

## CURRICULUM VITAE

### MATILDA ANGELA OKECH

Senior Lecturer and Dean Faculty Biomedical Sciences

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### Profile

A trainer and working with 3 PhD (one on Malaria; one on Actinomycetes; Human papiloma virus) and 2 MSc (one on liquid milk contamination; effect of plant extract on MRSA) Microbiology students on their proposal development and research bench work

### Education

- 1969 Teaching Diploma (Biology, Chemistry and Mathematics) Kenya Science Teachers College
- 1973 B. Sc. (Biology, Zoology and Chemistry), University of Nairobi, Kenya
- 1978 M. Sc. (Microbiology), University of Arizona, Tucson, Arizona, U.S.A.
- 2002 Ph.D. (Microbiology), Kenyatta University, Nairobi, Kenya

### Professional Experience

Affiliation: Teachers Service Commission, Kenya

Dates: January 1970 – September 1970

Position: Class teacher and Deputy Headmistress, Asumbi Girls School.

Affiliation: Teachers Service Commission, Kenya

Dates: January 1973 – July 1973

Position: Class teacher, Ahero Girls High school

Affiliation: Associates in Laboratory Medicine, Tucson, Arizona

Dates: July 1978 - January 1982

Position: Clinical Microbiologist

Duties: Isolation, Identification and susceptibility testing of the clinical microbes  
Identification of intestinal parasites and immunological tests. Making reports to the Doctors. Training technical staff on the job.

Affiliation: ICIPE, Nairobi, Kenya

Dates: February 1982 – 2006

Position: Scientific Officer and 2002 - Postdoctoral fellow

Duties

- Isolation and Identification of microbes associated with higher Termite for the delignification of lignocellulose materials

- Development of DUDUstop – Optimization studies for the fermentation of *Bacillus thuringiensis var.thuringiensis (Btt)* using local raw material; bioassays and field-testing of the product.
- Control of tsetse flies in Mfangano Island – mass production of fungi (*Metarrhizia anasopliae*); quality control on the product and field trials.
- Establishing resistance of *C. partellus* to *B.thuringiensis (CryIAb)* toxin; determination of persistence of *B.t.* toxin in the soil and susceptibility testing of stem borers to *B.t. (CryIAb)* toxin
- Applied Bioprospecting - isolation, preservation, fermentation and screening bioassays of soil microbes (*Actinomycetes* and *Bacillus* sp.) for their ability to produce bioactive molecules;

### **Research Scientist:**

**Dates 2007 – March 2009**

- Mushroom production: Tissue culture; spawn production; mushroom production; research on integrated mushroom pest management and training of mushroom farmers

### **Other duties:**

- Chairperson of Laboratory Order and Safety Committee and head of environmental and occupational Health and Safety (EOH&S) office. Developed the (*icipe*) Institutional Guide to Laboratory Biosafety policy documents.

### **Affiliation**

**Kampala International University (KIU) – Western campus**

**Date May 2009 - date**

- Senior lecturer in the Microbiology Department and Dean of the Faculty of Biomedical Sciences

### **PUBLICATIONS**

1. **Nguya K. Maniania, Matilda A. Okech, James O. Adino, Jacob O. Opere & Sunday Ekesi** Transfer of inoculum of *Metarhizium anisopliae* between adult *Glossina morsitans morsitans* and effects of fungal infection on blood feeding and mating behaviors. J Pest Sci (2013) 86:285-292 DOI 10.1007/s10340-012-0473-7, **Journal of Pest Science**, ISSN 1612-4758, Volume 86, Number 2
2. **James Oluoch Nonoh<sup>1,2</sup>, Wilber Lwande<sup>1</sup>, Daniel Masiga<sup>1</sup>, Rafi Herrmann<sup>4</sup>, James K. Presnail<sup>4</sup>, Eric Schepers<sup>4</sup>, Matilda Angela Okech<sup>1</sup>, Richard Bagine<sup>3</sup>, Paul Mungai<sup>3</sup>, Aggrey Bernard Nyende<sup>2</sup> and Hamadi Iddi Boga<sup>2</sup>.** Isolation and characterization of *Streptomyces* species with antifungal activity

from selected national parks in Kenya. *African Journal of Microbiology Research* Vol. 4 (9), pp. 856-864, 4 May, 2010

