

Albert Jairo Ounza Ndakala, PhD.

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Professional Contact

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Date of Birth: 2nd August 1967

Nationality: Kenyan

Research Interests

My main research focus is driven by my desire to exploit my organic synthesis expertise to develop molecules of potential pharmaceutical interest mainly against tropical diseases such as malaria, but also other endemic microbial diseases. I am also keen on structure modification of bioactive natural products to improve their pharmacological profiles. This is with the long term objective of identifying a drug for alleviating the disease burden globally.

Educational Qualifications

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|--------------------------------|---|
| 30 th August 2001 | PhD., Organic Chemistry
University of Connecticut, Storrs, Connecticut, USA
Thesis Title: Synthesis and Reactions of 1,5-Dioxaspiro[2.3]hexanes
Advisor: Prof Amy R. Howell |
| 11 th December 1995 | MSc., Environmental Chemistry
University of Nairobi, Nairobi, Kenya
Thesis Title: Essential Oils of Plants of the Family Capparaceae as Repellents of Maize Weevils (<i>Sitophilus Zeamais</i>) and the Livestock Tick (<i>Rhipicephalus Appendiculatus</i>)
Supervisor: Prof Peter M. Gitu |
| 8 th September 1992 | BSc., Chemistry
University of Nairobi, Nairobi, Kenya |

Employment Profile

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| 29 th January 2024 - Present | Associate Professor of Organic Chemistry
Department of Chemistry,
University of Nairobi, Nairobi, Kenya
Department Chairman: Prof David Kariuki |
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- 9th October 2013 – 28th January 2024 **Senior Lecturer of Organic Chemistry**
Department of Chemistry,
University of Nairobi, Nairobi, Kenya
Department Chairman: Prof David Kariuki
- 23rd July 2004 – 8th October 2013 **Lecturer of Organic Chemistry**
Department of Chemistry,
University of Nairobi, Nairobi, Kenya
Department Chairman: Prof Amir Yusuf
- 1st October 2006- 30th September 2007 **WHO Postdoctoral Research Fellow in Medicinal Chemistry**
Department of Chemistry,
University of Cape Town, Rondebosch, South Africa
Research Advisor: Prof Kelly Chibale
- 1st September 2001 – 31st August 2003 **Procter and Gamble Postdoctoral Research Associate**
Department of Chemistry and Biochemistry,
University of Notre Dame, South Bend, Indiana, USA
Research Advisor: Prof Paul Helquist
- 1st June 1999 – 31st August 1999 **Predoxal Industrial Consultant**
Chemical Discovery Unit
Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Connecticut, USA
Director: Dr Vittorio Farina
- 29th August 1995 – 30th August 2001 **Graduate Research Assistant**
Department of Chemistry,
University of Connecticut, Storrs, Connecticut, USA
Research Advisor: Prof Amy R. Howell
- 29th August 1995 – 31st May 1997 **Graduate Teaching Assistant in General and Organic Chemistry**
Department of Chemistry,
University of Connecticut, Storrs, Connecticut, USA
Supervisor: Prof Cecile Hurley
- 31st January 1994 – 31st July 1995 **Patent Examiner in Chemistry**
Kenya Industrial Property Institute, Nairobi, Kenya
Director: Prof Norah Olembo

Research Experience

Postdoctoral Research

- 4th June 2012- 11th August 2012 **Novartis/Seeding Labs Fellowship**
Global Drug Discovery Programme,
Novartis Institute for Biomedical Research
Mentor: Dr Frederic Zecri
Study: Synthesized heterocycles for management of cardiovascular diseases

1st October 2006- 31st September 2007 **WHO Postdoctoral Research Fellow in Medicinal Chemistry**
Department of Chemistry,
University of Cape Town, Rondebosch, South Africa
Research Advisor: Prof Kelly Chibale
Study: Synthesized pyrido[1,2-*a*]benzimidazole analogues for biological evaluation for antiplasmodial and antileishmanial activity

3rd September 2001 – 29th August 2003 **Procter and Gamble Postdoctoral Research Associate**
Department of Chemistry and Biochemistry,
University of Notre Dame, South Bend, Indiana, USA
Research Advisor: Prof Paul Helquist
Study: Synthesized analogues of the antibiotic Vancomycin for biochemical evaluation.

Predoctoral Industrial Research

1st June 1999 – 31st August 1999 **Predoctoral Industrial Consultant**
Chemical Discovery Unit
Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Connecticut, USA
Director: Dr Vittorio Farina
Study: Re-Investigated the mechanism of the Stille coupling reaction and its potential application in the synthesis of pharmaceuticals.

