

CURRICULUM VITAE

MARION WARIGIA BURUGU

1. Personal Details

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Nationality: Kenyan

2. Core competencies

I have experience in Biochemistry, Molecular Biology, Immunology and Virology and high proficiency in several genetic analytical packages. I have hands on experience in training of both my fellow colleagues and post graduate students on basic Bioinformatics and Molecular Biology techniques. Being a member of Global leadership Interlink, a body that trains in value-based leadership and mentors young professionals, i have gained invaluable experience in leadership and mentoring people, i have mentored many young men and women in different stages of their careers.

3. Current Position

Sep 2010- date Lecturer
Department of Biochemistry and Biotechnology, KU

4. Positions held

Jan 2015- to Jan 2016 Member Intellectual property board

July 2012- to Sep 2013 Coordinator Forensic science programme -KU.

Jan 2011 – June 2012 Chairperson, Departmental Board of postgraduate studies

July 2005 – Aug 2010 Research Officer and team leader Molecular Diagnosis in Viral Hemorrhagic Fever Laboratory, KEMRI.

Nov 2004 – June 2005 Assistant Research Officer, KEMRI

Jan 2005 – July 2008 Ph.D Scholar, Centre for Biotechnology Research and Development and Centre for Virus research, KEMRI

May 2002 – Feb 2004 DRIP Scholar, Biochemistry and Molecular Biology Unit, The International Centre Insect Physiology and Ecology (ICIPE)

Feb 2000- July 2001 Biology and Chemistry Teacher, Games Mistress, Assistant Christian Union Patron, St. Paul Secondary School.

5. Research Experience

Nov 2004 – Aug 2010 Research Officer position, KEMRI

Specific Duties:

1. Genotype virus isolates using RT-PCR and sequencing to study their molecular epidemiology
2. DNA extraction from insect vectors and quantification
3. Population genetic structure of arboviruses vector studies using mitochondrial DNA marker, molecular analysis using SSCP technique. Cloning, sequencing and sequence analysis.
4. RNA isolation from mosquito and human samples, RT- PCR using conventional PCR and real time methods.
5. Vector competence of arboviruses vector assays using cell culture and immunofluorescence microscopy techniques.
6. Training of students (undergraduate and postgraduate) in Molecular Biology techniques and basic bioinformatics.
7. Host identification of arboviruses vectors using Elisa technique and molecular based techniques.
8. Co-ordinating Journal club seminars.
9. Reviewing grant and postgraduate proposals

6: Academic Experience

Sep 2010- Date KU

I have been involved in preparation and disclosure of lectures in basic biochemistry, immunology, virology and molecular biology. Additionally, i have been involved in Msc student supervisions and examination of students' thesis. I have been involved in the development of Forensic Curriculum.

Student supervision

SN	Name	Thesis Title	Level	Status	University	Nationality
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1	MaryAnne Wanjiru Mureithi	Isolation and characterization of <i>Vibrio cholerae</i> among diarrhea patients attending Alupe sub-district Hospital in Alupe, Western Kenya.	MSc	Completed and graduated	Kenyatta University	Kenyan
2	David OmondiOuma	Molecular screening of selected mosquitoes and their blood meals for rift valley fever virus and preferred host in Baringo, Garissa and Kilifi districts of Kenya	Msc	Completed and Graduated	Egerton University	Kenya
3	Arthur Mwangemi Mwanjulu.	Use of <i>Mundulea Sericea</i> (Fabales: Fabacoiae) to control <i>Culex quinquefasciatus</i> (Diptera : Culöicidae) in Kibera slums, Nairobi.	MSc	Completed and graduated	Kenyatta University	Kenyan
4	Adu Winnie Riziki	Evaluation of virulence and fitness cost of resistance in artemisinin resistant <i>plasmodium berghei</i> .	MSc	Completed and graduated	Kenyatta University	Kenyan
5	Caroline Wanjiku Kung'u.	Biochemical signalling in the tri-trophic interaction between <i>Anacardium occidentale</i> , <i>Pseudotheraptus wayi</i> and <i>Oecophylla longinoda</i> .	MSc	Completed and graduated	Kenyatta University	Kenyan
6	Joan Ndumi	Biochemical effects of sewage pollution on benthic organisms in <i>Patella vulgata</i> .	MSc	Completed and graduated	Kenyatta University	Kenyan
7	Dorothy Wavinya Nyamai	Evaluation of the growth performance and phytochemical profiles of <i>prunus africana</i> sampled from Muguga, Kobujoi and Karuri, Kenya	MSc	Completed and graduated	Kenyatta University	Kenyan
8	Japheth Wambani Rapando	Hepatitis B and C co-infections and disease markers among HIV infected patients attending the Academic Model Providing Access to Healthcare clinic, Kenya, 2014	MSc	Completed and graduated	Kenyatta University	Kenyan
9	Ogao Onchuru Thomas	Characterization of microhabitats of arboviral mosquito vector larvae on three islands of Lake Victoria, Kenya	MSc	Completed and graduated	Kenyatta University	Kenyan
10	Fulakeza Joseph	Evaluation of the effectiveness of antimalarial interventions during pregnancy in Blantyre, Malawi	MSc	Completed and graduated	Kenyatta University	Malawi