3. **Fitt, G. P; Omoto, C, Maia, A. H, Waquil J. M, Caprio, M., Okech, M. A, Cia, E.,Nguyen Huu Huan and Andow, D. A. (2006)**, Resistance risks of *Bt* cotton and their management in Brazil In: Environmental Risk Assessment of Genetically Modified Organisms: Methodology for Assessing Bt Cotton in Brazil. Edited by A. Hilbeck, D. A. Andow and E. M. G. Fontes
4. **Nguya, K. Maniania, S. Ekesi, A. Odulaja, M. A. Okech and David J. Nadel (2006)**, Prospects of a fungus-contaminated device for the control of tsetes fly *Glossina fuscipes fuscipes*. *Biocontrol Science and Technology*, **16** (1/2): 129 - 139
5. **Fitt, G. P., Andow, D. A., Carriere, Y., Moar, W. J., Schuler, T. H; Omoto, C., Kanya J., Okech, M. A, Arama, P., and Maniania, N. K. (2004)**. Resistance risks and management associated with Bt maize in Kenya. In: Environmental Risk Assessment of Transgenic Organisms: A case study of Bt-maize in Kenya. Edited by A. Hilbeck and D. A. Andow
6. **Okech, M. A. (2002)**. Studies on Indigenous *Bacillus thuringiensis* isolates active against selected insect pests. A thesis submitted in fulfillment for the degree of Doctor of Philosophy in the Faculty of Science Kenyatta University
7. **Mahamat, H., Okech, M. A. and Maniania, N. (1998)**. The lethal insect technique (LIT): a new concept for the control of *Glossina* spp. In the laboratory and field. In: *24<sup>th</sup> Meeting of the International Scientific Council for Trypanosomosis Research and Control, Maputo*, Publication no. 119
8. **M.A.Okech and M.O.Koteng'o (1994)**. Using termites as a source of Microorganisms in Efficient Cellulose Digestion. (A. Hassanali and A. Ngeny-Mengech eds.) In **Chemistry and Development in Africa**.
9. **M.A.Okech and A. Hassanali (1990)**. The Origin of Phenolic Tsetse Attractants from Host Urine: Studies on the Pro -Attractants and Microbes Involved. *Insect Sci. Applic.* Vol **11**, no. **3**, pp. **363-368**.
10. **G. P.Kaaya and M.A.Okech (1990)**. Microorganisms associated with Tsetse in nature: Preliminary results on isolation, identification and pathogenicity. *Insect sci. Applic.* vol **11**, no. **3**. pp. **443-448**.
11. **G.P. Kaaya and M.A.Okech (1990)**. Horizontal transmission of mycotic infection in adult Tsetse, *Glossina morsitans*.*Entomophaga* **35** (4) pp.**589-600**.
12. **M.A. Okech and M.O. Koteng'o (1988)**. Culture, Isolation and Microscopic Studies on *Termitomyces* species from the fungus-comb of *Microtermes michaelseni*. *Mushroom Journal for the Tropics* Vol. **8** NO. **2** Ap. **1988**.
13. **M.A. Okech and M.O. Koteng'o (1986)**. Isolation of Microorganisms Associated with Higher African Termites for Potential use in Bioconversion of Lignocellulose Material In: Proceedings: 6th International Conference of African Association of Insect Scientist. **Monrovia, Liberia 24-26 March 1986**.

14. **H.Osore and M.A.Okech (1983).**The Partial Purification and Some Properties of Cellulase and B-Glucosidase of *Termitomyces* Conidiophores and Fruit bodies. *J. Appl. Biochemistry* Vol. 5, 172-179.
15. **W. Lwande, T. Gebreyesus, A. Chapya, C. Macfoy, A. Hassanali and M.A. Okech (1983).** 9-Acridone insect antifeedant alkaloids from *Teclea trichocarpa* bark. *Insect science and its application*, Vol 4, No. 4 pp 393-395

#### Paper Presented at Conference

1. "The origin of phenolic tsetse attractants from buffalo urine; Studies on the microbes and the precursors involved". **International Study Workshop on tsetse population and behaviour. 6-11 August 1989, Nairobi, Kenya**
2. "Isolation of Microorganisms Associated with Higher African Termites for potential use in bioconversion of lignocelluloses material". **The African Association of Insect Scientists Conference in Monrovia, Liberia 24-26 March 1986**
3. "Termite as a source of micro-organisms for efficient lignocellulolytic degradation". **Proceedings of the 2nd International Chemistry Conference in Africa, Nairobi, Kenya. June 27-July 2, 1983.**
4. International Training Course on Methods and Techniques for Biological Control in the Tropics, 12th September to 1st October, 1993, Nairobi, Kenya
5. HCDA-ICIPE-USAID Training Workshop on Pest Management in Vegetable Crops for Technical Field Officers 25<sup>th</sup> September 1997, Nguruman
6. **"Microbial Insecticides and Rational Pesticide Use"**. ICIPE- Ministry of Agriculture, Livestock Development and Marketing. Kenya Agricultural Research Institute February 10-11, 1998. **Integrated Pest Management Training for Extension Officers in Kwale and Kilifi District**
7. **"Use of Biopesticides in stem borer management"**. Workshop and Group Training Course on the "Management of Cereal Stem borers in Eastern and Southern Africa." Held at the International Centre of Insect Physiology and Ecology, Nairobi, Kenya 12 –23 October, 1998
8. Taught Laboratory sessions during the workshop on "Use of *Bacillus thuringiensis*-based biopesticides for Pest/Vector Management in Africa". Held at the International Centre of Insect Physiology and Ecology, Duvvuru, Nairobi, Kenya. 10 –19 November 1999.
9. Attended the 'Eighth Biochemical Society of Kenya Annual Scientific Symposium' 26 - 27<sup>th</sup> September 2002 and presented a paper title "Production of local *Bacillus thuringiensis* on cheap available raw materials". Nairobi, Kenya

