CURRICULUM VITAE

Name: **Prof. Francis J. Mulaa** (Ph.D)

Position **Associate Professor of Biochemistry**

Address: Biochemistry Department, University of Nairobi, P.O. Box 30197, Nairobi, Kenya. **Telephone:** 254-20-4442841, **Fax:**54-20-4441186.
E-mail: mulaafj@uonbi.ac.ke

Academic Background

Ph.D. Department of Biochemistry, 1990. Obafemi Awolowo University, ILE – IFE, Nigeria

MSc. Department of Biochemistry, 1986. University of Nairobi, Kenya

MSc. Department of Biochemistry, 1983. Faculty of Chemistry
Donestk State University, USSR

Language Certificate :Varonezh State University, USSR, 1977
Preparatory Faculty

1986 Pharmacia/ICIPE Certificate in biochemical separation techniques

Professional Positions Held

2006 Steering Committee Member European Malaria Postgarduate School (PhD Capacity Building Program in Malaria Pathology (BIOMALPAR), Antimalarial drug development (ANTIMAL,), Malaria parasitology (MALPAR http://www.biomalpar.org.

2005 Steering Committee Member European Commission Project Development of

New drugs for the Treatment of Malaria "ANTIMAL". http://www.antimal.eu

2006 Board Member of the African Biosciences Centre

2006 Steering Committee Member, Postgraduate Training School in Biotechnology and Bioinformatics (CEBIB). http://www.uonbi.ac.ke/cebib

2003 Steering Committee Member of the East African Programme and Research Network for Biotechnology, Biosafety and Biotechnology Policy Development (BIO-EARN). http://www.bio-earn.org.

2002 Member National Council for Science and Technology, Research Committee

Awards and Honours

2006 Honoured at the University of Nairobi 36th Graduation Ceremony as most resourceful scientist, with highest individual research grants in the University of Nairobi (2002- 2006).

2002 Faculty Training Fellowship to International Centre Insect Physiology and Ecology by Biotechnology African Research Network Faculty in Biotechnology.

2001 International Institute for Insect Physiology and Ecology (ICIPE A BIONET Africa project in collaboration with ICIPE and World Laboratory.

2001 Belgium Government fellowship to Free University Brussels (VLIR) to study development of e-learning materials and development of university e-learning curriculum

2000 Awarded certificate for most resourceful Scientist, College of Agriculture and Veterinary Sciences

1977 - 1983 Kenya - USSR Cultural Exchange Scholarship for studies leading to MSc Chemistry to Donetsk State University (USSR).

1984 – 1986 German Students Exchange Program Scholarship for studies leading to MSc Biochemistry University of Nairobi.

1987 - 1990 Association of African Universities Fellowship for PhD to University of IFE (ILE-IFE) Nigeria for studies leading to PhD

1993 British Council Fellowship to University College London to study Molecular Biology

Major Sources of Funding , Research Grants and Research Projects

2006-2009 SIDA/SAREC/ Dnr 1999-00830 Doss: SAREC, project No. 7500 0129 Extremophiles for Environmental Biotechnology Collaborative project between Department of Biochemistry University of Nairobi and Department of Microbiology, University of Daressalaam and Department of Biotechnology Centre for Chemistry and Chemical Engineering, Lund

University on capacity building in Biotechnology. A biotechnology capacity building project proposal. **SEK 2,400,000.00.** Total value of Grant.

2006-2010 European Union Grant Contract Number 018834; Development of New drugs for the Treatment of Malaria "ANTIMAL". **Euro 428,937.00.** http://www.antimal.eu. Total value of Grant. **Euro 17,000,000**

2005-2007 European Union Grant; Project No. 012174: Targeting malaria transmission through interference with signaling in *Plasmodium falciparum* gametocytes. **Euro 100,000.00.** http://europa.eu.int/comm/research/health/poverty-diseases/projects/101_en.htm Total value of Grant. **Euro 938,000**

