

Benson Charles Ochieng Nyambega, PhD

Date of birth: 29th December 1975

Language Proficiency: English, Kiswahili and Spanish

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CORE COMPETENCIES:

I have expertise in:

- Resource mobilization and management
- Strategic Plan Development
- Policy development and implementation
- Research Ethics
- Clinical mentorship
- Molecular biology
- Molecular immunology
- Biochemistry
- Bioinformatics
- Functional genomics/reverse genetics

EDUCATIONAL PROFILE:

- October 2012- September 2013. Visiting Researcher, Biomedical Systems Research Department, Life Sciences Research Laboratory, Hitachi Ltd, Tokyo, Japan
- 2010 to 2013. Fellow, European Union sponsored Poverty Related Disease College. An International Programme on Biomedicine & Development.
- 2010 May to September. Visiting Scientist: Fellowship from Sonderforschungsbereich 544 “Kontrolle tropischer Infektionskrankheiten” Zentrum für Molekulare Biologie der Universität Heidelberg (ZMBH), Germany.
- 2008-2009. European Molecular Biology Organization (EMBO) Fellow. Zentrum für Molekulare Biologie der Universität Heidelberg (ZMBH), Germany.

2003-2008. Ph.D in Molecular Biology and Biochemistry. Laboratorio de Biología Molecular de la Enfermedad de Chagas, INGEBI – CONICET University of Buenos Aires, Argentina.
- 2000-2002. Master of Science in Biochemistry. Jomo Kenyatta University of Agriculture and Technology, Kenya.
- 1995-1999. Bachelor of Science BSc. - Biochemistry/Chemistry. Kenyatta University, Nairobi, Kenya.

EMPLOYMENT AND PROMOTION HISTORY:

- July 2016 to date: Director of Research, Publications and Innovations at Maseno University.
- May 2017, Member, Maseno University Strategic Plan development Committee.
- February 2012 to November 2012: Project contact person/Coordinator, Partnership for Advanced Clinical Education (PACE), Maseno University.
- August 29th 2011 to October 2016: Chairman, Department of Medical Biochemistry, School of Medicine, Maseno University.
- June 16th 2011: Appointed as a Senior Lecturer in the School of Medicine, Maseno University.
- December 18th 2009 to August 29th 2011: Coordinator, Department of Biomedical Sciences and Technology, Maseno University, Kenya.
- September 8th 2008: Appointed as a Lecturer in the School of Public Health and Community Development, Maseno University.
- May 2003: Appointed as a Tutorial Fellow in the School of Public Health and Community Development, Maseno University.

GRANTS AND AWARDS:

- 2017/18 FY. National Research Fund grant towards establishment of a Cancer Care and Research Facility (US\$ 720,000).
- 2017/06/20. NACOSTI/JSPS grant towards hosting of the 3rd International Africa Biotechnology and Biomedical Conference. (US\$. 10,000)
- 2015.02. African Network of Scientific and Technological Institutions Travel Grant. No.ANSTI.319.15. US\$ 2,500.00.
- 2014/06. NACOSTI/JSPS grant for joint conference “1st Africa Biotechnology and Biomedicine and 8th International Workshop on Approaches to Single-Cell Analysis”. (US\$. 10,000).
- 2012.10 - 2013.10: Research Fellowship as a Visiting Scholar, Hitachi Central Research Laboratory, Tokyo, Japan. Theme of research: Biosystems Development.
- 2010 July: Grant award. AB/21623. Functional characterization of trypanolysin at the tsetse-trypanosome interface. International Foundation of Science (IFS). US\$ 12,000.00.
- 2010 May: Sonderforschungsbereich 544 fellowship at the ZMBH, Heidelberg.
- 2010: EU sponsored training in Poverty Related Diseases (PRD College).

- 2009: WHO/TDR Re-entry grant. TDR ID A90040. Protein-protein interactions of *Trypanosoma brucei* Splicing Factor SF3a60 as potential targets for novel trypanocidals. US\$ 50,000.00.
- 2008/9: European Molecular Biology Organization Fellowship at the ZMBH, Heidelberg.
- 2005: WHO/TDR Research Training Grant. TDR ID A50737. Pre-initiation complex assembly and dissociation in *Trypanosoma brucei*: Mapping of factors involved in stage specific regulation of gene expression, and *in vivo* analysis of gene expression. US\$ 10,000.00.
- 2003: PhD Scholarship. South - South Initiative of the WHO/TDR to the Institute of Genetic Engineering and Molecular Biology (INGEBI), Buenos Aires, Argentina.
- 2001: The Young Scientist Travel Award (International Union of Biochemistry and Molecular Biology through the South African Society of Biochemistry and Molecular Biology).
- 2000: Dissertation Research Internship Program from International Center of Insect Physiology and Ecology Capacity.