10. Attended a workshop on 'Genetically Engineered Organisms' (GMO) guidelines Project Workshop 25<sup>th</sup> – 29<sup>th</sup>, November 2002, *icipe*, Nairobi, Kenya.
11. Attended a workshop on 'Genetically Engineered Organisms' (GMO) guidelines Project Workshop April 2003, Brasilia, Brazil.
12. Attended a workshop on 'Establishment of the East Africa Biological Resource Centre to secure the Conservation and Sustainable Utilization of Microbial Diversity', organized by CAB International, 2 -3<sup>rd</sup> March 2004, CABI Africa Regional Centre, ICRAF, Nairobi, Kenya
13. Presented a paper title '*Bacillus thuringiensis* and other microbial agents in pest and vector management in Kenya'. 2<sup>nd</sup> Regional Microbiology Conference held at the Kenya School of Monetary Studies, Nairobi Kenya 16<sup>th</sup> - 19<sup>th</sup> March, 2004.
14. Attended a workshop on Establishment of a Biological Resource Centre for Kenya and presented a paper on 'The collection, storage and access to microorganisms at ICIPE', KARI -NARL, Kabete, January 25 to 26, 2005

#### **Fellowship:**

1. 1985 International Atomic Energy Agency for a three month training at the university de Padova, Padova, Italy.

#### **Training Attended**

1. Techniques for the culture and conservation of microorganisms. Nairobi 9-21 January 1984 given by the staff of **Commonwealth Mycological Institute**
2. First International Training Programme in Industrial biotechnology - Gesellschaft für Biotechnologische Forschung. Mascheroder Weg D-3300 Braunschweig Germany **27<sup>th</sup> April-15<sup>th</sup> June 1987**
3. Optimization studies on *Bacillus thuringiensis* var. *thuringiensis* at the University of Helsinki, Finland. **1<sup>st</sup> Nov. 1989-30<sup>th</sup> Apr. 1990; June 1992 – July 1992**
4. UNEP/MSDN training course on the use of computers in microbiology. **Jan, 24-28, 1994**, Lusaka, Zambia. (Data bases)
2. Took an in-house training on "Research Project Management", an interactive course for postgraduate scholars. **ICIPE Duduville, 17 April - 16 May 2000.**
6. Attended the East African Quality Coordinator's course B, Part IV: Self-assessment at program level, given by the Inter-University Council for East Africa Held in Nairobi, Kenya, from 1<sup>st</sup> to 4<sup>th</sup> February 2010

### Students supervised:

1. **Priscillar Mumo Mutungi**, MSc student at Jomo Kenyatta University of Agriculture and Technology (JKUAT): Thesis entitled: “**Studies on a protein with antifungal activities from a Streptomyces isolate**”
2. **Lisa Mucheni – KIU (2012)**
3. **Baguma Andrew (2012)**. MSc Microbiology, KIU: Thesis: Epidemiological studies of nosocomial bacteria infections of soft tissues in South-western Uganda.

### External Examiner:

**1. Birithia Rael Kayume** a student at JKUAT – the thesis entitled: “Molecular Characterization and genetic Diversity of tomato Root-knot Nematode (*Meloidogyne* spp.) from selected Localities in Kenya” for an MSc student

### Student currently under my supervision:

1. **Adamu Almustapha Aliero** (candidate)  
“Assessment for bioactive compound production by Actinomycetes isolated from waste dump soil in Uganda”
2. **Maniga Nyabayo Josephat PhD** (candidate)  
“Epidemiology and Genetic Diversity of Drug resistant *Plasmodium falciparum* parasites to artemisinin combination therapies in Bushenyi, Uganda“
3. **Eilu Emmanuel** (candidate)  
“Epidemiology and Molecular chararisation of Human papiloma virus among women in Eastern Uganda”

### MASTERS STUDENTS

1. **ABUBAKAR SANUSI ADAM**  
“In-Vitro Determination of Resistant Pattern And Antibacterial Effects Of Carica Papaya Leaves Etracts on *Staphylococcus epidermidis* Isolated From Surfaces of Kampala International University Teaching Hospital (KIU-TH) “
2. **BLESSING Jacob Yashim**  
“Assessment of bacteriological quality of raw and packaged liquid milk sold in Ishaka town“

### Courses I have been teaching and the group of students

1. Medical Mycology – Undergraduate Medical students; Allied Health and Pharmacy students
2. Bacteriology - Undergraduate Medical; Allied Health and Pharmacy students