

鹿大「進取の精神」支援基金 令和元年度 留学生受入推進事業  
研究留学生受入推進プロジェクト 報告書

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1. 申請者 (所属・職名・氏名)	鹿児島大学 共同獣医学部 臨床病理学分野・教授 大和 修
2. 受入留学生 (国・大学・学年・氏名)	(1) インドネシア・アイルランガ大学・獣医学部 5 年 Aisyah Nikmatuz Zahro
	(2) インドネシア・アイルランガ大学・獣医学部 5 年 Naura Nydyta Afifa
3. 留学生受入期間	平成 31 年 4 月 ～ 令和元年 9 月
4. プログラム研究分野	獣医臨床遺伝学、細胞診、野生動物医学

5. 本プログラムの目的と概要と成果 (申請者/日本語)

「インドネシアの家畜・家禽に潜在する各種遺伝子疾患の同定とその対策に関する研究」を通じて、インドネシアの Airlangga University (アイルラインが大学) と鹿児島大学との研究交流を深めるとともに、その他のアジア (特にバングラデシュおよび韓国) の獣医系大学との多角的共同研究を通じて、研究・学生交流をグローバルに展開していくことを目的に、同獣医学部の 2 名の学生 (Aisyah さんおよび Naura さん) を中心に本事業を実施した。

インドネシアの家猫集団から得た DNA を用いて、数種の遺伝子疾患 (赤血球ピルビン酸キナーゼ欠損症、多発性嚢胞腎、GM1 ガングリオシドーシス、サンドホフ病、など) に関わる分子疫学調査を実施した他、鹿児島大学動物病院症例の細胞診標本を用いたトレーニングおよび鹿児島市の動物園と水族館での実習や研究に参加して野生動物医学も学んだ。

家猫集団の調査の結果、インドネシア家猫集団の中に、赤血球ピルビン酸キナーゼ欠損症および多発性嚢胞腎のキャリアを見いだすことができた。一方、日本やバングラデシュの家猫集団とは異なり、GM1 ガングリオシドーシスのキャリアは認められなかった。これはインドネシアが海を隔てた島国であるため、猫の移動・分布に影響したものと考えられた。今後、これらのデータを元にして、論文作成まで進めて行きたいと考えている。



セミナー室での勉強



研究室での実験



鹿児島観光 (知覧武家屋敷)



送別会

かごしまだいがく けんきゅうかつどう せい  
6. 鹿児島大学での研究活動と成果 (Student/English or Japanese)

(1) Aisyah Nikmatuz Zahro

I am a bachelor student of the Faculty of Veterinary Medicine, Universitas Airlangga, Surabaya. I applied for Shinshu scholarship under supervising of Yamato Sensei through my senior recommendation. I was very happy and excited to know that I was accepted in this program. I engaged a lot of experiences and knowledge during this program. I learnt many kinds of genetic diseases such as GM1 gangliosidosis, GM2 gangliosidosis, erythrocyte pyruvate kinase deficiency, polycystic kidney disease, and startle disease in cats. I have learnt some of those diseases in my bachelor degree, but I have never had any experience in researches related to those disease.

During the work I knew the important issues of genetic researches for our society, for example, breeding plan and animal welfare. The research in animal genetics is rarely to be conducted in Indonesia. It's probably happened due to the lack of awareness about the important of genetic diseases in the veterinary field in Indonesia. It was my great experience. These experiences motivated me to learn more about a kind of molecular studies. Furthermore, I learnt good laboratory work management such as samples and reagents inventories. It is very important for research planning. I learnt the important of consistence in research. By consistency in research we could understand the condition in the field, and we can predict the possibility of variance occurred in the field. After joining this program, I knew the main goal of research is not only the publication, but also how the research can solve the problem in the field. I learnt cytology from Yabuki Sensei, associate professor in our lab. Cytology was a new study for me. I have never studied it in Indonesia before. After studying cytology, I knew the proper way to diagnose diseases is not only according to the clinical signs but also through cellular activity.



I visited Samurai houses in Ibusuki with Yamato Sensei. It was a pretty place. I saw different kinds of house architecture there.

During the program I took Japanese language course level 1. Studying Nihongo seemed difficult for the first time, but after taking this class, I could understand the grammar better. The teachers were very patient explaining some points I had not understood well. I could speak Japanese little. I enjoyed it.

In Kagoshima, I visited some popular places such as Sakurajima, Shiroyama koen, Yoshino koen, Kagoshima zoo, Kagoshima aquarium, and Meiji Restoration Museum. I had Hanami with Angklung group and Indonesian student community in Kotsukigawa koen and Yoshino koen. I enjoyed Rokugatsudo and Hanabi festivals too. It was a lot of fun. Kagoshima people are kind and very helpful. I ate a lot of Japanese food such as



shirokuma, sushi, ramen, yakisoba, okonomiyaki, takoyaki, and ikayaki. Those foods were delicious.

