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College of Health Sciences
Department of Medical Microbiology and Parasitology
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CAREER OBJECTIVE

To become an established immunologist with significant teaching and research capacity in the area of host-pathogen interactions and immunological interventions against infectious disease and non-communicable diseases, to alleviate pain and suffering and improve health.

EDUCATION

Doctor of Philosophy in Medical Immunology

Harbin Medical University-Harbin, China

2017-2023

Research interest: Mechanism of penetration and action of 1G3, an anticancer autoantibody derived from the serum of SLE patients

The study generated a genetically engineered fully human monoclonal anti-nuclear antibody (1G3). It established that the antibody down-regulates the expression of DDX5 (an oncoprotein) in tumor cells. 1G3 was confirmed to penetrate living HL-60 cells through an endocytic pathway, and its anticancer effects are associated with downregulation of DDX5 expression, inhibition of RNA methylation and splicing complex functions, and TGF- β signaling pathway.

The study was conducted at Harbin Medical University's microbiology and translational medicine laboratories under a fully funded scholarship by the China Scholarship Council.

The degree involved coursework with units like Medical Statistics, Epidemiology, Molecular Immunology, Tumor Pathology, R programming, Glial-Neuronal interactions, Advances in Medical Microbiology and Chinese Language among others.

Master of Science in Immunology

Jomo Kenyatta University of Agriculture and Technology- Juja, Kenya

2011-2015

Thesis Title: Effects of dexamethasone and hydrocortisone in the control of Leishmania major infection in Balb/c mice

The study demonstrated that glucocorticoid treatment of leishmania infected mice resulted in a reduction of pathological indices through the immunosuppressive activity of the steroid on 2 macrophage derived chemokines: MIP-1 α and MCP-1. This work resulted in a peer reviewed publication.

The study was conducted in state-of-the-art laboratories of the Institute for Tropical Medicine and Infectious Diseases (ITROMID), a joint research platform between the University and the Kenya Medical Research Institute (KEMRI), funded by the Government of Japan.

This degree also involved taught coursework including 8 units in Immunology of parasitic and infectious diseases, Cell Biology & Genetics and Research Methods.

Bachelor of Science in Biology (Biomedical Option)

2007-2010

University of Eastern Africa, Baraton - Kapsabet, Kenya
(Second class honours, Upper Division-*cum laude*)

WORK EXPERIENCE

Lecturer

2023-Present

Kenyatta University, College of Health Sciences, Department of Medical Microbiology and Parasitology

Duties:

Teaching Medical Immunology Courses including;

1. Basics of Immunology
2. Introduction to Immunology
3. Immunoglobulins and complement
4. Immunology and immunopathology of infectious diseases
5. Clinical Immunology

Tutorial Fellow/Assistant Lecturer

2017-2023

Kenyatta University, School of Medicine, Department of Pathology

Duties:

Teaching Medical Immunology Courses including;

1. Basics of Immunology
2. Immunoglobulins and complement
3. Applications of Immunology in human disease management and control

Part-time Graduate assistant

Jan 2014-May

2015

Jomo Kenyatta University of Agriculture and Technology
Department of Zoology

Duties:

Teaching introduction to HIV/AIDS

Assisting Department professors to administer and mark Continuous Assessment Tests/ main university exams

Intern

Oct 2010–Feb 2011

International livestock Research Institute (ILRI) Nairobi

Laboratory intern with a research group involved in the development of diagnostic tests for Contagious Bovine Pleuropneumonia using recombinant proteins for *Mycoplasma mycoides mycoides*

- Tissue culture
- Immunodiagnostic techniques (Immunoblotting and ELISA)
- Production of monoclonal antibodies (Immunisation, harvesting of cells, fusion and screening for hybridomas and cloning of cells)
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Laboratory Assistant

April 2008 – June 2010

Department of Biology, University of Eastern Africa, Baraton

- Assisted with molecular laboratory techniques including isolating DNA and gel electrophoresis.
- Taught laboratory sections for undergraduate introductory Basic Medical Microbiology, General Microbiology and Cell and Molecular Biology courses.
- Prepared different kinds of media for microbiology lab sessions.