PhD. Research

29th August 1995 – 30th August 2001 **Graduate Research Assistant**
Department of Chemistry,
University of Connecticut, Storrs, Connecticut, USA
Research Advisor: Prof Amy R. Howell

- Developed a protocol for the general synthesis of novel 1,5-dioxaspiro[3.2]hexane systems using 2-methyleneoxetanes as intermediates
- Investigated the nucleophilic ring opening of 1,5-dioxaspiro[3.2]hexanes
- Developed a protocol for accessing sphingoid bases from a 1,5-dioxaspiro[3.2]hexane template

MSc. Research

26th September 1991 – June 1994 University of Nairobi, Kenya and International Centre for Insect Physiology and Ecology, Nairobi, Kenya.
Research Advisors: Peter M. Gitu and Wilber Lwande

- Investigated the repellency properties of components of the essential oils of some Kenyan plants of the Capparaceae family against the maize weevil and a livestock tick

Teaching Experience

29th January 2024 - Present **Associate Professor of Organic Chemistry**
Department of Chemistry,
University of Nairobi, Kenya
Department Chairman: Prof David Kariuki

Courses Taught

1. SCH 102/SCH3102/HPCH3102: Introduction to Organic Chemistry, the Chemistry of Alkanes and Cycloalkanes

- Introduced BPharm freshmen students to organic chemistry, the chemistry of alkanes and cycloalkanes and demonstrated the relevance of stereochemistry to the practice of medicine.
2. SCH 302: Stereochemistry and Synthesis of Organic Compounds
 - Taught third year BSc (Chemistry/Analytical Chemistry/Industrial Chemistry) students, the concept of stereochemistry and application of organic chemistry in synthesis.
 3. SCH 402: Heterocyclic Chemistry
 - Taught fourth year BEd (Science) students the chemistry of heterocycles from 3-6 membered ring systems/
 4. SCH 504/ SCH 6104: Advanced Organic Chemistry II
 - Taught first year MSc students synthetic methodology, organometallic chemistry and synthetic planning.

9th October 2013- 28th
January 2024

Senior Lecturer of Organic Chemistry

Department of Chemistry,

University of Nairobi, Kenya

Department Chairman: Prof John Onyari and Prof David Kariuki

Courses Taught

1. SCH 102/SCH3102/HPCH3102: Introduction to Organic Chemistry, the Chemistry of Alkanes and Cycloalkanes
 - Introduced BPharm freshmen students to organic chemistry, the chemistry of alkanes and cycloalkanes and demonstrated the relevance of stereochemistry to the practice of medicine.
2. SCH 206: Organic Acids, Amines, Esters and Phenols
 - Taught third year B.Ed (Science) students, the chemistry of aldehydes, ketones, carboxylic acids, esters, amides, phenols and amines.
3. SCH 302: Stereochemistry and Synthesis of Organic Compounds
 - Taught third year BSc (Chemistry/Analytical Chemistry/Industrial Chemistry) students, the concept of stereochemistry and application of organic chemistry in synthesis.
4. SCH 305: Amino acids, Peptides, Proteins, Carbohydrates and Nucleic acids
 - Taught third year BEd (Science) students, the chemistry of amino acids, proteins, carbohydrates and nucleic acids.
5. SCH 402: Heterocyclic Chemistry
 - Taught fourth year BEd (Science) students the chemistry of heterocycles from 3-6 membered ring systems/
6. SCH 504/ SCH 6104: Advanced Organic Chemistry II
 - Taught first year MSc students synthetic methodology, organometallic chemistry and synthetic planning.

23rd July 2004 – 8th
October 2013

Lecturer of Organic Chemistry

Department of Chemistry,
University of Nairobi, Kenya
Department Chairman: Prof Amir Yusuf

Courses Taught

1. SCH 102: Introduction to Organic Chemistry, the Chemistry of Alkanes and Cycloalkanes
 - Introduced BPharm freshmen students to organic chemistry, the chemistry of alkanes and cycloalkanes and demonstrated the relevance of stereochemistry to the practice of medicine.
2. SCH 206: Organic Acids, Amines, Esters and Phenols
 - Taught third B.Ed (Science) and BPharm students, the chemistry of aldehydes, ketones, carboxylic acids, esters, amides, phenols and amines.
3. SCH 302: Stereochemistry and Synthesis of Organic Compounds
 - Taught third year BSc (Chemistry) students, the concept of stereochemistry and application of organic chemistry in synthesis.
4. SCH 305: Amino acids, Peptides, Proteins, Carbohydrates and Nucleic acids
 - Taught third year BSc (Chemistry) and second year BPharm students, the chemistry of amino acids, proteins, carbohydrates and nucleic acids.
5. SCH 504: Advanced Organic Chemistry 2
 - Taught first year MSc students synthetic methodology, organometallic chemistry and synthetic planning.
6. UPC 213: Pharmaceutical Chemistry
 - Taught BPharm students, the chemistry of aldehydes, ketones, carboxylic acids, esters, amides and amines relevant to the practice of medicine.
7. SCH 402: Heterocyclic Chemistry
 - Taught fourth year BEEd students the chemistry of heterocyclic compounds

Student Supervision

Postgraduate Students

PhD Programme Completed

Student Details

PhD in Chemistry

Carolyn Chepkirui (I80/52251/2017) (Female, Kenyan) Phytochemical Analyses of *Mundulea Sericea*, *Tephrosia Uniflora* (Leguminosae) and *Strobilus Usambarensis* (Moraceae) for Anti-Infective and Cytotoxic Principles. (Graduated 23rd September 2022). Co-supervisors: Prof Abiy Yenesew, Dr Solomon Derese