2003-2006 European Union Grant; Project No. ICA4-2001-10208: Pollution Monitoring in the Nairobi River: Application of New and Robust Biosensor Technologies Adapted to Locally Available Resources. **Euro 578,112.00.** http://www.cordis.lu/data/PROJ_FP5/ACTIONeqDndSESSIONeq112122005919ndDOCeq535ndTBLeqEN_PROJ.htm. Total value of Grant. **Euro 1,938,000**

2003 - 2005 SIDA/SAREC Grant for upgrading and Improvement of Local Area Network in Biochemistry and Botany Departments including upgrading of facilities at the Institute of Computer Science .**USD 23,100.** http://www.bio-earn.org

2002-2005 SIDA/SAREC/ Dnr 1999-00830 Doss: SAREC, project No. 7500 0129 Extremophiles for Environmental Biotechnology Collaborative project between Department of Biochemistry University of Nairobi and Department of Biotechnology Centre for Chemistry and Chemical Engineering, Lund University on capacity building in Biotechnology. A Ph.D biotechnology capacity building project proposal. **SEK 2,400,000.00**. http://www.bio-earn.org

2002 International Bureau of the German Ministry of Education and Tecchnology Project No**.** WTZ-K-KEN-002. Novel bioactive metabolites from extremophilic microorganisms from Kenyan Rift Valley. Three year travel and equipment grant.

1999-2001 SIDA/SAREC/ Dnr 1999-00830 Doss: SAREC, project No. 7500 0129 Extremophiles for Environmental Biotechnology Collaborative project between Department of Biochemistry University of Nairobi and Department of Biotechnology Centre for Chemistry and Chemical Engineering, Lund University on capacity building in Biotechnology. A Ph.D biotechnology capacity building project proposal. SEK **1,285,000.00.** http://www.bio-earn.org

1999-2001 Stable biocatalysts from extremophiles for utilization of renewable raw materials Ph.D project on extremophiles in collaboration with Bo Mattiasson and Rajni Hatti, department of biotechnology University of Lund Sweden . Extremophiles for environmental biotechnology, Ph.D project on extremophiles in collaboration with Bo Mattiasson, and Rajni Hatti, Department of Biotechnology University of Lund Sweden .

1997-2000 European Economic Community INCO grant No. ERBIC18CT970217, on "Molecular mechanisms of *Plasmodium falciparum* sexual development. An integrated approach". Molecular mechanisms of *Plasmodium falciparum* sexual development. an integrated approach. Project supported by EEC-INCO grant No. IC18CT970217. A collaborative malaria project with, INSERN, France, University of Edinburgh UK, University of Witwatersrand, South Africa, University of Zimbabwe, Zimbabwe, Instituto Superiore di Sanita, Italy, and University of Nairobi. Research on signal transduction and cell cycle control mechanisms of gametocytogenesis and gametogenesis.cultivation of gametocytes, gametocyte–specific transcription, gametocyte activation, cloning and sequencing putative signal transduction genes and characterisation of protein kinase genes involved in signal transduction as drug targets using RNA differential display techniques. **ECU 85,000.00**

1998 2000 German Centre for Biotechnology, Brauschweig, Germany
Conduct research on molecular ecology and microbial diversity of extremophilic microorganisms as source for bioactive metabolites as potential drug candidates. A drug discovery project in collaboration with Professor Kenneth Timmis and Peter Golyshin, division of microbiology German Centre for Biotechnology (GBF), Germany. Attended course on **bioinformatics** tools for genomics and proteomics. Use of RNA and DNA fingerprinting techniques for species identification, and high throughput screening techniques.

1994 UNESCO grant to hold a regional Training workshop on Molecular Biology Techniques and their use in Biotechnology **USD. 13,000.**

1994 International Foundation for Science research grant No. F/2276-1,on the isolation of DNA-binding protein genes of Rift Valley thermophiles. **USD.12000**.

1994. European Economic Community grant for training of K.A.R.I. technical research staff. A skills development programme.**Ksh.3,000,000/=.**

1994 Third World Academy of Sciences research grant No. 94 -053 RG/BIO/AF/AC, on Construction of Single Chain Fv whole blood immunoassay system for diagnosis of antigens. **USD. 7,000.00**.

