

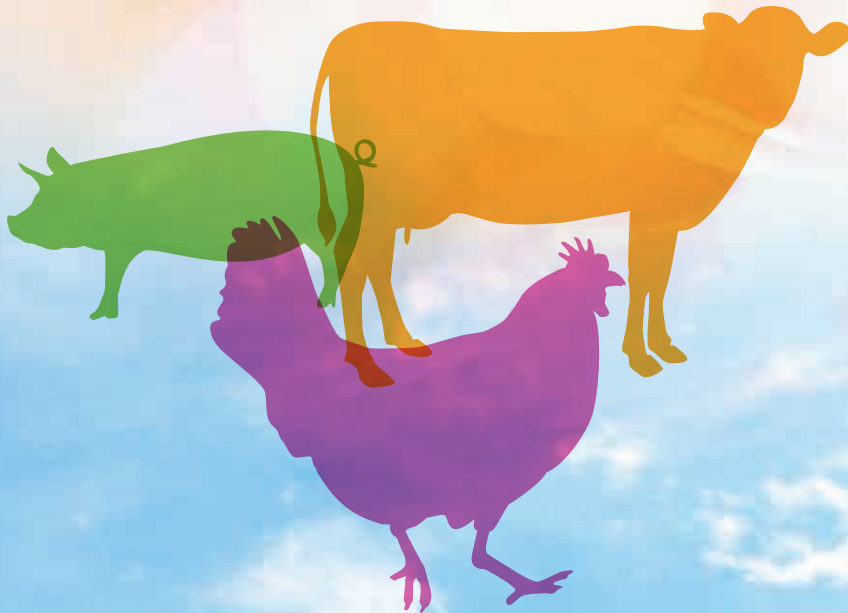
宮崎大学 第12回 CADIC国際シンポジウム

The 12th CADIC International Symposium



Veterinary Education and Research Network in Asia

アジアにおける 獣医学教育研究ネットワーク



Wednesday, November 16, 2022
Kibana Campus, University of Miyazaki, Japan

2022年11月16日(水)

**会場：宮崎大学330記念交流会館
(同時オンライン配信)**

主 催：宮崎大学産業動物防疫リサーチセンター

共 催：宮崎大学農学部

特別共催：公益財団法人宮崎県観光協会 MICE推進局

名義後援：農林水産省、宮崎県、日本獣医師会、8大学産業動物防疫コンソーシアム

趣旨

宮崎大学産業動物防疫リサーチセンター
センター長 吉田 彩子

世界的な人口増におけるタンパク源供給不足問題のために、アジアにおける畜産業発展には大きな期待が寄せられています。しかしながら、アジア諸国においては、安心・安全な畜産物の安定供給のために、国際的な家畜衛生と食品の安全の向上が大きな課題となっています。その中でも、輸出制限に関わる重要家畜伝染病の清浄化と、生産された畜産物の食品衛生管理の国際基準である危害分析重要管理点方式(HACCP)による高度衛生管理が不可欠となっています。

宮崎大学産業動物防疫リサーチセンター(CADIC)では、このような獣医学が責務を持つ家畜感染症防御の先端研究に取り組み、またこのような研究内容を現場に還元できる人材育成に取り組んできました。現在問題となる国際的な家畜感染症防疫のためには、我が国のみならずアジア、世界的な視点からの取り組みが不可欠です。

本シンポジウム第1部では、アジアにおける獣医学教育ネットワークの現状と課題を紹介していただき、アジアにおける家畜感染症の教育・研究拠点を目指してきたCADICの創設2010年来の取り組みを紹介します。また、第2部では、CADICの構築しているアジア獣医学ネットワークにおける研究内容を紹介します。

Objective

Center for Animal Disease Control

Ayako Yoshida, Director

There are high expectations for the development of the livestock industry in Asia due to the insufficient supply of protein sources in the growing population worldwide. However, improving international livestock hygiene and food safety has become significant issues in Asian countries to ensure a stable supply of safe and secure livestock products. Among these, eliminating important livestock infectious diseases related to export restrictions, strengthening hygiene management based on the Hazard Analysis and Critical Control Point (HACCP), and the international standard for food hygiene management of produced livestock products, are indispensable.