I visited Fukuoka, Nagasaki, and Kumamoto during the Golden Week. I went there by Shinkansen. It was the fastest train I have ever seen. It was my great experience. I am amazed with how Japanese people obey the regulation such as lining up neatly before getting on the train. It was very different compared to my country. They also keep the environment clean even though they live in a big city.

Last month I had a chance for homestay in Osaki town. I learnt how to write my own Kanji which is 'Ai'. My host parents taught me how to wear Yukata and play 'nanko' (Kagoshima traditional game), too. We also cooked some Japanese food such as teppayaki and onigiri together. My host parents showed me how big wagyu cattle is. It was an unforgettable experience.



I would like to express my gratitude to all members of the Laboratory of Clinical Pathology, especially Yamato Sensei because he has given me recommendation so I had a chance to learn genetic research. My big thanks to Mohammad Shafiqul Islam San, my tutor during this program. He really helped me to adapt the laboratory work and my daily life during the program. All members of Laboratory of Clinical Pathology are very kind and helpful. It reminded me to my previous laboratory I worked in when I was in Indonesia.

## (2) Naura Nydya Afifa

I knew this program and Sinshu scholarship from my senior at Universitas Airlangga. She also went to Kagoshima University to do the same program. She recommended Aisyah and me to Yamato Sensei to enroll the same program. When I first knew it, I was very thrilled because I wanted to learn more about clinical pathology to support me to be a better veterinarian in the future. In the laboratory of clinical pathology, Kagoshima University, me and my friend, Aisyah, researched some genetic



diseases in Indonesian cats and other feline samples from various regions in Japan, such as GM1 gangliosidosis, GM2 gangliosidosis, erythrocyte pyruvate kinase deficiency, polycystic kidney disease, and startle disease. The genotyping tests were conducted using real-time PCR. This was also my first time to do research using this equipment, so I was excited to learn about real-time PCR

and those genetic diseases. In Indonesia, we have never seen such cases, probably because we don't do many diagnostic tests.

Apart from doing the research, Yabuki Sensei also taught me a lot about cytology. I learned about staining technique using May-Grundwald and Giemsa, immunocytology, and also how to evaluate the cytology slides. There were many interesting cases, such as lymphoma, histiocytic sarcoma, apocrine gland tumor of anal sac origin, reactive lymph nodes, etc. Moreover, I got some chances to



visit Kagoshima University Veterinary Hospital for a few times and observe some of the clinical cases there, especially urological cases. Besides observing, I could help to handle the animals and do some clinical pathology analysis. For example, CBC, serum biochemistry, urine sediment, urine test strip, etc. Hopefully, I would be able to do above-mentioned activities in my own country.

Furthermore, we also experienced practical at Hirakawa zoo. There we observed various clinical cases on wild animals, such as mouth infection in a koala, cough in a chimpanzee, arthritis in an ostrich, etc. There we also learned how to collect blood samples from a rabbit. Additionally, we also went to Kagoshima city aquarium twice. The first one was to observe the techniques of physical examination and sample collection



on dolphins. The second time was to measure the blood gas of a dolphin undergoing acidosis. I hope there would be more activities at Hirakawa zoo and Kagoshima city aquarium. In the early of September, we're going to witness the exchanging of whale sharks from the aquarium to the sea, and from the sea to the aquarium. I'm so curious about this and can't wait to see it.

Besides the activities from the lab, I also joined the Japanese language class. The class was really fun and I made a lot of friends there. The first time I arrived in Kagoshima, I was not able to speak or even read Japanese at all. Now, living in Japan feels easier. From buying groceries until making a small conversation with strangers in an onsen is now a possible thing to do. With new friends, I went to a lot of places. We went to Miyazaki, Fukuoka, Kumamoto, Nagasaki, and played sports at Iso Beach and Round 1.

With Yamato Sensei, we had a trip to Chiran Samurai Residence and Ryugu Jinja. It was really interesting to see how samurai used to live and the story on how complicated the neighborhood looks just to confuse invaders. Ryugu Jinja was also beautiful, I love the seashore nearby the jinja. Yamato Sensei also took us to this sushi place at Dolphin Port, and it was the best sushi experience I've ever had.



Finally, I'd like to express gratitude to Yamato Sensei, Yabuki Sensei, and all the Japanese students and PhD students in the lab, Yuki san, Noguchi san, Yuki san, Raqib san and Rahman san for all the precious knowledge that has been shared to me, and especially to Shafiq san, our tutor, and Parvin san who also helped us a lot in many ways and gave us a lot of delicious food. I would definitely practice and develop everything I've learned from this program back in my country.