11	Kinyanjui Grace Waithira	Identification of aphid (Hemiptera: Aphididae) species of economic importance in Kenya using DNA barcodes and PCR-RFLP-based approach	MSc	Ongoing	Kenyatta University	Kenya
12	Perpetua Arusei	Quantitative trait loci analysis of maize (<i>zea mays</i> L.) for maize streak virus resistance	MSc	Ongoing	Kenyatta University	Kenya
13	Kambona Royford Njeru.	Genetic diversity of circulating hpv type 16 among kenyan women.	MSc	Ongoing	Kenyatta University	Kenya
14	Samuel Barasa Khaemba.	Molecular diversity of Hepatitis B virus in HIV infected patients at Mbagathi district hospital, Nairobi.	MSc	Ongoing	Kenyatta University	Kenya
15	Kipsang K. Amos	Determination of the prevalence of severe acute viral respiratory infections in patients under mechanical ventilation in Moi Teaching and Referral Hospital.	MSc	Ongoing	Kenyatta University	Kenya
16	Muthanga humphrey muthomi	The prevalence of West Nile virus among squirrels at Msambweni, Kwale county in Kenya	MSc	Ongoing	Kenyatta University	Kenya
17	Mungai Peter Mbugua	Detection and molecular characterization of rotavirus from selected waste water treatment plants in Kenya	MSc	Ongoing	Kenyatta University	Kenya
18	John Mwangi Kithinji.	Antiplasmodial activity of six kenyan medicinal plant extracts, singly or in combination with chloroquine	MSc	Ongoing	Kenyatta University	Kenya
19	Irene Wangari Njagi	Evaluating promoters for expression of transgenes in cassava storage roots	PhD	Ongoing	Kenyatta University	Kenya

Examination of thesis

Non- supervisory thesis exterminations *

Institutions	level	No	Examiner Status
Kenyatta University	Msc	15	Internal
Kenyatta University	phD	5	Internal
University of Nairobi	Msc	5	External

*Candidate IDs withheld for confidentiality/anonymity

7. Academic 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.

8. Scholarships and Awards

1. 2005-2006 Ph.D. UNICEF/ UNDP/ World Bank/ WHO Special Programme for research and Training in Tropical Diseases (TDR)
2. 2002-2003 M.Sc BioNET Africa
3. December 2002 Kenyatta University: Outstanding Postgraduate Student of the year Award
4. 2008 Recognition Award by US Department of Health and Human Services for outstanding efforts and contributions to the control of the 2006-2007 Rift Valley Fever Outbreak.

9. Research Grants

Bionomics of Rift Valley Fever Virus Vectors in Kenya. Dr. Rosemary Sang, Dr. Kenneth Linthicum; Dr. Kristine Bennett; Dr. Marion Warigia and Joel Lutomiah. 250 000 UsD.

Harnessing Recombinant Technology to Promote Kenyan Indigenous latex rubber plant.
Loise Ngithi, Gem Githui, Marion Warigia, Ken Gichunge, Ksh. 2000000, NCST.

Characterization of microhabitats of arboviral mosquito vector larvae on three islands of Lake Victoria, Kenya. Thomas Ogao Onchuru, Marion Warigia, Dan Masiga. Ksh. 2000000, NCST.

10. Publication in peer reviewed Journal

1. **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.
2. 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
3. LN Wangai, M Geoffrey, S Omar, G Magoma, FT Kimani, JM Mwangi, **MW Burugu**, N Maina. Molecular screening for *Plasmodium falciparum* resistance markers for artemisinins in Mbita, Kenya. *AFRICAN JOURNAL OF CLINICAL AND EXPERIMENTAL MICROBIOLOGY*, 12(3): 106-110, 2011.
4. 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.
5. 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 piperazine-resistant *Plasmodium berghei* in a mouse model. *Malaria Journal* 2015, 14:38
6. 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>.