PhD in Biochemistry	Harrison Ndungu (H80/51971/2017) (Male, Kenyan) Integrating Bioinformatics Mechanism-Based Screening into Kinetoplastids Antiprotozoan Rrna Targets Compound Discovery Paradigm. (Graduated 23 rd September 2022) Co-supervisors: Prof. Francis Mula; Prof Peter Wagacha, Dr Edward Muge.
PhD in Chemistry	Richard Oriko (I80/50120/2015) (Male, Ugandan) Phytochemical Analysis of Selected Tephrosia Species for Anti-Inflammatory Principles. (Graduated 24 th September 2021) Co-supervisors: Dr Solomon Derese; Dr George Ongamo.
PhD in Chemistry	Daniel Buyinza (I80/96687/2014) (Male, Ugandan) Antiplasmodial and Anticancer Principles from <i>Millettia Dura</i> , <i>Millettia Leucantha</i> and <i>Millettia Lasiantha</i> Species. (Graduated 25 th September 2020) Co-supervisor: Dr Solomon Derese.
PhD in Chemistry	Moses Andima (I80/50060/2015) (Male, Ugandan) Natural Product-loaded Nanoparticles for Cancer Therapy: Formulation, Characterization, <i>In Silico</i> and Cellular Studies. (Graduated 25 th September 2020) Co-supervisors: Dr Solomon Derese.
PhD in Chemistry	Fozia Ali Adem (I80/97548/2015) (Female, Ethiopian) Phytochemical Analysis of Selected Plants in the Leguminosae and Moraceae Families for Anticancer Principles. (Graduated 6 th September 2019) Co-supervisors: Prof Abiy Yenesew, Dr. Beatrice Irungu.
PhD in Chemistry	Yoseph Atilaw (I80/92721/2013) (Male, Ethiopian) Phytochemical Investigation of Selected Tephrosia Species for Antiplasmodial and Anti-inflammatory Principles (Graduated on 14 th September 2018). Co-supervisors: Prof Abiy Yenesew, Dr Hellen Kariuki.
PhD in Chemistry	Negera Abdissa (I80/82021/2011) (Male, Ethiopian) Phytochemical Studies of Eastern African Plants belonging to the Family Asphodelaceae (Graduated on 29 th August 2014). Co-supervisors: Prof. Jacob O. Midiwo; Prof Abiy Yenesew.
PhD in Chemistry	Milkyas Endale Annisa (I80/82101/2009) (Male, Ethiopian) Phytochemical Analyses of Six Pentas Species for Antiplasmodial Principles. (Graduated on 24 th August 2012). Co-supervisors: Prof Abiy Yenesew, Dr Martin Mbugua; Prof. Máté Erdélyi.
PhD Programme Ongoing	Student Details
PhD in Chemistry	Ivan Kiganda (I80/56064/2020) (Male, Uganda) Phytochemical Investigation of Selected Plants from the Families Apocynaceae and Leguminosae for Antiplasmodial Principles. Co-supervisors: Prof Abiy Yenesew, Dr Hosea Akala
PhD in Chemistry	Swaleh Abdillahi Mwenga (I80/57791/2021) (Male, Kenya) Computer Guided Development and Synthesis of Antifungal 2-Amino-4-Chlorophenol Derivatives Against <i>Candida albicans</i> . Co-supervisors: Dr Solomon Derese, Dr Lucy Ochola and Dr Edith Amuhaya
MSc Programme Completed	Student Details

MSc in Chemistry	Patrick Kinuthia (I56/11471/2018) (Male, Kenyan) Synthesis of Meso-Tetrafurlylporphyrins for Water Disinfection. (Graduated on 22 nd September 2023). Co-supervisors: Dr Solomon Derese, Dr Edith Amuhaya.
MSc in Chemistry	Vicent Kanya (I56/15292/2018) (Male, Ugandan) Phytochemical Investigation of <i>Pentas Parvifolia</i> for Leishmanicidal Principles. (Graduated on 23 rd September 2022). Co-supervisors: Prof Abiy Yenesew.
MSc in Chemistry	Ivan Kiganda (I 56/83010/2015) (Male, Ugandan) Phytochemical Investigation of <i>Alstonia boonei</i> or Anticancer Principles (Graduated on 21 st December 2018). Co-supervisors: Prof Abiy Yenesew, Dr Ivan Gumula.
MSc in Chemistry	George Kwesiga (I56/68908/2013) (Male, Ugandan) Phytochemical investigation and structure modification of antimicrobial principles of <i>Erythrina sacleuxii</i> and <i>Erythrina melanacantha</i> . (Graduated on 2 nd September 2016). Co-supervisor: Prof Abiy Yenesew.
MSc in Chemistry	Openda Ikala (I56/80032/2015) (Female, Congolese) Phytochemical Evaluation of <i>Tephrosia Hildebrandtii</i> for Antimicrobial Principles. (Graduated on 21 st December 2018).Co-supervisor: Dr Solomon Derese,
MSc in Chemistry	Samuel Gachuhi (I56/67848/2013) (Male, Kenyan) Synthesis of Antimicrobial Benzene-1,4-Diol Analogues of a Benzoquinone Metabolite From the Endophytic Fungi <i>Xylaria</i> Sp. PBR 30 (Graduated on 22 nd December 2017).Co-supervisor: Dr Solomon Derese, Dr Erick Guantai
MSc in Chemistry	James Oyim (I56/79108/2012) (Male, Kenyan) Modeling and Synthesis of Antiplasmodial Naphthoquinones from Natural Products of Kenya (Graduated on 2 nd December 2016).Co-supervisor: Dr Solomon Derese
MSc in Chemistry	Michael Rogo (I56/79390/2012) (Male, Kenyan) Modeling and Synthesis of Antiplasmodial Benzoxazines from Natural Products of Kenya (Graduated on 2 nd September 2016).Co-supervisor: Dr Solomon Derese
MSc in Chemistry	Scolastica Maynim (I56/79952/2012) (Female, Kenyan) Modeling and Synthesis of Antiplasmodial Chromones, Chromanones And Chalcones based on Natural Products of Kenya (Graduated on 2 nd September 2016).Co-supervisor: Dr Solomon Derese
MSc in Chemistry	Abdillahi Swaleh (I56/81011/2015) (Male, Kenyan) Synthesis and Antiglycemic Activity of <i>In Silico</i> Designed Analogues of Allylpropylidysulphide (Graduated on 21 st December 2018).Co-supervisor: Dr Solomon Derese,
MSc in Chemistry	Yoseph Atilaw (I56/64389/2010) (Male, Ethiopian) Phytochemical Investigation of <i>Schizogygia coffaeoides</i> Ball. (Apocynaceae) for Antimicrobial Principles (Graduated September 2012). Co-supervisor: Abiy Yenesew; Dr Catherine Lukhoba.
MSc in Chemistry	Michael Bugigi Sangale (I56/71728/2008) (Male, Kenyan) Larvicidal Activity of Some Flavonoids and their Analogues (Graduated on 24 th August 2012). Co-supervisors: Prof Abiy Yenesew; Dr Martin Mbugua.

