大学院教育支援機構（DoGS）海外渡航助成金　報告書
Outcome report

計画名 Plan	**Participation at international conference (AIBBC 2023) and a visit to KAVI Institute of Clinical Research (University of Nairobi) in Kenya**
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研究科・専攻・学年 Graduate school/Division/Year level	Graduate School of Agriculture, Division of Applied Biosciences Year 2 of master's program.
渡航国 Country	Kenya
渡航日程 Travel schedule	2023 年 10 月 27 日 ～ 2023 年 11 月 24 日

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・各項目について具体的に記述してください。Please fill in each item specifically.
・日本語または英語で記載ください。Please use Japanese or English.

渡航計画の概要 Outline of the travel plan

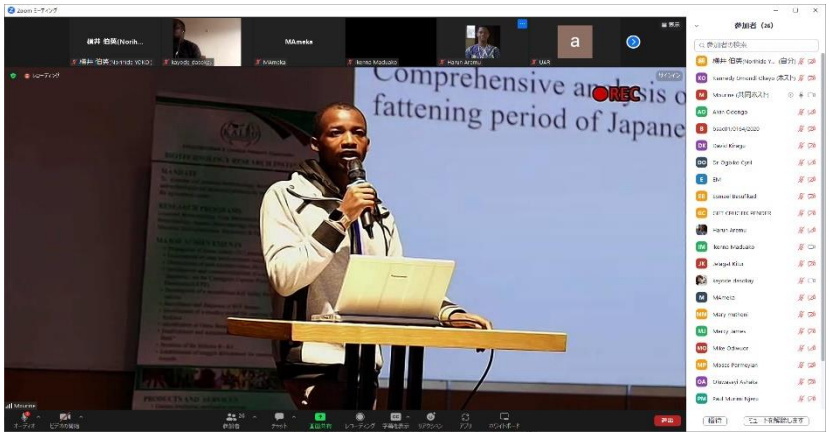
1St Plan (30th October 2023-4th November 2023

(i) Participation at the **6th Africa International Biotechnology and Biomedical Conference (AIBBC 2023)** and oral presentation at the conference in Naivasha, Kenya.

During the conference, I had the privilege to present my research findings on the use of RNA-seq data analysis to profile microRNAs expression in plasma to identify blood biomarkers for predicting beef quality and quantity.

MicroRNAs (miRNAs) are single-stranded RNAs of approximately 20-22 nucleotides that regulate gene expression at the post-transcriptional level by destabilizing or inhibiting the translation of multiple target messenger RNAs (mRNAs). miRNAs are potential biomarkers because their expression in body cells corresponds to the physiological conditions of the cells. Therefore, the expression profile of certain miRNAs in plasma during the fattening period of Japanese Black cattle could be used as blood biomarkers to predict beef quality and quantity.

My study presented 37 plasma microRNAs that could be potential blood biomarkers for beef quality and quantity in Japanese Black cattle.



Oral presentation at the AIBBC 2023 conference in Kenya

(ii) Parallel to my oral presentation, I also had the opportunity to attend the AIBBC workshop on Flow cytometry and its applications to cell sorting and analysis through the Florescence-activated cell sorting (FACS) technique.

Training session at the AIBBC 2023 workshop

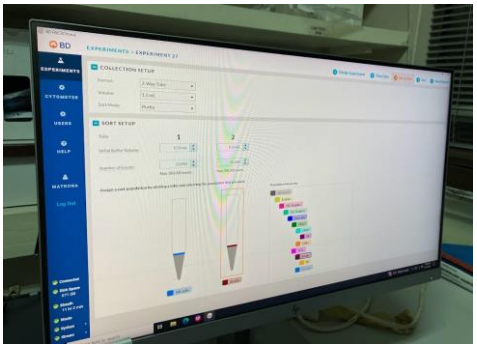
2nd plan (6th November 2023-15th November 2023)

(iii) Training at the KAVI Institute of Clinical Research (University of Nairobi) in Kenya

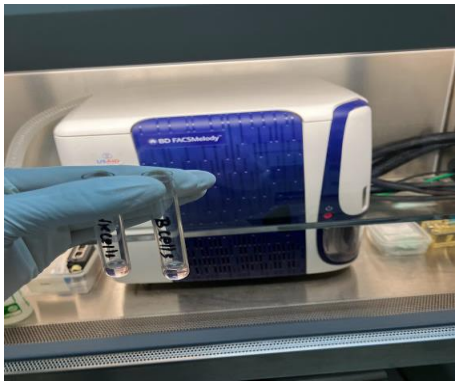
During my trip to Kenya, I attended a laboratory training course on fluorescence-activated cell sorting (FACS) to build my skills in this technique, which I plan to use in my future experiments.

At the KAVI Institute of Clinical Research, FACS is commonly used to isolate antibodies from other immune cell populations for research in antibody-based assays and vaccine development. Their laboratory hosted me to learn the technique and apply its principles to my future experiments.

This plan was originally scheduled for 6-10 November, but was extended to 16 November due to some technical difficulties experienced by my trainer.

