



# University of Dar es Salaam

## Our June 2023 UDSM Alumna

This is a “light corner” on the UDSM portal intended to feature for one month in turns two among many of the University’s graduates—alumni—since its foundation in 1961. The corner is designed to inform the public and the University itself, without prejudice in terms of historical precedence but guided only by professional information search, on the past graduates of the University, their whereabouts, their current position or engagement, what is remembered of them as past ‘boys’ and ‘girls’ of their time and, finally, on what is reckoned about their contribution to their Alma Mater, their nation, the Africa region and/or the wider world.

### Regina N. BWIRE - Kenyan



**Year of matriculation: 2011;**  
**Year of graduation: 18<sup>th</sup> November 2015;**  
**Award: PhD (in Chemistry), 2015.**

#### More info:

- **Bachelor of Science (Hons), Maseno University, Kenya (2001);**
- **Master of Philosophy (Chemistry), University of Botswana, Botswana (2006).**

Dr. Regina N. Bwire, currently a natural-and-applied scientist and teacher in chemistry at Masinde Muliro University of Science and Technology (MMUST) in Kakamega, Kenya, is an alumna of the University of Dar es Salaam of the graduating doctoral class of 2015. She graduated from Chemistry within the College of Natural and Applied Sciences, CoNAS. She is currently teaching and researching in the Department of Pure and Applied Chemistry (PAC) within MMUST’s School of Natural and Applied Sciences (SONAS). At her University office on the third floor of the SPD Block, on Webuye Road, a visitor will find her a cool and warmly welcoming personality, ready to talk about her professional life and scientific exploits, contrary to many a scientist who feel unwilling or too busy to have time to talk about their scientific experiences at MMUST.

Regina was born in Kenya in the mid-1970s and obtained her early education at two primary schools - Holy Rosary Girls Boarding school and Elgon Estate Primary School between 1983 and 1990. She then moved on to Moi Girls High School in Eldoret for secondary education from 1991 to 1994, for which she obtained the Kenya Certificate of Secondary Education (KCSE). In January 1995, she decided to take a break from the schooling process by taking a four-months casual teaching job at Lolkingeyi Secondary School in Eldoret, where she taught Chemistry and Biology until April 1995. Then, between April 1995 and December 1997, she strategically changed jobs twice: first, working as a restaurant cashier (April 1995-December 1996) and then, in calculating the job prospects bound up with the forthcoming general elections in Kenya of December 1997, taking on a civil job as Elections Clerk based at the Moiben Mafuta Station registration centre in the Eldoret-North constituency.

In 1997, Bwire got admission at Maseno University for the four-year bachelor of science degree study programme, majoring in chemistry and biology. Alongside her undergraduate programme, and frequently in addition to her normal coursework, she wrote and submitted a research-based thesis titled “Extraction and chemical characterization of pyrrolizidine alkaloids present in *Crotalaria brevidens* Kotschy”. She finally graduated on 8<sup>th</sup> March 2001 with honours. It was on the basis of her exemplary performance in the B.Sc. programme that Regina was offered a research assistantship by the Chemistry Department at Maseno, with one of her prescribed tasks being to assess the pyrrolizidine alkaloids found present in various medicinal plants. Her appointment in the department ended in August 2003 as she had obtained admission into a two-year postgraduate study programme in chemistry at the University of Botswana (2004-2006). She earned her M. Phil [master of philosophy] in record time. It is worth noting that, during her academics journey in Botswana, Regina Bwire had the experience-and the benefit-of serving as a ‘demonstrator’ in the Department of Chemistry, concerned, among other things, with organising major scientific and laboratory exhibitions as well as speaking on planned occasions with external visitations.

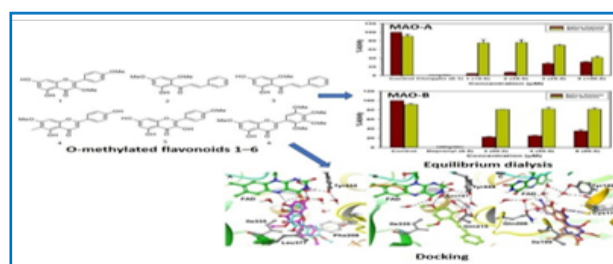
When she returned home to Kenya in September 2006, Bwire initially got a job with Kabarak University in Nakuru as a part-time lecturer. She taught there for one year till August 2007, when she secured a permanent and more promising position at Masinde Muliro University of Science and Technology (MMUST) in Kakamega. At MMUST, she had the initial experience of teaching in various areas of chemistry (organic, inorganic, physical and analytical chemistry) in the next five years of departmental engagement before embarking on the next stage of graduate study - doctoral research. It was in 2011 that Ms. Bwire, then as a confirmed permanent staff member of the

