[redacted]

International Development Fund

1. Key details

[redacted]
Project title: Antimicrobial stewardship training at Makerere University
Host institution: Makerere University, Kampala
Project start date: 01/01/2020
Project end date: 01/12/2020
Expected costs: £5000
Maximum we can award: £5000

2. Project details

2.1 Project summary

The topics of the lectures, workshops and laboratory classes to be delivered were identified in partnership following a preliminary needs assessment which took place during [redacted] visit to Mak on 6th Sept 2019.

We will cover:

- Antimicrobial resistance
- Principles of antimicrobial stewardship for HCPs (e.g. nurses and pharmacists), public health specialists, community health workers and veterinary workers, including methods for audit of antimicrobial use and infection prevention and control such as the Global Point Prevalence and Healthcare Associated Infections surveys, respectively.
- Practical training on culture, identification and antimicrobial sensitivity testing
- Principles of molecular diagnostics e.g. PCR and sequencing
- Data reporting, analysis, interpretation and discussion of implications of laboratory findings for clinical practice and guideline development.

2.2 Project description

We plan for [redacted] and [redacted] to visit Mak for one week in April 2020 to deliver a program of lectures, workshops and laboratory classes to undergraduate students in the Schools of Health Sciences, Public Health and Veterinary Medicine. Students across human, animal and environmental health disciplines will be targeted because our training takes a One Health approach to AMR and AMS.

2.3 Benefits to professional development

[redacted] is an Associate Professor and [redacted] is a Principal Lecturer. As recently appointed co-leads of the newly formed AROM research theme at [redacted], we see this as an ideal opportunity to forge new international collaborative links in research and teaching between our team and the teams of the staff at Mak.

For research, this project will also give several Masters students the opportunity to engage in real-world, internationally collaborative and potential impactful research projects.

For teaching, the project will enhance the internationalisation of our microbiology curriculum because we will return from Uganda with new insights into the global challenges of AMR and the

particular challenges faced by a low income country, to share with our colleagues and students in the UK.

2.4 Aims/objectives

This project will have a number of outcomes:

1. Knowledge exchange and capacity building

The strengthening of AMR/AMS, culture/ID/sensitivity testing, and data reporting, analysis and interpretation content in the undergraduate curricula across several Schools within Mak will help to fulfil key aspects of the Uganda National Action Plan for AMR (increasing knowledge, awareness and skills relating to AMR and AMS).

2. Pedagogical outputs

If successful, the training resources will be published in an open access pedagogical journal. Social media (Twitter, Facebook) will also be used to publicise the availability of these resources to encourage wider roll-out of the training across other universities in Uganda and beyond. The resources generated will also be shared on the Uganda online Community of Practice on AMS that our partnership is currently spearheading.

3. Research outputs

To contribute directly to the fight against AMR, research projects will be initiated and students mobilised to test Ugandan herbal preparations for novel antimicrobial activities. Additionally, support in data analysis will be useful to HK who has been instrumental in gathering ID and sensitivity data on bacterial bloodstream infections from Ugandan patients for the WHO GLASS database and research publications, again contributing to a key target of the Ugandan National Action Plan on AMR (surveillance).

2.5 Expected research outcomes

Expected research outcomes:

- A pedagogical paper discussing the training outcomes and releasing the training materials
- A research paper presenting the results of any antimicrobial activities found
- Several Masters-level research projects completed (data on novel antimicrobials generated and students will have developed research skills)

Benefits to the host institution:

- Increased knowledge of AMR & AMS; culture, identification & sensitivity testing; molecular diagnostics; data analysis
- Integration of new training materials on those topics into undergraduate curricula
- Students and staff will develop new practical skills (laboratory and data analysis)
- Opportunities for staff and students to engage in collaborative research
- Co-authorship of publications
- Increased representation of women in STEM

Benefits to our institution:

- Establishment of new international research collaborations on AMR
- Increased knowledge of AMR & AMS challenges and solutions in the Ugandan setting
- Opportunities for staff and students to engage in collaborative research
- Co-authorship of publications
- Improved internationalisation of our undergraduate and postgraduate curricula
- Increased representation of women in STEM

2.6 Methodology

Already completed:

- Establishment of partnership and Memorandum of Understanding between [redacted] and Mak
- Development and delivery of AMR & AMS training workshops to Ugandan HCPs
- Preliminary needs assessment at Mak
- Twinning of [redacted] Social Science and Mak Public Health programs

January to March 2020:

- Completion of more detailed needs assessment and curriculum review at Mak
- Adaptation of our AMR & AMS training materials to suit undergraduate students at Mak
- Planning of research activities and gathering of samples, resources and laboratory consumables to support the research projects
- Twinning of undergraduate programs between [redacted] and Mak across other departments including Biosciences at [redacted] and Health at Mak.