The Center for Animal Disease Control (CADIC), University of Miyazaki, has been engaged in advanced research on the prevention of infectious diseases in livestock which is the obligation of veterinary medicine, and has also been working to foster human resources who can apply this research to society. To prevent the current problem of international livestock infectious diseases, it is important to consider the global perspective, not only from Japan but also from Asia.

In the first part of this symposium, the current status and challenges of veterinary education networks in Asia will be introduced, as well as CADIC's efforts since its establishment in 2010 to become a center for education and research on infectious diseases in livestock in Asia. In the second part, the research activities in the Asian Veterinary Medicine Network that CADIC is building will be introduced.

ご挨拶

鮫島 浩

国立大学法人 宮崎大学 学長

本日、宮崎大学産業動物防疫リサーチセンター主催の、第12回国際シンポジウム「アジアにおける獣医学教育研究ネットワーク」を開催するにあたり、開会のご挨拶を申し上げます。

宮崎大学は日本有数の畜産県に位置し、国や県、さらには民間の農業団体等と連携して、産業動物関連感染症に基軸を置いた教育・研究に力を入れてきました。宮崎県は、過去に口蹄疫や高病原性鳥インフルエンザの被害に見舞われました。その際に、産業動物感染症に特化した世界水準の感染症教育・研究が不可欠であることを認識し、本学内に学部横断的なエキスパートからなる産業動物防疫リサーチセンター(CADIC)を開設しました。

世界的には、日本の近隣諸国で口蹄疫や高病原性鳥インフルエンザだけでなく、アフリカ豚熱の発生が拡大しています。また、本州には2018年に豚熱が侵入し、その猛威は日本の豚産業の中心となる九州への拡大が危惧されています。宮崎大学では、このような国際的に重要な産業動物関連感染症の防疫に資する教育・研究のネットワークを強化するために、毎年1回の国際シンポジウムを開催してきました。

今年度は「アジアにおける獣医学教育研究ネットワーク」をテーマに、特に日本の近隣諸国であるアジアにおける産業動物関連感染症防疫に重要な役割を果たす獣医学教育ネットワークの現状と課題について、国際的な視点からの情報、また、CADICの取り組んできた国際研究・人材育成の取り組み、そこから生み出された研究成果について紹介します。

最後に、今回のシンポジウムが、ご参加くださった全ての皆様にとって実りある有意義なものとなり、産業動物関連感染症に関する地域および国際的なネットワークがさらに強固されることを期待します。

Greetings

Hiroshi Samejima, President
University of Miyazaki

I am honored to welcome you to the 12th International Symposium, "Veterinary Education and Research Network in Asia," hosted by our university's Center for Animal Disease Control.

Miyazaki is one of Japan's leading livestock-producing prefectures. In cooperation with the national and prefectural governments and private agricultural organizations, University of Miyazaki has been focusing on education and research of industrial animal-related infectious diseases. Miyazaki Prefecture has previously suffered from foot-and-mouth disease and highly pathogenic avian influenza. Therefore, we realized that world-class education and research, with a particular focus on infectious diseases of industrial animals, were essential. The Center for Animal Disease Control (CADIC) was established, which consisted of cross-faculty experts within our university.

On a global scale, outbreaks of foot-and-mouth disease, highly pathogenic avian influenza, and African swine fever are spreading in Japan's neighboring countries. In addition, swine fever invaded Honshu Island in 2018. Its fierceness caused great fears that it could spread to Kyushu, the center of Japan's swine industry. As a result, University of Miyazaki has been holding annual international symposiums to strengthen the network in education and research that contributes to the prevention of internationally important industrial animal-related infectious diseases.