**MSc Programme
Ongoing**

Student Details

MSc in Chemistry

Nicholas Mwanzia Kamuti (I56/38826/2020) (Male, Kenyan) Phytochemical Investigation of *Dalbergia Melanoxylon* for Anticancer Principles. Co-supervisors: Prof Abiy Yenesew.

MSc in Chemistry

Purity Jael Ochieng (I56/35006/2019) (Female, Kenyan) Phytochemical Investigation of *Crotalaria Incana* for Antileishmanial Principles. Co-supervisors: Prof Abiy Yenesew.

MSc in Chemistry

Kelvin Wangai (I56/11727/2018) (Male, Kenyan) Synthesis and Photophysical Studies of Porphyrins as Photodynamic Antimicrobial Agent in Water Disinfection. Co-supervisor: Dr Solomon Derese and Dr Edith Amuhaya

Undergraduate Students

**BSc Programme
Completed**

Student Details

BSc in Industrial
Chemistry

Brenda Okoko (I08/30341/2014) (Female, Kenyan) Antimicrobial Activity of the Essential Oils from of *Tephrosia Vogellii* for Antimicrobial Activities (Graduated on 14th September 2018) Co-supervisors: Dr Solomon Derese.

BSc

Stephanie Gathoni Kamunya (I20/1973/2013) (Female, Kenyan) Modelling the Pathogen Box Against *Plasmodium Falciparum* Dihydroorotate Dehydrogenase for Antiplasmodial Compounds (Graduated on 22nd September 2017) Co-supervisors: Dr Solomon Derese.

