



THAMMASAT UNIVERSITY
FACULTY OF PUBLIC HEALTH



HOKKAIDO
UNIVERSITY



Abstracts of

5th One Health Lecture Series

on Emerging Infectious Diseases and Environmental Health



Date and Time : **16 December 2020, 08:00-14:45 h**

Hosted by : Faculty of Public Health, Thammasat University, Rangsit Campus, Pathumthani Province, Thailand

Co-hosted by : Hokkaido University and Rakuno Gakuen University, Japan

Venue : Online seminar



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A Tentative Program of the 5th One Health Lecture Series on Emerging Infectious Diseases and Environmental Health

Hosted by : Faculty of Public Health, Thammasat University, Rangsit Campus,
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Date and Time : 16 December 2020 , 08:00–14:45 h (Thai time, GMT+7)

Venue : Online Seminar

Time	Topic	Speaker
08:00 – 08:30	Program orientation and video presentation of One Health Lecture Series milestone	Moderators Asst. Prof. Adisak Bhumiratana
08:30 – 08:50	Welcome address by Dean	Assoc. Prof. Dr. Sasitorn Taptagaporn Faculty of Public Health, Thammasat University
	Opening remark by Vice Rector for International Affairs	Assoc. Prof. Dr. Kitti Prasirtsuk Thammasat University
08:50 – 09:30	<i>Keynote lecture:</i> How to tackle infectious diseases by “One Health” approach	Prof. Dr. Yasuhiko Suzuki Research Center for Zoonosis Control, Hokkaido University
09:30 – 09:45	<i>Special lecture:</i> Defying SARS-CoV-2 gravity in the lower Mekong region: a transdisciplinary (One Health) approach to pandemic preparedness planning	Dr. Andrew Lee Corwin Faculty of Public Health, Thammasat University
09:45 – 10:00	<i>Special lecture:</i> Whole of Society Interventions: Myth or Reality?	Asst. Prof. Dr. William Aldis Faculty of Public Health, Thammasat University
10:00 – 10:15	Profiling of viral protein-RNA interaction during infection of emerging tick-borne bandavirus	Dr. Keita Matsuno Research Center for Zoonosis Control, Hokkaido University
10:15 – 10:30	Relationship between hepatitis E virus and the host	Prof. Dr. Katsuro Hagiwara School of Veterinary Medicine, Veterinary Virology, Rakuno Gakuen University
10:30 – 10:45	Cell-mediated Immune Response to Avian Influenza H5N1 Virus	Asst. Prof. Dr. Pirom Noisumdaeng Faculty of Public Health, Thammasat University
10:45 – 11:00	Microplastics contamination in aquatic animals in the Chao Phraya river estuary	Dr. Manapron Wongsoonthornchai Faculty of Public Health, Thammasat University

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Time	Topic	Speaker
11:00 – 12:00	Lunch break	
12:00 – 12:15	Characterization of SARS-CoV-2 variants with mutations at the S1/S2 cleavage site	Dr. Michihito Sasaki Research Center for Zoonosis Control, Hokkaido University
12:15 – 12:30	Infectivity of bioaerosols – possible association with air pollutants	Assoc. Prof. Dr. Jun Noda School of Veterinary Medicine, Environmental Health, Rakuno Gakuen University
12:30 – 12:45	Assessment of indoor air quality and particle size distribution of total bacteria and <i>Staphylococcus</i> spp. in a hospital	Dr. Kanjana Changkaew Faculty of Public Health, Thammasat University
12:45 – 13:00	Afternoon Break	
13:00 – 13:15	Interdisciplinary and international approach to overcoming mine pollution in Zambia	Dr. Hokuto Nakata Faculty of Veterinary Medicine, Hokkaido University
13:15 – 13:30	Parasitic Helminthiasis and Wild Animal Medical Center of Rakuno Gakuen University, Japan	Prof. Dr. Mitsuhiro Asakawa School of Veterinary Medicine, Parasitology and Zoology Rakuno Gakuen University
13:30 – 13:45	<i>Brugia pahangi</i> parasitic ecosystem: landscape ecology and epidemiology of epizootic <i>B. pahangi</i> in Thailand	Asst. Prof. Adisak Bhumiratana Faculty of Public Health, Thammasat University
13:45 – 14:00	Rabies dynamics in ecosystem in northern South Africa	Prof. Dr. Kohei Makita School of Veterinary Medicine, Veterinary epidemiology, Rakuno Gakuen University
14:00 – 14:15	Health risk assessment of exposure to multiple heavy metals among children living in a Vietnamese informal e-waste recycling village	Dr. Hien Thi Thu Ngo Department of Public Health, Faculty of Health Sciences, Thang Long University
14:15 – 14:30	Studies on DNA gyrase of <i>Campylobacter jejuni</i> as the target of quinolones	Dr. Ruchirada Changkwaneyun Faculty of Public Health, Thammasat University
14:30 – 14:45	Closing address by Dean	Assoc. Prof. Dr. Sasitorn Taptagaporn Faculty of Public Health, Thammasat University