1993 Department of Biochemistry and Molecular Biology, University College London on Molecular Toxicology of Cytochrome P – 450. Application of RNA profiling techniques to study tissues responded to drugs. Development of *in vitro* human liver tissue culture systems for *in vitro* toxicology studies.

1982-1983 Institute of Endocrinology and Metabolism, Ukrainian Academy of Sciences, Kiev, Conduct research on effects of Cortisone on neurotransmitter (gamma aminobutyric acid) metabolism on the rat hypothalamus and hippocampus. *In vitro* cultivation techniques of pancreatic tissues for therapeutic xeno-transplanation into humans in the hospital of experimental medicine of Ukarainian Academy of Sciences.

Publications in Peer Reviewed Journals

Kevin Raymond Oluoch, Ulrika Wilander, Maria Margaretta Andersson, **Francis Jakim Mulaa**, Bo Matiasson, and Rajni Hatti-Kaul.(2006). Hydrogen peroxide degradation by immobilized cells of alkaliphilic Bacillus halodurans. Biocatalysis and Biotransformation, 24. 3,. 215-222

Laila U Abubakar L. U., Bulimo W. D., **Mulaa. F.J**, and Ellie O Osir (2006). Molecular characterization of a tsetse fly midgut proteolytic lectin that mediates differentiation of African trypanosomes. . Insect Biochemistry and Molecular Biology. 36 (4).

Ochieng' Washingtone, **Mulaa Francis Jackim**, Ogoyi Dorington., Ogola Simon, Musoke Rachel., Otsyula Moses(.(2006). Viral load, $CD4^+$ T-lymphocyte counts and antibody titres in HIV-1 infected untreated children in kenya; implication for immunodeficiency and aids progression. African J. Health Sciences .6 (1) 3-12

Kevin Raymond Oluoch, Francis Jakim Mulaa and Bo Matiasson, Rajni Hatti-Kaul. (2005). Production, purification and characterisation of an alkaline-active pectinase by *B. halodurans* LBK 261 (Manuscript).

Kevin Raymond Oluoch, Rajni Hatti-Kaul, Francis Jakim Mulaa and Bo Matiasson (2005). Pectinase-producing microorganisms from Kenyan soda lakes (Manuscript).

Hashim SO, Delgado O, Martinez A, Hatti-Kaul R, **Mulaa FJ** and Mattiasson (2005). B. Alkaline active maltohexaose forming α-amylase from *Bacillus halodurans* LBK 34. *Enzyme and Microbial Technology* 36: 139-146.

Hashim SO, Hatti-Kaul R, Andersson M, **Mulaa FJ** and Mattiasson B (2005). Differential scanning calorimetric studies of a Bacillus halodurans alpha-amylase. Biochim Biophys Acta. May 25;1723(1-3):184-91.

Johnson K. Kinyua, Edward K. Nguu, **Francis Mulaa** and Joseph M. Ndung'u **(***2005.)* Immunization of rabbits with *Glossina pallidipes* tsetse fly midgut proteins: Effects on the fly and trypanosome transmission. Vaccine, Volume 23, Issue 29, 31 May Pages 3824-3828.

Hashim SO, Hatti-Kaul R, **Mulaa FJ** and Mattiasson B. (2004). Maltohexaose production by a recombinant *Bacillus halodurans* α-amylase: enhanced yields by in situ product removal (manuscript).

Suhaila O. Hashim, Osvaldo Delgado1, Rajni Hatti-Kaul1, Francis J. Mulaa & Bo Mattiasson (2004). Starch hydrolysing *Bacillus halodurans* isolates from a Kenyan soda lake. *Biotechnology Letters* **26:** 823–828.

Baliraine FN, Bonizzoni M, Guglielmino CR, Osir EO, Lux SA, **Mulaa F.J,** Gomulski LM, Zheng L, Quilici S, Gasperi G, Malacrida AR (2004). Population genetics of the potentially invasive African fruit fly species, *Ceratitis rosa* and *Ceratitis fasciventris* (Diptera: Tephritidae). *Molecular Ecology* 13: 683-695.

