

CURRICULUM VITAE

1.1 Personal Profile

1.1.1 Personal Details

Name: Marion Warigia Burugu

Department: Biochemistry Microbiology and Biotechnology

Designation: Lecturer

Email: Warigia.marion@ku.ac.ke

Area of Specialization: Molecular Biology

Research Interests:

- Bioremediation
- Phytochemistry
- Ecological genomics

Google Scholar: Marion Warigia Burugu

ORCID ID: 0000-0002-3679-9307

1.1.2 Academic and Professional Qualifications

2005-2008 : Ph.D (Molecular Biology) KEMRI / Kenyatta University,
Nairobi, Kenya.

2001-2004: M.Sc. (Biotechnology) ICIPE/Kenyatta University,
Nairobi, Kenya.

Oct 1996- April 2000: B.Sc. (Biochemistry and Zoology), Second
Class Upper Division, Kenyatta University,
Nairobi, Kenya.

1991 – 1994 : Gituru Secondary School, Murangá County
Kenya Certificate of Secondary Education (KCSE) - Mean Grade B minus

1.1.3 Employment History

- October 2010 to date- Kenyatta University School of Pure and Applied Sciences
Department of Biochemistry Microbiology and Biotechnology.
Position- Lecturer
- 2008- August 2010- Kenya Medical Research Institute
Centre For Virus Research
Position: Research Officer

1.1.4 Achievements At Kenyatta University

- Preparation and disclosure of lectures in basic biochemistry, ecological biochemistry, immunology, virology and molecular biology.
- Postgraduate students supervisions and examination of students' thesis
- Coordinated Forensic science programme from 2012 to 2014: Organized laboratory practicals (Years 1-4) and organized External practicum for all Third Year students persuing Bachelors of Forensic Science course.
- Reviewing curriculum taught at the Department of Biochemistry Microbiology and Biotechnology
- Development of Forensic Curriculum -Diploma programme and Post Graduate diploma curriculum..

At KEMRI

- Team leader Molecular Diagnosis Section in Viral Hemorrhagic Fever Laboratory, KEMRI.
- Genotyped many virus isolates of medical and veterinary importance using RT-PCR and sequencing to study their molecular epidemiology.
- Formed part of Emergency Response Team in cases of Human Infectious Diseases Outbreaks/ pandemics.
- Trained attachment students on Molecular Virology Techniques.

1.2. Publications

1.2.1 Referred Journals

- **2023**

Kiarie T, **Burugu M**, Amayo A. Significance of Chloride delta flags in Critical Care Unit patients at The Nairobi Hospital. *TNH Med J* 2023; 2(1): 21 -34.

- **2022**

Kiarie TN, **Burugu M**, Amayo A. Percentage delta method nets the highest clinically relevant delta flags in critical care patients. *TNH Med J* 2022; 1(1): 9 -19.

- **2019**

Omondi, P., **Burugu, M.**, Matoke-Muhia, D., Too, E., Nambati, E.A., Chege, W., Musyoka, K.B., Thiong'o, K., Otinga, M.S., Muregi, F., & Kimani, F. (2019). Gametocyte clearance in children, from western Kenya, with uncomplicated *Plasmodium falciparum* malaria after artemether–lumefantrine or dihydroartemisinin–piperaquine treatment. *Malaria Journal*, 18.

P. Arusei¹, S. Runo, **M. Warigia**, A. Ngetich and P. Leley (2019). Quantitative Trait Loci Analysis of Maize (*Zea mays* L.) for Maize Streak Virus Resistance. *Journal of Experimental Agriculture International* 33(4): 1-6, 2019; Article no.JEAI.41121 ISSN: 2457-0591.

- 2018

Kipsang, A.K., **Burugu, M.**, & Arodi, W.O. (2018). Prevalence of Viral Severe Acute Respiratory Infections in Patients in the Intensive Care Unit and Those under Mechanical Ventilation in Moi Teaching and Referral Hospital, Uasin Gishu County, Kenya. *International Journal of Virology and Molecular Biology*, 7(1): 1-10
DOI: 10.5923/j.ijvmb.20180701.01

Mwangemi A. Mwanjulu, Joseph J.N. Ngeranwa, **Marion Burugu**, Bernard O. Osero and Christopher O. Anjili (2018). Evaluation of Larvicidal and Ovicidal Effects of *Mundulea Sericea* in the Control of *Culex Quinquefasciatus*. *Journal of Zoological Research* Volume 2, Issue 1, 2018, PP 21-28.