Welcome Address

by Associate Professor Dr. Sasitorn Taptagaporn

The Dean of Faculty of Public Health, Thammasat University

16 December 2020

Excellencies,

Associate Professor Dr. Kitti Prasertsuk, Vice Rector for International Affairs of Thammasat University,
Prof. Hiroshi KIDA, Head, Research Center for Zoonosis Control
Prof. Yasuhiko SUZUKI, Director, Research Center for Zoonosis Control
Associate Prof. Masaru USUI, School of Veterinary Medicine, Rakuno Gakuen University
Prof. Mayumi ISHIZUKA, Faculty of Veterinary Medicine, Hokkaido University
Professor Dr. Kohei Makita, Rakuno Gakuen University,
Distinguished Delegates, Ladies and Gentlemen,

On behalf of the Faculty of Public Health, Thammasat University, I am honored to express our deep consolidation of hosting the fifth One Health Lecture Series on Emerging Infectious Diseases and Environmental Health on 16 December 2020, at Faculty of Public Health, Thammasat University. Today, our continued consolidation of this fifth online seminar emerged out of our collaboration network among three universities: Hokkaido University, Rakuno Gakuen University, and Thammasat University.

Undoubtedly, this seminar marks the start of fruitful academic collaboration and cooperation among our universities. Faculty of Public Health, Thammasat University sincerely appreciates all distinguished delegates from Hokkaido University, Rakuno Gakuen University, and all other participants attending to this online seminar; who are interested in doing multidisciplinary research and obtaining currently emerged One Health issues from multisectors including various universities, ministries, national organizations, and international organizations.

In September 11, 2019, the Hokkaido University and Thammasat University renewal academic exchange agreement. Our universities entered into formal memorandum of understanding on academic exchange student and collaboration. Based on university agreement, Faculty of Public Health, Thammasat University utilized augmented mechanisms for development of international PhD program in Global Health under MOU on Cotutelle program between Hokkaido University and Faculty of Public Health, Thammasat University that could accelerate the program open for the international applications in academic year 2019.

In March 2016, the Rakuno Gakuen University and Thammasat University signed Memorandum of Understanding on academic agreement. Faculty of Public Health, Thammasat University and Rakuno Gakuen University joint active and fruitful technical cooperation such as research, academic symposium several time during the past five years. We are convinced that there are great potentials that both universities can strengthen the technical cooperation for our mutual benefits more. And our faculty certainly is hoping to continue the research and the engagement with your university.

Activities act on our shared and mutual interest with regard to our commitment to education and research on zoonosis and One Health are as follows: Firstly, the meetings on collaborating and cooperating research and education, strengthening network, and continuing Lecture Series on One Health;

Secondly, the development of collaborative research projects between Hokkaido, Rakuno Gakuen, and Thammasat University.

An ongoing 2017–2018 project entitled “Surveillance of antimicrobial resistance in bacteria isolated from swine farms and pork in Thailand”, granted by Thammasat University in collaboration with Hokkaido University and Rakuno Gakuen University.

Other ongoing project entitled “Surveillance and characterization of antimicrobial resistant *Escherichia coli* and *Salmonella* from swine farms and pork in Thailand”, granted by WHO in collaboration with Hokkaido University under WHO AGISAR Country project in 2016–2017.

Thirdly, human resource development by accepting our scientist enrolling into PhD program and staff doing research at Hokkaido University in 2016–2018.

These are only the beginning, I do hope we closely build and strengthen more collaboration in various strands of global health between our universities. This seminar helps us understand more about how to build interdisciplinary collaboration to the “One World, One Health” that require our collaborative and cooperative efforts. Again, I am most grateful for sharing great visions and contributing greatly to our success.

Thank you.



