



## **Med Biotech Laboratories**

**Location:** Kampala, Uganda

**Scientific Disciplines:** Biochemistry, bioinformatics and post-genomics approaches, immunology, epidemiology and biostatistics.

**Description:** Med Biotech Laboratories is a biomedical research institution situated in Kampala, Uganda. It is a non-government institution legally registered in Uganda as a Non-governmental Organization (NGO). It collaborates with the Ministry of Health and affiliated hospitals and health centers and other national institutions such as Makerere University, Mbarara University, the Uganda National Council for Science and Technology, and the National Agricultural Research Organization in research projects on malaria, tuberculosis, HIV-1/AIDS, cassava, and environmental biotechnology.

Ongoing projects include soil and environmental biotechnology; antimalarial malaria drug resistance, malaria vaccine studies, and host response profiles and polymorphisms in different clinical forms of malaria; molecular markers for cassava cyanogenic glycoside content for cassava breeders; screening for novel type II restriction enzymes in soil bacteria; microbial diversity and community structures in the Nakivubo Channel; a new program on pediatric AIDS has started in collaboration with St. Francis Nsambya Hospital in Kampala.

Current sources of funding are exclusively grants to the institution from the European Union, Howard Hughes Medical Institute, the Elisabeth Glaser Pediatric AIDS Foundation, and the NIH.

Current scientific staff:

1. Dr Thomas Egwang, PhD; HHMI International Research Scholar
2. Pius Alibu, MSc; PhD candidate at Heidelberg University, Germany
3. Anne Kazibwe, MSc; PhD candidate at University of Glasgow, UK
4. Brenda Okech, BSc; PhD candidate; London Sch. of Hygiene and Trop Med, UK
5. Kizito Elisabeth, BSc; PhD candidate; Swedish University of Agriculture, Sweden
6. Charles Okori, MSc
7. Doris Ngonzi, BSc
8. Mujuzi Godfrey, BSc
9. Prossy Namuwulya, BSc
10. Nanyonjo Halima, BSc
11. Benard Kanoi, BSc
12. Margaret Njoroge, BSc
13. Abila Ponsiano, Diploma
14. Ogwal Alex, Diploma

15. Betty Magambo, Diploma

16. Connie Agwang, Diploma

**Laboratory Facilities:** Laboratories and offices are housed in two adjacent double-storied buildings which provide a surface area of close to 500 sq meters. There is dedicated space for parasite and tissue culture, a hot room for work with radioactive isotopes, two dark rooms for auto-radiographic work, microscopy, pre-PCR preparation, a tuberculosis laboratory, gel electrophoresis room, water distillation and de-ionization, library, and a conference room. A sample of equipment and their respective ages is listed below.

3 Biometra Tri-block PCR machines, 6 & 3 years  
1 Perkin Elmer PCR 2400 cycler, 9 years  
1 Gene Amp PCR 9700 system, 2 years  
1 Autoclave, 9 years  
1 Water distiller, 9 years  
1 Class II cabinet, 6 years  
1 Laminar flow hood, 9 years  
1 UV Strata linker, 6 year  
1 Orbital shaker, 3 years  
1 Sorvall R5 Floor refrigerated centrifuge, 5 years  
5 Bench top centrifuges, 8 & 5 years  
1 Automatic haematology analyzer, 3 years  
1 Clinical chemistry analyser (Reflotron +), 3 years  
1 Dissecting microscope, 9 years  
1 Inverted microscope, 9 years  
5 Light microscopes, 9 years  
1 Fluorescent microscope, 9 years  
1 ABI sequencer, 9 years  
1 Flow cytometer, 9 years  
1 Sonicator, 7 years  
1 Fractionating water system, 7 years  
1 Carbondioxide incubator, 6 years  
2 Incubator, 9 & 5 years  
2 Water baths, 7 & 6 years  
1 Dryer, 9 years  
2 pH meter, 7 & 1 year  
1 Heating block, 9 years  
1 UV box, 9 years  
1 White light box, 9 years  
1 Vertical electrophoretic apparatus, 9 years  
7 Horizontal electrophoretic apparatus, 9 & 1 year  
2 Microwave ovens, 3 years  
2 -80 freezer, 7 & 4 years  
1 - 20 freezer, 9 years  
7 Refrigerators, 7, 4, 1 years

- 1 Automatic generator, 5 years
- 2 Dot block apparatus, 3 years
- 1 Gel dryer, 5 years
- 1 Scanner, 2 years
- 1 Weighing scale, 2 months

The institute has eight computers, with a direct VSAT satellite 24-hour Internet and email access as well as access to several international journals via the Internet.

**Affiliations:** The institute collaborates with the Ministry of Health, hospitals in Kampala (Mulago and Nsambya Hospitals) and upcountry (Apac Hospital). This collaboration provides access to clinical staff and expertise and clinical samples. Recently a Ministry of Health official used the institute's facilities for his doctoral research. Med Biotech laboratories has also been involved in a project to assess drug resistance in the country for the Ministry of Health.

Med Biotech also collaborates with Makerere University medical and veterinary faculties, mainly to share scientific equipment and expertise. Additional collaboration: London School of Hygiene and Tropical Medicine, University of Glasgow, both in UK; Leiden University Medical Center, Leiden, Netherlands, and Osaka University, Osaka, Japan. These collaborations provided opportunities for training graduate students (London and Glasgow), short term training for staff in parasite culture (University of Osaka) and malaria parasite transfection (Leiden University Medical Center), and research materials.

**Placement Description:** A GSC fellow would be placed at the central lab in Kampala or, if they are clinically-disposed, in the hospitals in Apac or Kampala. The institute hopes that such a placement would entail capacity building and tech-transfer in various aspects of biomedical research or strengthen their clinical research capacity specifically in data analysis and epidemiology.

This placement offers several things. First, access to field materials (patient and pathogen) relevant to malaria, tuberculosis, and AIDS research. Second, the lab and collaborative health centers will provide a unique opportunity to acquire hands-on experience in tropical medicine. Lastly, the opportunity to undertake cutting edge collaborative research that brings basic research and the field/clinic to interface on important problems of public health.

**Desired Applicants:** One year would be ideal for sabbatical professors and it is sufficient for adequate technological transfer in specific fields. However, two years would be the ideal length of time for the fellow to be able to follow a field study backed by laboratory investigations to its logical and successful conclusion.

The lab currently has an ABI 377 DNA sequencer as well as a flow cytometer which were donated. They do not have experience with this equipment; it would be useful to have someone with experience and expertise with these machines to train the laboratory staff.

The lab would welcome fellows at all levels depending on the assignment or research program of mutual interest. Technicians, post-docs, and junior faculty would be most appropriate. However, university professors on sabbatical would also be welcome.

**Other:** The lab usually has journal clubs on Fridays and would anticipate presentations from the fellow. In addition, the laboratory would gain from a fellow able to teach statistics, bioinformatics, and other subjects of mutual interest to the lab and the fellow.