

Thomas Ogao Onchuru

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EDUCATION

2019	Doctor of natural science (Biology)	Johannes Gutenberg University (JGU)-Mainz, Germany
2014	M.Sc. Biotechnology	Kenyatta University (KU), Nairobi, Kenya
2009	B.Sc. Biotechnology, 1 st class (Hons)	Kenyatta University (KU), Nairobi, Kenya

PROFESSIONAL EXPERIENCE

02/2021 – To date	Lecturer/Researcher Bomet University College
11/2019 – 01/2021	Lecturer Technical University of Kenya (TU-K).
08/2019 – 11/2019	Postdoctoral Researcher Johannes Gutenberg University (JGU) – Mainz, Germany.
08/2014 – 08/2019	Ph.D. student & Jena School of Microbial Communication (JSMC) Graduate research fellow Johannes Gutenberg University (JGU) & Max-Planck Institute for Chemical Ecology (MPI-CE), Germany. Project: “Host and symbiont contribution towards parasite resistance in cotton stainer bugs”
05/2013 – 09/2013	DAAD exchange program fellow Max-Planck Institute for Chemical Ecology (MPI-CE), Germany. Project: “Characterization of microbial communities in mosquito breeding sites”
09/2011 – 07/2014	M.Sc. student and DAAD research fellow Kenyatta University & ICIPE, Kenya. Project: “Ecology of arbovirus mosquito vectors”
03/2011 – 09/2011	Graduate research fellow ICIPE/Consortium of National Health Research (CNHR), Kenya. Project: “Population genetics of arbovirus mosquito vectors”

PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS (* refers to equal contribution)

1. Nattoh G, Maina T, Makhulu EE, Mbaisi L, Mararo E, Otieno FG, Bukhari T, **Onchuru TO**, Teal E, Paredes J, Bargul JL, Mburu DM, Onyango EA, Magoma G, Sinkins SP and Herren JK (2021) Horizontal Transmission of the Symbiont Microsporidia MB in *Anopheles arabiensis*. *Front. Microbiol.* 12:647183. <https://doi.org/10.3389/fmicb.2021.647183>
2. Martinez AJ, **Onchuru TO**, Ingham CS, Sandoval-Calderon M, Salem H, Deckert J, and Kaltenpoth M. 2019. Angiosperm to Gymnosperm host-plant switch entails shifts in microbiota of the Welwitschia bug, *Probergrothius angolensis* (Distant, 1902). *Molecular ecology*, 28(23), 5172-5187. <https://doi.org/10.1111/mec.15281>
3. **Onchuru TO**, & Kaltenpoth M. (2019). Established cotton stainer gut bacterial mutualists evade regulation by host antimicrobial peptides. *Applied and Environmental Microbiology*, 85, e00738-19. <https://doi.org/10.1128/AEM.00738-19>
4. **Onchuru TO**, & Kaltenpoth M. (2019). Quantitative PCR primer design affects quantification of dsRNA-mediated gene knockdown. *Ecology and Evolution*, 9(14), 8187–8192. <https://doi.org/10.1002/ece3.5387>
5. Ajamma YU, **Onchuru TO***, Ouso DO*, Omondi D, Masiga DK, & Villinger J. (2018). Vertical transmission of naturally occurring Bunyamwera and insect-specific flavivirus infections in mosquitoes from islands and mainland shores of Lakes Victoria and Baringo in Kenya. *PLoS Neglected Tropical Diseases*, 12(11). <https://doi.org/10.1371/journal.pntd.0006949>
6. **Onchuru TO**, Martinez AJ, Ingham CS, & Kaltenpoth M. (2018). Transmission of mutualistic bacteria in social and gregarious insects. *Current Opinion in Insect Science*, 28, 50–58. <https://doi.org/10.1016/j.cois.2018.05.002>
7. **Onchuru TO**, Martinez AJ, & Kaltenpoth M. (2018). The cotton stainer’s gut microbiota suppresses infection of a cotransmitted trypanosomatid parasite. *Molecular Ecology*, 27(16), 3408–3419. <https://doi.org/10.1111/mec.14788>
8. Ajamma YU, Mararo E, Omondi D, **Onchuru TO**, Muigai AWT, Masiga DK, & Villinger J. (2016). Rapid and high throughput molecular identification of diverse mosquito species by high resolution melting analysis. *F1000Research*, 5. <https://doi.org/10.12688/f1000research.9224.1>
9. **Onchuru TO**, Ajamma YU, Burugu M, Kaltenpoth M, Masiga DK, & Villinger J. (2016). Chemical parameters and bacterial communities associated with larval habitats of *Anopheles*, *Culex* and *Aedes* mosquitoes in western Kenya. *International Journal of Tropical Insect Science*. <https://doi.org/10.1017/S1742758416000096>
10. Ajamma YU, Villinger J, Omondi D, Salifu D, **Onchuru TO**, Njoroge L, Muigai A, & Masiga DK. (2016). Composition and genetic diversity of mosquitoes (Diptera: Culicidae) on Islands and mainland shores of Kenya’s

lakes Victoria and Baringo. Journal of Medical Entomology, 53(6), 1348–1363.
<https://doi.org/10.1093/jme/tjw102>