Research Publications

1. Carolyne Chepkirui, Fozia Ali Adem, Anastasia Rudenko, Yukino Gütlin, Albert Ndakala, Solomon Derese, Andreas Orthaber, Catarina Bourgard, Abiy Yenesew, and Máté Erdélyi (2023). Benzo[b]naphtho[2,1-d]furans and 2-Phenylnaphthalenes from *Streblus usambarensis*. *Journal of Natural Products*, **86**, 1010–1018.
2. Harrison Ndungu Mwangi, Edward Kirwa Muge, Peter Waiganjo Wagatha, Albert Ndakala, Francis Jackim Mula. (2023). Identification of Selected Kinetoplastids 18S rRNA Residues required for Efficient Recruitment of Initiator tRNA Met and AUG Selection *in silico*. *International Journal of Bioinformatics and Intelligent Computing* **2**(1), 29-43;
3. Carolyne Chepkirui, Catarina Bourgard, Pieter J. Gilissen, Albert Ndakala, Solomon Derese, Yukino Gütlin, Máté Erdélyi, Abiy Yenesew, (2022) A new β -hydroxydihydrochalcone from *Tephrosia uniflora*, and the revision of three β -hydroxydihydrochalcones to flavanones, *Fitoterapia*, **158**, 105166, <https://doi.org/10.1016/j.fitote.2022.105166>.
4. Veronica M. Masila, Albert J. Ndakala, Jacob O. Midiwo, Robert Byamukama, Rahab W. Kamau, Mallika Kumarihamy and Ilias Muhammad (2022) Synthesis of a pyrrolidine derivative of a carvotacetone and monoterpenes for anti-methicillin-resistant *Staphylococcus aureus* and anti-cryptococcal properties, *Natural Product Research*, **36**:9, 2321-2328, DOI: 10.1080/14786419.2020.1833201
5. Moses Andima, Albert Ndakala, Solomon Derese, Sarkar Biswajyoti, Aabid Hussain, Li Jun Yang, Otieno Elsie Akoth, Paolo Coghi, Chiranjib Pal, Matthias Heydenreich, Vincent Kam-Wai Wong & Abiy Yenesew (2022) Antileishmanial and cytotoxic activity of secondary metabolites from *Taberneamontana ventricosa* and two aloe species, *Natural Product Research*, **36**:5, 1365-1369, DOI: 10.1080/14786419.2021.1871906.
6. Carolyne Chepkirui, Purity J. Ochieng, Biswajyoti Sarkar, Aabid Hussain, Chiranjib Pal, Li Jun Yang, Paolo Coghi, Hoseah M. Akala, Solomon Derese, Albert Ndakala, Matthias Heydenreich, Vincent K. W. Wong, Máté Erdélyi, Abiy Yenesew. (2021). Antiplasmodial and Antileishmanial Flavonoids from *Mundulea sericea*. *Fitoterapia*, 104796.
7. Harrison Ndungu Mwangi, Edward Kirwa Muge, Peter Waiganjo Wagatha, Albert Ndakala, Francis Jackim Mula. (2021). Methods for Identifying Microbial Natural Product Compounds that Target Kinetoplastid RNA Structural Motifs by Homology and De Novo Modeled 18S rRNA. *International Journal of Molecular Sciences* **22**(9), 4493; <https://doi.org/10.3390/ijms22094493>.
8. Buyinza, D., Derese, S., Ndakala, A., Heydenreich, M., Yenesew, A., Koch, A. and Oriko, R. (2021). A coumestan and a coumaronochromone from *Millettia lasiantha*. *Biochemical Systematics and Ecology*, **97**, 104277. <https://doi.org/10.1016/j.bse.2021.104277>
9. Owor, R. O., Derese, S., Bedane, K. G., Zühlke, S., Ndakala, A., and Spitteller, M. (2020). Isoflavones from the seedpods of *Tephrosia vogelii* and pyrazoisopongaflavone with anti-inflammatory effects. *Fitoterapia*, **146**, 104695.
10. Richard Oriko Owor, Kibrom Gebrehiwot Bedane, Sebastian Zühlke, Solomon Derese, George Otieno Ong'amo, Albert Ndakala, Michael Spitteller (2020) Anti-inflammatory Flavanones and Flavones from *Tephrosia linearis*; *Journal of Natural Products* **83** (4): 996-1004.

11. Richard Oriko Owor, Kibrom Gebrehiwot Bedane, Yolande Ikala Openda, Sebastian Zühlke, Solomon Derese, George Ong'amo, Albert Ndakala, Michael Spiteller (2021) Synergistic anti-inflammatory activities of a new flavone and other flavonoids from *Tephrosia hildebrandtii* vatke *Natural Product Research* **35** (22): 4486-4493.
12. Veronica M Masila, Albert J Ndakala, Robert Byamukama, Jacob O Midiwo, Rahab W Kamau, Mei Wang, Mallika Kumarihamy, Jianping Zhao, Matthias Heydreich, Ilias Muhammad (2020) Synthesis, structural assignments and antiinfective activities of 3-*O*-benzyl-carvotacetone and 3-hydroxy-2-isopropyl-5-methyl-*p*-benzoquinone, *Natural Product Research* Pages 1-9.
13. Daniel Buyinza, Dancun Chalo, Solomon Derese, Albert Ndakala, Abiy Yenesew (2020) Flavonoids and Isoflavonoids of *Millettia dura* and *Millettia ferruginea*: Phytochemical Review and Chemotaxonomic Values, *Biochemical Systematics and Ecology* **91**, 104053.
14. Moses Andima, Paolo Coghi, Li Jun Yang, Vincent Kam Wai Wong, Chrispus Mutuku Ngule, Matthias Heydenreich, Albert Jairo Ndakala, Abiy Yenesew, Solomon Derese (2020) Antiproliferative Activity of Secondary Metabolites from *Zanthoxylum zanthoxyloides* Lam: In vitro and *in silico* Studies. *Pharmacognosy Communications* **10** (1) 44-51.
15. Fozia A Adem, Victor Kuete, Armelle T Mbaveng, Matthias Heydenreich, Andreas Koch, Albert Ndakala, Beatrice Irungu, Abiy Yenesew, Thomas Efferth (2019) Cytotoxic flavonoids from two *Lonchocarpus* species. *Natural Product Research* **33** (18) Pages: 2609-2617.
16. Daniel Buyinza, Li Jun Yang, Solomon Derese, Albert Ndakala, Paolo Coghi, Matthias Heydenreich, Vincent Kam Wai Wong, Heiko M Möller, Abiy Yenesew (2019) Cytotoxicity of isoflavones from *Millettia dura*, *Natural Product Research* Pages 1-4.
17. Fozia A Adem, Armelle T Mbaveng, Victor Kuete, Matthias Heydenreich, Albert Ndakala, Beatrice Irungu, Abiy Yenesew, Thomas Efferth (2019) Cytotoxicity of isoflavones and biflavonoids from *Ormocarpum kirkii* towards multi-factorial drug resistant cancer, *Phytomedicine* **58**, Pages 152853.
18. Olivia M. Merkel, Moses Andima, Gabriella Costabile, Lorenz Isert, Albert J. Ndakala, Solomon Derese (2018) Evaluation of β -Sitosterol Loaded PLGA and PEG-PLA Nanoparticles for Effective Treatment of Breast Cancer: Preparation, Physicochemical Characterization, and Antitumor Activity, *Pharmaceutics*, **10** (4): 1-18.
19. Fozia A. Adem. Victor Kuete, Armelle T. Mbaveng, Matthias Heydenreich, Albert Ndakala, Beatrice Irungu, Thomas Efferth and Abiy Yenesew (2018) Cytotoxic benzylbenzofuran derivatives from *Dorstenia kameruniana* *Fitoterapia*, **128**, 26-30.
20. Yoseph Atilaw, Lois Muiva-Mutisya, Albert Ndakala, Hoseah M. Akala, Redemptah Yeda, Yu J. Wu, Paolo Coghi, Vincent K. W. Wong, Máté Erdélyi and Abiy Yenesew (2017) Four Prenylflavone Derivatives with Antiplasmodial Activities from the Stem of *Tephrosia purpurea* subsp. *Leptostachya* *Molecules*, **22**(9), 1514.
21. Awas, E.; Omosa, L. K.; Midiwo, J. O.; Ndakala, A.; Mwaniki, J. (2016) Antioxidant Activities of Flavonoid Aglycoes from Kenyan *Gardenia ternifolia* Schum and Thonn, *IOSR Journal of Pharmacy and Biological Sciences*, **11** (3), 136-141.