Assoc. Prof. Dr. Sasitorn Taptagaporn

Dean
Faculty of Public Health, Thammasat University

Relationship Between Hepatitis E Virus and The Host



Prof. Dr. Katsuro Hagiwara

School of Veterinary Medicine,
Veterinary Virology,
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Hepatitis E virus (HEV) is one of the causative agents of hepatitis in humans. Clinical symptoms of HEV infection varies from asymptomatic to acute fulminant hepatitis. The case fatality rate among pregnant women is about 20%, which increases during the second and third trimesters. HEV is a non-enveloped, single-stranded positive-sense RNA virus classified in Hepeviridae. The 7.2 kb genome of HEV is composed of three open reading frames including ORF1 (non-structural protein), ORF2 (capsid protein) and ORF3 (accessory proteins associated with virion cellular protein kinase activity and virion release). HEV is environmentally resistant and remain infectious even after heat treatment at 60 °C.

HEV associated with human hepatitis is genetically classified into 4 genotypes. Genotypes 1 and 2 which are water-borne diseases are endemic in Asia, Africa, and South America. The virus causes outbreaks involving large populations by contaminated food and drink. Genotypes 3 and 4 are considered to be zoonosis. The viruses (genotypes 3 and 4) are distributed all over the world, and contaminated water and unheated meat are the main factors. Iatrogenic infection cases such as transfusion-transmitted HEV has been reported at several countries including Japan, and the origin of HEV comes from the organs or blood from infected donor.

Epidemiological studies have revealed that HEV infections in pigs are ubiquitous worldwide and the majority of pigs are seropositive. HEV shedding in feces has been observed mainly in piglets after weaning, but rarely detected in the end of fattening pigs. In addition, detection of HEV has been reported in livers sold in Japan and USA. HEV has been reported to be infected in various animal species and is recognized as a zoonotic disease. Humans can also be a reservoir for the virus. The risk factors for HEV infection are related poor sanitation area in the world and the consumption of undercooked contaminated meat or water. The One Health concept is an important element in the preventive measures against this viral infection.

Infectivity of Bioaerosols – Possible Association with Air Pollutants



Assoc. Prof. Dr. Jun Noda

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The ongoing COVID-19 pandemic draws much attention to the airborne infection route. Now it is well accepted by scientific community, WHO, and other institutes that the aerosolized pathogen in the form of bioaerosols can be a pathway for a respiratory infection of COVID-19. However, very little is known about the factors and mechanisms attributing to the prolonged infectivity of the pathogens in the atmospheric environment. In this talk, I will introduce the idea of the possible role of air pollutants as fomites. We hypothesize that the air pollutants can enhance the viability of airborne microbes by preventing them from the degradation process from some stresses; thereby, enhancing the infectivity of pathogenic bioaerosols. *Mycobacterium Smegmatis* is used as a model airborne bacteria in a laboratory study, and different amounts of soot particles are employed as model air pollutants. The toxic effects of soot on aerosolized *M. Smegmatis* are first evaluated and excluded by introducing them separately into a chamber, being sampled on a filter, and then cultured and counted. Secondly, the bacteria-soot mixture is exposed to UV with different durations and then cultured for bacterial viability evaluations. The results show that the different survival rates of the low-, medium-, and high- soot groups under UV exposure as stress. These results show a significant enhancement of survival rates by the presence of soot at all UV exposures. This study indicates that the soot induced survival rate of *M. smegmatis* under UV stress conditions. It represents the possible associations between air pollution and the extended viability of pathogens; therefore, increased airborne infection probability. Understanding the mechanism of airborne infection is one of many steps to increase knowledge for the public health goal to alleviate the threat from infectious disease with the One Health approach.

Parasitic Helminthiasis and Wild Animal Medical Center of Rakuno Gakuen University, Japan



Prof. Dr. Mitsuhiro Asakawa

DVM, MSc Wild Animal Health (UK), Ph.D., Dipl. JCZWM
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WAMC's facebook: <https://www.facebook.com/mitsuhiro.asakawa>

Prof. Asakawa have studied in the scientific fields including helminthology, especially, morphology, taxonomy, ecology and zoogeography, and including zoonotic and wildlife helminthiasis, for example, its diagnosis, epidemiological survey and countermeasures among human-livestock and variable animals including wildlife, exotic pets, zoo and aquarium animals etc.



In 2004, the Wild Animal Medical Center (WAMC) was established at Rakuno Gakuen University, Hokkaido, Japan, not only to study/educate parasitology mentioned above vobe, but also to perform conservation medicine including zoo and wildlife medicine, medical zoology, pathobiology, forensic veterinary medicine etc.

In this presentation, I will show a couple of topics with special reference to recent cases of helminthiasis and helminth epidemiological studies of pet and free-ranging animals performed by WAMC, in order to understand the activities of WAMC and the Japanese Society of Zoo and Wildlife Medicine, and to establish good relationships between you and us.



