CURRICULUM VITAE

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1.0 Personal Profile

Dr. Johnson Matowo is a Senior Lecturer in Medical Parasitology and Entomology and *Medical Entomologist*, based at Kilimanjaro Christian Medical University College (KCMUCo) of the Tumaini University Makumira.

Dr. Johnson Matowo has supervised and mentored students at different levels in different programmes. His main research interest is the *understanding of the Biochemical and Molecular Basis of Insecticide Resistance in Malaria Vectors*. He primarily works on *Anopheles gambiae s.l* and *Anopheles funestus*, the major malaria vectors in sub-Saharan Africa. *An. arabiensis*, one of the sibling species of the *Anopheles gambiae s.l* is becoming more important as a malaria vector following recent studies that have revealed replacement of *An. gambiae s.s* with *An. arabiensis* in many areas including Tanzania.

Dr. Johnson Matowo has published several papers in International peer-reviewed Journals including the papers that describe Biochemical and Genetic Basis of pyrethroid resistance in *Anopheles arabiensis* in north eastern Tanzania.

2.0 Work Experience

Current positions

1. Senior Lecturer in Medical Parasitology and Entomology, Kilimanjaro Christian Medical University College (KCMUCo) of Tumaini University Makumira *http://www.kcmuco.ac.tz*
2. Head of Department, Department of Medical Parasitology and Entomology, KCMUCo
3. Coordinator of Master of Science in Medical Parasitology and Entomology, KCMUCo
4. Deputy Testing Facility Manager (DTFM), Pan African Malaria Vector Research Consortium (PAMVERC) under the Innovative Vector Control Consortium (IVCC) http://*www.pamverc.or.tz*

Previous experience

1. Lecturer (KCMUCo), 2013-2017
2. Assistant lecturer (KCMUCo), 2008-2013
3. Laboratory assistant, Gates Vector Control Project, Joint Malaria Programme (JMP),(2004-2005)

3.0 Academic Qualifications

3.1 Universities/College Year Qualifications

3. 1.1 *Doctor of Philosophy (PhD) in Medical Entomology*

Kilimanjaro Christian Medical University College of Tumaini University Makumira (2010-2014)

3.1.2 *Master of Science (MSc.) in Medical Parasitology and Entomology*

Kilimanjaro Christian Medical College of Tumaini University (2005-2007)

3.1.3 Bachelor of Science (*BSc.* (*hons.*) *in Chemistry and Biology*

University of Dar es Salaam (1994 - 1998)

3.2. Other courses/training

3.2.1 International course in Data Handling, Biostatistics and use of STATA 11 at University of Nairobi, Institute of Tropical and Infectious Diseases (UNITID), Nairobi, Kenya from 23rd August to 3rd September 2010

3.2.2 Microarrays and quantitative real-time (qPCR) training for identifying genes that are involved in insecticide resistance in malaria vectors-Liverpool School of Tropical Medicine (LSTM), UK, 2013/2014

4.0 Skills

- Language: English and Kiswahili (Reading, Speaking, Wrting)
- Computer literacy:Microsoft Office (Word, Excel, Power point)
- Internet & E mailing;
- Statistical Analysis by STATA, SPSS, Polo Plus

5.0 Research Projects

- Characterization of insecticide resistance in *Anopheles gambiaes.l*in Northern Tanzania by WHO test kits, CDC bottle bioassays,TaqMan assays, **SSOP-ELISA, Microplate / Biochemical assays, Microarrays and Real-time quantitative PCR (RT-qPCR)**
- Evaluation of new insecticides and long-lasting treatments for nets and other materials used in malaria vector control and personal protection
- The combined use of indoor residual spraying (IRS) and long-lasting insecticidal nets (LLINs) for malaria reduction in endemic rural Tanzania

6.0 Research or Lab Experience

Dr. Johnson Matowo has been involved in Research at Kilimanjaro Christian Medical University College with the Pan African Malaria Vector Research Consortium (PAMVERC) in which different molecular techniques have been applied:

- SSOP-ELISA for genotyping *kdr* mutations
- Conventional PCR
- Real-time quantitative PCR (RT-qPCR) for identification of sibling species of the *Anopheles gambiae* s.l; *kdr* and *ace-1* genotyping, identification of genes involved in insecticide resistance
- CSP ELISA for sporozoite rates determination
- Direct ELISA for identification of blood meal sources in mosquitoes
- Microarrays for identification of genes involved in insecticide resistance

7.0 Fellowships, Grants, and Scholarships

1. Master of Science Fellowship, Belgian Technical Corporation (BTC) (2005-2007)
2. Doctoral Fellowship, Malaria Capacity Development Consortium (MCDC) through a PhD studentship scholarship [the MCDC is funded by the Wellcome Trust (grant no.WT084289MA)]. (2010-2014)
3. Post-doctoral Fellowship, Well Come Trust

9.0 Membership to professional bodies

1. The member of Pan African Malaria Vector Research Consortium (**PAMVERC**)
2. The member of Tanzania Entomological Association **(TEA)**
3. The member of Pan African Mosquito Control Association **(PAMCA)**
4. The member of College Academic Staff Assembly **(CASA)**

10.0 Publications

10.1 ***Peer reviewed***

1) Deokary Joseph Matiya , Anitha B. Philbert, Winifrida Kidima and **Johnson J. Matowo** (2019) Dynamics and monitoring of insecticide resistance in malaria vectors across mainland Tanzania from 1997 to 2017: a systematic review *Malaria Journal*,18:102 https://doi.org/10.1186/s12936-019-2738-6
2) Lucille Lyaruu , Violet Temba, Shandala Msangi, Aneth Mahande, **Johnson Matowo** and Eliningaya Kweka The Bio-Efficacy of Flower Liquid Mosquito Repellent in Laboratory and Field Conditions *Malaria Control and Elimination 2018, 7:1*
3) George Mtove, Joseph P Mugasa, Louisa A Messenger, Robert C Malima, Peter Mangesho, Franklin Magogo, Mateusz Plucinski, Ramadhan Hashimu, **Johnson Matowo**, *et al*. The effectiveness of non-pyrethroid insecticide-treated durable wall lining to control malaria in rural Tanzania: study protocol for a two-armed cluster randomized trial.*BMC Public Health* 2016 25;16:633
4) **Johnson Matowo**, Reginald A Kavishe, Robert Kaaya, Alex Wright, William Kisinza, ImmoKleinschmidt, Franklin Mosha,Mark Rowland, Natasha Protopopoff Trends in the selection of insecticide resistance in *Anopheles gambiae s.l* in north-western Tanzania during a community randomised trial of long lasting insecticidal nets and indoor residual spraying *Medical and Veterinary Entomology* 2015, doi: 10.1111/mve.12090
5) **Matowo J**, Jones C, Kabula B, Ranson H, Steen K, Mosha FW, Rowland M, and Weetman D Genetic basis of pyrethroid resistance in a population of *Anopheles arabiensis*, the primary malaria vector in Lower Moshi, north eastern Tanzania *Parasites & Vectors* 2014, 7:274.
6) **Matowo J**, Kitau J, Kabula B, Oxborough RM, Kavishe RA, Kaaya R, Francis P, Chambo A, Mosha FW, Rowland M (2014) Dynamics of pyrethroid resistance and the frequency of kdr mutation in the primary malaria vector *Anopheles arabiensis* in rural villages of Lower Moshi, North Eastern Tanzania *Journal of Parasitology and Vector Biology* 2014,6(3): 31-41.
7) Jovin Kitau, Richard Oxborough, **Johnson Matowo**, Franklin Mosha, Stephen M Magesa and Mark Rowland Indoor Residual Spraying with microencapsulated DEET repellent (N, N-diethyl-m-toluamide) for control of *Anopheles arabiensis* and *Culex quinquefasciatus Parasites & Vectors* 2014, **7**:446 doi:10.1186/1756-3305-7-446
8) R M Oxborough, JovinKitau, Rebecca Jones, Emmanuel Feston, **Johnson Matowo**, Franklin W Mosha and Mark Rowland Long-Lasting Control of *Anopheles arabiensis* by a Single Spray Application of Microencapsulated Pirimiphos-methyl (Actellic(R) 300 CS) *Malaria Journal* 2014, **13**:37.

