

Regina N. Bwire (Ph.D)

Department of Pure & Applied Chemistry

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Personal Profile

I hold a PhD in Organic Chemistry and currently lecturing Chemistry and doing research at Masinde Muliro University of Science and Technology. I have ten (10) years teaching and management experience at University level. I have the ability to teach across most of the chemistry fields at undergraduate level as will be evidenced in my CV. I have also developed curricula for various courses at university level including Technical Vocational, Education and Training (TVET) courses. I am a member of The Kenya chemical society (KCS), which is the professional body for experts in the chemical sciences and I serve as the treasurer, KCS-Western Chapter. I have passion to serve the community and as a result I chair a Community Based Organization (CBO) and also serve on various school boards of management. I am quick to learn, dedicated, capable of working under pressure to meet strict deadlines. I have the ability to work in a multi-ethnic and cultural environment with sensitivity and respect for diversity. I think strategically and possess the ability to solve problems.

Grants, Awards & Other Achievements

- **2020/2021 Financial year:** University Research Fund(URF) GRANT on: *“University-Community Led Response to Adolescents Sexual and Reproductive Health Crisis in the wake of Covid19 Pandemic”*
- **2016/2017-Financial Year:** National Research Fund Multidisciplinary Research Grant on: *“Bioprospecting for Phytochemical Repellants and Bio pesticides of the jigger flea Tunga penetrans from Western Kenya Flora”*
- **2017:** Took part in developing the Bachelor of technology in cosmetology program at MMUST (CUE Approved)
- **2015:** took part in developing the BSc. Industrial Chemistry program at MMUST (CUE Approved)
- **2014:** Won a Royal Society of Chemistry full travel bursary to present at the Natural Products Symposium 23-25 Sept 2014 in Cape Town, South Africa.
- **2010- 2013:** German Academic Exchange program (DAAD)-NAPRECA Scholarship to pursue a Doctor of Philosophy degree at the University of Dar Es Salaam.

- **2012:** DAAD Research Award for a four months research visit to The Institute of Chemistry, Potsdam University –Germany.
- **2003-2006:** DAAD - NAPRECA Scholarship to pursue a Master of Philosophy degree at the University of Botswana.

Other Duties & Responsibilities

- **July 2021-Date:** Secretary of the Kenya DAAD Scholars Association-MMUST Chapter
- **Aug 2019-Date:** Kenya Bureau of standards(**KEBS**) Technical committee member(TC171:Natural products and services)
- **June 2019-Date:** National Executive Committee Member of the Kenya DAAD Scholars Association (KDSA)
- **2017 - Date:** TVET Coordinator School of Natural Sciences (SONAS) MMUST
- **Jan 2017- Date:** Program Leader: Bachelor of Technology in Cosmetology Department of Pure and Applied Chemistry-MMUST
- **Aug 2017- Sept 2017:** Ag Chair, Department of Pure and Applied Chemistry (P&AC)
- **Feb 2017- Date:** Deputy Chair Parents Association and Board of Management member at St. Luis Butula High School-Busia
- **Jun 2016-Date:** Treasurer, The Kenya Chemical Society (Western Chapter)
- **Aug 2015-2018:** Committee Member of the MMUST greening initiative
- **Sept 2015- Date:** Deputy Chair Board of Management, St. Cecilia Nangina Girls High School
- **May 2015-Date:** Chair of the Departmental Post graduate Committee(P&AC)
- **Dec 2015-Date:** Chair Lady, Mundika Farmers Self-help group
- **June 2008-Sept 2009:** Departmental Exam Coordinator

Education Background

Course: Doctor of Philosophy (Chemistry) **Year & Date of Graduation:** 18th November 2015

Institution Name: University of Dar es Salaam- Tanzania

Thesis Title: *'Structure and Bioactivity studies on the Constituents of Baphia macrocalyx, Baphia Keniensis, Syzygium cordatum and Pavetta teitana.'*

Course: Master of Philosophy (Chemistry) **Year & Date of Graduation:** 14th October, 2006

Institution Name: University of Botswana- Botswana **Thesis Title:** *'Secondary metabolites from Cassia abbreviata beareana Holmes and Vangueria parvifolia Sond, their antimicrobial and radical scavenging properties and a facile palladium catalyzed stereoselective transfer hydrogenation protocol of prochiral alkenes.'*

