CURRICULUM VITAE

PERSONAL DETAILS

NAME:	**Dr. Isaac Mwangi Wangari**
NATIONALITY:	**Kenyan**
PLACE OF BIRTH:	**Laikipia County**
GENDER:	**Male**
MARITAL STATUS:	**Never Married**
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CAREER AIM

- To work in an environment that leads to continuous improvement, total dedication, creativity and sound decision making as prerequisites for success.

EDUCATION AND QUALIFICATIONS

February 2014 to 29 December 2017:	PhD (applied mathematics), RMIT University, Melbourne, Australia
June 2012 to December 2013:	Master of Science in applied mathematics (Mathematical Biology/Applied Mathematics) University of Kwazulu Natal (South Africa)
August 2011 to June 2012:	Postgraduate Diploma in Mathematical Sciences, African Institute for Mathematical Sciences (AIMS), affliated to Univesity of Western Cape- South Africa
Octomber 2006 - September 2010:	University of Nairobi Bachelor of Science degree (mathematics) Attained First Class Honours
2000 - 2004:	Ting'ang'a Secondary School Kenya Certificate of Secondary Education Attained B^+

WORK EXPERIENCE

- June 2021 -to date: Mathematics lecturer at Bomet University College (A constituent College of Moi University)
- November 2019-May 2021: Mathematics lecturer (three year contract) at Catholic University of Eastern Africa.
- September 2018- December 2019- Part-time lecturer at Karatina university: Units taught include: Vector analysis (Math214) and Discrete mathematics (Math115).
- May 2018- December 2018: Part-time lecturer at Kiriri Women's University of Science and Technology: Units taught include: Calculus 1, Calculus II, Mathematics for modelling and Complex analysis.
- March 2018 -September 2018: Part-time lecturer at Dedan Kimathi University of Technology. Units taught: Mathematics for science, algebra and ordinary differential equations for computer science.
- July 2012- December 2013: Mathematics tutor/Teaching assistant at University of Kwazulu Natal; Pietermarzburg Campus. Courses tutored include: calculus (I, II, III), linear algebra, ordinary differential equations (first and higher order ODE), numerical analysis (I and II), real analysis, complex analysis, vector analysis, Introduction to probability and statistics I.
- Sept 2009 - October 2009: Worked as an enumerator employed by Kenya National Bureau of Statistics.

SKILLS

Languages

- Fluent English and Swahili

Computing Skills

- Proficient in Unix/Linux ubuntu (Linux Microsoft Office), Computer programming using python, Matlab for technical computing, Statistical R for data analysis, Mathematica, Latex command (typing and drawing), Sasat-sensitivity and sampling analysis tool for mathematical modelling, Numerical Computing, Sage, Experimental mathematics using sage, Gap, advanced drawing computer skills using Xfig, geogebra, Dia and Tikz
- Ability to teach online using KENET in particular bigbluebutton

Team Work

- Commitment to participating and contributing to social forum(s).

FELLOWSHIPS/AWARDS/FUNDING

- African Institute for Mathematical sciences award to study postgraduate diploma in mathematical sciences
- University of Kwazulu Natal postgraduate research scholarship to study masters degree in applied mathematics
- RMIT university scholarship to study a PhD in applied mathematics

RESEARCH GRANT

- The World Academy of Sciences (TWAS) for the advancement of science in developing countries (hereinafter referred to as TWAS) awarded our research project entitled "Mathematical modelling of the impact of asymptomatic cases and stigmatization in COVID-19 virus transmission" a research grant amounting to a combined total of **USD 15,200.00** equivalent to **1,638,750.00 Kshs**. The grant number is **20-345 RG/MATHS/AF/ACG -FR3240314176**. This research is currently in progress.

JOURNAL REVIEWER

- Journal of Applied Mathematics and Computing (see https://orcid.org/0000-0002-8661-311X)
- Journal of Nonlinear Modeling and Analysis
- Industrial & Engineering Chemistry Research

CONFERENCES/SEMINARS/WORKSHOPS ATTENDED

12-14 March, 2013: University of Kwazulu Natal Siyacabanga Workshop, Complexity and Biology: Tick-borne diseases dynamics for wildlife, livestock and humans held in UKZN Campus, Pietermarzburg, Kwazulu Natal, South Africa
11 May and 25 May 2013-Mastering Masters Workshop; Efficient use of Ms Word Advanced I and II, Reading and Writing Skills and Advanced Excel

PROFESSIONAL MEMBERSHIP

Member of Southern Africa Mathematical Sciences Association (SAMSA)

RESEARCH INTEREST

- Biomathematics (Modelling of infectious diseases using dynamical systems)
- Interested in unravelling how heterogeneity in TB transmission influence public health interventions

- Current project include modelling the intricate dynamics of infectious diseases such as the recent pandemic-SARS-CoV-2 by applying optimal control theory

DISSERTATIONS

- Masters thesis-Impact of exogenous reinfection on tuberculosis infection in a genetically susceptible population. Supervised by Dr Faraimunashe Chirove (University of Kwazulu Natal) and Dr T. Achia (University of Kwazulu Natal).
- PhD thesis- Backward bifurcation and reinfection in mathematical models of tuberculosis. Supervised by Prof. Lewi Stone and Dr. Stephen Davis.