9) Nyindo, Mramba; Kitau, Jovin; Lisasi, Esther; Kapanda, Gibson; **Matowo, Johnson**; Francis, Patrick; Bartlett, John (2014) Introduction of Team-Based Learning (TBL) at Kilimanjaro Christian Medical University College: Experience with the Ectoparasites Module *Medical Teacher* 2014,36(4):308-13.

10) JovinKitau, Richard Oxborough, Angela Kaye, Vanessa Chen-Hussey, Evelyn Isaacs, **Johnson Matowo**, Stephen M Magesa, Franklin Mosha, Mark Rowland and James Logan Laboratory and experimental hut evaluation of a long-lasting insecticide treated blanket for protection against mosquitoes *Parasites & Vectors* 2014, 7:129

11) **Matowo J,** Kulkarni MA, Mosha FW, Oxborough RM, Kitau JA, Tenu F, Rowland M. Biochemical basis of permethrin resistance in *Anopheles arabiensis* from Lower Moshi, northeastern Tanzania. *Malaria Journal* 2010, (7) 9: 193.

12) Natacha Protopopoff, **Johnson Matowo**, Robert Malima,Reginald Kavishe, Robert Kaaya, Alex Wright, Philippa West, William Kisinza, Franklin W Mosha, Immo Kleinschmidtand Mark Rowland High level of resistance to pyrethroids and DDT and reduced susceptibility to bendiocarb in malaria vector Anopheles gambiae in North Western Tanzania *Malaria Journal* 2013, 12:149.

13) Oxborough RM, Kitau J, **Matowo J,**Feston E, Mndeme R, et al. ITN mixtures of chlorfenapyr (pyrrole) and alphacypermethrin (pyrethroid) for control of pyrethroid resistant *Anopheles arabiensis* and *Culex quinquefasciatus PLoS ONE* 2013, 8: e55781.

14) BilaliKabula, Patrick Tungu, **Johnson Matowo**, JovinKitau, Clement Mweya , BasilianaEmidi,Denis Masue, Calvin Sindato, Robert Malima, Jubilate Minja, ShandalaMsangi, RithaNjau, Franklin Mosha, Stephen Magesa and William Kisinza. Susceptibility status of malaria vectors to insecticides commonly used for malaria control in Tanzania *Tropical Medicine and International Health*, 2012

15) R C Malima · R M Oxborough · P K Tungu · C Maxwell · I Lyimo · V Mwingira · F W Mosha · **J Matowo** · S M Magesa · M W Rowland Behavioural and insecticidal effects of organophosphate- , carbamate- and pyrethroid-treated mosquito nets against African malaria vectors *Med Vet Entomol*. 2009, 23(4):317-25. doi: 10.1111/j.1365-2915.2009.00837.x

16) R M Oxborough, J Kitau, **J Matowo,** R Mndeme, E Feston, P Boko, A Odjo, C G Metonnou, S Irish, R N'guessan, F W Mosha and M W Rowland.Evaluation of indoor residual spraying with the pyrrole insecticide chlorfenapyr against pyrethroid-susceptible *Anopheles arabiensis* and pyrethroid-resistant *Culex quinquefasciatus* mosquitoes. *Transactions of the Royal Society of Tropical Medicine & Hygiene* 2010, 104(10):639-45.

17) R. M. Oxborough, F. W. Mosha, **J. Matowo**, R. Mndeme, E. Feston, J. Hemingway and M. Rowland. Mosquitoes and bednets: testing the spatial positioning of insecticide on nets and the rationale behind combination insecticide treatments. *Annals of Tropical Medicine & Parasitology* 2008, Vol. 102, No. 8, 717– 727.

18) J Kitau,R.M. Oxborough, Tungu P.K., Malima R.C. **J Matowo**, FW Mosha, S. Magesa, M.W. Rowland. "Species shifts in the *Anopheles gambiae* complex: do LLINs successfully control *Anopheles arabiensis*?"*PLoS ONE* 2012.