7. Munyasya JN, Juma KK, **Burugu MW**, Mburu DN and Okuku EO (2015). Biochemical Effects of Sewage Pollution on the Benthic Organism *Neirita polita*. *Environmental & Analytical Toxicology*. <http://dx.doi.org/10.4172/2161-0525.S7-0>.
8. Nyamai DW, Mawia AM, Wambua FK, Abdirahman YA, Osano K, Lagat R, Mumbi B, Arika W, Juma KK, Anyango E, Mulugeta M, Ngugi MP, Muchugi A, Ng'ang'a M, **Burugu MW** and Ramni Jamnadass (2015). Growth Performance of Domesticated *Prunus africana* Population in Muguga, Kiambu County, Kenya. *Biochemistry & Physiology* vol 4. Issue 4. <http://dx.doi.org/10.4172/2168-9652.1000185>.
9. 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.
10. 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.

11. Thesis and Dissertation

1. **Burugu M.W**, Kenya E , Kamau L , and Sang R (2008). Genetic differentiation, vector competence to dengue 2 viruses and host preference of coastal and inland *Aedes aegypti* populations from Kenya . PHD thesis. 140 pages.
2. **Burugu M. W**; Abubakar L. U; Kenya E. U; and Osir E. O (2004). Expression of *Glossina* proteolytic lectin gene in tsetse flies and other haematophagous arthropods. Msc thesis. 70 pages.
3. **Undergraduate dissertation:** Prevalence of malaria in patients attending Thika District Hospital (50 pages).

11. Manuscripts in press

Onchuru, T., Ajamma, Y., **Burugu, M.**, Kaltenpoth, M., Masiga, D. K., Villinger, J. (in press). Chemical parameters and bacterial communities associated with larval habitats of *Anopheles*, *Culex* and *Aedes* mosquitoes in western Kenya. *International Journal of Tropical Insect Science*. [KAL068]

12. Conference Attendance and Presentations (In parenthesis)

1. African Technology Policy Studies Network- Science, Ethics and Technological Responsibility in Developing and Emerging Countries (ATPS-SETDEV) capacity building workshops, 14 – 17 July 2009, Mombasa, Kenya (Oral)
2. Postgraduate seminar, Kenyatta University, Nairobi, Kenya. July 18, 2008. (Oral)
3. Advanced Molecular and Cellular Basis of infection. Hermanus, South Africa. February 28th Feb – 9th March 2008 (Oral and poster presentation).
4. Biochemical society of Kenya annual scientific symposium, Nairobi, Kenya. September 26 – 27, 2002,
5. The African association of Insect scientist 25th anniversary, scientific conference Nairobi, Kenya. February 16- 20, 2004.
6. Kenyatta University postgraduate seminar, Nairobi, Kenya. December 16-17, 2004. (Oral).
7. A Time to Heal: The Science of and Investments in Cracking Africa's Killer Diseases. The 3rd Annual Africa Genome Initiative (AGI) Conference, Nairobi, Kenya. March 22-24, 2005. (Poster).
8. Biochemical society of Kenya annual scientific symposium, Nairobi, Kenya. July 17-18, 2007. (Oral)

14. Short Courses Attended

- Patent drafting and dispute resolution. 5th – 9th Aug, 2013. KU.
- Training in Pedagogy – Kenyatta University, Kenya. 2012.
- SMARTBOARD training – Kenyatta University. February 2014.
- Safety and security Awareness Training by National Security Intelligence Service. KEMRI, Nairobi, Kenya. 19th August, 2009
- Good clinical laboratory practice. KEMRI, Nairobi, Kenya. 5th – 7th May, 2009.
- Laboratory biosafety and biosecurity awareness workshop by WHO. KEMRI, Nairobi, Kenya. 16th – 18th March, 2009.
- Graphical methods of data presentation and how to publish a scientific paper: Journal choice to printed paper. University of Nairobi, Kenya. 29th – 30th September 2008.
- Real time PCR training. Nairobi, April 3- 6, 2008.
- Advanced Molecular and Cellular Basis of infection. Hermanus, South Africa. February 28th Feb – 9th March 2008
- Bioinformatics and post genomic molecular cell biology of African Trypanosomes and Malaria. An advanced course sponsored by Human Frontier Science Program. Kampala, Uganda. July 17-21, 2006.

- Biochemical Society of Kenya (BSK) and Kenyatta University Training Workshop on Bioinformatics / Computational Biology, Departments of Computer Science and Biochemistry, Kenyatta University, Nairobi, Kenya August 11-14, 2003

15. Broad Research Areas of Interest

- Molecular mechanism of vector-parasite and host- parasite interactions
- Epidemiology of vector borne- and parasitic diseases- (Human and animals) – Public Health Implications.
- Emerging and re-emerging diseases of the tropics
- Populations genetics of vector populations implicated in emerging and re-emerging diseases
- Ecological genomics

16. Membership and Professional Affiliation

- Biochemical Society of Kenya
- Entomological Society of Kenya
- Dudu club of Kenya
- Global Leadership Interlink

Referee:

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