

(Abroad • Domestic) Official trip report form (Student)

2016/11/22 (Year/Month/Day)

Name	Eugene Chisela Bwalya
Laboratory	Veterinary Surgery
Year (Grade)	D4
Destination	Oxford University, Kennedy Institute of Rheumatology (KIR)
Period of trip	6 weeks (05 th October to 19 th November 2016)
Purpose of trip	Combined Internship and collaborative report

Summary of activities (about 800 words, provide photos, tables and figures that clearly show the activities during the period)

The purpose of the combined internship and collaboration research was to gain experience, knowledge and skills required to:

1. Elucidate the functional response of the transcription factors, hypoxia-inducible factors (HIFs), HIF-1 α and HIF-2 α in regulating articular chondrocytes response static and cyclic compression mechanical loads.
- Contribute at international level to the development of novel effective strategies for OA treatment.
- In future establish an osteoarthritis (OA) research facility in Zambia that would have strong collaboration ties with facilities like the KIR.

During the six (6) weeks combined internship and collaborative research that ran from 05th October to 18th November, 2016, I was involved in a number of activities which are summarized below;

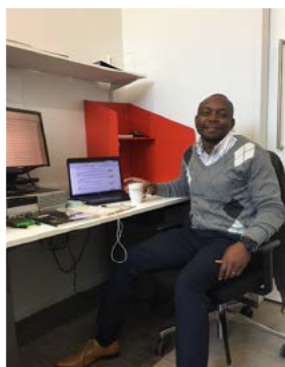
- I attended weekly general laboratory meetings where research ideas, results and updates on any ongoing research activities were discussed.
- I was also privileged to attend the 1st Annual Kennedy Institute Student Symposium (1st KISS) that was held on 04th November, 2016 where PhD students presented their current research activities for an open discussion.
- I also had numerous one on one meeting with experts leading various research groups at the KIR to discuss research ideas and plan experiments and explore possible future collaboration research.
- I was able to conduct an experiment to investigate the functional response of hypoxia inducible factors (HIFs) to static and cyclic compression loads using porcine articular cartilage explants. I further explored other pathways like Sox-9, NF κ B and the MAPK

that may be regulated by static and cyclic compression mechanic loads and how they relate to the changes in HIFs protein expression pattern. The findings of the experiment have provided evidence for the first time on how HIFs in articular chondrocytes may respond to different mechanical load and the results have since formed a basis on which I intend to conduct future collaborative experiments with the KIR to translate in to a publishable manuscript.

- I was able to design two collaboration research experiments which I intend to conduct from December 2016 to February, 2017 in our laboratory with the help of two experts from the KIR who I will work closely with and they will also provide some of the required materials for the experiments.
- I attended and participated in weekly seminars that were held every Friday were experts in the field of OA were invited to discuss breakthroughs and their experience in the field.
- A picture summary of some of the activities that I was part of at the KIR, Oxford University is shown below;



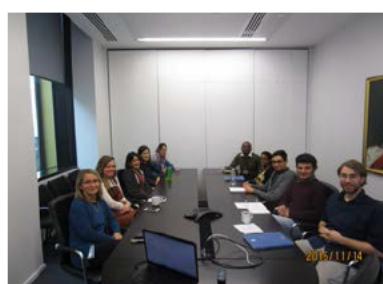
Kennedy Institute of Rheumatology (KIR)



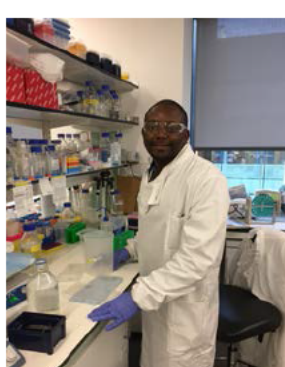
Literature review & planning



Collecting liquid nitrogen for experiment



Monday general laboratory meeting (KIR)



Conducting experiment in laboratory



Attending a formal graduation dinner for a colleague at University College

The **outcome** of the combined internship and collaborative research activities can be described as positive and are summarized as follows;

- I was able to successfully achieve the purpose of the two activities by being

able to learn new techniques, gain experience by interacting with different experts and peers in the field and acquire more knowledge and understanding of OA.

- I was able to successfully perform my primary experiment objective which was to investigate the functional response of HIFs to static and cyclic compression mechanical load using porcine articular cartilage explants. Since this is the first time such an experiment was being conducted, the initial findings from this experiment has provided me with valuable information that will form the background of my future research plan.
- In enhancing future collaboration ties with Oxford University and University of Zambia, I was able to meet various experts and group leaders at the KIR to discuss possible collaboration and student exchange opportunities.
- I was also able to meet fellow young researchers conducting research in OA at different levels and we were able to share our experiences in the field. This was a great opportunity to create a young researchers network that is important for the progression of science and will be vital for future collaboration and consultation.
- During my consultation meetings with the different experts and leaders at KIR, I was also able to get valuable information on how to source for research funding and possible organizations to target in my quest to set up a research facility in Zambia that will have collaboration ties with Hokkaido and Oxford University and other organizations.
- Finally, in consultation with some experts at KIR, Oxford University, I was able to design two future collaboration research plans that will soon see my current laboratory conduct collaboration research with the KIR. These projects will enhance knowledge and resource transfer between Hokkaido and Oxford University and will surely strengthen and improve the quality of future publications.

Approval of supervisor	Institution • Official title • Name : Laboratory of Veterinary Surgery, Professor Masahiro Okumura 印
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※1 Send the electronic file to the Leading School section, International Affairs Office, also submit the

Hokkaido University
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original print out with seal of supervisor to the Leading School section, International Affairs Office.

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