CAPACITY BUILDING:

- April 24-28th 2012: Master trainer of University staff in innovative teaching methodologies and clinical mentorship for the Partnership for Advanced Clinical Education (PACE) project at Egerton University, Kenya.
- January 9-13th 2012: Master trainer in innovative teaching methodologies and clinical mentorship for the Partnership for Advanced Clinical Education (PACE) project at the Paediatric Training Center, College of Health Sciences, University of Nairobi, Kenya.
- January 1st – September 1st 2012: Appointed master trainer to join a multidisciplinary team that coordinates and supports the implementation of HIV training needs assessment, curriculum review and revision for the Partnership for Advanced Clinical Education (PACE).

PUBLICATIONS:

- Awuoche E.O, Weiss B.L, Vigneron A, Mireji PO, Aksoy E, Nyambega B, et al. (2017) Molecular characterization of tsetse's proboscis and its response to *Trypanosoma congolense* infection. PLoS Negl. Trop. Dis. 11(11): e0006057. <https://doi.org/10.1371/journal.pntd.0006057>
- Momanyi, V.K., Nyambega, B. and Onyango, M.A. (2015) An Investigation into the Factors Predisposing Workers to High Levels of Pesticide Exposure in Machakos District, Kenya. Intl. J. of Sci. and Res. 5(11): 315-322.
- Nyambega B, Helbig C, Masiga DK, Clayton C, Levin MJ (2014) Proteins Associated with SF3a60 in *T. brucei*. PLoS ONE 9(3): e91956. doi:10.1371/journal.pone.0091956

- Nyambega, B., Juri Ayub, M., Simonetti, L; Duffy, T., Longhi, S. A., Gómez, K. A., Hoebeke, J, Levin, M.J. and Smulski, C. R. (2012) Selective blockage of trypanosomatid protein synthesis by recombinant antibody anti-*Trypanosoma cruzi* P2 β protein. *PLoS ONE* 7(5): e36233.
- Ouna, B. A., Nyambega, B., Manful, T., Helbig, C., Males, M., Fadda, A and Clayton, C. (2012) Depletion of trypanosome CTR9 leads to gene expression defects. *PLoS ONE* 7(4): e34256.
- Nyambega, B., Abubakar, L. U., Imbuga, M. O., Abakar, M. H. and Osir, E. O. (2011) Lysis of *Trypanosoma brucei brucei* by Tsetse Trypanolysin. *Kenya J. Sci (B series)*. 14, 26-34.
- Vazquez, M. P., Mualem, D., Bercovich, N., Zeev Stern, M, Nyambega, B., Barda, O., Masiga, D., Kumar Gupta, S., Michaeli, S., Levin, M.J. (2009) Functional characterization and protein-protein interactions of trypanosome splicing factors U2AF35, U2AF65 and SF1. *Mol Biochem. Parasitol.* 164, 137-146.
- Maximiliano Juri Ayub, Cristian Smulski, Benson Nyambega, Natalia Bercovich, Dan Masiga, Martín Vazquez, Carlos F. Aguilar and Mariano J. Levin (2005) Protein-protein interaction map of the *Trypanosoma cruzi* ribosomal P protein complex. *Gene.* 357,129-136.

POST GRADUATE SUPERVISION:

PhD.

- 2018 to date. Andrew Otieno Aura - Socio-Cultural Factors Influencing Conventional Treatment For Endemic-Burkitt's Lymphoma Patients In Nyanza Region, Kenya. Department of Sociology and Anthropology, Maseno University.
- 2017 to date. Owoko Lilian Adhiambo - Sub-optimal adherence and associated factors influencing treatment failure among adolescents living with HIV on antiretroviral therapy in Gem sub-county, western Kenya. Department of Sociology and Anthropology, Maseno University.
- 2014 to date. Awuoche Erick Otieno - PHD/PH/00016/2014. Characterization of genes mediating *Glossina pallidipes*- *Trypanosoma congolense* infections. Department of Biomedical Sciences and Technology, Maseno University and the Biotechnology Research Institute (BRI), Kenya Agricultural and Livestock Research Organization (KALRO).
- 2010 to March 2012. Bernard Ouna. Zentrum für Molekulare Biologie der Universität Heidelberg (ZMBH). The function of the *CTR9-CDC73-LEO1* complex in *Trypanosoma brucei*.