Course: Bachelor of Science (General), Second Class Honors Upper division

Year & date of Graduation: 8th March, 2001

Institution Name: Maseno University – Kenya

Dissertation Title: *'Extraction and chemical characterization of pyrrolizidine alkaloids present in Crotalaria brevidens Kotchsky'*

Date: 1991 – 1994 **Course:** Kenya Certificate of Secondary Education(KCSE)

Institution Name: Moi Girls High School Eldoret – Kenya

Date: 1983- 1990 **Course:** Kenya Certificate of Primary Education (KCPE)

Institution Name: Holy Rosary Girls Boarding Primary School& Elgon estate primary school

Work Experience

Date: June 2008 – Date

Job Title: Lecturer (Full time)

Employer: Masinde Muliro University of Science and Technology (MMUST)

Duties: Teaching organic, inorganic, physical and analytical chemistry courses, Setting and marking of examinations, supervising laboratory experiments and marking laboratory reports.

Date: January 2007 – May 2008

Job Title: Ass. Lecturer (Part time)

Employer:

Masinde Muliro University of Science and Technology (MMUST)

Duties: Teaching organic, inorganic, physical and analytical chemistry courses, Setting and marking of examinations, supervising laboratory experiments and marking laboratory reports.

Date: September 2006- Aug 2007 **Job Title:** Lecturer (Part time)

Employer: Kabarak University (KABU)

Duties: Taught CHEM 111: Inorganic chemistry I, Setting and marking of examinations, supervising laboratory experiments and marking laboratory reports.

Date: August 2004- 2006 **Job Title:** Demonstrator

Employer: University of Botswana (UB)

Duties: Undergraduate laboratory demonstration, examination invigilation and any other duties as maybe given by the head of department.

Date: Jan 2001 - Aug 2003 **Job Title:** Research Assistant

Employer: chemistry Department, Maseno University

Duties: Assessing pyrrolizidine Alkaloids Present in various medicinal plants

Date: Dec 1997 **Job Title:** Elections Clerk, Mafuta Station- Moiben (Eldoret North Constituency).

Duties: Cross examining the voter register with names of those who have voted

Date: April 1995 - Dec 1996 **Job Title:** Cashier Beneve restaurant –Nairobi

Duties: Collecting money by the till from customers

Date: Jan 1995 – April **Job Title:** Teacher, Lolkinyei Secondary School Eldoret

Duties: Chemistry and Biology teacher

Publications

1. Rahab Kamau, Quintino Mgani, Jacob Midiwo, Veronica Masila, Leonida K. Omosa, **Regina N. Bwire**, Melisa R. Jacobs, Frank Wiggers and Muhamad Illias. ***Oleanolic Acid and other Compounds Isolated from Cordia africana Lam which Inhibit Vancomycin Resistant Enterococcus***. *Pharmacognoc Communications*, 9(3) 91-95
2. **Regina N. Bwire**, Quintino Mgani, Jacob O. Midiwo, Matthias Heydenrich and Leonidah K. Omosa *C -methylated Flavones and other flavones from Baphia macrocalyx Afzel*. Submitted to *Natural Products Communications*.
3. **Regina N. Bwire**, Quintino Mgani, Jacob O. Midiwo, Matthias Heydenrich and Leonidah K. Omosa An ellagic acid rhamnoside from the East African *Syzygium cordatum* Hochst and its antimicrobial and antioxidant activity. *Submitted to natural Products communications*
4. **Regina N. Bwire**, Runner R. Majinda and Masesane B. Ishmael. *Radical Scavenging activities of the constituents of Cassia abbreviata and Vangueria parvifolia*. Manuscript
5. **Regina N. Bwire**, Runner R. Majinda, Masesane B. Ishmael and P.G. Steel (2009). **From Nature, through chemical synthesis, towards use in Agriculture: Oryzoxymycin case study**. *Journal of Pure and applied Chemistry*, 81(1), 105.
6. **Regina N. Bwire**, Ishmael B. Masesane and Majinda R. T. Runner (2008). Facile enantioselective palladium catalysed transfer hydrogenation of α - Methylcinnamic

acid in the presence of optical pure organic acids. *Bulletin of the Chemical Society of Ethiopia*, 21(3), 1-4.