This year, under the theme of "Veterinary Education and Research Network in Asia," the symposium will focus on the current status and issues of veterinary education networks that play an important role in the prevention of industrial animal-related infectious diseases, especially in our neighboring countries in Asia. The symposium will also introduce CADIC's efforts in international research and human resource development, as well as the research results produced from these efforts.

Finally, we hope this symposium will be fruitful and meaningful for all participants and will further strengthen the regional and international network on infectious diseases related to industrial animals.

Program

9:50- Opening Remarks

Dr. Hiroshi Sameshima, President, University of Miyazaki.

Master of the symposium; Dr. Hirohisa Mekata, CADIC, UOM

Part1: “VETERINARY EDUCATION NETWORKS IN ASIA”

(10:00-12:25)

Chairperson: Dr. Tamaki Okabayashi, CADIC, UOM

10:00- Veterinary education networks in Asia — WOAHA's role

Dr. Maho Urabe, World Organisation for Animal Health, Japan.

(Presentation 35min, Q&A 10min)

10:45- A Scenario on the Development of Veterinary Education Establishments, VEEs Accreditation Standard from Thailand to ASEAN; Challenge and Opportunity

Dr. Achariya Sailasuta, Chair of ASEAN Veterinary Statutory Body Network, AVSBN and Professor, Center of Excellence on Companion Animal Cancer, Chulalongkorn University, Bangkok, Thailand. Thailand (P:15min, Q: 5min)

11:05- Standard of Veterinary Education and Networks Among Veterinary Schools and Veterinary Association In Indonesia.

Dr. Bambang Pontjo Priosoeryanto, Secretary General of the Federation of Asian Veterinary Association (FAVA) and Graduate Study Program of Animal Biomedicine Sciences IPB University, Indonesia. (P:15min, Q: 5min)

11:25- Group Photo & Coffee Break (15min)

Chairperson: Dr. Ayako Yoshida, CADIC, UOM

11:40- Creation of an education and research base for countermeasures for the prevention of animal infectious diseases and global human resource development by the Center for Animal Disease Control, University of Miyazaki -Aiming at education and research collaboration in Asia-

Dr. Naoaki Misawa, Center for Animal Disease Control, University of Miyazaki, Japan.

(P:35min, Q: 10min)

12:25- Lunch Break

Part2; “ANIMAL INFECTIOUS DISEASE RESEARCH NETWORK IN ASIA”

(13:30-15:50)

Chairpersons: Dr. Achariya Sailasuta, Chulalongkorn University, Bangkok, Thailand.

Dr. Bambang Pontjo Priosoeryanto, Graduate Study Program of
Animal Biomedicine Sciences IPB University, Indonesia

13:30- Leishmaniasis: an emerging neglected disease of livestock

Dr. Saruda Tiwananthagorn, Chiang Mai University. (P:15min, Q: 5min)

13:50- Foot and Mouth Disease in Indonesia: Current Update and Control Strategies

Dr. Harimurti Nuradji, Research Center for Veterinary Science, National Research and Innovation Agency (BRIN), Bogor, Indonesia. (P:15min, Q: 5min)

14:10- Current Status and Control Strategies of the Avian Influenza in Korea

Dr. Se-Yeoun Cha, Center for Poultry Diseases Control, Jeonbuk National University, South Korea
(P:15min, Q: 5min)

14:30- Early-phase risk assessments during the first epidemic year of African Swine Fever in Vietnam

Dr. Mai Thi Ngan, Department of Veterinary Microbiology and Infectious Diseases, Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam(P:15min, Q: 5min)

14:50- Coffee Break (15min)

Chairperson: Dr. Satoshi Sekiguchi, Faculty of Agriculture, UOM,

15:05- Immunological Research on Livestock Animals

Dr. Junzo Norimine, Laboratory of Animal Infectious Disease and Prevention, University of Miyazaki,
Japan (P:35min, Q: 10min)