22. Abdissa N., Heydenreich, M., Midiwo, J.O., Ndakala, A., Majer, Z., Neumann, B., Stammler, H.-G., Sewald, N., Yenesew A., (2014). A Xanthone and a Phenylanthraquinone from the roots of *Bulbine frutescens*, and the revision of six *seco*-anthraquinones into xanthenes. *Phytochemistry Letters* **9**, 67-73.
23. Atilaw, Y.; Heydenreich, M.; Ndakala, A.; Akala, H. M.; Kamau, E.; Yenesew, A (2014). 3-Oxo-14 α ,15 α -epoxyschizozygine: A new schizozygane indoline alkaloid from *Schizozygia coffaeoides* *Phytochemistry Letters*, **10**, 28-31.
24. Abdissa, N.; Induli, M.; Akala, H.M.; Heydenreich, M.; Midiwo, J. O.; Ndakala, Albert; Yenesew, A. (2013), Knipholone Cyclooxanthrone and an Anthroquinone Dimer with Antiplasmodial Activities from the Roots of *Kniphofia foliosa*” *Phytochemistry Letters*, **6**(2), 241-245.
25. Endale, M.; Ekberg, A.; Alao, J. P.; Akala, H. M.; Ndakala, Albert; Sunnerhagen, P.; Erdelyi, M.; Yenesew, A (2013). Anthraquinones of the roots of *Pentas micrantha* *Molecules*, **18**, 311-321.
26. Endale, M; Alao, J.P; Akala, H.M; Rono, N.K; Eyase, F.L; Derese, S; Ndakala, A; Mbugua, M; Walsh, D.S; Erdelyi, M; Yenesew, A. “Antiplasmodial Quinones from *Pentas longiflora* and *Pentas lanceolata*” *Planta Medica* 2012, **78**(1), 31-35.
27. Ndakala, A. J; Gessner, R.K; Gitari, P.W; October, N.; White, K. L; Hudson, A.; Fakorede, F.; Shackelford, D.M; Kaiser, M.; Yeates, C.; Charman, S. A.; Chibale, K. “Antimalarial Pyrido[1,2-a]benzimidazoles” *J. Med. Chem.* 2011, **54**, 4581–4589.
28. Taboada, R.; Ordonio, G. G.; Ndakala, A. J.; Howell, A. R., "Directed Ring-Opening of 1,5-Dioxaspiro[3.2]hexanes: Selective Formation of 2,2-Disubstituted Oxetanes," *J. Org. Chem.*, 2003, **68**, 1480-1488.
29. Martinez, I.; Andrews, A. E.; Emch, J. D.; Ndakala, A. J.; Wang, J.; Howell, A. R. "Unusual, Strained Heterocycles: 3-Alkylidene-2-methyleneoxetanes from Morita-Baylis-Hillman-type Adducts," *Org. Lett.* 2003, **5**, 399-402.
30. Howell, A. R.; Ndakala, A. J. "The Preparation and Biological Significance of Phytosphingosines," *Curr. Org. Chem.* 2002, **6**, 365-391.
31. Ndakala, A. J.; Hashemzadeh, M.; So, R. C.; Howell, A. R.; "Synthesis of D-erythro-Dihydrosphingosine and D-xylo-Phytosphingosine from a Serine-Derived 1,5-Dioxaspiro[3.2]hexane Template," *Org. Lett.* 2002, **4**, 1719-1722.
32. Howell, A. R.; Ndakala, A. J. "Ring Opening of 1,5-Dioxaspiro[3.2]hexanes: Selective Preparation of α -Heterofunctionalized- β '-hydroxy Ketones or 2,2-Disubstituted Oxetanes," *Org. Lett.* 1999, **1**, 825-827.
33. Dollinger, L.M; Ndakala, A. J.; Hashemzadeh, M.; Wang, G.; Wang, Y.; Martinez, I.; Arcari, J.; Galluzzo, D.J.; Howell, A.R.; Rheingold, A.L.; Figuero, J. S., "Preparation and Properties of 2-Methyleneoxetanes," *J. Org. Chem.*, 1999, **64**, 7074-7080.
34. Lwande, W.; Ndakala, A. J; Hassanali, A.; Moreka, L.; Nyandat, E.; Ndungu, M.; Amiani, H.; Gitu, P. M.; Malonza, M. M.; Punyua, D. K., "Gynandropsis gynandra Essential Oil and Its Constituents as Tick (*Rhipicephalus appendiculatus*) Repellents," *Phytochemistry*, 1999, **50**, 401-405.
35. Ndakala, A. J.; Howell, A. R., "The First General Synthesis of 1,5-Dioxaspiro[3.2]hexanes," *J. Org. Chem.*, **1998**, **63**, 6098-6099.