Baliraine FN, Bonizzoni M, Osir EO, Lux SA, **Mulaa F.J,** Zheng L, Gomulski LM, Gasperi G, Malacrida AR (2003) Comparative analysis of microsatellite loci in four fruit fly species

of the genus Ceratitis (Diptera: Tephritidae). *Bulletin of Entomological Research* 93, 1–10

Abubakar L. U., Zimba G., Wells C., **Mulaa F**. and Osir E. O. (2003). Evidence for the involvement of a tsetse midgut lectin-trypsin complex in differentiation of bloodstream-form trypanosomes. Insect Sci. Applic. 23(3). 197–205.

Mulaa F (2003). Introduction to bioinformatics. Report of the first international course on strategic planning for parasite control. Eastern and South Africa Centre of International Parasite control (ESACIPAC). 3-21, Feb 2003.P 56- 58.

Waibochi L .W, Ballingali K.T, Machuga N.D, **Mulaa F.J** And Mckeever D.J (2002). Allelic polymorphism in CD45 locus In African cattle. Journal Of The Cameroon Academy Of Sciences Vol 2 Supplement (2002) 251-255.

Baliraine F. N., Bonizzoni M., Osir E. O.,. Lux S. A, **Mulaa F. J.**, Quilici S,. Gomulski ,L. M, Gasperi G. and Malacrida A. R. (2002) "Medfly microsatellite markers for species diagnosis and population genetic analysis in three tephritid fruit fly species. Proceedings of the 6th International symposium on fruit flies of economic importance, Stellenbosch, South Africa, 6-10 May 2002.

Baliraine F.N, Osir.E.O, Obuya S.B, and **Mulaa, F.J** (2001). Protein polymorphism in two populations of the brown ear tick, *Rhipicephalus Appendiculatus* Neumann (Acari: Ixodidae). Insect Sci.Applic.Vol.20.(3), 227-231.

Pina Sallicandro, Maria Grazia Paglia, Suhaila Omar Hashim, Francesco Silvestrini, Leonardo Picci, Marco Gentile, **Francis Mulaa** and Pietro Alano (2000). Repetitive sequences upstream the pfg27/25 gene determine frequent polymorphism in this subtelomeric locus in laboratory and natural lines of Plasmodium falciparum. Mol. Biochem. Parasitol. Oct 110 (2): 247-257.

Kaiuki, M.M, Kiaira, J.K**, Mulaa,F.J,** Mwangi, J. K, Wasunna, M.K, and Martin, S.K (1998). Plasmodium falciparum: Purification of the various gametocyte developmental stages from in vitro cultivated parasites gametocytes Am J. Trop. Med. Hyg., 59 (4), 505-508.

Kariuki, M, Ogwang, R, **Mulaa, F,** Martin S.K (1998). Signal transduction in malaria gametocytes. biochemical pathways in parasites of medical importance. Proceedings of a workshop held at the University of Cape Town from 14-16 January (1998). South African Journal of Science. 271-272

Khan B., Omar S., Kanyara J.N., Warren-Perry M., Nyalwidhe J., Peterson D.S., Wellems. T.,Kaniaru S., Gitonga J., **Mulaa F.J.**, and Koech D.K (1997).Antifolate drug resistance and point mutations in *Plasmodium falciparum* in Kenya. Trans Trop Med and Hyg 91: 456-460.

Songok E.M., Tukei P.M., **Mulaa F.J.** (1996). Serological investigation of HIV-1 variant subtype strains in transmission in Nairobi. E. Afr. Med J. 73 (2) . 88-90.

Mulaa F.J. and Aboderin A.A (1992). Two Phosphoglycoprotein (Phosvitins) from *Kinixys erosa* Oocyte. Comp. Biochem. Physiol. 103B 1025 - 1031.

Mulaa F.J. (1990).The Phosphoproteins of the African Land tortoise *Kinixy erosa* Lin.

Ph.D. Thesis Obafemi Awolowo University Ile - Ife.

Mulaa F.J (1986).The effects of Corticosteroids on Neurotransmitter metabolism on the rat CNS.MSc thesis University of Nairobi.