- 2016

G. Kinyanjui, F.M. Khamis, S. Mohamed, L.O. Ombura, **M. Warigia** and S. Ekesi (2016). Identification of aphid (Hemiptera: Aphididae) species of economic importance in Kenya using DNA barcodes and PCR-RFLP-based approach. *Bulletin of Entomological Research* (2016) 106, 63–72.

Wambani RJ, Ogola PE, Arika WM, Rachuonyo HO, **Burugu MW** (2016) Ebola Virus Disease: A Biological and Epidemiological Perspective of a Virulent Virus. *J Infect Dis Diagn* 1: 103.

Thomas Ogao Onchuru, Yvonne Ukamaka Ajamma, **Marion Burugu**, Martin Kaltenpoth, Daniel Masiga and Jandouwe Villinger (2016). Chemical parameters and bacterial communities associated with larval habitats of *Anopheles*, *Culex* and *Aedes* mosquitoes (Diptera: Culicidae) in western Kenya. *International Journal of Tropical Insect Science* page 36, 146–160. doi:10.1017/S1742758416000096

- 2015

Winnie R Gimode, Daniel M Kiboi, Francis T Kimani, Hannah N Wamakima, **Marion W Burugu** and Francis W Muregi (2015) Fitness cost of resistance for lumefantrine and piperaquine-resistant *Plasmodium berghei* in a mouse model. *Malaria Journal* 2015, **14**:38

Wambani JR, Ogola PE, Arika WM, Rachuonyo HO, Kemboi NG, Lihana R and **Burugu MW** (2015). Anti-retroviral drug hepatotoxicity and risk factors in HIV patients with or without hepatitis B and C: a review. *Infectious Diseases & Therapy*. Volume 3 • Issue 6 • 1000258. <http://dx.doi.org/10.4172/2332-0877.1000258>.

Nyamai DW, Mawia AM, Wambua FK, Njoroge A, Matheri F, Lagat R, Kiambi J, Ogola P, Arika W, Cheseto X, King'ori E, Ramni J, Ngugi MP, Muchugi A, Ng'ang'a M, **Burugu**

MW (2015). Phytochemical Profile of *Prunus africana* Stem Bark from Kenya. *Pharmacognosy & Natural Products*. vol 1. Issue 1.

- 2013

Michelle Moore, Massamba Sylla, Laura Goss, **Marion Warigia Burugu**, Rosemary Sang, Luna W. Kamau, Eucharika Unoma Kenya, Chris Bosio, Maria de Lourdes Munoz, Maria Sharakova, William Cormack Black (2013). Dual African Origins of Global *Aedes aegypti* s.l. Populations Revealed by Mitochondrial DNA. *PLoS Negl Trop Dis* 7(4): e2175. doi:10.1371/journal.pntd.0002175.

- 2012

Mwaengo D, Lorenzo G, Iglesias J, **Warigia M**, Sang R, Bishop RP, Brun A. (2012) Detection and identification of Rift Valley fever virus in mosquito vectors by quantitative real-time PCR. *Virus Research*, 169(1):137-43, 2012.

- 2011

LN Wangai, M Geoffrey, S Omar, G Magoma, FT Kimani, JM Mwangi, **MW Burugu**, N Maina (2011). Molecular screening for *Plasmodium falciparum* resistance markers for artemisinin in Mbita, Kenya. *African Journal Of Clinical And Experimental Microbiology*, 12(3): 106-110.

- 2010

Sang, Rosemary; Kioko, Elizabeth; Lutomiah, Joel; **Warigia, Marion**; Ochieng, Caroline; O'Guinn, Monica; Lee, John; Koka, Hellen; Godsey, Marvin; Hoel, David; Hanafi, Hanafi; Miller, Barry; Schnabel, David; Breiman, Robert; Richardson, Jason (2010). Rift Valley Fever virus epidemic in Kenya, 2006/2007: the entomologic investigations. *American Journal of Tropical Medicine and Hygiene* 83: 28-37.

- 2008

Burugu M. W; Abubakar L. U; Kenya E. U; and Osir E. O. (2008). The proteolytic lectin gene is expressed only in tsetse flies, *Glossina* species. *International Journal of Tropical Insect Science*, 27: 145–151.

1.2.3 Scholarly Presentations at Conferences

S. Barasa Khaemba , **M. Warigia** , W. Arodi , C. Wekesa , F. Ogollah (2021). Molecular diversity of hepatitis B virus in HIV infected patients at Mbagathi District Hospital, Nairobi. IAS conference. 18th -21st July., 2021.