Masters.

- 2013 to 2016: Bor Hillary, BG/MSc/60/2011. Immunochemical profile of the differentiation-related gene-1 in estrogen receptor breast cancer in western Kenya.
- 2012, May to date: Gitonga Godfrey Mutuma, I56/CE/14402/2009. Effects of Khat (*Catha Edulis*) Extract on Liver and Kidney of Albino Mice When Administered Orally.

- 2010 to 2012. Celestine Khayeli. Kenyatta University. Protein-protein interactions associated with *Trypanosoma brucei* splicing factor SF3a60.
- 2009-2011. Violet Nakmo. Maseno University, ESPUDEC. Exposure to pesticides among farm workers of Mavoko division in Machakos district, Kenya.

POSTGRADUATE THESIS EXAMINATION

PhD.

- 2015, November. Candidate: Adebiyi Olubunmi Adeniyi. Thesis Title: EFFECTS OF NARINGIN ON HYPERGLYCEMIA-INDUCED BIOCHEMICAL AND STRUCTURAL DEFECTS IN THE MYOCARDIUM OF RATS IN TYPE 1 DIABETIS MODEL, Student No. 213568377, in fulfillment of the requirements for the award of a Doctor of Philosophy degree in Pharmacology of the University of Kwazulu Natal, Westville.
- 2013, July. Candidate: Wandili Sarah, PG/PHD/055/2009. Thesis title: Molecular Diversity and Clonal relatedness of Clinical Salmonella isolates from Kisumu and Nandi counties of Kenya.
- 2010, November. Candidate: Asito Stephen Amolo, PG/PHD/011/08. Thesis title: “B Cell Homeostasis and EBV Immunology In Healthy Children and Endemic Burkitt’s Lymphoma Patients”
- 2010, November. Candidate: Paul Oyieng Angienda, PG/PHD/015/05. Thesis title: “Genetic Basis of Heat Induced Sex Determination In Tilapia (*Oreochromis Niloticus* L) and Genetic Viability of the Species Local Populations”

Masters.

- 2015, March. “NARINGIN REVERSES HIV-1 PROTEASE INHIBITORS-ASSOCIATED PANCREATIC β -CELL IN VITRO” for the Candidate: Ms SANELISIWE NZUZA, 207508019 in fulfillment of the requirements for the award of a Master of Science degree in Pharmacology of the University of Kwazulu Natal.
- 2015, March. “ANTI-DIABETIC AND ANTI-DYSLIPIDAEMIC EFFECTS OF GRAPEFRUIT JUICE” for the Candidate: SANELISIWE P. NGUBANE, 207503334 in fulfillment of the requirements for the award of a Master of Medical Science degree in Pharmacology of the University of KwaZulu-Natal.
- 2012, May 17th. Candidate: Alio Ibrahim Adan, PG/MPH/68/05. Thesis title: “Factors Influencing The Provision of Water and Sanitation In Primary School Kaloleni Division Kilifi District Kenya”
- 2012, March 9th. Candidate: Jeseplat Nyandieka Nyataya, PG/MSc/0013/09. Thesis title: “*Plasmodium falciparum* Population Structure in Children with Severe Malaria Anemia in Kisumu, Western Kenya”

- 2011, September 15th. Candidate: Owade Caroline Auma, PG/MSc/009/07. Thesis title: “Baseline Status of Pfm^{dr}-1 Gene Single Nucleotide Polymorphisms and Copy Numbers in Western Kenya”
- 2011, September 1st. Candidate: Ogolla Sydney Onyango, PG/MSc/081/08. Thesis title: “Immunophenotypic Characterization of Lymphocyte Subsets Expressing Programmed Death–(PD-1) in Healthy Children and in Children With Endemic Burkitt’s Lymphoma”
- 2011, July 29th. Candidate: Ochomo Eric Odhiambo, PG/MSc/0066/09. Thesis title: “Reduced Susceptibility to Pyrethroids in *Anopheles gambiae s.l.* Populations of Ahero, Budalangi and Bungoma in Western Kenya”
- 2011, July 25th. Candidate: John Jacktone Okeyo, PG/MSc/027/04. Thesis title: “Effect of Insecticide-Treated Bed Nets (ITNS) on Multiplicity of *Plasmodium falciparum* Infections in Children in a Malaria Holoendemic Area of Western Kenya”
- 2009, November 9th. Candidate: Sheila M. M. Libokoyi, PG/MPH/066/05. Thesis title: “School Performance of Primary School Girls Involved In HIV And Aids Home-Based Care In Maseno Division”
- 2009, November 2nd. Candidate: Ochola Lyticia Amondi, PG/MSc/075/05. Thesis title: “Cytokine Responses To Plasmodium Falciparum Multistage Antigen (Mb-2) In Adults Living In Areas of Varying Malaria Transmission Pressures In Western Kenya”
- 2009, July 1st. Candidate: Margaret Wandera Nyongesa, PG/MPH/053/2006. Thesis title: “Determinants of Clients’ Satisfaction with Healthcare Services at Pumwani Maternity Hospital”
- 2008, November 17th. Candidate: Sarah Awuor Wandili, PG/MSc/007/05. Thesis title: “Phenotypic and Genotypic Characterization of Salmonella Isolated from *Oreochromis Niloticus* along Lake Victoria Beaches In Western Kenya”