19) Jovin Kitau, Helen J. Pates, Theophirl R. Rwegoshora, DionisRwegoshora, **Johnson Matowo**, Eliningaya J. Kweka, Franklin W. Mosha, Karen McKenzie and Stephen M.*Magesa*. The Effect of Mosquito Magnet® Liberty Plus Trap on the Human Mosquito Biting Rate Under Semi-Field Conditions. *Journal of American Mosquito Control Association* 2010, 26(3).

20) J Kitau, RT Rwegoshora, D Rwegoshora, **J Matowo**, FW Mosha, SM Magesa
The effect of combined use of Mosquito Magnet Liberty Plus™ trap and insecticide treated net on human biting rates of *Anopheles gambiae s.s.* and *Culex quinquefasciatus Tanzania Journal of Health Research* 2009, Vol 11, No 2

21) F. W. Mosha, I. N. Lyimo, R. M. Oxborough, **J. Matowo**, R. Malima, E. Feston, R. Mndeme, F. Tenu, M. Kulkarni, C. A. Maxwell, S. M. Magesa and M. W. Rowland. Compartive efficacies of permethrin-, deltamethrin- and alpha-cypermethrin-treated nets, against *Anopheles arabiensis*and *Culexquinquefasciatus* in northern Tanzania. *Annual Tropical Medicine & Parasitol*ogy 2008, Jun; 102(4):367-76.

22) F. W. Mosha, I. N. Lyimo, R. M. Oxborough, R. Malima, F. Tenu, **J. Matowo** et al.,Experimental hut evaluation of the pyrolle insecticide chlorfenapyr on bed nets for the control of *Anopheles arabiensis* and *Culex quinquefasciatus*. *Tropical Medicine & International Health* May 2008, Volume 13 No.5 pp 644-652.

23) Eliningaya J Kweka, Franklin Mosha, AsanterabiLowassa, Aneth M Mahande, JovinKitau, **Johnson Matowo**, et.al. Ethnobotanical study of some of mosquito repellent plants in north-eastern Tanzania. *Malaria Journal* 2008, 7:152.

24) Manisha A Kulkarni, Mark Rowland, Michael Alifrangis,Frank W Mosha, **Johnson Matowo,** et al. Occurrence of the leucine- to- phenylalanine knockdown resistance (*kdr*) mutation in *Anopheles arabiensis* populations in Tanzania, detected by a simplified high-throughput SSOP-ELISA method *Malaria Journal* 2006, 5: 56.

10.2 ***Technical report***

- Kisinza W; Kabula B; Tungu P; Sindato C; Mweya C; Massue D; Emidi B; Kitau J; Chacha M; Batengana B; **Matowo J**; Msangi S, Malima R &Magesa S (2011). Detection and Monitoring of Insecticide Resistance in MalariaVectors in Tanzania Mainland; *Technical Report of the National Institute for Medical Research,* Tanzania

10.3 ***Policy brief***

- Nkya T, **Matowo J**, Kitau J & Kisinza W (2016). Intersectoral insecticide resistance management for sustainable malaria control and improved agriculture. *Policy Brief NIMR/EPB/004/2016*

10.4 *PhD Thesis*

- Characterization of insecticide resistance in anopheles gambiae s.l, the principal malaria vectors in northern Tanzania, KCMUCo, **September 2014**

10.5 *MSc. Dissertation*

- Biochemical basis of permethrin resistance in *Anopheles arabiensis* from Lower Moshi, north-eastern Tanzania, KCMUCo, **September 2014**

