

Student Free Design Activities (One Health on-site Training)
報告書 Report

報告者 [Reporter]

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活動報告 [Activity Report]

※活動内容が判る様な写真や図表を加えて下さい。 / Provide photos, tables and figures that clearly show the activities during the period.

タイトル [Course Title]	Strengthening avian influenza surveillance and control measures through international collaboration
実施期間 [Periods]	1 st of June ~ 8 th of June
共同実施者 [Other participants]	Nguyen Bao Linh Graduate School of Infectious Diseases (Laboratory of Microbiology)
言語 [Language]	English
実施場所 [Location]	Vietnam (Hanoi and Lang son)

申請時計画の実施報告 [Report how you carried out your plan in the application form]

Did you follow the schedule you initially planned? Did you get the outcome(s) you expected? Please describe what you did during the activity period in detail.

As H5 high pathogenicity avian influenza virus (HPAIV) has caused concern at the global level, due to the negative impact toward poultry industry and wild birds. Thus, the purpose of this SFDA 4 has been divided into two parts which are the active surveillance for avian influenza (AI) in the live bird market (LBM) in Lang Son, Vietnam, to gain better understanding about how HPAIVs were circulated in the LBM and the genetic characteristic of the viruses that were detected in LBM. For the second part of this SFDA 4, workshop was organized in the government agency, National Center for Veterinary Diagnostic Center (NCVD) for the transfer of technique such as the reverse genetic system to the governor officer to facilitate the implementation of this novel technique in vaccine production against HPAIV strains circulated in Vietnam compared to conventional vaccine production. For further description, all activities were summarized in the below section.

A) Workshop for the transfer of reverse genetic system at NCVD

- This workshop was held between 3-7 of June 2024 in NCVD, Hanoi, Vietnam. Before the starting of the workshop, talk was provided by our members in Laboratory of Microbiology, Hokkaido University, to allow the participants from different part of government agencies to understand the concept of reverse genetic system and the implementation of this system in vaccine production and other research related study especially in the field of

influenza virus research. After the talk, the workshop has officially begun, and the participants were able to learn the skills such as co-culturing of Madin-Darby Canine kidney cells together with human embryonic kidney 293T cells. Throughout this training, the participants can understand the important role of co-culturing in the reverse genetic system as the cell condition and growth rate of two different cell types can affect the efficiency of transfection and rescue of the virus. In this workshop, I was involved in providing the guidance and technical support for the participants to ensure the workshop can be carried out without hindrance. However, due to abnormalities growth of the cells occurred during the workshop, I participated in the discussion with the staff from the government agencies to optimize the cell conditions in order to ensure ideal growth rate of the cell for the transfection and virus rescue. Because of the time limitation, we were unable to provide the second part of the training such as transfection and virus rescue and this training will still be supported by us in the lab through the online system after returning back to Hokkaido, Japan.



B) Field sampling and observation at LBM, Lang Son, Vietnam

- In Vietnam, LBM are the focal point for the AI surveillance because of the gathering of poultry such as chickens and ducks that were introduced from different regions of Vietnam or from the neighboring countries. The LBM in Lang Son, Vietnam was selected as the ideal location for the AI surveillance site because of high risk of the introduction of HPAIV due to long national border with the neighboring countries where live birds can be easily transport or smuggled in and out of Vietnam.
- On 5th of June 2024, we have a brief meeting the governor officer from the sub-Department of Animal Health (DAH) to discuss about the current HPAIVs situation and the illegal trading across the boundaries in Lang Son. In the meeting, we can understand the situation illegal trading in Lang Son has been significantly decreased in recent years because of the implementation of some control measures such as building fences across the borders or the involvement of multiple cooperation among the government sectors to limit illegal trading activities across the borders.
- On the next day, 6th of June 2024, we were provided the opportunity to join the field sampling activities in two LBM, Lang Son and we have an active discussion with the staff from the market management to understand the disease control level to reduce the spreading of AIV in the market. Even though, difficulties were present in controlling the spread of HPAIV within the LBM as multiple factors such as from the government side, retailer, or market management were needed to be taken into consideration. However, it was worth noticing that many efforts have been introduced such as disinfection were carried out at the end of the day and information were shared to retailers to increase the awareness toward the diseases.