Mulaa F.J. (1983).The effects of Cortisone on GABA metabolism on the rat hypothalamus and hippocampus. MSc Thesis Donestsk State University.

Book Chapters and Biosensor Research

Petra M. Krämer, Cristina M. Weber, Elisabeth Kremmer, Christina Räuber, Dieter Martens, Stephan Forster, Larry H. Stanker, Peter Rauch, Paul M. Shiundu, **Francis J. Mulaa** (2006). Optical Immunosensor and Conventional ELISA for the Analysis of Pyrethroids and DDT in Environmental Samples. **ACS Symposium Book with the tentative title 'Rational Methods for the Selection and Use of Agrochemicals'** (Editors: Ivan R. Kennedy, Keith Solomon, Shirley Gee, Angus Crossman, Shuo Wang). (Accepted for Publication)

Francis J. Mulaa, Cristina M. Weber, Stephan Forster, Peter Rauch, Martin Robinson, Calum McNeil, Edward K. Muge, Vincent Madadi, Paul M. Shiundu, Larry H. Stanker, Petra M. Krämer. (2005). Application of an Optical and an Electrochemical Immunosensor for Pollution Monitoring in the Nairobi River. The second workshop on **Biosensor** for Food Safety and Environmental Monitoring, 10th to 12th November, 2005. Agadir Morocco. http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=186172

Weber, Cristina Forster, Stephan Kremmer, Elisabeth Rauch, Peter Mulaa, Francis Stanker, Larry Kramer, Petra (2005). A New Optical Immunosensor Platform for the Analysis of Pyrethroids and Ddt in Water. Pacifichem Symposium. http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=179924

Novel DNA/Proteins Submited to GeneBank: (http://www.ncbi.nlm.nih.gov/)

1. AAN86938 4-methyl-5-beta-hydroxyethylthiazole kinase [Plasmodium falciparum] gi|27362863|gb|AAN86938.1|[27362863]

2. AAN60085 phosphotrypsin [Glossina fuscipes fuscipes] gi|24496454|gb|AAN60085.1|[24496454]

3. AAM82602 lectizyme [Glossina fuscipes fuscipes] gi|21952507|gb|AAM82602.1|AF525314_1[21952507]

4. CAB93664 hypothetical protein [Plasmodium falciparum] gi|8250571|emb|CAB93664.1|[8250571]

5. CAB93663 gap [Plasmodium falciparum] gi|8250569|emb|CAB93663.1|[8250569]

6. CAB93662 hypothetical protein [Plasmodium falciparum] gi|8250568|emb|CAB93662.1|[8250568]

7. EF113328 Bacillus licheniformis isolate LBS 1(5) 16S ribosomal RNA gene, partial sequence gi|118722725|gb|EF113328.1|[118722725]

8. EF113327 Bacillus licheniformis isolate LB 8C 16S ribosomal RNA gene, partial sequence gi|118722724|gb|EF113327.1|[118722724]

9. EF113321 Bacillus halmapalus isolate LB 16 16S ribosomal RNA gene, partial sequence gi|118722718|gb|EF113321.1|[118722718]

10. AY528737 Bacillus halodurans alpha-amylase gene, complete cds gi|46487400|gb|AY528737.1|[46487400]

11. AJ580352 Paracoccus sp. BOG6 partial 16S rRNA gene, isolate BOG6 gi|49292199|emb|AJ580352.1|PSP580352[49292199]

12. AF542087 Bacillus halodurans isolate 314 16S ribosomal RNA gene, partial sequence gi|33332339|gb|AF542087.1|[33332339]

13. AF542086 Bacillus halodurans isolate 34 16S ribosomal RNA gene, partial sequence gi|33332338|gb|AF542086.1|[33332338]

14. AY423275 Bacillus halodurans isolate LBK 261 16S ribosomal RNA gene, partial sequence gi|39636533|gb|AY423275.1|[39636533]

Presentations at Conferences Symposia

Abubakar L.U., Bulimo W.D, Masiga D, **Mulaa F.J**., Osir E.O. Jan 2004;.Analysis of a serine protease gene expressed in midgut of african trypanosome vector, *glossina fuscipes fuscipes*. African Journal of Biotechnology: Jan 3(1)

Mulaa. F, Shiundu, P, and Moore E.R.B (2000) Effects of metal ions and phenolic compounds on thermophilic bacteria isolated from lake Bogoria, Kenya, Third internation congress on extremophiles Hamburg, Germany, September 3-7, p 146 (abstract)
Abstracts.