Teaching Modules

Ndakala, A. J. and Onyari, J., "SCH 302: Organic Chemistry 3 (Carbonyls, Carbanions, Carboxylic Acids, Phenols and Amines)", **2010**, University of Nairobi Press, 253 Pages.

Posters and Presentations at Conferences

1. **Albert Ndakala**, Derese, S and Nassir, A (2018) Computer-Guided Modelling in Diabetes Drug Discovery presented at the Second ESAEAC-TCCA Conference, Reef Hotel. Mombasa, on 3rd September 2018
2. **Albert Ndakala**, Derese, S and Gachuhi S (2016) Antimicrobial Hydroquinones presented at the 7th International SEANAC-AFRICA Analytical and Environmental Chemistry Conference, Reef Hotel. Mombasa, on 28th November 2017
3. **Albert J. Ndakala** and Solomon Derese (2016) A Database of Natural products of Kenya for Drug Discovery presentation at the East and Southern Africa Environmental/Analytical Chemistry Conference and The 11th Theoretical Chemistry Conference in Africa, Mombasa, Kenya, June 15th, 2016.
4. **Albert J. Ndakala**, Kelly Chibale and Fred Zecri (2012) Prospecting for Antiplasmodial Pyrido[1,2a]benzimidazoles, Poster presentation at the Novartis Summer Forum, Novartis Institute for Biomedical Research, Cambridge, August 7th, (2012).
5. **Albert J. Ndakala** and Amy R. Howell. (2000) 1,5-Dioxaspiro[3.2]hexanes in the synthesis of the glycosphingolipid, KRN7000, presentation at the 220th ACS National Meeting, Washington DC, August 20-24, (2000).
6. **Albert J. Ndakala** and Amy R. Howell. (2000) Synthesis and Reactivity of 1,5-dioxaspiro[3.2]hexanes, Oral presentation at the 29th Northeast ACS Regional Meeting, University of Connecticut, Storrs, June 18-21, (2000).
7. **Albert J. Ndakala** and Amy R. Howell. (2000) Synthesis and Reactivity of 1,5-dioxaspiro[3.2]hexanes, a poster presentation at the Randolph T. Major lecture series, University of Connecticut, Storrs, April 14-20, (2000).

Workshops/ Trainings and Seminars Attended

1. Pedagogy, Andragogy, and Mentorship Training Workshop at UNES-ARZIKI Conference Centre, College of Biological and Physical Sciences, University of Nairobi from January 29th to 31st, 2020
2. Chemistry Curriculum Review Workshop at University Towers, University of Nairobi from July 27th, 2019
3. Postgraduate Supervision Workshop at Nairobi Safari club on March 28th, 2019
4. Postgraduate Supervision Trainers of Trainers Workshop at Maazoni Lodge in May, 2015
5. Bioethics and Research Ethics Workshop at College of Health Sciences, University of Nairobi, 5th August to 9th August 2013.

6. Seeding Labs Grant Proposal Writing Workshop in Boston, USA, 4th June to 11th August 2012.
7. University of Nairobi Writers Workshop for Distance Learners at Agricultural Resource Centre, Egerton University. Njoro, February 21-26, (2010): Authored "SCH 302: Organic Chemistry 3 Module for Distance Learners.
8. Research Grant and Project Grant Proposal Writing Workshop at Chiromo Campus, University of Nairobi, September 19-23, (2011).