ESSAY

Differential susceptibility of co-infection models supervised by Prof. Farai Nyabadza (University of Stellebosch) and Dr Kgosimore (University of Botswana).

PUBLICATION LIST

1. Isaac Mwangi Wangari, Stanley Sewe, George Kimathi, Mary Wainaina, Virginia Kitetu, Winnie Kaluki: Mathematical Modelling of COVID-19 Transmission in Kenya: A Model with Reinfection Transmission Mechanism. Published in Computational and Mathematical Methods in Medicine Journal. https://doi.org/10.1155/2021/5384481
2. Isaac Mwangi Wangari, Stephen Davis, and Lewi Stone. Backward bifurcation in epidemic models: Problems arising with aggregated bifurcation parameters. Applied Mathematical Modelling (Elsevier), 40(1) : 1669–1675, 2016. *doi* : 10.1016/*j.apm*.2016.07.022
3. Isaac Mwangi Wangari, James Trauer and Lewi Stone. Modelling heterogeneity in host susceptibility to tuberculosis and its effect on public health interventions. Published in the journal of PLoS One. *https* : //*doi.org*/10.1371/*journal.pone*.0206603
4. Isaac Mwangi Wangari and Lewistone. Analysis of a heroin epidemic model with saturated treatment function, published in the journal of applied mathematics. can be accessed from *http* : //*dx.doi.org*/10.1155/2017/1953036
5. Isaac Mwangi Wangari and Lewi Stone Backward bifurcation and hysteresis in models of recurrent tuberculosis. Published in the journal of PLOS ONE . *https* : //*doi.org*/10.1371/*journal.pone*.0194256
6. Isaac Mwangi Wangari. Condition for global stability for a SEIR model incorporating exogenous reinfection and primary infection mechanisms. Published in Computational and Mathematical Methods in Medicine Journal. https://doi.org/10.1155/2020/9435819
7. Isaac Mwangi Wangari. Backward bifurcation and reinfection in mathematical models of tuberculosis. PhD thesis *https* : //*researchbank.rmit.edu.au/view/rmit* : 162589

8. Isaac Mwangi Wangari. Impact of exogenous reinfection on tuberculosis infection in a genetically susceptible population. Masters thesis. *http://hdl.handle.net/10413/10241*

9. Emily Atieno Omollo, George Kimathi, Isaac Mwangi. The effects of variation of contact rates between the environment, susceptible and infected population in a mathematical model of the transmission dynamics of Infectious Bursal Disease (IBD)

10. Faraimunashe Chirove, Irene Wattanga, Isaac Mwangi Wangari, Rachel Waema Mbogo, Benard Kipchumba, Mathematical Model for Langerhans cells and HIV evolution

THESIS SUPERVISION

I have supervised the following Masters thesis:

1. Mathematical models for the transmission dynamics of infectious Bursal disease (IBD), (Gumboro disease) by Sr. Emily Atieno Omollo, Catholic University of Eastern Africa

2. Modelling the impact of carrier and vaccination in understanding typhoid fever dynmics by Sr. Nzani Borive Esperance, Catholic University of Eastern Africa

3. Mathematical Modelling of Shiga Toxin incorporating the environment by Sr. Serapia Peter Soka, Catholic University of Eastern Africa

TRAINING

- April 2020-May 2020: Trained by Catholic university of Eastern Africa on how to use KENET (in particular BIGBLUEBUTTON) to teach online classes

- August 2009 - September 2009: Trained as an enumerator by Kenya National Bureau of Statistics

HOBBIES

- Sports and reading motivational books.

REFEREES

1. Professor. Lewi Stone, Lecturer/researcher, School of Science, Department of Mathematics and Geospatial Sciences, RMIT University, G.P.O Box 2476, Melbourne, Victoria 3001, Australia. Phone: +61 452176626, Email 1: lewistone100@gmail.com,
Email 2: lewi.stone@rmit.edu.au.

2. Dr. Flora Runji, Lecturer, School of Pure and Applied Sciences, Department of Mathematics, Statistics and Actuarial Science, Karatina University, P.o Box 1957-10101, Karatina, Kenya. Mobile: 0722313778. Email:hodmsas@karu.ac.ke

3. Dr Damian Muindi Maingi, Assistant Professor Department of Mathematics College of Science Sultan Qaboos University PO Box 50, Al Khod, 123 Muscat, Sultanate of Oman
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