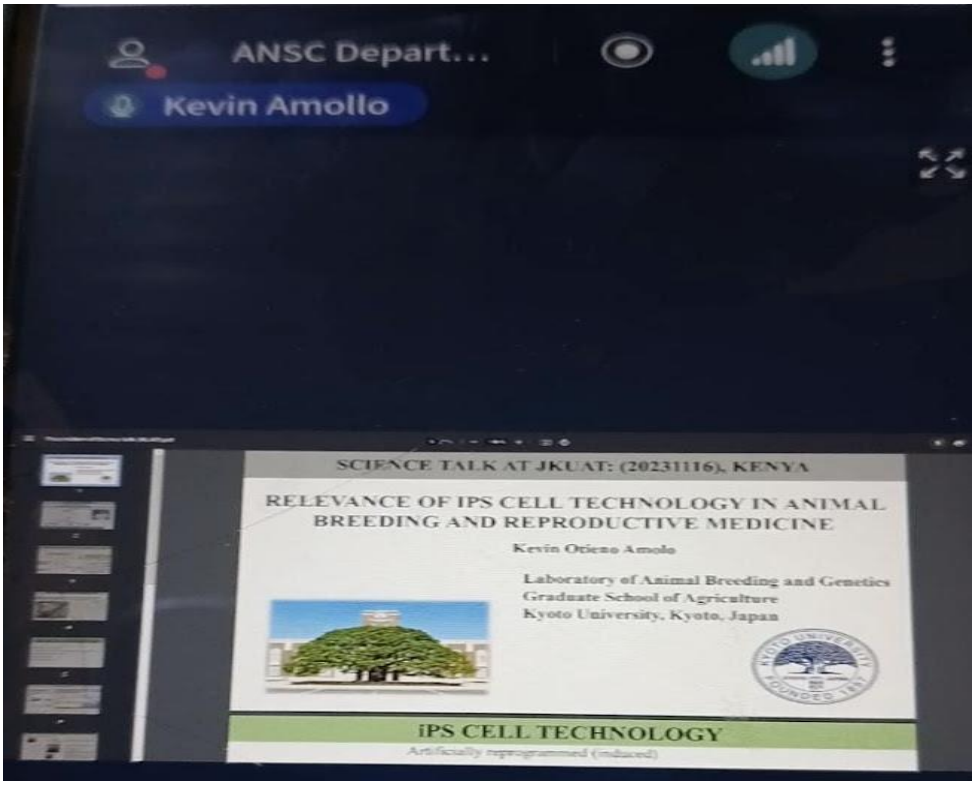


Computer simulation of the cell sorting of B-cells and Natural killer (NK) cells from PBMCs during the training



Display of sorted B-cells and Natural killer (NK) cells from PBMCs

(iii) Concurrently, I also visited **Jomo Kenyatta University of Agriculture and Technology** (JKUAT) main campus in Nairobi, to attend a science talk, where I made a presentation on 16th November on the topics of iPS cell technology in animal breeding and reproductive medicine. I also presented on my ongoing research blood biomarkers in beef research.



My oral presentation during science talk at JKUAT in Nairobi Kenya
Courtesy image of one of the online participants.

Traveling back to Japan

I missed my first flight back to Japan due to an unavoidable situation of heavy rainfall on my way to the airport, so I rescheduled my journey and came back to Japan on 24th November 2023.

成果 Outcome

Although I was not in the top three of the best presenters, the audience was excited and intrigued by the interesting results of my study. I hope that the concerns and suggestions raised by the audience will help me to improve my future research and presentations.

I was also fascinated by the results of other researchers with oral and poster presentations.

We shared the latest research results and exchanged research ideas among different researchers. And many researchers became interested in the possibility of collaborating with my lab.

Many student participants also showed interest in joining my lab for their future studies.

During the AIBBC 2023 workshop session, I received theoretical and practical background on flow cytometry and its applications in cell analysis.

In the KAVI-ICR laboratory, I gained hands-on experience in isolating peripheral blood mononuclear cells (PBMCs) from whole blood and staining the PBMCs for the target cells of interest for cell sorting of the target cells based on their surface markers using the FACS Melody cell sorter. The same principle can be used to isolate progenitor cells for use in elucidating the regulatory mechanism of miRNAs on the accumulation of skeletal muscle fat (beef marbling) in vitro.

During the networking session, I interacted with various researchers, some from different universities in Japan. I also visited the industrial exhibitions of the AIBBC conference sponsors, most of which are biotechnology companies.

I interacted with Prof. Yoshihiro Inoue of Kyoto University during the poster presentation session.

Dr. Radiossa Gallini of Upsalla University, sweden during industrial exhibition session at the AIBBC 2023 conference.

今後の展望 Prospects for the future

The biggest experience I gained during the conference was the presentation skills in an international conference. The comments from the researchers will be very helpful in improving my research and communicating my research results.

Recently, it has been reported that plasma microRNAs are useful as indicators of various biological states, including disease diagnosis. Therefore, if well researched, they could be reliable blood biomarkers not only for beef quality and quantity, but also for cancer screening. As for my research, I will continue to investigate the expression of interesting miRNAs in plasma exosomes using qRT-PCR analysis and investigate the relationship between their expression profile and carcass traits of Japanese Black cattle.

Acknowledgements

Special thanks to the Division of Graduate Studies (DoGS) for supporting my overseas travel and research activities.