C) Meeting with the staff from DAH, Hanoi, Vietnam

- After returning from the surveillance site in Lang Son, we were provided the opportunity to have meeting with deputy director of DAH, which are the head of the epidemiology department together with other staff within DAH on 7th of June 2024. Information sharing is important in the controlling transboundary diseases especially HPAIV and because of the strong collaboration between DAH and Laboratory of Microbiology, Hokkaido University which are also the reference laboratory for World Organization for Animal Health (WOAH). Our member from the lab who oversees this study shared the results of AI surveillance in Lang Son, Vietnam in 2023 and we also discussed deeply about the situation of HPAIV in that area and appropriate action needed to reduce the spreading of HPAIV. Besides the members of DAH also gladly shared the information related to the genetic characteristic of HPAIVs that were circulating in other part of Vietnam at the moments. The outcome from the meeting further strengthening the collaboration by enables both parties discuss detail to prioritize in developing better strategy to reduce the spread of HPAIV within Vietnam as well as in supporting the development of vaccines targeting the latest HPAIV strains that can contribute further collaboration.



目的達成状況報告 [Report how you achieved your goal/objectives listed in the application form]

Did you achieve all the goals you initially planned? If not, please describe why you failed to fulfill your objectives.

- The objectives included in the SFDA 4 has been successfully fulfilled for example the workshop for the transfer for the reverse genetic system organized in NCVD was going smoothly even though some setbacks have been occurred in the workshop such as the maintenance of the conditions during co-culturing of the cells; the timeline for the workshop remain unaffected. Throughout this workshop, I was able to understand the importance of effective communication and cooperation to ensure the message successfully delivered to the participants in the workshop. For the second part of the activities, which are the field sampling activities in LBM in Lang Son, Vietnam. This activity has been carried out smoothly, and it gave me different perspective especially in the disease control. Apart from focusing on the development of antiviral or vaccine for the treatment or control the diseases, it required involvement of multiple sectors or agency to control the incident of the disease such as the effort from DAH to monitor the prevalence and characteristic of HPAIV circulating in the LBM in Vietnam, the role of the management from the market to increase the awareness of HPAIV among the retailer in the market or the border control officer to decrease the incident of illegal trading across the borders to minimize the introduction disease into or out of Vietnam. Lastly, information sharing is important for the disease control, and the meeting between the members of DAH together with members from Laboratory of Microbiology, Hokkaido University played an important role to develop a better strategy in disease control.

One Health Approach実践報告 [Report how your activity could link to One Health Approach]

Did you have a chance to experience One Health approach (collaboration with people from other academic areas)? Please describe some of the examples of One Health approach you implemented in your activity. Otherwise, explain the possibility(ies) how you could link this activity to One Health approach for your future.

- With the concept of the one health approach, international cooperation network played an important role. Thus, to strengthen this cooperation, workshop was organized in NCVD to transfer the reverse genetic technique to the governmental agencies in NCVD for the establishment of the vaccine production in the future using this new system.
- In this workshop, we can learn the importance of communication skill to facilitate smooth progress during the organization of the workshop and how to deal with problem if unexpected incident has occurred through effective communication with other parties. Apart from that, by participating in the field sampling in LBM, Lang Son, Vietnam, it allowed us to understand how the governmental agencies conduct surveillance activities and the strategies that have implemented to reduce the transmission of avian influenza virus (AIV) in LBM by corporation with multiple sectors from governor agencies but also the management of border control to ensure the welfare toward the public health. As Laboratory of Microbiology, Hokkaido University which are also one of the WOAH

Reference Laboratory for AIV, we joined the active discussion with DAH and NCVD for information sharing related to AIV situation and the control measure of HPAIV in Vietnam.

- Lastly, this SFDA 4 present a rare opportunity for me (Malaysian) because in Malaysia there were still no reported of HPAIV outbreak in the poultry, whereby sporadically detection of HPAIV cases were reported in the neighboring countries. Through the one health concept, it allowed me to understand how the governmental bodies worked to control the HPAIV outbreak in poultry and preparedness for the future potential HPAIV outbreak in Malaysia.

備考 [Remarks]

※ 報告書を作成後、担当教員に確認をお願いし署名をもらってください。PDFファイルとしてVetlogから提出してください。

提出先：「Student Free Design Activities報告書」

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