15:50 Closing Remarks: Dr. Ayako Yoshida, Director & Professor, Center for Animal Diseases Control,
University of Miyazaki

Reception: Hotel Merieges; MANDARIN (18:30-)

ABSTRACTS

Part1: “VETERINARY EDUCATION NETWORKS IN ASIA”

(10:00-12:45)

Veterinary education networks in Asia — WOAHA's role

Hirofumi Kugita¹, Maho Urabe^{1*}, Yumiko Shimizu¹

¹*World Organisation for Animal Health, Regional Representation for Asia and the Pacific, Japan*

**Corresponding author: m.urabe@woah.org*

Networking and networks around veterinary education can improve veterinary education outcomes through various ways such as learning from each other's experiences, developing new ideas, and becoming more efficient by sharing resources. Yet, establishment and maintenance of networks require considerable effort by stakeholders. The World Organisation for Animal Health (WOAH, founded as OIE) supports strengthening of veterinary education as providing high-quality education is key to equipping potential veterinarians with the necessary knowledge to perform efficiently and support Veterinary Services effectively. Over the past 10 years or so, WOAHA developed several guidelines and active programmes, including veterinary education twinning, to support WOAHA Members in strengthening veterinary education. In the Asia Pacific region, WOAHA has organised regional, sub-regional, and national workshops to 1) advocate importance of good quality veterinary education, 2) promote WOAHA's resources and 3) facilitate information and experience-sharing among key stakeholders for more cooperation and collaboration. Further, WOAHA has been supporting the activities of several networks related to veterinary education including the Asian Association of Veterinary Schools and the South East Asia Veterinary School Association, and establishment of a new network among Veterinary Education Establishments (VEEs) in South Asia. Members of these networks exchange information, organise joint events, and collaborate with other regional networks, such as the Federation of Asian Veterinary Associations, towards veterinary education outcome enhancement. Taking advantage of these networks and other opportunities, the regional VEEs and stakeholders can work together towards building a stronger veterinary workforce and providing optimal veterinary services in the region.

Keywords: education, networks, Asia

A Scenario on the Development of Veterinary Education Establishments, VEEs Accreditation Standard from Thailand to ASEAN; Challenge and Opportunity

Achariya Sailasuta

Chair of ASEAN Veterinary Statutory Body Network, AVSBN and Professor, Center of Excellence on Companion Animal Cancer, Department of Pathology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok, Thailand.

Email: achariya.sa@chula.ac.th

Veterinary education establishments (VEEs) and veterinary statutory bodies (VSBs) play a key role in ensuring the effectiveness of veterinary professionals and delivery of competent Veterinary Services (VS). In the sub-region of SEA, with the actively support from WOAHSRR-SEA, a strong network among VEEs has already existed. In Thailand, Veterinary Council of Thailand, VCT has led the development of the standard of veterinary education through the Thailand Veterinary Dean Consortium, TVDC. With its objectives are the collaboration and contribution buildings in term of standard, academic support, research, and knowledge exchange among Thai Vet schools. Currently, the TVDC has 14 members and work aligning with VCT's standard in the country and the South East Asian Veterinary School Association, SEAVSA. Recently, the need for a regional forum for managing veterinary standards and the mobility of the veterinary workforce has become an issue of increasing importance. Subsequently, the ASEAN Veterinary Statutory Body Network, AVSBN which the objectives are on the potential ASEAN MRA for movement of Veterinary Professionals for the region. The improvements to the veterinary service of Thailand through the OIE VSB Twinning program, Australasian Veterinary Board Council Inc., AVBC-VCT in 2018-2020 had been successfully conducted on the VCT to play a pivotal and influential role in developing a strong and effective VSB Network in ASEAN. This will benefit to all SEA and APEC members by improving trade and market access, animal welfare and supporting the control of many transboundary animal and zoonotic diseases.

Keywords: ASEAN Veterinary Statutory Body Network, Thailand Veterinary Dean Consortium, Veterinary Council of Thailand

Standard Of Veterinary Education and Networks Among Veterinary Schools and Veterinary Association In Indonesia.