11. Salem H*, Onchuru TO*, Bauer E, & Kaltenpoth M. (2015). Symbiont transmission entails the risk of parasite infection. Biology Letters, 11(12), 20150840. <https://doi.org/10.1098/rsbl.2015.0840>

GRANTS, FELLOWSHIPS AND AWARDS

- German Society for International cooperation (GIZ) diaspora expert fellowship, 2019 – 2020
- Best poster presenter award, Gordon Research Conference (Animal-microbe symbioses), 2019
- Best joint project conception, dev't, and presentation. PhD summer course (Instituto Gulbenkian de Ciência). 2017
- Best oral presenter award, TReND Africa Genome editing course, 2017
- EMBL travel award, 2016
- Jena School of Microbial Communication graduate research fellowship, 2014 – 2018
- DAAD international exchange programme fellowship, 2013
- Kenya National Council of Science and Technology research grant, 2012
- DAAD incountry fellowship, German academic exchange programme, 2011 – 2014
- Consortium of National Health Research internship fellowship, 2011

CONTRIBUTIONS TO INTERNATIONAL CONFERENCES AND WORKSHOPS

1. German Zoological Society workshop, Jena, Germany. **Invited talk title:** Transmission of mutualistic bacteria in social and gregarious insects drives host-pathogen interactions, 09/09/2019.
2. Gordon research seminar and conference, Mount Snow, Vermont, USA. **Poster title:** Gut microbiota protect the African cotton stainer bug against a co-transmitted trypanosomatid parasite infection. 15/06/2019
3. Association for General and Applied Microbiology conference, Johannes Gutenberg University-Mainz, Germany. **Talk title:** Gut bacteria symbionts protect the African cotton stainer insect against a co-transmitted trypanosomatid parasite. 18/03/2019
4. Evolutionary Biology, Institute of Biology, Free University of Berlin, Germany. **Invited talk title:** Exploring animal multi-partite interactions using firebugs. *Evolutionary Biology*, 11/11/2017.
5. Ecological immunology workshop. Berlin, Germany. **Poster title:** Stronger together: Gut symbionts complement *Dysdercus fasciatus* immune system in defending against trypanosomatid parasite infection. 28/08/2017
6. PhD summer school. Instituto Gulbenkian de Ciência. Oeiras, Portugal. **Poster title:** Arrival isn't success: *D. fasciatus* gut microbiota block establishment of a co-transmitted trypanosomatid parasite. 07/2017
7. TReND Africa Genome editing course. ICIPE. Mbita, Kenya. **Talk title:** Using genome editing tools to study the regulation of gut symbionts in cotton stainer insects (*D. fasciatus*). 06/2017
8. EMBL symposium - Innate Immunity in Host-Pathogen Interactions. Heidelberg, Germany. **Poster title:** Guarding the guardian: *D. fasciatus* mediated protection of its defensive gut symbionts, 26/06/2016
9. JSMC symposium. Jena, Germany. **Talk title:** Parasites hitch-hike on symbiont transmission mechanisms but fail to successfully infect the host. 15/12/2016
10. 8th International symbiosis society congress. Lisbon, Portugal. **Poster title:** The good, the bad, and their regulation: Symbiosis, parasitism, and immune response in an insect gut. 07/2015
11. Jena School for Microbial Communication. Jena, Germany. **Talk title:** Physico-chemical parameters and bacterial associated with arbovirus mosquito vectors' habitats. 04/12/2013
12. Sokoine University-Tanzania. **Talk title:** The effect of hemozoin on the immune cells during malaria infection. East Africa regional workshop on immunology. 23/07/2010

STUDENT SUPERVISION AND MENTORSHIP

Supervision of Master of Science and Bachelor of Science theses, practicals, and internships

PROFESSIONAL QUALIFICATION

- PhD summer course. Host-microbe symbioses: from functional to ecological perspectives. 07/2017. Instituto Gulbenkian de Ciência. Oeiras, Portugal.
- TReND course. Genome editing with CRISPR/Cas9. 06/2017. ICIPE - Kenya
- Presentation skills. Institute of Molecular Biology. 01/2016. Mainz - Germany
- Introduction to bio-risk management training course. 09/2013. ICIPE - Nairobi
- Computational molecular evolution course. 07-08/2013. Technical University of Denmark
- Good clinical laboratory practice. 11/2012. ICIPE - Nairobi
- Essentials of epidemiological data analysis using R software. 07-09/2011
- Basic and advanced health research ethics courses. 04-07/2011. African Malaria Network Trust
- Immunobiology of tropical parasitic diseases. 03/2011. Institute of Primate Research – Nairobi
- EBI bioinformatics roadshow. 03/2011. ILRI – Nairobi

RELEVANT SKILLS

• Insect collection and rearing • Insect dissection • Designing and conducting experimental bio-assays • Cultivation of microbes • DNA and RNA extraction • Primer design, PCR, RT-PCR, qPCR, HRM, TGGE and RFLP • Microscopy and Fluorescent in situ hybridization (FISH) • DNA Sanger sequencing • Illumina & 454 Pyrosequencing microbial community analysis using QIIME platform • RNA interference • Genome editing with CRISPR/Cas9 • Statistical analyses (Excel, SPSS, R) • Data management

SERVICE ACTIVITIES

Reviewer for refereed scientific journals

REFEREES

Available on request