Protus Omondi ; **Marion Burugu**; Damaris Matoke ; Edwin Too; Eva Aluvaala ; William Chege; Maureen Otinga; Francis Muregi; Brian Musyoka ; Francis Kimani ; Kevin Thiongo (2020). Gametocyte clearance in children, from western Kenya, with uncomplicated *Plasmodium falciparum* malaria after artemether-lumefantrine or dihydroartemisinin-piperaquine treatment. 10th KEMRI Annual Scientific & Health (KASH) Conference 11th - 13th February, 2020. Safari Park Hotel. Nairobi. Abstract 054

1.2.6. Referred Learning Modules

First Semester 2020/2021 Academic Year Completed Modules

SBC 809: Ecological Biochemistry 1

SBC 350: Cytoskeleton III

SBC 312: Genome Organization II

SBC 273: Cytoskeleton II

SBC 221: Cellular and Molecular Biology I

1.3. Quality Teaching, Learning and Mentorship

1.3.1 Students Evaluations

-SBC113 - Introduction to Molecular Biology. First Semester 2022/2023 Academic Year – Scored A (95.40 %)

-SBC 221 - Cellular and Molecular Biology I. First Semester 2022/2023 Academic Year - Scored A (92.24 %)

- SBC 273 - Cytoskelton II. First Semester. 2022/2023 Academic Year - Scored A (99.43 %)

-SBC 312 - Genome Organization II. First Semester. 2022/2023 Academic Year -Scored A (99.62 %)

-SBC 350 - Cytoskeleton II. First Semester 2022/2023 Academic Year- Scored A (100.00 %)

-SBC 116 - Cytoskeleton I. Second Semester 2022/2023 Academic Year -Scored A (95.40 %)

- SBC 221 - Cellular And Molecular Biology I . Second Semester 2022/2023 Academic Year -Scored A (9.77 %)

- SBC 275 - Genome Organization 1. Second Semester 2022/2023 Academic Year- Scored B (84.48 %).

-SBC 399 - Ecological Biochemistry. Second Semester 2022/2023 Academic Year -Scored A (98.08 %)

-SBC 116: Cytoskeleton I. Second Semester 2017/ 2018 Academic Year – Scored A (93.31 %).

-SBC 275: Genome Organization I. Second Semester 2017/2018 Academic Year- Scored B (86.09%).

-SBC 820: Ecological Biochemistry II. Second Semester 2017/2018 Academic Year- Scored A (100%).

-SBC 221: Cellular and Molecular Biology I. First Semester 2019/2020 Academic year- Scored B (88.51%).

1.3.2 Training in Higher Education

- 16 -20th October 2023: International Molecular Biology Lab Training Programme (MoBiLab). Kenyatta University.
- 19th November 2022- Attended Kenya Research and Mentorship Training on mentorship. United States International University - Africa
- 5-6th May, 2021: Attended a Virtual SPAS staff Training on Development and Implementation of the Competency Based Curriculum Facilitated by Association For Faculty Enrichment In learning and teaching (AFELT).
- 22-24th March, 2021: Attended a short course on patent Drafting facilitated by Kenya Industrial Property Institute at Chandaria Business Innovation and Incubation Centre, Kenyatta University.
- June and September, 2020: Undertook a virtual training on Blended On-Line Learning content development organized by Digital School, Kenyatta University.
- May 2019: Completed one week course on Train The Trainer Training on Lean Start-up organized by Chandaria Business Innovation and Incubation Centre, Kenyatta University.
- April 2016: Participated in a leadership and professional forum on Ethical Professionalism in the current global context facilitated by Global Leadership Interlink.
- December 2015: Completed a training in Values Based Education Forum organized by NorthGate Schools, Nairobi.
- August 2013- Completed a course on Patent Drafting and Dispute Resolution organized by Regional Centre for Capacity Development, Kenyatta University
- 2013-Completed a course on Teaching Methodology organized by Centre for Teaching Excellence and Evaluation, Kenyatta University.
- 2011: Completed a course on Basic Skills in Teaching Methodology and Course examination at Kenyatta University, Organized by Regional Centre for Capacity Development.
- July 2009- Completed the Annual Safety Training by KEMRI- Walter Reed project.

