

CURRICULUM VITAE



NAME: Zachariah Ngalo Otieno-Ayayo
DATE OF BIRTH: 15 November 1960
MARITAL STATUS: Married, have three children
NATIONALITY: Kenyan
CURRENT ADDRESS: School of Science, Technology and Engineering,
Rongo University, P.O. Box 103, Rongo-40404, Kenya.
Email: zngalo@ruc.ac.ke
Tel: +254 723 203802/752203803

CAREER OBJECTIVES:

1. To overcome communicable, vector-borne and lifestyle diseases for sustainable development in Africa;
2. To apply my expertise and skills to overcome biological, physical as well as chemical environmental challenges locally and internationally;
3. To create wealth through scientific research, innovation and technology transfer;
4. To plan and strategize for mitigation of negative anthropogenic environmental and natural disaster impacts through research & development, academic & public education, as well as public awareness.

ACADEMIC QUALIFICATIONS:

- 2008** PhD (Life Sciences) Ben-Gurion University of the Negev, Israel
<http://in.bgu.ac.il/en/GlobalImpact/global-impact-2012.pdf> .
- 1999** M.Phil. (Environmental Studies, Biological Sciences), Moi University, Kenya.
- 1997** Certificate (Environmental Impact Assessment), Moi University, Kenya.
- 1983** B.Sc. (Applied Bio-Medical Technology), Poona University, India.
- 1982** B.Sc. (Zoology), (1st Class) Poona University, India.

PROFESSIONAL SKILLS ACQUIRED:

Integrated Malaria Control, Environmental Impact Assessment/Audits, Pollution Control, Bioassays, Solid Waste Analysis Techniques, Bacterial transformation techniques, SDS-PAGE for protein studies, ELISA, Western Blot Analysis, PCR, Transfection techniques, Several Relevant Computer Packages.

PROFESSIONAL APPOINTMENTS AND ASSIGNMENTS:

- 2016-Current:** Ag Coordinator, Rongo Town Learning Centre, Rongo University
www.rongovarsity.ac.ke
- 2009-Current:** Editor-in-Chief, The Baraton Interdisciplinary Research Journal
www.ueab.ac.ke/BIRJ
- 2011-2015:** Editor-in-Chief, African Association of Insect Scientists (AAIS)
- 2015-Current:** Treasurer, African Association of Insect Scientists (AAIS) <http://aaais-africa.org>
- 2007-8:** Environment Lead Consultant for Nile Transboundary Environmental Action Project (NTEAP): Documentation of Best Practices

2007-Current: Lead Expert, National Environmental Management Authority Reg No. 1416
2007-Current: Lead Environment and Development Consultant for South of Sahara Environmental and Development Solutions (SoSEDS)
2006: External Examiner for the Environmental Health Program for University of Botswana's Institute of Health Sciences at Lobatse, Botswana.
2005 Committee Member, (Zimbabwe) National Environmental Health Council's Environmental Education Committee

PROFESSIONAL EXPERIENCE:

April 2014 to Current: Associate Professor of Biological Sciences, Rongo University College
Employer: Rongo University, Kenya

May 2013 to April 2014: Associate Professor of Biological Sciences, UEAB

April 2011 to April 2014: **Dean**, School of Science and Technology, UEAB

Employer: University of Eastern Africa, Baraton, Kenya

March 2008 to April 2011: **Senior Lecturer (and Chairman)**, Dept. Biological Sciences,

Employer: University of Eastern Africa, Baraton,

2008 to Date: **Founding Editor-in-Chief**, The Baraton Interdisciplinary Research Journal

2007 to Date **Registered Lead Consultant** National Environment Management Authority (NEMA)

2007-2008: **Lead Environmental Consultant** for Kenya Country Best Practices, NTEAP, NBI

2007- Current: **Registered Lead Consultant**, South of Sahara Environmental and Development Solutions (SoSEDS) Limited

March 2004 – Aug 2005

Job Title: **Head of Department**, Dept Mathematics, Environmental & Natural Sciences