11.0 Conferences and symposia attended

11.1 Conferences

- The 29th Annual Joint Scientific Conference (AJSC) at Julius Nyerere International Convention Centre, Dar es salaam, 13th to 15th Oct.2015 **-Oral presentation**
- The 13th Joint Malaria Programme **(JMP)** Annual Scientific Conference at Lutheran Uhuru Hostel Moshi, 15th- 16th January, 2014**-Oral presentation**
- The 63rdAmerican Society of Tropical Medicine and Hygiene **(ASTMH)** Annual Meeting at at the Sheraton New Orleans in New Orleans, LA, USA, 2nd - 6th November, 2014 **-Poster presentation**
- The first PAMCA Annual Conference at Panari Hotel, Nairobi, Kenya, held on 6th – 8th October 2014**- Oral presentation**
- The sixth Pan-African Malaria Conference (MIM Conference) at International Convention Centre(ICC), Durban, South Africa, 6th-11th November 2013**-Oral presentation**
- The 12th Joint Malaria Programme**(JMP**) Annual Scientific Conference at Lutheran Uhuru Hostel Moshi, 5th- 6th December 2012**-Oral presentation**
- The 61st American Society of Tropical Medicine and Hygiene **(ASTMH)** Annual Meeting at Atlanta Marriott Marquis, Hilton Atlanta, USA, 11th -15th November 2012 **-Poster presentation**
- The sixth Tanzania Entomological Association (TEA) Annual Scientific Conference at the Tropical Research PesticidesInstitute (TPRI)-November 28th -30th 2005-**Oral presentation**
- The seventh Tanzania Entomological Association (TEA) Annual Scientific Conference at the Tropical Research PesticidesInstitute **(TPRI)**-November 28th -30th 2007**-Oral presentation**
- The fifth Pan-African Malaria Conference (MIM Conference) at Kenyatta International Conference Center **(KICC),** Nairobi-Kenya-2nd to 6th Nov.2009**-Poster presentation**
- The 24th Annual Joint Scientific Conference (AJSC) at Arusha International Conference Centre **(AICC)** in February, 2010**-Oral presentation**
- The eighth TEA Annual Scientific Conference at the Tropical Research Pesticides Institute **(TPRI)**-September 29th -30th 2010**-Oral presentation**

11.2 Symposia

- **The 86th Post graduate seminar & 3rd PhD Symposium**, KCCO, KCMC, 22nd to 23rd October 2014
- The second **International PhD Symposium** at at Kilimanjaro Christian Medical Centre (KCMC), Uhuru Hostel, Moshi, Tanzania, 27th to 28th Nov. 2013

12.0 Training & workshops attended

- Workshop on Policy Brief Write shop for Health Researcher in Tanzania, convened at the Kilimanjaro Christian Medical University College (KCMUCo) under the framework of the Building Stronger Universities Programme, in Kilimanjaro Tanzania, 23rd to 27th November, 2015
- Workshop on **Good Clinical Laboratory Practice** Kilimanjaro Christian Medical University College (KCMUCo), Moshi, Tanzania 23rd to 25th February, 2015. The first Workshop of the T.o.T Course on **'' E-Learning and Problem Based Learning (PBL)''** conducted jointly by Copenhagen University, Aalborg University and University of Dar es salaam (UDSM) under the framework of building Stronger Universtities Programme in Dar es Salaam, Tanzania, 27th to 29th August 2014
- Workshop on **Good Clinical Practice (GCP)** KCMC, Moshi, Tanzania 22nd to 25th May 2012.
- Short course **on CDC Bottle Bioassay Training for Monitoring of Insecticide Resistance of Malaria Vectors** at NIMR-Mwanza from 28th Nov. to Dec. 9th 2011
- **Research Methods Course** at the College of Medicine in Blantyre, Malawi from 2nd June to 11th July 2009
- East African Training Workshop in **Research Methods in Protozoan Pathogens, Focus on Vaccines for Parasitic Diseases** in Morogoro Tanzania 2nd to 15th July 2006.
- Workshop in **Good Clinical Practice** at Kilimanjaro Christian Medical Centre (KCMC), Moshi, Tanzania 31st July to 1st August 2006.
- **Insecticide Resistance Genotyping SSOP-ELISA** Training Workshop at Joint Malaria Programme (JMP), KCMC, Moshi, Tanzania, May 8th -12th 2006.
- Workshop in **Mosquito Ecology & Vector Control** at Amani Medical Research Centre,Muheza, Tanzania from 24th April-5th May 2006
- Workshop in **ELISA techniques** at Amani Biomedical Research Laboratory Bombo Hospital, in March 2005.
- Methodology workshop on **Detection of Insecticide Resistance of Malaria Vectors in the context of treated nets scaling up in Tanzania** at the National Institute for Medical Research station-Muheza in Sept.2004
- Workshop in **Laboratory Techniques and Management** at Majengo Secondary School in 2003

13. REFEREES

1) Professor Franklin W. Mosha
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