**East African Vector Surveillance PhD Students.**

We are looking to recruit three PhD students with strong backgrounds in genomics/ bioinformatics to work within a Bill and Melinda Gates Foundation funded project to use genomic and epidemiological approaches to understand the impacts of insecticide resistance on malaria vector control. The programme is a partnership between the Liverpool School of Tropical Medicine (LSTM), the Uganda Virus Research Institute (UVRI), the Kenyan Medical Research Institute (KEMRI) and the Wellcome Sanger Institute (WSI).

The World Health Organization has called for action to preserve malaria control gains and to ensure that the ambitious 2030 targets, which includes eliminating malaria from 35 countries, are met. To achieve this, the effectiveness of vector control tools (VCTs) that have driven the success must be maintained, and new tools added to combat residual transmission. A key component of sustained malaria reduction will be integrated use of established and new VCTs, and active ingredients (AIs); particularly in Africa where resistance is widespread. Central to evidence-based vector control is an understanding of:-

1. What is the impact of insecticide resistance on epidemiological indicators of malaria (eg infection prevalence/ incidence, morbidity, mortality)?
2. To what extent do public health insecticide-based interventions select for increased resistance?

The project objectives are:

Objective 1. Integrated scientific computing ecosystem for insecticide resistance marker surveillance

Objective 2. Identifying and tracking emergent resistance to established and new insecticides

Objective 3. Embedding resistance panel screening into insecticide-based malaria vector control programmes.

The studentships are open to all nationalities but given the students will be based at UVRI or KEMRI we particularly encourage Ugandan and Kenyan nationals to apply. The project has funds to support short-term visa applications for students travelling to the UK but not for students who would require a visa to study in Kenya or Uganda. The PhD studentships will cover stipend and tuition fees for three years. Students will be enrolled at the Liverpool School of Tropical Medicine as off-site students although there is the possibility for one of the students to be registered as an on-site student which would permit a greater proportion of time to be spent in the UK. Each student will have a supervisory team drawn from the participating partners.

All three PhD projects will have a substantial component of research time dedicated to the screening of mosquito collections for insecticide resistance using MiSeq-based amplicon panels and analysis of the impacts of insecticide resistance on epidemiological indicators of malaria burden. In addition each project will have address a unique research question related to the theme of insecticide resistance evolution.

The three projects are:

1. Functional genomics of Insecticide resistance. PhD location Uganda Virus Research Institute. Study supervisors Dr Jonathan Kayondo, UVRI; Professor Tony Nolan, LSTM.
2. Genome wide association studies to identify emergent resistance to newly introduced insecticides. PhD location. Kenya Medical Research Institute, Nairobi. Study supervisors Dr Damaris Matoke-Muhia, KEMRI; Professor Martin Donnelly, LSTM; Dr Chris Clarkson, WSI.
3. Development of long-read sequencing technology for screening for insecticide resistance associated copy number variants. PhD location KEMRI, Kisumu. Study supervisors Dr Eric Ochomo KEMRI/LSTM; Dr Eric Lucas LSTM; Dr Alistair Miles WSI.

Application procedure.

This is a two-step process. The deadline for preliminary applications is the 11th October 2024 with short-listing and online interviews to occur in mid-November. To apply candidates must submit a CV and fill in the attached application form. Candidates who do not submit the application form will not be considered. **Please do not apply directly to the LSTM postgraduate office but send all application materials to** [**EAVES@lstmed.ac.uk**](mailto:EAVES@lstmed.ac.uk)

The three candidates selected at interview will then be supported through the LSTM PhD application process with a proposed PhD start date of 1st February 2025. The candidates will also have to meet the entry requirements of LSTM please check you meet the LSTM entry requirements before submitting an application <https://www.lstmed.ac.uk/study/research-degrees/post-graduate-research-before-you-apply>

**Please complete the application form indicating in the column labelled “EVIDENCE” how you meet the essential and/or desirable criteria. Please leave the column labelled "SCORE” blank, this will be used by the short-listing panel.**

**Applicants Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

| **COMPETENCY CRITERIA** | **ESSENTIAL/**  **DESIRABLE** | **EVIDENCE** | **SCORE** |
| --- | --- | --- | --- |
| **Qualifications & Training** |  |  |  |
| We are looking for students who **have obtained** a first class or upper-second class honours degree\* at undergraduate level and/or a Master’s degree in Biology or related field. The degree must have included courses in Molecular Biology, Genetics, Biochemistry or mosquito biology/ entomology. in a relevant subject.  \*International qualifications need to be of an equivalent standard, as defined by NARIC | Essential |  |  |
| **Skills & Experience** |  |  |  |
| Significant experience in genomics.  Examples could include; a higher degree in bioformatics/ genomics; employment as a bioinformatician/ genomic scientist; internship at a major genomics facility. Please note a certificate of attendance from a bioinformatics course will not be sufficient evidence. | Essential |  |  |
| Experience of working with next generation sequencing technologies.  Examples could include employment in sequencing laboratories; publications; advance level degree modules | Essential |  |  |
| Experience of data handling and analysis using scripting languages such as R and/or Python. Evidence could be from published work or a link to applicant's GitHub profile. | Essential |  |  |
| Well-developed research skills with the ability to present research findings in oral or written format.  Examples could include papers with significant authorship contributions; presentations at national/international meetings. | Essential |  |  |
| Experience working with and develop insecticide assays | Desirable |  |  |
| Experience working with mosquitoes or other insects | Desirable |  |  |
| **Knowledge & Behaviours** |  |  |  |
| Excellent verbal and written communication skills, with the ability to communicate at all levels. | Essential |  |  |
| Excellent organisational skills | Essential |  |  |
| Ability to use initiative and work independently | Essential |  |  |
| A problem-solving attitude | Essential |  |  |
| **Circumstances** | | |  |
| Willing and able to be based in Kenya or Uganda and with travel to the UK | Essential |  |  |