Rabies Dynamics in Ecosystem in Northern South Africa



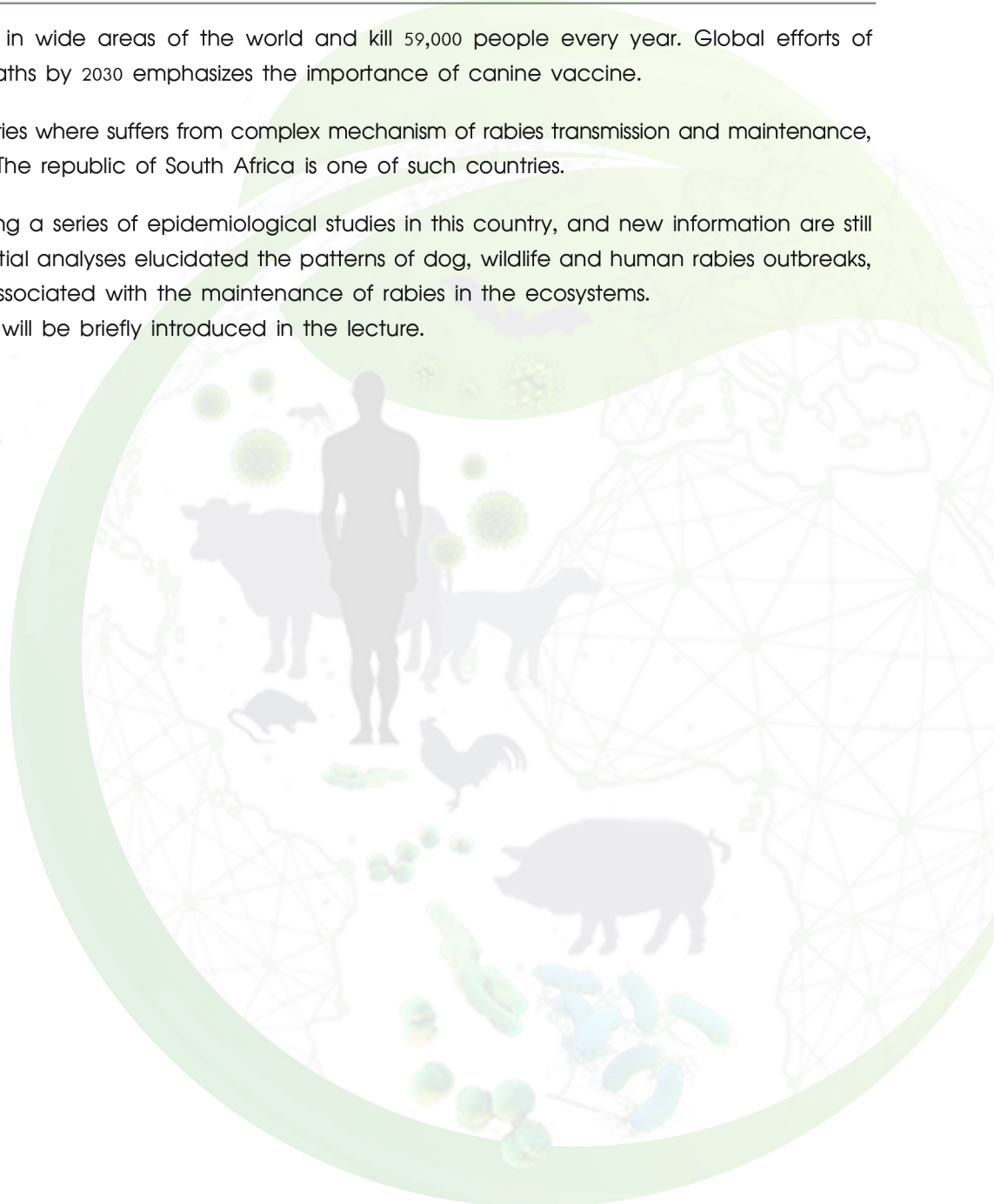
Prof. Dr. Kohei Makita

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Rabies remains endemic in wide areas of the world and kill 59,000 people every year. Global efforts of elimination of human deaths by 2030 emphasizes the importance of canine vaccine.

However, there are countries where suffers from complex mechanism of rabies transmission and maintenance, particularly from wildlife. The republic of South Africa is one of such countries.

We have been conducting a series of epidemiological studies in this country, and new information are still accumulated. So far, spatial analyses elucidated the patterns of dog, wildlife and human rabies outbreaks, and ecological factors associated with the maintenance of rabies in the ecosystems. These ecohealth findings will be briefly introduced in the lecture.





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