PUBLIC APPEARANCES:

CONFERENCES (ATTENDANCE)

- 2017, September 12-17th. 3rd Africa International Biotechnology and Biomedical Conference. Sino-Africa Joint Research Center (SAJOREC), Jomo Kenyatta University of Agriculture and Technology, Nairobi.
- 2015, March 8-13th. Gordon Research Conferences-“Tropical Infectious Diseases”. Galveston, Texas. USA.
- 2012, May 10-15th. Gordon Research Conferences –“The biology of Host-Parasite interactions”. Salve Regina University, Rode Island. USA.
- 2011, April 26-28th. E - Biokit Training Workshop. Department of Biochemistry and Molecular Biology, Egerton University, Kenya.

- 2010, May. Screening and Target Validation: Understanding Biology Symposia Series. Heidelberg, Germany.
- 2003, 30th Nov-3rd December. Gene Expression and RNA Processing. Iguazú Falls, Misiones, Argentina.

CONFERENCE (PRESENTATIONS)

- Nyambega, B., Falda, A., Helbig, C., Clayton, C. Tetratricopeptide Repeat proteins - likely targets for novel trypanocidals. 8-13th March 2015. Gordon Research Conferences - "Tropical Infectious Diseases". Galveston, Texas. USA.
- Nyambega, B., D. Masiga, A. Fadda, C. Helbig and C. Clayton. The Tetratricopeptide repeat as Targets of Novel Trypanocidals. Sept 10-12th 2014, Nairobi, Kenya.
- Nyambega, B., B. Ouna, T. Manful, A. Fadda, C. Helbig, M. Males and C. Clayton. The Tetratricopeptide repeat repertoire of African Trypanosomes. June 10-15th, Salve Regina University, RI, USA.
- Nyambega B. Tetratricopeptide Repeat Proteins of African Trypanosomes. July 22nd 2011. Center for Biotechnology and Bioinformatics (CEBIB), University of Nairobi.
- Nyambega, B., G. C. Cerqueira, M. Ehebauer and C. Clayton Trypanosome-specific protein interactions as novel targets for trypanocidals. African Network for Drugs Initiative (ANDI) Stakeholders forum, United Nations Office in Nairobi. 11-13th October 2010.
- Nyambega, B., Mireji, P. Protein-protein interaction prediction and 3-D modeling in trypanosomes. Beca-Hub. International Livestock Research Institute, Nairobi. 11th February 2010.
- Nyambega, B. Regulation of mRNA expression and translation in African trypanosomes. Walter Reed, Kisumu. 19th August 2009.
- Juri Ayub, M; Nyambega, B and Levin M. (2005) Caracterización del complejo de las proteínas ribosomales P en *Trypanosoma cruzi*. *Acta Bioquímica Clínica Latinoamericana. Suplemento n°3*- pagina 78.
- Nyambega, B., Juri Ayub, M; Curto, M. A; Bercovich, N; Masiga, D; Longhi, S and Levin M. (2005) Trypanosome RACK 1:Protein-protein liaisons and gene functional assays. *Acta Bioquímica Clínica Latinoamericana. Suplemento n°3*- pagina 79.
- Nyambega, B., Martin Vazquez, Natalia Bercovich, Catalina Atorrasagasti, Daniel Masiga, David Moalen, Shulamit Michaeli and Mariano Levin. Functional relevance and protein-protein interactions of the components of the E complex of *T. cruzi* and *T. brucei* trans-spliceosome. Tri-Tryp Consortium. Accra Ghana. 13-16th /09/2004.
- Atorrasagasti, C., Bercovich, N., Caro, F., Nyambega, B., Mariano, L. and Vazquez, M. (2004) Protein interaction map and functional analysis reveal the unique organization of the trans-spliceosomal complex. Abstract No. MI-C24. *Biocell*. 28:1-31.