Bambang Pontjo Priosoeryanto^{1,2}

Secretary General of the Federation of Asian Veterinary Association (FAVA)¹⁾ & Chairman of Graduate Study Program of Animal Biomedicine Sciences IPB University – INDONESIA²⁾

The beginning of the veterinary profession in Indonesia dates back to the middle of the 19th century. During the Dutch colonization period a development program for large ruminants in Bogor was started and named ‘Nederlandsch-Indische Veeartsenijschool’ (NIVS). During the Japanese occupation (1942-1945) the veterinary school was named ‘Bogor Semon Zui Gakko’. After the independence era August 1945, it became the High School of Veterinary Education. Indonesia has a “Multi Level and Multi Competency” Veterinary Higher Education System as follows: 1) Vocational/Paramedics (S0), 2) Undergraduate/Bachelor (S1), 3) DVM, Veterinarian, 4) Graduate MSc (S2) and Ph.D (S3), 5) Specialist /Professional Level-1 (Sp-1) and 6) Sub-Specialist/Professional Level-2 (Sp-2). Since the independence of Indonesia, veterinary education has gone through several curriculum changes which have improved the quality of the training. The curricula of veterinary education in Indonesia consist of the National Curriculum (80%) with local curricula (20%) as integrated parts of the National Curriculum. National Certification of competence is acquired through a National Examination Body under the Ministry of Education which the board is consisted of Indonesian Association of Veterinary Schools (AFKHI), Indonesian Veterinary Medical Association (IVMA) and Ministry of Education & Culture, Research and Technology (Kemendikbudristek). At present there are 11 faculties/school of veterinary medicine in Indonesia, distributed from Sumatra island to East Nusa Tenggara islands. The Indonesian Veterinary Medical association (IVMA) was established on January 9, 1953 at its first Congress in Bandung West Java as the one and only veterinary association in Indonesia. At present the number of IVMA members is around 25,000 veterinarians, coming from all parts of Indonesia. The membership is mandatory for all veterinarians. At present there are 44 regional associations of the IVMA across the nation, and 16 specialist/interest associations under the IVMA umbrella. The main pillars organizations on the veterinary profession activities on the general of animal health issues in Indonesia are Indonesia Veterinary School Association (AFKHI) for development of Science & Technology and also fresh graduate student quality (Day One Competencies), Indonesia Veterinary Medical Association (IVMA) on the registration & continuing development of the veterinarian, and Ministry of Agriculture

(MoA) on the policy for veterinary services and other related issues/activities. The networking and collaboration among the parties is very strong, good relationship and very positive in term of the development of veterinary education and veterinary profession in Indonesia such as curriculum development, veterinary education standard are always come out from the agreement between these parties based on the general standard of national higher education system.

Creation of an education and research base for countermeasures for the prevention of animal infectious diseases and global human resource development by the Center for Animal Disease Control, University of Miyazaki
-Aiming at education and research collaboration in Asia-

Naoaki MISAWA, DVM, Ph.D., Professor
Center for Animal Disease Control (CADIC), University of Miyazaki, Japan

Recent globalization has led to a rapid expansion of the movement of people and goods across national borders. In addition, global warming is beginning to alter the ecosystems of plants and animals, and these effects are having a profound impact on the distribution and transmission of infectious pathogens affecting humans and animals. Neighboring countries in Japan continue to experience outbreaks of foot-and-mouth disease (FMD) and African swine cholera (ASF). In addition, the spread of Classical Swine Fever (CSF), the last incidence of CSF in Japan in 26 years since 1992, continues. As a result, the future of animal quarantine measures is once again being questioned.

