


# Academic Staff Profile

## Personal Profile

### Personal Details

<p>Name: THOMMAS MUTEMI MUSYOKA Title/Qualification: PhD, Pr. Sci Nat. Department: Biochemistry, Microbiology and Biotechnology Designation/Position: Lecturer Email: <a href="mailto:mutemibiochemistry@gmail.com">mutemibiochemistry@gmail.com</a>; <a href="mailto:musyoka.thommas@ku.ac.ke">musyoka.thommas@ku.ac.ke</a> Contact Address: P.O BOX 25997-00100, Nairobi, Kenya Area of Specialization: Bioinformatics Cheminformatics Protein dynamics Research Interests: Drug discovery and development Protein structure, function and dynamics Google Scholar: Thommas M. Musyoka ORCID ID: 0000-0001-8906-9482</p>	
--	--

### Academic & Professional Qualifications

2013-2016: PhD Science (Bioinformatics), Rhodes University, South Africa  
2010-2012: MSc (Pharmacology of infectious diseases), Nagasaki University, Japan  
2011: Diploma (R & D of pharmaceuticals), Nagasaki University, Japan  
2005-2009: BSc (Biochemistry – First class Hons), Kenyatta University

### Employment History

2021 -: Lecturer, Kenyatta University  
2017 -: Postdoctoral research associate, Rhodes University, South Africa  
2015: Part-time software developer, Human Heredity and Health in Africa (H3Africa)  
2013-2015: Undergraduate teaching assistant, Rhodes University, South Africa  
2012-2013: Part-time lecturer, Technical University of Kenya, Kenya  
2008: Intern, National government chemistry laboratories, Kenya

### Publications

#### Referred Journals

- 1) Tendwa MB, Chebon-Bore L, Lobb K, **Musyoka T.M**, Tastan Bishop Ö. Force Field Parameters for  $\text{Fe}^{2+}_4\text{S}^{2-}_4$  Clusters of Dihydropyrimidine Dehydrogenase, the 5-Fluorouracil Cancer Drug Deactivation Protein: A Step towards In Silico Pharmacogenomics Studies. *Molecules*. 2021; 26(10):2929. <https://doi.org/10.3390/molecules26102929>

- 2) Diallo, B.N., Glenister, M., **Musyoka, T.M.** Kevin Lobb & Özlem Tastan Bishop. SANCDB: an update on South African natural compounds and their readily available analogs. *J Cheminform* **13**, 37 (2021). <https://doi.org/10.1186/s13321-021-00514-2>
- 3) Boateng, R.A., Tastan Bishop, Ö. & **Musyoka, T.M.** Characterisation of plasmodial transketolases and identification of potential inhibitors: an in silico study. *Malar J* **19**, 442 (2020).
- 4) Amamuddy, O.S, **Musyoka, T.M.**, Boateng, R. A, Zabo. S. and Özlem Tastan Bishop. Determining the unbinding events and conserved motions associated with pyrazinamide release due resistance mutations of Mycobacterium tuberculosis pyrazinamidase. *Computational and Structural Biotechnology Journal*. \* DOI: <https://doi.org/10.1016/j.csbj.2020.05.009>
- 5) **Musyoka, T.**; Bishop, Ö.T. South African Abietane Diterpenoids and Their Analogs as Potential Antimalarials: Novel Insights from Hybrid Computational Approaches. *Molecules* **2019**, *24*, 4036.
- 6) **Musyoka, T. M.** and Tastan Bishop, Ö. *In silico* Identification of Inhibitors of Escherichia coli Dihydrofolate Reductase from the South African Natural Compounds Database (Under review).
- 7) **Musyoka, T. M.**; Njuguna, J. N.; Tastan Bishop, Ö. Comparing sequence and structure of falcipains and human homologs at prodomain and catalytic active site for malarial peptide based inhibitor design. *Malar. J.* **2019**, *18*, 159.
- 8) Siwe-Noundou, X.; **Musyoka, T. M.**; Moses, V.; Ndinteh, D. T.; Mnkandhla, D.; Hoppe, H.; Tastan Bishop, Ö.; Krause, R. W. M. Anti-HIV-1 integrase potency of methylgallate from Alchornea cordifolia using in vitro and in silico approaches. *Sci. Rep.* **2019**, *9*, 4718.
- 9) The determination of CHARMM force field parameters for the Mg<sup>2+</sup> containing HIV-1 integrase. **Musyoka TM**, Tastan Bishop Ö, Lobb KA and Moses V. *Chemical Physics Letters*. 2018; *711*: 1-7
- 10) Structure Based Docking and Molecular Dynamic Studies of Plasmodial Cysteine Proteases against a South African Natural Compound and its Analogs. **Musyoka TM**, Kanzi AM, Lobb KA, Tastan Bishop Ö. *Scientific reports*. 2016; *6*:23690.
- 11) In Vivo Antianaemic Effect and Safety of Aqueous Extracts of *Erythrina abyssinica* and *Zanthoxylum usambarensis* in Mice Models. **Musyoka TM**, Nyamai WD, Arika MW, Juma KK, Mutua DN, David M, Stanely KW, Mathew PN, George OO, Geoffrey MK, Eliud NM. *Journal of Hematology & Thromboembolic Diseases*. 2016; (4):1000242.
- 12) Analysis of non-peptidic compounds as potential malarial inhibitors against plasmodial cysteine proteases via integrated virtual screening workflow. **Musyoka TM**, Kanzi AM, Lobb KA, Tastan Bishop Ö. *Journal of biomolecular structure & dynamics*. 2016; *34*(10):2084-101.
- 13) SANCDB: a South African natural compound database. Hatherley R, Brown DK, **Musyoka TM**, Penkler DL, Faya N, Lobb KA, Tastan Bishop Ö. *Journal of cheminformatics*. 2015; *7*:29.
- 14) JMS: An Open Source Workflow Management System and Web-Based Cluster Front-End for High Performance Computing. Brown DK, Penkler DL, **Musyoka TM**, Bishop ÖT. *PloS one*. 2015; *10*(8):e0134273.
- 15) Evaluation of antiviral activity of Oligonol, an extract of *Litchi chinensis*, against betanodavirus. Ichinose T, **Musyoka TM**, Watanabe K, Kobayashi N. *Drug discoveries & therapeutics*. 2013; *7*(6):254-60.