university (MMUST), was granted institutional support to undertake her doctoral study programme in natural-products chemistry at the University of Dar es Salaam in Tanzania. At Dar, she was based in the Chemistry Department of the College of Natural and Applied Sciences (CoNAS), where ‘natural-products chemistry’ (otherwise termed organic chemistry) had for some decades been one of the prime study areas in biochemistry and for which UDSM had been among the most active members of the Natural Products Research Network for East and Central Africa (NAPRECA). A number of chemists had been working on a rich variety of plants that lay candidate to scientific investigations for medicinal and/or nutritional potential. For Regina Bwire, the biochemical analyses she performed on various plant species over the years of experimentation and investigations were quite rewarding. They resulted in a doctoral thesis on “*Structure and bioactivity studies on the constituents of Baphiamacrocalyx, Baphia Keniensis, Syzygium cordatum and Pavettateitana*”. It was a study of considerable significance in bio-chemistry, leading to further insights into industrial breakthroughs as her follow-up post-doctoral work has come to indicate.

Dr. Bwire has since teamed up with scientific colleagues within Kenya and beyond in related scientific production and investigation of prototypes as well as in advising on a number of organic, especially plant-based productions. She has published—solely or with others—a number of works in the field. They include:

- Bwire, Regina N., Masesane, Ishmael B. and Majinda, R.R. (2008). “Facile enantioselective palladium catalysed transfer hydrogenation of  $\alpha$  - Methylcinnamic acid in the presence of optical pure organic acids.” *In Bulletin of the Chemical Society of Ethiopia*, 21(3), 1-4;
- Bwire, Regina N., Majinda, R.R., Masesane, I.B. and Steel, P.G., “From nature, through chemical synthesis, toward use in agriculture: Oryzoxymycin case study”. *In Pure and Applied Chemistry*, Vol. 81, no. 1, 2009, pp. 105-112; and
- Chaurasiya, N.D, Midiwo, J., Pandey, P., Bwire, R.N., Doerksen, R.J., Muhammad, I., Tekwani, B.L. “Selective Interactions of O-Methylated Flavonoid Natural Products with Human Monoamine Oxidase-A and -B. *In Molecules* 2020, 25, 5358.

Among several professional associations, Dr. Bwire belongs to the Kenya Chemical Society (KCS) where she has served also as the treasurer. The University of Dar es Salaam is highly appreciative of her academic efforts and her professional commitments.



Graphical abstract of an article written by Regina N. Bwire and her colleagues in the discipline of chemistry, in contribution to a special issue of *Molecules*, 25(22), which was published in honour of Professor James D. McChesney of the University of Mississippi, USA, on the occasion of his 80th birthday. Prof. McChesney is an Adjunct Professor in Biomolecular Sciences at the University of Mississippi, USA, who, among other things, has contributed immensely to overcoming the inherent challenges associated with discovering and developing products modelled from plants. The full citation of the publication is: Nayaran D. Chaurasiya, Jacob Midiwo, Pankaj Pandey, Regina N. Bwire, Robert J. Doerksen, Illias Muhammad & Babu L. Tekwani (2020), “Selective Interactions of O-Methylated Flavonoid Natural Products with Human Monoamine Oxidase-A and -B”. *In Molecules*, 25(22), 5358; Retrieved from <https://doi.org/10.3390/molecules25225358>.

**Regina N. BWIRE is Our June 2023 Alumna,  
and her great stories begin here!**

#### Get in touch with us through

Directorate of Internationalization,  
Convocation and Advancement.  
P.O BOX 35091 DSM – Tanzania

Mobile:  
0739-959545

Mail: [alumni@udsm.ac.tz](mailto:alumni@udsm.ac.tz)  
[www.udsm.ac.tz](http://www.udsm.ac.tz)

Facebook / [udsm.alumni](https://www.facebook.com/udsm.alumni)  
Twitter / [udsmalumni](https://twitter.com/udsmalumni)  
LinkedIn/[udsm](https://www.linkedin.com/company/udsm)  
Instagram/[udsmalumni](https://www.instagram.com/udsmalumni)