F. Baliraine, M. Bonizzoni, E. O. Osir, L. A. Lux, **F. J. Mulaa**, D. K. Masiga, L. Zheng, L. M. Gomulski, G. Gasperi & A. R. Malacrida. (2002). microsatelliti derivati nella mosca mediterranea della frutta, *ceratitis capitata* , in altre tre specie congeneriche *XIX Congresso Nazionale Italiano di Entomologia* Catania, 10-15 giugno 2002

Hashim S.O., Delgado O., Martinez A, Hatti-Kaul R **Mulaa FJ** and Mattiasson. (2002). Alkaline amylases from *Bacillus halodurans* isolate 34. Poster presentation at the 4th International Congress of Extremophiles. 25th - 26th September 2002., pp 445.

F. Baliraine, M. Bonizzoni, E. O. Osir, L. A. Lux, **F. J. Mulaa**, S. Quilici, L. M. Gomulski, G. Gasperi & A. R. Malacrida. (2002). Medfly microsattellite markers for species diagnosis and population genetic analysis in three other fruit fly (Diptera : tephritidae) species. Proceedings of 6th International fruit fly symposium. 6-10 May 2002. Stellenbosch, South Africa. P. 411-414.

Tami.G; Pelle. R and **Mulaa. F** (2001). Plasmodium falciparum gametocyte cell cycle regulatory mechanism. 3rd International Congress of Federation of African Societies of Biochemistry and Molecular Biology. Cairo, Egypt, Nov. 14- 16, p 210 (abstract).

Laila Abubakar, Ellie Osir, **Francis Mulaa** (2001). Role of the midgut lectin-trypsin from *glossina fuscipes* in immunity and parasite differentiation. 4th COST-B9 Congress on Antiprotozoal Chemotherapy 6 to 9 May. Lisbon, Portugal.

Abubakar .L, Osir E.O, **Mulaa F.J.** (2001). The role of midgut lectin-trypsin from *Glossina fuscipes* in immunity and parasite differentiation. Biochemical Society of Kenya 7th annual symposium, 6-7th September, 2001

Baliraine .F .N, Osir. E O, Obuya, S.B , and **Mulaa F.J,** (2001). Genetic variation in two *Rhipicephalus appendiculatus* (Axari: Ixodidae) populations in Kenya, assessed by two dimentional gel electrophoresis. Biochemical Society of Kenya 7t^{h} annual symposium, 6-7th September, 2001.

Ochieng V.O., Osir E.O, and **Mulaa F.J.** (2001)**.** Genetic biodiversity in banana weevil *Cosmopolites sordius* populations in banana growing regions of the world. Biochemical Society of Kenya 7th annual symposium, 6-7th September, 2001.

Oyamo G.O, **Mulaa F.J** and Dion M. (2001). Molecular evolution of α–galactosidase AgaB from *Bacillus strearothermophilus* by saturation mutagenesis. Biochemical Society of Kenya 7t^{h} annual symposium, 6-7th September, 2001

Laila Uweso Abubakar, Ellie O. Osir, **Francis Mulaa**: (2001). Identification of a lectin-trypsin complex as the putative inducer of trypanosome transformation in tsetse midgut Molecular Parasitology Meeting XII.
Kevin Raymond Oluoch, Vish Nene and **Francis Jakim Mulaa** (2000) Identification of schizont cDNAs located on a subtelomeric fragment of the *Theileria parva* genome. 18th International Congress of Biochemistry and Molecular Biology – Beyond the Genome, Birmingham, UK, 16-20th July 2000