## Research

Drug discovery (Infectious diseases) using computational approaches

## Conferenced/Workshops/Seminars Attended

### Conferences Attended

- 1) July 2015: 23<sup>rd</sup> Annual International Conference on Intelligent Systems for Molecular Biology (ISMB) / 14<sup>th</sup> European Conference on Computational Biology (ECCB) – Ireland (Poster presentation).
- 2) November 2014: Pan Africa Chemistry Network Congress - Ethiopia (Poster presentation).
- 3) September 2014: South Africa Genetics Society (SAGS) and South Africa Society for Bioinformatics (SASBi) Joint Congress - South Africa (Oral presentation).
- 4) August 2012: Japanese Society of Virology and Bacteriology congress – Japan (Oral presentation).

### Workshops Attended

- 1) August 2019: SA MRC symposium for East Cape – East London, South Africa (Presenter)
- 2) July 2018: DELGEME midterm general meeting – Bamako, Mali (Mentor/Supervisor)
- 3) September 2017: Homology modelling and docking - University of Limpopo, South Africa (Facilitator).
- 4) July 2017: Homology modelling and docking - University of Fort Hare, South Africa (Facilitator).
- 5) July 2010: East African Regional Workshop on Immunology of Parasitic Diseases – Tanzania (Trainee).
- 6) July 2009: Science, Ethics and Technological Responsibility in Developing and Emerging Countries workshop – Kenya.

## Supervision of Postgraduate Students

### Masters

- 3 MSc (Bioinformatics – completed, Rhodes University, South Africa)
- 4 BSc Honours (Biochemistry -completed, Rhodes University, South Africa)

### Ph. D

- 2 PhD (Bioinformatics – ongoing, Rhodes University, South Africa)

## Professional/ Consultancy (Editor/ Peer review in journals, Networks/ Collaborations, External Examiner, Patents)

- 1) Journal of Molecules – Reviewer (Bioinformatics)
- 2) Experimental parasitology – Reviewer (Pathogen bioinformatics)
- 3) Journal of Biomolecular Structure and Dynamics – Reviewer (Bioinformatics)
- 4) BioTechnologia
- 5) RSC Advances

## Affiliation of Professional Bodies

- 1) South African Council for Natural Scientific Professions – SACNASP (Professional Natural Scientist)
- 2) International Society for Computational Biology – ISCB (Member)
- 3) South African Society for Bioinformatics - SASBi – (Member)

## National and International awards and Recognitions

- 1) 2019 – 2021: Grand Challenges Africa postdoctoral fellowship – Drug design and discovery, Drug resistance mechanism (Malaria and Tuberculosis)
- 2) 2017 – 2018: Rhodes University postdoctoral research fellowship
- 3) 2015: ISMB/ECCB travel fellowship
- 4) 2013 – 2015: Rhodes University doctoral research fellowship
- 5) 2010 – 2012: Japanese Government graduate research fellowship
- 6) 2010: National Institute of Health travel fellowship

## Administrative Positions Held

### Recognized university administrative positions

Academic advisor BSc Biochemistry (2<sup>nd</sup> Year – Kenyatta University)

**Kindly use this format for your online CV submission and send it to: [webmaster@ku.ac.ke](mailto:webmaster@ku.ac.ke) to enable updates to your web page.**