track changes in the ecology and virulence of influenza virus in avian and mammalian hosts to inform pandemic preparedness. Our approach entails mining influenza virus genomic sequence information to correlate evolutionary and functional changes with hosts and pathogenesis. Comparative studies with the newly discovered bat influenza viruses help us understand the most conserved structures of influenza viruses and their functionality. We are studying how glycan specificity of the viral hemagglutinin and neuraminidase proteins and the functionality of proteins that may modulate interspecies transmission, global gene expression, and virulence. Collectively, these genomic and molecular information tools should provide novel approaches to assess the risk of interspecies transmission of influenza viruses and the outcomes of influenza infections in the host. We also evaluate the antigenic relationships of currently circulating viruses as compared to those in our pandemic vaccine virus library. Our risk assessment studies are complemented by the analysis of virologic surveillance data from animal populations in collaboration with global partners in animal and human health. This “One-Health” approach is ideally suited to monitor pandemic threats and inform development of candidate vaccine viruses for pandemic preparedness.

Disease Control at the animal-human-ecosystems interface: the influenza experience

Ruben O. Donis

Influenza Division

Centers for Disease Control and Prevention

Atlanta, Georgia, USA

Influenza viruses are a major cause of morbidity and mortality in humans and animals. The animal reservoir of influenza is essential for the long term survival of influenza viruses in the human population. Changes in the ecology and host range of influenza virus in avian or mammalian hosts are the cornerstone of new pandemics. Our approach to pandemic preparedness involves monitoring the evolution of influenza viruses in animal reservoirs to correlate evolutionary and functional changes with antigenic properties and pathogenesis. Comparative studies with the newly discovered bat influenza viruses help us understand the most conserved structures of influenza viruses and their functionality. We are studying how glycan specificity of the viral hemagglutinin and neuraminidase proteins and the functionality of proteins that may modulate interspecies transmission, global gene expression, and virulence. Collectively, these genomic and molecular information tools should provide novel approaches to assess the risk of interspecies transmission of influenza viruses and the outcomes of influenza infections in the host. We also evaluate the antigenic relationships of currently circulating viruses as compared to those in our pandemic vaccine virus library. Our risk assessment studies are complemented by the analysis of virologic surveillance data from animal populations in collaboration with global partners in animal and human health. This “One-Health” approach is ideally suited to monitor pandemic threats and inform development of candidate vaccine viruses for pandemic preparedness.

Subhash Morzaria

Regional Manager

Emergency Centre for Transboundary Animal Diseases

Food and Agriculture Organization of the United Nations

Bangkok, Thailand

ACADEMIC DEGREES:

B.V.Sc.	1970	University of East Africa (Veterinary Medicine and Surgery)
M.Sc.	1972	University of London (Medical Parasitology)
Ph.D.	1976	University of London (Medicine, infectious diseases)
M.R.C.V.S	1978	University of Cambridge (Veterinary Medicine and Surgery)

PROFESSIONAL APPOINTMENTS:

1976 - 1979	Veterinary Research Office, Central Veterinary Laboratory, Weybridge, UK
1979 – 1982	Senior Technical Officer, Food and Agriculture Organization, Rome, Italy
1982 – 1995	Senior Scientist, International Laboratory for Research on Animal Diseases, Nairobi, Kenya
1996 – 2002	Head, Animal Health Programme, International Livestock Research Institute, Nairobi, Kenya
2003 –	Regional Manager, Emergency Centre for Transboundary Animal Disease, FAO Regional Office for Asia and the Pacific, Bangkok
2008 -	Adjunct Professor, University of Murdoch, Perth, Australia

RESEARCH INTERESTS:

Subhash Morzaria has over 30 years of international experience in technical and management capacity on animal health and livestock development. He has worked for a number national and international organizations in Africa, UK and Asia. In Africa and the UK, he has contributed significantly in addressing a range of animal disease problems focusing on the improvement and commercialisation of existing technologies and development of novel vaccines against a range of vector-borne pathogens. The key achievements in this field have been improved vaccines against bovine respiratory diseases, and the development of a range of diagnostics, live vaccines, and an experimental subunit vaccine against a killer disease of cattle, East Coast fever.