7. Obuya Were and **Regina N. Bwire** (2004). **Principal alkaloid from seeds of *Crotalaria mauensis***. *Proceedings of the ninth International Chemistry Conference in Africa (ICCA - 9)*. Pp 151-154.

Thesis & Dissertations Examined/Supervised

- **External Examiner** MSc. Thesis titled “*Synthesis of Semiochemicals and related fine Chemicals from Cashew Nut Shell Liquid*” by Godfrey Pius (University of Dar es Salaam-Tanzania) July 2016
- **Internal Examiner** MSc. Thesis titled “*Adulticidal Activity and Feeding deterrence of *Plectranthus marruboides* and *Tretradenia riparia* Essential oils on *Prostephanus truncates* (Coleoptera: Brostrichidae)*” by Judith Velma Adhiambo (Masinde Muliro University of Science and Technology-Kenya).
- **Supervised Msc. Thesis**
 - ✓ “*Isolation and structure elucidation of secondary metabolites from endophytes of *Croton macrostachyus* and *Croton megalocarpus* for antimicrobial activity*” By Redempta Bulinda-On going. **Supervisors:** Dr. Regina N. Bwire-MMUST and Prof. Donald Siamba-Kibabii University
 - ✓ “*Isolation and Structure elucidation of Secondary Metabolites from endophytes of *Albizia gummifera* and *Albizia coriaria* In search of Antimicrobial Agents* By Philip Wamalwa-On going. **Supervisors:** Dr. Regina N. Bwire-MMUST and Prof. Donald Siamba-Kibabii University
 - ✓ *Extraction, characterization of essential oils form the genus *Tephrosia* for Anti Jigger (*Tunga penetrance*) activity* By Julius Andim- On going. **Supervisors:** Dr. Regina N. Bwire and Prof. Omolo Maurice- MMUST
- **Supervised PhD Thesis:**
 - ✓ “*Diversity of Culturable Endophytic Fungi and Analysis of Antimicrobial Activity of Secondary Metabolites from Selected Medicinal Plants of Western Kenya*” By Kennedy Nyongesa-On going. **Supervisors:** Dr. Regina N. Bwire and Prof. Donald Siamba
- **Supervised BSc. dissertations:**
 - ✓ “*Qualitative Phytochemical Screening, Antimicrobial And Antioxidant Activity Studies On The Extract Of *Mollugo nudicaulis* Lam.*” by Otwane Michael (MMUST)
 - ✓ “*Phytochemical screening, antibacterial & antioxidant activities of *euphorbia heterophylla* extracts*” by Onger John SCH /0030/12
 - ✓ “*Phytochemical analysis, antioxidant and antimicrobial activities of extracts of the *Allium canadense* var. *mobilense* (wild garlic).*” By Martin Karugu SCH/009/13 (MMUST)
 - ✓ “*Comparative Chemical analysis of high and lowland *Musa* spp Fruits used for their antacid properties*” By Isaac Mwangi Wagocho SCH/007/13 (MMUST)

- ✓ *“Phytochemical Analysis of the seed coat of Pearsea Americana and its antimicrobial Activity”* By Jeremiah Mwihia Gikuhi SCH/002/13 (MMUST)
- ✓ *“GC/MS Profiling of the crude volatiles of Ocimum bacillicum found in Western Kenya and their Antifungal Activity”* By Oscar Simba SCH/1000/13 (MMUST)
- ✓ *“Comparative Qualitative Analysis of solanin in the bitter and Mild varieties of Solanum nigrum complexes”* By Emily Kawuki Makumbi SCH/0034/13 (MMUST)
- ✓ *“Quantitative studies of parabens in personal care products in kenya: case study of methylparaben”* By Agnes Muyale SCH/1000/15 (MMUST)
- ✓ *“Quantitative studies of parabens in personal care products in kenya: case study of propylparaben”* By Judith Kerubo(MMUST)
- ✓ *“Phytochemical studies and antibiotic activity of leaf extracts of leonotis nepetefolia”* Samuel Maina SCH/0003/2015
- ✓ *“Mosquito larvicidal activity of betulinic acid extract from guava leaves”.* Joseph Njoroge Ndichu SCH/0038/2015
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Trainings & Workshops

May 22th to 24th 2019: DAAD sponsored workshop on ‘*PhD supervision in the 21st Century*’ at the Technical University of Kenya.