- Juri Ayub, M., Gao, H., Nyambega, B., Tanco, S., Frank, J. and Levin M. (2004) Unique structural and functional features of *Trypanosoma cruzi* ribosomes as detected by Yeast-2-hybrids, sequence comparison and Cryo-electron microscopy. Abstract No. MI-C23. *Biocell*. 28:1-31.
- Nyambega, B., L. Abubakar, D. K. Masiga and E. Osir. Sequencing and functional analysis of trypanolysin, a tsetse midgut protein with trypanolytic activity. 15th Biennial Congress of the African Association of Insect Scientists (AAIS), 9-13th June 2003.
- Nyambega, B., E. Osir and M. Imbuga (2001) Trypanolysin mediated lysis of *T. brucei brucei*. Biochemical Society of Kenya 8th Annual Symposium, 26-27th September 2002.

Nyambega, B., E. Osir and M. Imbuga (2001) The mode of action of a midgut trypanolysin from the tsetse fly, *G. austeni*. IUBMB/SASMB special meeting on the Biochemical and Molecular Basis of Disease, Nov. 19-23, Rondebosch, S. Africa.

GRAND MEDIA:

- *Featured in:* "Argentine Laboratory tracks a killer" [IDBAmerica](#), Sunday, February 18, 2007. News about people and ideas that are re-shaping Latin America and the Caribbean.

INTENSIVE COURSES UNDERTAKEN.

- Resource Mobilization Training Workshop. 20-21st March 2017, Strathmore Business School, Nairobi.
- Comparative Annotation of Major Tsetse Fly Species. Workshop Theme: From Genomes to Function – Analyzing the *Glossina* Genome Cluster. March 15-21, 2015, Biotechnology Research Institute-Kenya Agricultural and Livestock Research Organization (KALRO).
- Clinical mentorship. January 12 – 13th 2012 by faculty from the St. John's Medical College, Bangalore India.
- PRD College. Advanced Module on Mandatory Educational Training. August 1st - 19th 2011. The Biotechnology Center, University of Yaounde I, Cameroun.
- PRD College. Advanced Module on Emerging Technologies for Translational Research. Nov 28th –Dec 18th 2010. International Center for Genetic Engineering and Biotechnology (ICGEB), University of Cape Town, Cape Town, South Africa.
- PRD College. Advanced Module on the Basic notions in the molecular biosciences and infection biology including the cellular and molecular basis of disease, immune evasion, management and prevention of Poverty Related and Neglected Diseases. April 9 – 30th 2010. College of Health Sciences, Makerere University, Uganda.
- Molecular immunology of protozoan infections. Sponsored by HHMI, EMBO, WHO, ANPCyT, CONICET, UNU-BIOLAC & CABBIO. February 19th - March 20th 2007. Buenos Aires, Argentina.

- EMBO/TDR/BECA Practical Course on RNA interference and reverse genetics in trypanosomes. International Livestock Research Institute (ILRI) 27 Nov-16 Dec 2006.
- EMBO/TDR Practical Course on RNA interference and reverse genetics in trypanosomes. Noguchi Memorial Institute for Medical Research, Accra, Ghana. 10-21 January 2005.
- UNDP/World Bank/WHO/TDR sponsored 3rd Latin American course on Bioinformatics for Tropical Disease Research. Departments of Parasitology and Computer Science, University of Sao Paulo, Brazil. 5-16 July 2004.

MEMBERSHIP OF PROFESSIONAL BODIES

- Biomedical and Biotechnology Society in Kenya.
- Biochemical Society of Kenya.

REFEREES

- Prof. Christine Clayton. Zentrum für Molekulare Biologie der Universität Heidelberg (ZMBH), Im Neuenheimer Feld 282, 69120 Heidelberg, Germany. Tel: (+49) 6221 54 6876, Telefax +49 6221 54589. E-mail: cclayton@zmbh.uni-heidelberg.de
- Prof. Wilson Odero. Dean, School of Medicine, Maseno University. Tel: (+254) 733784417 . E-mail: wodero@gmail.com, deanmedicine@maseno.ac.ke
- Dr. Daniel Masiga. International Center for Insect Physiology and Ecology (ICIPE). Nairobi, Kenya. Tel: +254722207080. Email: dmasiga@icipe.org