In livestock animal quarantine, it is important for early containment that veterinarians are familiar with various transboundary infectious diseases and important infectious diseases and have the skills to make a clinical diagnosis of pseudo-affected animals based on their initial symptoms and to make a definitive diagnosis through in-laboratory testing. Familiarity with various infectious disease control measures is also an important skill for preventing the subsequent spread of infectious diseases. However, there are few veterinarians who possess such skills, and it has become an important and urgent task to train personnel who can respond to transboundary infectious diseases in the field from the perspective of risk management.

The CADIC has decided to create a new comprehensive academic field on the prevention of livestock animal infectious diseases through collaboration and cooperation with various communities in different fields in Japan and abroad. In order to fulfill this objective, we are promoting collaborative education and research through the International Consortium for Research and Prevention of Animal Infectious Diseases by utilizing our strength of having many partners in Asia.

We hope to develop cutting-edge research on the diagnosis and prevention of malignant infectious diseases of livestock abroad, including FMD, which is difficult to handle in Japan, and to develop new applied technologies essential for quarantine, thereby contributing to securing sustainable livestock resources and developing human

resources who can play an active role in the global era.

ABSTRACTS

Part2; “ANIMAL INFECTIOUS DISEASE RESEARCH NETWORK IN ASIA”

(13:30-15:45)

Leishmaniasis: an emerging neglected disease of livestock

Saruda Tiwananthagorn

*Department of Veterinary Biosciences and Veterinary Public Health &
Research Center of Producing and Development of Products and Innovations for Animal
Health and Production, Faculty of Veterinary Medicine, Chiang Mai University, Thailand*

**Corresponding author: saruda.t@cmu.ac.th*

Abstract

Leishmaniasis is an emerging vector-borne disease caused by intracellular parasites in the genus *Leishmania*, mainly belong to the subgenus *L. (Leishmania)*, subgenus *L. (Viannia)* and the new subgenus *L. (Mundinia)*. Old World leishmaniasis lead to cutaneous leishmaniasis (CL), caused by *L. (L.) major* and *L. (L.) tropica*, and visceral leishmaniasis (VL), caused by *L. (L.) infantum* and *L. (L.) donovani*. Recently, *L. (M.) martiniquensis* and *L. (M.) orientalis* have been recognized as two common indigenous species causing VL, CL and disseminated CL in Northern and Southern Thailand. *Leishmania* infection can be anthroponotic, transmitted from human to human, or zoonotic, with wild or domestic animals as the reservoir. Leishmaniasis control programs are not achievable unless all factors leading to the infection are recognized, including the parasite's life cycle, sandfly vectors, and reservoirs. So far, rodents and dogs have been considered the principal reservoirs of *Leishmania* spp. The role of other mammals, especially the livestock, in maintaining *Leishmania*; however, is neglected and remained unclear. Some literatures reviewed here have confirmed the relatively high prevalence of *Leishmania* infection in the livestock in the endemic areas of the disease, such as cattle, sheep, and goats, without any remarkable clinical symptom indicating the possible role of livestock for zoonotic transmission. Fascinatingly, *L. (L.) martiniquensis* infection in farm animals possibly cause clinical CL, including horses in Germany and in Florida, and the cattle in Switzerland. Therefore, *Leishmania* infection in the livestock should be emphasized for the bovine practitioners and considered during leishmaniasis investigation and epidemiological studies.

Keywords : leishmaniasis, reservoir, livestock

Foot and Mouth Disease in Indonesia: Current Update and Control Strategies

Harimurti Nuradji

Research Center for Veterinary Science, National Research and Innovation Agency,
Bogor, Indonesia.