Examination of Thesis

1. **Susan Cherotich** Assessment of Major Chemical Fertilizer Nutrients' Levels in Soil from Small Scale Tea Farms, Sediments and Water from Sulal River, Bureti Sub-County, Kericho County, Kenya. MSc candidate registered at the Department of Chemistry, University of Nairobi, April 2021
2. **James Mungai** Concentration of Chlorothalonil and Lambda Cyhalothrin Pesticides Residue Levels in Vegetables Sold in Nairobi City Markets, their Removal and Degradation using Selected Standard Solutions. MSc candidate registered at the Department of Chemistry, University of Nairobi, May 2020
3. **Sebastian Oloo Otieno** Solar-Driven Photocatalytic Activity of Porphyrin Sensitized TiO₂ in Methylene Blue Degradation and Sacrificial Hydrogen Generation. MSc candidate registered at the Department of Chemistry, University of Nairobi, April 2020
4. **Mach Paul Achuoth** Phytochemical Investigation of *Tephrosia pentaphylla* for Larvicidal Principles MSc candidate registered at the Department of Chemistry, University of Nairobi, October 2019
5. **Khethobole Cassius Sekgota** Synthesis of Novel Heterocyclic Systems as Potential Inhibitors of HIV-1 Enzymes. PhD candidate registered at the Department of Chemistry, Rhodes University, South Africa, June 2019.
6. **Souaibou Yaouba** Phytochemical Investigation of Selected Plants in the Families Anacardiaceae and Asteraceae for Bioactive Principles PhD candidate registered at the Department of Chemistry, University of Nairobi, October 2018
7. **Bonface Kamau** Dissipation Studies of Methyl *N*-(Methoxyacetyl)-*N*-(2,6-Xylyl)-D-Alanate (Ridomil Gold) and 3-(2-Chloro-1,3-Thiazol-5-ylmethyl)-5-Methyl-[1,3,5]-Oxadiazinan-4-ylidene (Nitro) Amine (Actara 25WG. MSc candidate registered at the Department of Chemistry, University of Nairobi, June 2017.
8. **Julie Kidaha** Assessment of New Persistent Organic Pollutants-Pesticides in Air and Soil from Sites in Nairobi and Mount Kenya MSc candidate registered at the Department of Chemistry, University of Nairobi, November 2015.
9. **Annah Moraa** Investigation of Mutagenicity of Solar Disinfected (SODIS) Water MSc candidate registered at the Department of Chemistry, University of Nairobi, May 2015
10. **Robert Masinde** Phytochemical Investigation of *Zanthoxylum gilleti* (Rutaceae) for Active Biomolecules against Protozoal Diseases MSc candidate registered at the Department of Chemistry, University of Nairobi, July 2015.

11. **Ivan Gumula** Phytochemical Investigation of Three Leguminosae Plants for Cancer Chemopreventive Agents PhD candidate registered at the Department of Chemistry, University of Nairobi, May 2014.

Funded Projects

1. **Ndakala, Albert**; Derese, Solomon; Ochola, Lucy and Amuhaya, Edith "Computer Guided Development of Antifungal Agents for Candidiasis," *NRF-Kenya*, **KShs 15,590,000**. 2020
2. Onyari, John; Yenesew, Abiy, Mirikau, Charles, Derese, Solomon; Kerubo, Leunida; **Ndakala, Albert** and Mwaniki, Joseph "Establishment of the Kenya National Magnetic Nuclear Resonance Centre," *NRF-Kenya*, **KShs 42,796,236**. 2016
3. Derese, Solomon; **Ndakala, Albert** and Guantai, Eric "Mitishamba Database of Natural Products from Kenyan Plants for Design of Antimalarial Drugs," *Grand Challenges Canada*, **USD 90,000**. 2013
4. Midiwo, Jacob; Yenesew, Abiy; Derese, Solomon; **Ndakala, Albert**, Kerubo, Leonidah, and Mwaniki, Joseph "Natural Products Chemistry Research towards Management of Tropical Diseases," *International Science Programme*, **USD 187,000**. 2019.
5. Yusuf, Amir; Derese, Solomon; **Ndakala, Albert** "Strengthening Capacity in Teaching, Research, Innovation and Consultancy," *Dow (East Africa)*, **USD 80,000**. 2016-2021.

Membership of Professional Societies

1. Kenya Chemical Society
2. Kenya DAAD Scholars Association
3. Royal Society of Chemistry

Administrative Duties

Date	Position, Responsibility
July 2020 –Present	Thematic Head – Organic Chemistry, Department of Chemistry

Committee Duties

Date	Position, Name of Committee
July 2021 –Present	Chemistry representative, Faculty of Science and Technology Postgraduate Studies Committee
July 2021 –Present	Member, Department of Chemistry, Postgraduate Studies Committee
February 2016 – Present	Member, Curriculum Review Committee of the Department of Chemistry
July 2013 –July 2021	Chair, School of Physical Sciences, Postgraduate Studies Committee
September 2009 –June 2013	Chair, Department of Chemistry, Postgraduate and Seminars Committee
July 2008 – 2018	Coordinator, Chemistry Evening Programmes (CEP)

Honors, Awards and Scholarships

Date	Granting Organization
26 th September 1991 –	A Deutscher Akademischer Austauschdienst (DAAD) Scholarship to pursue MSc.
31 st March 1994	degree studies at the University of Nairobi, Kenya
30 th September 1996	The East African Industries Chemistry award for the final year student with the best grades in chemistry
30 th September 1996	The Montedison award for the best final year student in the Department of Chemistry
30 th September 1996	The Enimont award for the best final year student in the Department of Chemistry

Community Service

Date	Nature of the service and target community
12 th August 2020	Donation of ChiroKlean Liquid Handwash to the Council of Governors as a CSR initiative between BASF EA Ltd and the Department of Chemistry to combat COVID-19 across the country, The ceremony was presided by the Vice Chancellor, UON at the COG offices in Westlands.
26 th -30 th May 2014	A member of the steering committee that organized the Department of Chemistry Open Week for High School Students and Teachers to enhance the KCSE performance in Chemistry and Physics across the nation. 13 secondary schools participated in demonstrations in chemistry, physics and glass blowing.

Referees

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