- 5th – 7th May, 2009. Completed training on Good clinical laboratory practice. KEMRI, Nairobi, Kenya
- 16– 18 March, 2009 -Completed training on Laboratory Biosafety and Biosecurity awareness workshop by KEMRI, Nairobi, Kenya.
- 29 – 30th September 2008- Attended a workshop on Graphical Methods of Data Presentation and how to publish a scientific paper: Journal choice to printed paper. University of Nairobi, Kenya.
- April 3- 6, 2008- Completed a training on Real time PCR. Nairobi, By Applied Biosystems.
- 28th Feb – 9th March 2008: Training on Advanced Molecular and Cellular Basis of infection. Hermanus, South Africa.
- July 2006: Trained on Workplace safety and Fire Safety National Security Intelligence Service. KEMRI, Nairobi, Kenya.
- July 17-21, 2006: Training on Bioinformatics and Post Genomic Molecular Cell Biology of African Trypanosomes and Malaria. An advanced course sponsored by Human Frontier Science Program. Kampala, Uganda.
- 11-14th August, 2003: Training Workshop By Biochemical Society of Kenya (BSK) and Kenyatta University on Bioinformatics / Computational Biology, Departments of Computer Science and Biochemistry, Kenyatta University, Nairobi, Kenya .

1.3.3. Ongoing Supervisions

- **Masters**

Tom Kiarie N (I56/25695/2011). Determination of the most sensitive and specific electrolytes deltacheck method for quality control in the Nairobi Hospital Laboratory, Kenya (Defended successfully)

Samuel Barasa Khaemba (P150/22948/2011). Molecular diversity of Hepatitis B virus in HIV infected patients at Mbagathi District Hospital, Nairobi.

Stephen Kipkoech Barngetuny (I56/23068/2011). Assessment of *in vivo* hypoglycemic activity and safety of selected plants from KoibatekSubcounty, traditionally used management of diabetes mellitus.

Serem Naum Jeptoo (I56/25216/18). Preclinical evaluation of the antinoceptive and anti-inflammatory effects of *Carissa spiranum* (Linnaeus) in animal models.

Mohamed Ali (P150F/29071/2014). Molecular detection and genetic characterization of circulating measles from children below five years of age in Mogadishu Somalia.

Muthanga Humphrey Muthomi (P150/27526/2014). The prevalence of West Nile virus among squirrels at Msambweni, Kwale County in Kenya

- **PhD**

Ngari Ngithi Loise (I84/ 20665/20) Identification and artemisinin gene expression of *Artemisia annua* L. in different geographical regions in Kenya

1.3.4 Supervision of Postgraduate Students

1.3.4.1 Masters

16th December 2022

Kipsang K. Amos (P150/27337/2014). Acute viral respiratory infections in intensive care unit and ventilator support patients in Moi Teaching and Referral Hospital, Uasin-Gishu County, Kenya.

23rd July 2021

Omondi Protus Okwato (I56/32937/2015). Evaluation of *Plasmodium falciparum* gametocyte carriage after artemether-lumefantrine or dihydroartemisinin /piperaquine treatment in children from Busia County.

4th August, 2017

Kinyanjui Grace Waithira (I56/ 20403/ 2010). Characterization of Aphid (Hemiptera: Aphididae) Species in Kenya using PCR-RFLP and DNA Barcoding

16th December, 2016

Perpetua Arusei (I56/21297/2010). Quantitative trait loci analysis of maize (*zea mays* L.) for maize streak virus resistance

15th July 2016

Nyamai Dorothy Wavinya (I56/24138/2013). Growth performance and phytochemical profiles of *prunus africana* sampled from Muguga, Kobujoi and Karuri, Kenya

18th December, 2015

Wambani Japheth Rapando (P150/21179/2012). Hepatitis B and C co-infections and their effects on T-lymphocytes and liver function disease markers among HIV patients attending Ampath Clinic, Eldoret.

17th July, 2015

Munyasya Joan Ndumi (I56/23065/2011). Biochemical Effects of Sewage Pollution on The Benthic Organism *Nerita Polita*.

19th December, 2014

Ogao Onchuru Thomas (I56/ 20571/ 2010). Characterization of microhabitats of arboviral mosquito vector larvae on three Islands of Lake Victoria, Kenya

Fulakeza Joseph (I56F/21877/2010). Evaluation of the effectiveness of antimalarial interventions during pregnancy in Blantyre, Malawi

Mwangemi Arthur Mwanjulu (I56/2259/2009). Evaluation of larvicidal and ovicidal effect of *Mundulea sericea* in the control of *Culex quinquefasciatus*

4th July 2014

Omuyundo K Mulati (P150/20960/2010). Prevalence of dengue viral infections among febrile patients in Mombasa County, Kenya

Adu Winnie Riziki (I56/21436/2010) Fitness cost of resistance for lumefantrine and piperazine-resistant *Plasmodium berghei* in a murine model

Kung'u Caroline Wanjiku (I56/20572/2010). Biochemical signalling in the tri-trophic interaction between *Anacardium occidentale*, *Pseudotkeraptus wayi* and *Oecophyia longinoda*