Abstract. Foot and Mouth Disease is a highly contagious disease in susceptible animals such as cattle, buffalo, pigs, sheep, goats and other animals. FMD is caused by foot and mouth disease virus (FMDV) belonging to genus Aphthovirus, Picornaviridae family. FMD has been recognized in Southeast Asia for about 150 years, with early outbreaks documented in Indonesia, Malaysia, and the Philippines. Singapore only reported an outbreak of serotype A in 1973, and Brunei Darussalam never reported an outbreak of FMD. From 2007 to 2017, around 4961 FMD outbreaks have been reported from Cambodia, Lao PDR, Malaysia, Myanmar, Thailand, and Vietnam. The first case of FMD in Indonesia was reported in 1884 in Malang, East Java, and quickly spread to other parts of the country. Through a continuous and massive vaccination program, FMD has been eradicated, controlled, and prevented, and in 1990, Indonesia had been declared as FMD free country by OIE. After being free for around 32 years, in 2022 the new outbreaks of FMD were reported in some areas in East Java and Aceh Provinces. The disease spread very fast through out several provinces in Indonesia, and causes huge impact to the farmers. By June 2, 2022, there were 57,732 livestock with FMD symptoms in 127 districts and cities in 18 provinces, and by September 28, there were 546,218 infected cattle in 16 provinces in Indonesia. Several strategies have been implemented to control this disease, such as vaccination, strict animal movement, implementation of biosecurity, surveillance and increasing community awareness. These control strategies will not work without the engagement of all the stakeholders from the government, farmers, livestock seller, researcher and private sectors. Further studies are still required to understand FMD in Indonesia to develop better control strategies which can be implemented in Indonesia.

Keywords: Foot and mouth disease, Indonesia, control strategies

Current Status and Control Strategies of the Avian Influenza in Korea

Se-Yeoun Cha*, Min Kang, Bai Wei, and Hyung-Kwan Jang

Center for Poultry Diseases Control, Jeonbuk National University, South Korea

**Corresponding author: seyeouncha@jbnu.ac.kr*

Avian influenza (AI) is a highly contagious viral disease affecting several species of food-producing birds (chickens, turkeys, ducks, quails, etc.), as well as wild birds. AI continues to cause severe losses in poultry and poses a zoonotic threat to human populations in many countries. Many countries have encountered highly pathogenic avian influenza (HPAI) subtypes such as H5N1, H5N2, H5N6, H5N8, and H7N9 at the beginning of the 2000s with its host of economic and health consequences. Recently, multiple serious outbreaks of H5N8 (Clade 2.3.4.4b) HPAI outbreaks at poultry farms and wild birds occurred simultaneously in Asia and Europe in winter 2020-2021. The size, duration, and severity of those seasonal outbreaks of HPAI were varying and, however, early detection, activated surveillance, and strong control measures are considered to be the key points for the eradication consistently from all the experiences. Also, the H5 HPAI subtypes including H5N1, H5N6, and H5N8 have caused massive economic losses in the poultry industry in South Korea since 2003. Hence, multiple advanced strategies including HPAI early warning system, rapid virulence prediction, vaccine candidate renewal, etc., are preparing for early and efficient limitation of the risk of HPAI outbreak and transmission in Korea.

Keywords: avian influenza, issues, control

Early-phase risk assessments during the first epidemic year of African Swine Fever in Vietnam

Mai Thi Ngan^{1*}, Le Anh Tuyen¹, Le Van Truong¹, Huynh Thi My Le¹, Pham Thi Lan Huong², Vu Duc Hanh³, Vu Viet Anh⁴, Nguyen Xuan Hoa⁵, Tran Van Vui⁵, Satoshi Sekiguchi^{6,7}

¹) Department of Veterinary Microbiology and Infectious Diseases, Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam

²) Department of Pharmacology, Toxicology, Internal Medicine and Diagnostics, Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam

³) Department of Veterinary Anatomy, Histology and Embryology, Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam

⁴) Central Laboratory, Faculty of Animal Science, Vietnam National University of Agriculture, Hanoi, Vietnam

⁵) Department of Veterinary Medicine, Faculty of Animal Husbandry and Veterinary Medicine, Hue University of Agriculture and Forestry, Hue, Vietnam

⁶) Center for Animal Disease Control, University of Miyazaki, Miyazaki, Japan

⁷) Department of Veterinary Science, Faculty of Agriculture, University of Miyazaki, Miyazaki, Japan