7th to 8th March 2019: Kenya Chemical Society and DAAD cosponsored workshop: *“Laws and Policies for Chemical Management Systems Towards Responsible Consumption and Production in Kenya”*

5th to 9th March 2018: Brucker and Riscan cosponsored training: Course: *“Usage and operational course on NMR 300 from Brucker South Africa”* at the MMUST SPD basement NMR ROOM

19th to 21st June 2018: 5th Humboldt Kolleg in Kenya: *“The role of alumni networks in mentorship and Collaboration in Multidisciplinary Research: Foundation for Kenya’s vision 2030”*

July 2017: Training on Chemical Security Vulnerability Assessment at **Royal city(garden) Hotel Kisumu -Kemya**

June 2014: Workshop on ‘*curriculum development, review & implementation for the faculty of science (MMUST)*’ at **MMUST Main Catering Unit**

December 2012: Workshop on ‘*Chemical and biological studies of bioactive plant materials*’ at **Bangladesh Institute of Health Sciences (BIHS)**

August 2011: Workshop on ‘*Organic synthesis, spectroscopy and bioassay techniques*’ at **University of Nairobi Chiromo Campus and ICIPE**

November 2010: Workshop on Gas Chromatography/Mass Spectrometry at JKUAT-Kenya

August 2010: NAPRECA summer school on ‘*organic spectroscopy*’ at **the University of Botswana**

August 2008 : *Training on pedagogical skills at MMUST*

September 2006: *Training on NMR, MS, UV-Vis, antimicrobial and antioxidant assays at at the Chemistry department, University of Botswana*

September 2006: *NAPRECA Summer School on “Raising Competence in Natural Products Techniques: Spectroscopy and Antimicrobial Assays” at the Chemistry department, University of Botswana*

April 2006-August 2006 : *Certificate in French language (Level 3) at Alliance François de Gaborone*

Conferences

June 2021: KDSA Virtual conference: “*Mitigating the impact of Covid-19 and future pandemics: Role of Academia*” at **MMUST VC’s Board room, Kakamega -Kenya**

May 2021: MMUST 14th Multi-disciplinary international virtual conference at **MMUST VC’s Board room, Kakamega -Kenya**

July 2019: DAAD & Biophysical Society of Kenya Conference on: “ *Exploring Biophysics Diversity for Sustainable Industrial and Economic Development*” at **Bishop Stam Pastoral Center, Kakamega -Kenya**

June 2019: KDSA international conference on: “ *The role of Universities and Research Institutions in realization of the Kenya Big Four Agenda*” at **Sirikwa Hotel – Eldoret Kenya**

August 2017: 17th NAPRECA symposium on “*Harnessing natural products for the wellbeing of the African people*” at **Hotel Ras Amba, Addis Ababa-Ethiopia**

September 2014: 2nd symposium on ‘*natural products*’ at **Lagoon Beach hotel, Cape Town -South Africa**

May 2014: 4th African conference on ‘*edible and medicinal Mushrooms(ACEMM)*’ [organizing committee member] at **Golf Hotel, Kakamega**

July 2007: 12th NAPRRECA symposium on “*drug discovery from African Equatorial flora*” at the **Hotel Africana, Kampala, Uganda.**

October 2005: Graduate Intersivity Symposium at the **University of Botswana.**

August 2004: Ninth International Chemistry Conference in Africa (ICCA-9) on “*Chemistry Towards Disease and Poverty Eradication*” at **Arusha International Conference Centre (AICC), Arusha, Tanzania.**

October 2003: Graduate Intersivity Symposium at the **University of North West Potoschefstroom Campus - South Africa.**

August 2002: Kenya Chemical Society 4th International Conference on “*Chemistry, Research and Industry as Partners in Development*” at the **Arc Hotel Egerton University - Kenya.**

Professional Bodies Membership

1. Kenya Chemical Society (KCS): Treasurer, Western Chapter
2. Kenya DAAD Association(KDSA): National Excecutive Committee Member and Secretary KDSA-MMUST Chapter

Referees

1. Prof. Jacob Midiwo
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