北海道大学
One Health フロンティア卓越大学院プログラム
One Health Allyコース
Student Free Design Activities報告書

Hokkaido University
WISE Program for
"One Health Frontier Graduate School of Excellence"
One Health Ally Course
Student Free Design Activities Report from

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

報告書 Report

報告者 [Shwe Yee WIN]

氏名 [Full Name]	Shwe Yee Win		
学年 [Year]	D3	E-mail	
所属 [Affiliation]	Infectious Diseases		

担当教員 [Instructor]

氏名 [Full Name]	Satoru KONNAI		
署名 [Signature]			
所属 [Affiliation]	Infectious Disease		
E-mail		電話 [Tel]	

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]	Development of a vaccine against tick
実施期間 [Periods]	23/01/15-23/01/25
共同実施者 [Other participants]	Takeuchi HIROTO
言語 [Language]	English
実施場所 [Location]	CENTRO DE BIOTECNOLOGIA da UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL, Porto Alegre, Brazil

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.

I could succeed in my initial schedule and got the outcomes as I expected. We departed to Brazil at 23.01.15 and arrived at 23.01.16 and our activities started from 23.01.17 to 23.01.23. On 23.01.17, Dr. Itabajara introduced the host Laboratory, the Center of Biotechnology, the Federal University of Rio Grande Do Sul (UFRGS). This laboratory is contributing to research on ticks by elucidating the metabolic pathways of ticks for the development of vaccines for ticks' control. Dr. Itabajara's laboratory owns pathogen-free (Babesia, Theileria, etc.) strains of *Rhipicephalus microplus,* which is cattle tick. Therefore, small animals such as mice and rabbits cannot compose the life cycle of the tick. Moreover, this laboratory is keeping this strain by infesting to pathogen-free cattle and passaging for further experiments. So, it was very interesting to see such a facility for the first time, as there are no facilities in Japan.

From 23.01.18 to 23.01.23, we collected B.microplus from pathogens-free infested cattle for saliva production from ticks. We collected host drop-off engorged ticks and clean the debris from ticks with water. Next, we glutted the

ticks on the glass on the ventral side position with double-sided tape. Then, we applied 0.5 µl of 2% pilocarpine suspension in 100% ethanol to each tick by using Hamilton syringe. After the application of pilocarpine to all ticks, the glass plate to which glutting the ticks was placed in a container provided with humidity condition and incubated at 30°C. We checked the salivation by 30 mins intervals and collected the saliva for further experiment. This operation was continued until the tick stopped producing saliva (about 5 hours after pilocarpine inoculation). This saliva will be used for further experiments for contribution to tick control. For additional experience, we conducted vaccination of rabbits using cystatin and BM05 from ticks for the evaluation of their vaccine efficacy for the control of ticks that are harmful to animals and humans.

On 23.01.20, we introduced our own research topics and discussion with laboratory members. All laboratory members actively participated in the seminar.

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.

Ticks, which are ectoparasites of livestock and humans, are important worldwide because they reduce the production of livestock by sucking blood and transmit many pathogens, including zoonotic diseases. However, effective control measures for ticks have not yet been fully established. Taking the advantages from joint research and exchange program with the Federal University of Rio Grande do Sul, to develop an anti-tick vaccine, we contributed our involvement in One Health by getting research experience form the tik saliva collection for elucidation of further control strategies, vaccination to rabbits with proteins, cystatin, BM05 from ticks to evaluate their vaccine efficacy against tick and chances to discuss with different research topics with many researchers for future collaboration. This research activity contributes to establishing an effective control measure for tick and zoonotic diseases transmitted by them. Therefore, this on-site training was a valuable experience for us, not only advantages for current research but also for a future research career.

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.

Apart from my current research field, the development of vaccine against avian mites, I conducted this on-site training on, Development of a vaccine against ticks. Even though the principle of vaccine development is similar in both research, it is somewhat different that it cannot conduct in my own research such as direct saliva collection from ticks, an infestation of ticks on cattle, etc. Therefore, this on-site training contributed to my involvement in One Health Approach by gaining experience on research and development for tick control and understanding the other research fields for extending future research interest and future research collaboration. Especially for me, a nationality of Myanmar and my country is tropical country and developing. So, many infectious pathogens are distributed and impact on human and animal health and zoonotic diseases. So, it is necessary to conduct research for the control of those pathogens. Therefore, this on-site training is precious for me to contribute to my future research in the involvement in One Health Approach.

備考 [Remarks]

北海道大学
One Health フロンティア卓越大学院プログラム
One Health Allyコース
Student Free Design Activities報告書

Hokkaido University
WISE Program for
"One Health Frontier Graduate School of Excellence"
One Health Ally Course
Student Free Design Activities Report from

Figure 1. Injection of pilocarpine to induce saliva of tick

Figure 2. Immunization of cystatin protein to rabbit

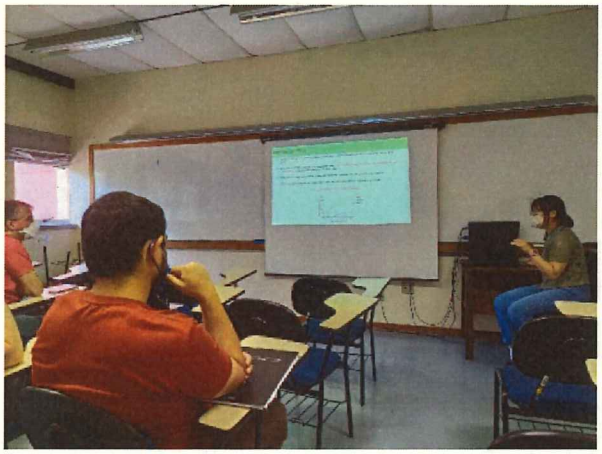

Figure 3. Presentation of my current research

Figure 1. Group photo with laboratory members

※ 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上の提出書類「Student Free Design Activities報告書」としてアップロードして下さい。

※ Please ask your instructor to check this report and get his/her signature before you submit to WISE Office. The scanned report is to be submitted strictly through VetLog