African swine fever (ASF) is a notifiable viral disease of pigs and wild boars that could lead to serious economic losses for the swine industry. In Vietnam, the first ASF case was diagnosed in February 2019 then ASFV spread rapidly in all 63 provinces within seven months. This study aimed to identify risk factors in the early phase of ASF outbreaks in Vietnamese swine herds from February to July 2019 in the first epidemic year. A questionnaire was administered in northern Vietnam where all early cases of ASF were reported. Producers of herds with reported cases were asked to provide information starting from the day of onset of clinical signs as well as 30 days prior to that day. The period of interest for controls was within 6 months of the first outbreak in Vietnam. Questionnaires included 55 questions; responses were received from 67 cases and 115 controls. Logistic regression analysis was used to identify factors associated with ASF status. Thirty-seven of 55 variables were associated with ASF status in univariate analysis ($P < 0.05$). These variables were assessed for inclusion in the multivariate analysis by backward stepwise selection. Six variables remained significant as ASF risk factors in the final model that related to proximity to other farms and irrigation systems, poor hygienic management, and lower levels of biosecurity practices. Knowledge of these ASF

transmission routes in the Vietnamese production system may help to identify and implement control measures to restrict the spread of ASFV in other locations.

Keywords: ASF, Risk factors, Vietnam

Immunological Research on Livestock Animals

Junzo Norimine^{1,2*}, Shuya Mitoma³, Satoshi Sekiguchi^{1,2}

¹Laboratory of Animal Infectious Disease and Prevention, University of Miyazaki, Japan

²Center for Animal Disease Control, University of Miyazaki, Japan

³Department of Infectious Diseases, Faculty of Medicine, University of Miyazaki, Japan

*Presenter, Corresponding author: nori@cc.miyazaki-u.ac.jp

Protective immunity can be established by vaccination, but the protection may not be complete. Smallpox and rinderpest have been eradicated by vaccinations that provided complete protection. However, as we know, most vaccinations have been repeatedly unsuccessful in providing complete protection, including vaccines for Covid-19. Immunological mechanisms of the difference between complete and incomplete (or partial) protection are not well understood. Our main focus has been understanding the mechanisms of protective immunity that generate complete protection and create an effective vaccine against economically important infectious diseases in animals, such as foot-and-mouth disease (FMD). It is increasingly becoming clearer that protective immunity is achieved by balancing immunity that eliminates pathogens and prevents destructive immune responses. The immunity includes both humoral and cellular immunity. Although humoral immunity has been evaluated thoroughly and used as main criteria for protection, cellular immunity has been widely ignored or avoided. Since cellular immunity play a critical role in excessive destructive immune responses, we must evaluate it. Particularly for animal infectious diseases, it is still difficult to evaluate cellular immunity. We developed bovine MHC class II tetramers and used them to evaluate the antigen-specific CD4⁺ T cell response against FMD virus capsid proteins. At the same time, we identified CD4⁺ T cell epitopes within the capsid proteins using a tetramer-guided epitope mapping method. Here, I present the results and the rationale for investigating antigen-specific CD4⁺ T cell response to develop a new effective vaccine.

第12回 CADIC 国際シンポジウム企画・実行委員

鮫島 浩 (大会委員長)

岡林 環樹 (実行委員長)

新 竜一郎、井口 純、石井康之、井田隆徳、井上典子、入江隆夫、上村涼子、梅北邦彦、大澤健司、押川絵里、川島知之、河原 聡、北原 豪、小林郁雄、齊藤 暁、坂本信介、佐藤裕之、嶋本 寛、関口 敏、高橋俊浩、田上普美子、武田龍一郎、田中秀典、谷口喬子、徳永忠昭、西内朝子、乗峰潤三、林 康広、日高勇一、平井卓哉、藤井良宜、松井優人、丸山治彦、三澤尚明、目堅博久、山田健太郎、山本直之、吉田彩子、HOMBU Amy、

Torrung Vetchapitak

(五十音順)