April 2020:

- [redacted] and [redacted] travel to Mak for one week and deliver a series of lectures, workshops and practical classes to undergraduate students
- [redacted] and Mak teams have research planning meetings and exchange samples, resources and laboratory consumables

May-July 2020:

- [redacted] and [redacted] run Masters research projects in the UK with input from Mak team (e.g. testing antimicrobial activity of selected Ugandan herbal preparations)

August-Dec 2020:

- [redacted] and Mak teams co-author research and pedagogical publications

2.7 Breakdown of costs

UK return trains Nottingham to Heathrow	£70 x2 staff = £140
Return flights UK to Uganda	£600 x2 staff = £1200
Accommodation in Uganda	£600 x2 staff = £1200
Subsistence in Uganda	£100 x2 staff = £200
Visa x2 staff	£40 = £80
Uganda airport to hotel transfers x2 trips	£30 = £60

Total for travel = £2880

Travel contingencies (vaccinations, further in-country transportation, currency variation etc)	£320
Printed & laminated training materials and props for teaching purposes	£400
Laboratory consumables (including culture media, antibiotics, disposable plastics)	£1400

Total requested = £5000

Notes:

- Costs of generating extracts from herbal remedies will be covered by Mak
- Costs of the UK-based Masters laboratory projects will be covered by NTU

2.8 Evaluation measures

To evaluate the success of the training, undergraduate students will complete a questionnaire before and after training.

To evaluate the success of the other project objectives, we will monitor and report on the production of pedagogical and research outputs as outlined above.

2.9 Personnel knowledge

[redacted] is a Principal Lecturer in Microbiology at [redacted]. They co-led the AROM research team at [redacted] and are also the subject group leader for microbiology teaching at [redacted]. They have delivered numerous recent microbiology outreach events targeting primary school children in the UK and Uganda, and was the UK microbiology lead for our recent THET-funded project delivering training workshops on AMR and AMS to HCPs in Uganda.

[redacted] is an Associate Professor in Microbiology at [redacted]. They co-led the AROM research team and is module leader for Advanced Bioinformatics, and Biomathematics and Bioinformatics. They have delivered numerous microbiome-focussed outreach activities to school children in the UK, and are an incoming Hamied Foundation UK–India Antimicrobial Resistance (AMR) Visiting Professor, working with colleagues in Pune, India to better characterise carriage of antibiotic-resistant Enterobacteriaceae in Indian urban, rural and tribal populations.

2.10 Collaborators

[redacted]: Chair in medical microbiology at Mak, AMR expert, coordinated development of the Uganda AMR national action plan.

[redacted]: clinical pharmacist and Dean, School of Health Sciences at Mak. Co-designed and delivered our recent HCP training in Uganda.

[redacted]: Associate Professor, Veterinary Medicine at Mak with research expertise including drivers of AMR in animals, humans and the environment.

[redacted]: Lecturer in Public Health at Mak, was Uganda lead for our HCP focussed AMS project. They are also the Uganda lead of the 10-year NTU – Mak partnership.

The Uganda team ([redacted]) will support the curriculum review and co-ordinate the proposed training activities in each of their departments at Mak.

[redacted] & team, infection pharmacists at Buckinghamshire NHS Trust, co-developed & delivered the HCP training and will act in an advisory capacity to support the proposed project.

2.11 Sustainability

Training resources will be co-developed in partnership and then during the visit, these resources will remain with the Ugandan academic team for continued delivery in future years. The resources will also be posted to the online Community of Practice for AMS which has been set up by the Uganda team for continued engagement of stakeholders as part of our recent HCP-focused project.

Our partnership uses a train the trainer, workshop style approach in which each participant is empowered to design their own training events and other interventions, to subsequently cascade key AMR and AMS messages to a range of target audiences including colleagues, peers, patients, friends and family. This approach aims to increase the reach and sustainability of the project beyond the one week formal contact time planned.

We intend the visit to also initiate research collaborations between our groups, generating preliminary data and enabling us to secure external research and outreach grants together in the future.