20th December, 2013

Mureithi Maryanne Wanjiru (I56/20399/2010). Isolation and Characterization of Bacteria Pathogens in Blood and Stool Samples among Patients Presenting with Typhoid Fever Symptoms in Alupe, Busia County

1.3.4.2 PhD

4th August 2017

Njagi Irene Wangari (I84/11907/2007). Evaluating promoters for putative root specific expression of transgenes in cassava storage roots

1.4. Professional / Consultancy

1.4.1 Networks/ Collaboration

- **2013 – 2015:** Jointly carried out research with scientists from National Museum and Technical University of Kenya on "Harnessing recombinant technology to promote Kenyan indigenous latex rubber plants".

1.4.6 Membership to Academic / professional Bodies

2004 to Date – Active member of Global Leadership Interlink.

1.4.7 Peer Review

2016- 2017 : Peer reviewer for The Pharmaceutical Journal of Kenya (PJK)

1.5 Administrative and Responsibilities

1.5.1 Recognized University Administrative positions

- 16th January 2023- Appointed by the DVC (Administration) in the committee to investigate alleged chronic university money theft.
- 8th January, 2021 – Appointed by the Chairman, Department of Biochemistry Microbiology and Biotechnology as the 4th Year bachelor of Science (Biochemistry) Academic Advisor.
- 10th December 2020 to Date- Appointed by the Chairman, Department of Biochemistry, Microbiology and Biotechnology as a member of the Departmental programme Development Committee.
- 12th October, 2020. Appointed by the Dean School of Pure and Applied Sciences as member of School Development Committee.
- 29th October, 2015- Appointed by the Chairman, Department of biochemistry and Biotechnology to be a member of the Departmental marks Verification Committee.
- 20th September, 2011- Appointed as the Chairman, Departmental Postgraduate Coordinator
- 19th February 2013- Appointed by the Director, Institute of Peace and Security Studies as a member Postgraduate Committee.
- 11th July 2012- Appointed by the Vice Chancellor, Kenyatta University as the programme Co-ordinator : Forensic Science Programme.

1.5.2 Other responsibilities in the University

- 2013- Chaired Examination Anti-corruption Committee meetings in the Department of Biochemistry and Biotechnology.
- 2015: Participated in the Departmental Review of Bsc (Molecular and Cellular Biology) programme
- 2016: Participated in the Departmental Review of Bsc (Forensic Science) programme
- 2011: Chaired the Committee during the development of Diploma (Forensic Science) and Postgraduate Diploma (Forensic Science) Courses in collaboration with the Directorate of Criminal Investigation, National Police Service.

1.6. Community Engagements and other Contributions

1.6.1 Research Funding

4th call Women Scientist for 2012/2013 by Science , Technology and innovation research Grant (Women Scientist) . Awarded Ksh. 2000000 in collaboration with Scientists form National Museums for research topic: Harnessing recombinant technology to promote Kenyan indogenous latex rubber plants.

1.6.2 Community Outreach

2018 To Date- Academic mentorship at NorthGate Schools in Career Guidance, Subject selection and form 1 induction.

1.6.3. Professional Affiliation and Portifolios

1.6.4 recognitions and Awards

- 2007- Emerging Infections Honor Award- For outstanding efforts and contributions to the control of the 2006-2007 Rift Valley Fever Outbreak.
- 2002- Postgraduate Student of the year Award- In recognition of outstanding performance in postgraduate studies.

1.6.5 Any other Sub-Categories

- **Appointment to School Board**
 - 2019 to Date- Appointed Member of Board of Management at Kimandi Secondary School.
 - August 2021- June 2023- served as an assistant secretary in Kenyatta University Biochemistry and Biotechnology Staff Welfare Association (KUBBSWA) management committee.

REFEREES

1. Dr. Mathew Piero Ngugi
Chairman, Department of Biochemistry, Microbiology and Biotechnology,
Kenyatta University,

P.O Box 43844-00100 Nairobi.

Email Address: piero.mathew@ku.ac.ke/matpiero@gmail.com

2. Prof. Michael Gicheru

Associate Professor and Dean, School of Pure and Applied Sciences,
Kenyatta University,

P.O Box 43844-00100, Nairobi.

Email Address: gicheru.michael@ku.ac.ke

3. Prof. Steven Runo Maina

Associate Professor, School of Pure and Applied Sciences,
Kenyatta University,

P.O Box 43844-00100, Nairobi.

Email Address: runo.steve@ku.ac.ke