TRAININGS AND CONFERENCES ATTENDED

- Attended and presented a paper at the eighth JKUAT scientific, technological and industrialization conference in AICAD, JKUAT, Nairobi, Kenya. (November 23-25, 2013) **Title: Effects of glucocorticoids on chemokine production: a bid to control leishmaniasis**
- Attended and presented a paper in the first international innovation and research conference of the Mt. Kenya University in Safari Park hotel, Nairobi, Kenya (August 28-30, 2013). **Title: Inhibition of *Leishmania* infection development using glucocorticoid drugs *in vitro***
- Attended and presented a paper in KEMRI (Kenya Medical Research Institute) KASH (KEMRI Annual Scientific and Health) Conference (February 6-8, 2013) **Title: Exploring the use of Glucocorticoid Drugs in Prevention of *Leishmania* Infection: An *in vitro* study**
- Attended the sixth JKUAT scientific, technological and industrialization conference (November 23-25, 2011).
- Training on tissue culture and monoclonal antibody production in ILRI (International Livestock Research Institute) October 2010 - February 2011
- Training on data analysis using STATA statistical software (24th -28th July, 2017)

PUBLICATIONS

1. **Rose M. Nyamao**, Zipporah O. Lagat, Khayeka W. Christopher, Benard M. Jumba, Rebeccah W. Waihenya, Robert Karanja and Bernard Osero Ong'ondo (2014). Efficacy of glucocorticoids in controlling *Leishmania major* infecting Balb/c mice. *Journal of Infectious Diseases and Immunity* 6(2): pp. 10-18.
2. Bernard N. Jumba, Christopher O. Anjili, Judith Makwali, Johnstone Ingonga, **Rose Nyamao**, Sylvia Marango, Joseph K. Choge and Christopher Khayeka-Wandabwa. (2015) Evaluation of leishmanicidal activity and cytotoxicity of *Ricinus communis* and *Azadirachta indica* extracts from western Kenya: in vitro and in vivo assays. *Biomed central research notes* 8: (650).
3. **Rose N.M.**, Wu, J., Yu, L., Xiao, X., & Zhang, F.-M. (2018). Roles of DDX5 in the tumorigenesis, proliferation, differentiation, metastasis and pathway regulation of human malignancies. *Biochimica et Biophysica Acta (BBA)-Reviews on cancer*
4. Kosgey JC, Jia L, Fang Y, Yang J, Lei Gao, Wang J, **Nyamao R**, Cheteu M, Tong D, Wekesa V, Vasilyeva N, Zhang FM (2019). Probiotics as antifungal agents: Experimental confirmation and future prospects. *J Microbiol Methods*, 162, 28-37.

5. Kosgey, J., Jia, L., **Nyamao, R.**, Zhao, Y., Xue, T., Yang, J., Fang, Y. and Zhang, F., 2020. RNase 1, 2, 5 & 8 role in innate immunity: Strain specific antimicrobial activity. *International Journal of Biological Macromolecules*, 160, pp.1042-1049.
6. Jia, L., Kosgey, J. C., Wang, J., Yang, J., **Nyamao, R. M.**, Zhao, Y., ... & Zhang, F. (2020). Antimicrobial and mechanism of antagonistic activity of *Bacillus* sp. A2 against pathogenic fungus and bacteria: The implication on honey's regulatory mechanism on host's microbiota. *Food science & nutrition*, 8(9), 4857-4867.
7. Wabo, T. M., Wang, Y., **Nyamao, R. M.**, Wang, W., & Zhu, S. (2022). Protein-to-carbohydrate ratio is informative of diet quality and associates with all-cause mortality: Findings from the National Health and Nutrition Examination Survey (2007–2014). *Frontiers in Public Health*, 10.

COMPUTER SKILLS

Knowledge and experience of Microsoft Word, PowerPoint, Excel, Adobe Acrobat, SPSS and STATA

REFERENCES

Prof. Alloys S.S Orago
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