Dr. Morzaria joined the FAO Regional Office for Asia and the Pacific (FAORAP) in early 2003 and worked firstly as the Senior Animal Health and Production Officer, and then in various capacities to address priority animal disease problems that constraint livestock development, and impact negatively on food security, food safety and livelihoods of poor farming communities. For the last 10 years with FAORAP, he has primarily focused on developing regional and international strategies for prevention and control of major transboundary animal diseases (TADs) including FMD, CSF and HPAI. With his experience in TADs and emerging infectious diseases of animals and humans, and with his background in development of vaccines and diagnostics and epidemiology, he continues to play an active role in coordinating regional and international efforts to address the severe problems of infectious diseases in Asia under the joint FAO/OIE Global Framework for the Control of Transboundary Animal Diseases (GF-TADs) umbrella.

Currently he is the Regional Manager of FAO's Emergency Centre for Transboundary Animal Diseases (ECTAD RAP) based in Bangkok, Thailand. Most recently he has been involved in the development and promotion of One Health concepts, and has been the principal writer of the UN joint interagency (FAO, WHO, UNICEF), UNSIC, OIE and WB document: *Contributing to One World One Health: Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface*. Dr. Morzaria has authored over 200 scientific papers in international refereed journals and has supervised a number of PhD students in the Africa, UK and Asia. He is also Adjunct Professor at University of Murdoch, Perth, Australia.

One Health approach to FAO's action plan to implement multi-sectoral and multi-disciplinary approach to controlling high impact infectious diseases

Subhash Morzaria, Wantanee Kalpravidh, David Castellan
Food and Agriculture Organization (FAO) of the United Nations,
Emergency Centre for Transboundary Animal Diseases, Bangkok, Thailand

The world faces a major challenge of emergence and spread of high impact infectious diseases (EIDs) due to many factors that include exponential growth in human populations, rapid urbanization, intensification of farming systems, forest encroachment, and globalization of trade in animals and animal products. The social and economic consequences of emerging infectious diseases (EID) can be catastrophic as evidenced by recent epidemics of SARS, H5N1 HPAI, H1N1 and H7N9 viruses. It is estimated that even a moderately severe pandemic influenza would cost the global economy around US$2 trillion. Therefore, investments in preventive and control strategies are likely to be highly cost-effective. FAO is involved in global efforts to diminish the risk and minimize the global impact of epidemics and pandemics due to EIDs, by enhancing disease intelligence, surveillance and emergency response systems at national, regional and international levels, and by supporting them through strong and stable public and animal health services and effective national communication strategies, with national authorities playing a key role in devising, financing and implementing these interventions. Such an effort is expected to contribute significantly to the overall goal of improving public health, food safety and security, and the livelihoods of poor farming communities, as well as protecting the health of ecosystems. FAO is aiming to achieve these through a) building capacities of public and animal health systems compliant with international (WHO and OIE) standards, b) preventing regional and international crises by controlling disease outbreaks through improved national and international emergency response capabilities, c) addressing the concerns of the poor in addressing actual disease problems they immediately face, and through a focus on the drivers of a broader range of locally important diseases, d) promoting wide-ranging collaboration across sectors and disciplines, and d) developing rational and targeted disease control programmes through the conduct of strategic research.

The above objectives and components represent an international public good. Thus FAO in partnership with OIE and WHO continue to support the strengthening of existing animal and public health surveillance, response, prevention and preparedness systems at the country, regional and international levels. FAO adopts and promotes the One Health approach to engage multiple sectors and disciplines, the integration of technical, social, political, policy and regulatory issues; and the establishment of broad-based partnerships across sectors and along the research-to-delivery continuum. This includes engagement of wildlife and ecosystems interests, the human and veterinary medical community, advanced research

institutions, and the private sector to strengthen local capacity and to promote long-term sustainability. The approach encourages the formation of flexible, formal and informal networks of partners, and promotes pro-poor actions and interventions. A number of initiatives are currently being implemented that include development of regional communication and regional strategies, enhancement of tripartite (FAO-OIE-WHO) collaboration, joint public and veterinary health and wildlife consultations on zoonoses, human and veterinary laboratory collaboration through networks, disease information sharing between sectors, joint training at field level using the field epidemiology training programme for veterinarians (FETPV) and implementing specific disease control such as rabies deploying expertise from human, veterinary, wildlife and social science sectors. FAO plays an important role in bringing benefits to poor communities and agricultural sectors by reducing the risks of infectious diseases that are important locally. This approach does not only control existing and often neglected infectious diseases, but will also promote surveillance for EID at a grassroots level by embedding global concerns within a local context. Overall, in addressing the EIDs, FAO embraces the One Health by leveraging its broad mandate on food security and multi-disciplinary focus.

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