Waibochi L .W, Ballingali K.T, Machuga N.D, **Mulaa F.J** And Mckeever D.J (2000). Allelic Polymorphism In CD45 Locus In African Cattle. Journal Of The Cameroon Academy Of Sciences p.251 Proceedings Of The 4th Congress Of The Federation Of African Immunological Societies Held In Yaounde On 14-18 February 2000

Menge, D.M., Makawiti, D.W., **Mulaa, F.J**. and Otsyula, M.G. (2000). Isolation and partial characterisation of an HIV-like lentivirus from De Brazza's monkeys, Cercopithecus neglectus. 18th International Union of Biochemistry and Molecular Biology (IUBMB) congress, Birmingham, UK, 16th-20th July 2000

Menge, D.M., Makawiti, D.W., **Mulaa, F.J**. and Otsyula, M.G. (1998). Development of a non-human primate model for HIV/AIDS Pathogenesis. 2nd Federation of African Societies of Biochemistry and Molecular Biology, Potchefstroom, South Africa, 30th Sept-3rd Oct.

Kariuki M.M., Kiaira J.K., **Mulaa F.J.**, and Martin S.K. (1996) Identification of homologues of the cell cycle regulators in mature *in vitro* cultivated Plasmodium falciparum gametocytes. The 1st Pan Afr Cong on Biochem and Mol Biol Sep 2-6, Abst No. F-42 P 243.

Songok M; Tukei P; **Mulaa FJ**;. HIV-1 V3-loop antibodies and it's association with clinical status in Nairobi. *Int Conf AIDS. 1994 Aug 7-12;10(1):113 (abstract no. PA0070). Unique Identifier : AIDSLINE ICA10/94369300*

Mulaa F.J. (1992).The plant lectins of Indigenous African plants.Isolation and characterization.1st Kenya Natural Products Symposium University of Nairobi Oct. 19th.

Curricullum Development and Teaching Experience

2006 Conceptualization and Development of curriculum and syllabus, for postgraduate Training program in Biotechnology and Bioinformatics for the University of Nairobi, Centre for Biotechnology and Bioinformatics (CEBIB). http://www.uonbi.ac.ke/cebib

2006 Development of curriculum and training material, for Biosafety training course for International Livestock Research Institute (ILRI) research scientists.

2002 Senior Lecturer Department of Biochemistry University of Nairobi: Assignments include teaching and research supervision of Biochemistry and Molecular Biology to postgraduate and undergraduate student in University of Nairobi.

2003 Development of curriculum and training material for, First BSK computational biology (bioinformatics) training workshop, 11-13 August

2003 Resource Person EISACIPAC-KEMRI Training Workshop on Bioinformatics (3rd-7th February 2003)

2000 Development of curriculum and training material for, Modernized University of Nairobi Degree program in Biochemistry and Molecular Biology

1986 - 1994 Tutorial Fellow department of Biochemistry University of Nairobi

Posgraduate PhD Postgraduate Student Supervision

Germaine Tami (1999-2004) Analysis of putative pharmacological targets on Plasmodium falciparum: Characterization of cell cycle control mechanisms in drug resistance**.**

Suhaila Hashim (2000- 2004). Stable biocatalysts from extremophiles for utilisation of renewable raw materials.

Kevin Oluoch (2000-2006). Extremophiles for environmental biotechnology.

Frederick Baliraine (2001-2004) Development of molecular markers for species diagnosis and analysis of genetic diversity in African fruit fly populations.

Vincent Ochieng (1997-2002). Studies on the genetic biodiversity in banana weevil *Cosmopolites sordidus*, populations.

Laila Abubakar (1998-2003). Molecular characterization of the lectin-trypsin complex from the midgut of the tsetse fly, *Glossina fuscipes fuscipes.*

George Osanjo (2004 -2007).Characterization and molecular evolution of fucosidase from extremophiles by saturation mutagenesis

Leah Tsuma (2005-2008) Applications in Biocatalysis of Glycosyl Hydrolases and

Lipases from Extremophilic Organisms from Rift Valley Soda Lakes

Posgraduate MSc Postgraduate Student Supervision

Omar Sabah (1994)	Detection of drug resistance *Plasmodium falciparum* by Polymerase chain reaction using Oligonucleotide primers.
Elijah Songok (2000).	The molecular Epidemiology of the human Immuno deficiency virus in Kenya: Serological characterization of hypervariable region of envelope glycoprotein GP 120 of the HIV I virus in transmission in Nairob.i
Michael Kariuki (1997).	Identification of homologous of the cell cycle regulators in mature *in vitro* cultivated *Plasmodium Falciparum* Gametocyte.
Suhaila Hashim (2000).	Genetic variation of *Plasmodium falciparum* from malaria endemic regions of Kenya.
Frederick Baliraine (1999).	Use of RAPDS to study the Genetic variation between infected and refractory ear the *Rhipicephalus appendiculatus*.
Melanie De Souza (2000).	Analysis of putative candidate genes for drug resistance in *Trypanosoma congolense*.
Lilian Waibochi (2001).	Analysis of polymorphism in the gene encoding the bovine CD45 molecule.
Peter Ojwang (2001).	Isolation, purification and characterisation of DNA binding proteins and their target sites from a thermophile growing in Rift Valley hot springs.
George Oyamo (2001).	Molecular evolution of alpha galactosidase AgaB from bacillus strearothermophilus by saturation mutagenesis
Edward Muge (2003)	Isolation of camel phage displayed functional of camel phage displayedfunctional single domain antibody fragments against pesticides (pyrethrin and ddt) and chloroquine
Leah Tsuma (2003)	Isolation and Characterisation of Glycosidases from Extremophiles.
Patrick Okanya 2003	Screening for antimalarial activity using extremophiles of the Kenyan soda lakes
Gladis Bichanga 2003	Characterization of cell cycle regulatory gene in mature in-vitro *plasmodium falciparum* gametocytes
Paul Okeyo 2003	Biological activity of secondary metabolites from extremophilic microorganisms of the Kenyan soda lakes

Academic Interests:

Environmental and Industrial Biotechnology Bioremediation by biotechnology, Biocatalysis, Molecular microbial ecology techniques, microbial community structure analysis, biology of new natural products and producers, metabolic engineering of microorganisms, evaluation of toxicological effects using genomic and proteomic techniques, metabolic profiling, application of high throughput screening techniques in drug discovery.

Molecular and cell biology: DNA and RNA labelling, purification and analysis, cDNA synthesis, DNA and RNA fingerprinting techniques including differential display technology, Nucleic acid amplification and detection methods including PCR, Use of RNA and DNA fingerprinting techniques for species identification, and high throughput screening techniques.
thermal melt analysis, genotype analysis using the 373/310 format, Northern and Southern blotting, DNA sequencing, signal transduction and biosignaling protocols, bioinformatics tools, protein and DNA arrays protocols, gametocyte cultivation technology, cell and tissue culture techniques***,*** *in vitro* human liver culture systems, and tissue engineering technology.

Immunotechnology: Phage display antibody technology, immunodiagnostics, conjugation techniques, complete antibody production and purification, enzyme and signal amplification systems, separation and solid-phase systems, assay development, evaluation and validation, reagent formulations and shelf life evaluation.

Protein chemistry: Downstream processing techniques, protein and Amino acid analysis techniques, protein cross-linking and derivatization techniques, protein modification techniques, immobilization technologies, radioactive and non-radioactive labelling and detection protocols, Western blotting techniques, integration of proteomics in drug discovery and development process

Instrumentation: Instrumentation for study of biological structure and function. Absorption spectroscopy, principles, analysis, other optical techniques, optical activity, fluorescence spectroscopy, ultracentrifugation, chromatography, electrophoresis, Automated DNA sequence analysis 16 capillary sequencer

Membership of Societies and Positions held

1992	Member Biochemical Society of Kenya
1992	Appointed Executive Committee Member Organizing Committee ICRO/UNESCO International Union of Biochemistry and molecular Biology Symposium on current research trends on the Biochemistry of Parasitic Protozoa.
2000	Executive Committee Member Biochemical Society of Kenya.
2004	Member American Society of Microbiologists

Hobbies: Biotechnology and industrial products formulary