Employer: Solusi University, Bulawayo, Zimbabwe

Responsibilities: Departmental Administration, Lecturing and Research activities

Jan. 2005-Aug. 2005

Job Title: **Senior Lecturer**,

Employer: Solusi University Bulawayo, Zimbabwe

Responsibilities: Coordinating Environmental Health activities and lecturing, organizing environmental outreach activities

Dec. 2000 – 2003

Job Title: **Lecturer**,

Employer: Solusi University, Bulawayo, Zimbabwe

1999 - 2000

Job Title: **Station Manager** at the Coastal Field Research Station

Employer: International Centre of Insect Physiology and Ecology (ICIPE)

Location: Coastal Kenya

Responsibilities: Managing administrative and research activities in the field station.
Responsible for financial, human and material resources in the station.
Responsible for coordination of technology transfer to local farmers in an Interactive Socioeconomic Research Project

1991 - 1996

Job Title: Senior Research Assistant:
Employer: International Centre of Insect Physiology and Ecology (ICIPE).
Location: Coastal Kenya
Responsibilities: Environment friendly management of crop pests and vectors of disease.
Financial, human and project resources management.
Link with the local and international communities.

1985 - 1990

Job Title: Research Assistant
Location: Mbita Point Field Station, Kenya
Responsibilities: Assisting in laboratory and field experiments on sustainable integrated pest control, production of bio-pesticides from *Bacillus thuringiensis* for laboratory and field experimentation.

1984 - 1985.

Job Title: Teacher
Employer: Teachers' Service Commission
Location: Manyatta High School.
Responsibilities: Teaching Biology, Chemistry and Agriculture.

1983 – 1984

Job Title: Part-time Lecturer
Employer: Egerton College, Njoro, Kenya.
Responsibilities: Lectured in Genetics and carried out demonstration classes in Animal Anatomy and Physiology.

2008

Job Title: Part-time Lecturer
Employer: Egerton University, Njoro, Kenya.
Responsibilities: Lectured in the MSc Programme; Immunology and Physiology of Parasites.

GRADUATE STUDENTS SUPERVISED, CURRENT AND GRADUATED

Wekesa, Euginia Makinia (2017-ongoing). Efficacy of *Securidaca longipedunculata* root and bark extract against two standard isolates of *Neisseria gonorrhoeae*. MSc Thesis, University of Eastern Africa, Baraton

Maritim, Josephine Cherotich (2014-2016) Prevalence of sexually transmissible protozoan bacterial and fungal infections among teenage girls attending Kapsabet County Referral Hospital, Kenya. MSc in Biological Sciences (Biomedical Option). University of Eastern Africa, Baraton

Musyimi, Florence (2012-2013). The relationship between nurses' knowledge on patient rights and client satisfaction in Uasin Gishu District, Kenya. MSc, International Development Programme, Andrews University.

Ejigu, Deressa (2010-2013). A feasibility study on establishment of oyster mushroom farming in Akaki, Addis Ababa, Ethiopia. MBA, UEAB, Kenya

Gichuhi, Alice W. (2011-2012). Assessing the compliance level of infection prevention and control measures among the health care workers in Kapsabet District Hospital, Kenya.

MScN-Community Health Nursing, UEAB, Kenya
Mooka, Gladys Seroney (2008-2009). Knowledge, attitude and practices of trained professional birth attendants on HIV/AIDS transmission and prevention in Mosoriot, Kosirai Division, Nandi North. MScN, UEAB, Kenya
Chihava, Memory (2002-2003). Factors contributing to bacterial diversity and count in Bulawayo restaurants. MSc, Solusi University, Zimbabwe.

GRADUATE THESES EXAMINED

V.S. Kavitha (2016) Genetic aspects of congenital septal defect in South Indian population PhD, Bharathiar University, India.
Chasweka, Joseph Msambathukuta (2016) Evaluation of factors associated with inadequate mitigation of floods in Chikwawa district, Malawi. Master of Science in Global Health, University of Eastern Africa, Baraton
Mudola, Jesica (2011). Factors influencing compliance with oral hygiene practices among upper primary school children in Eldoret Municipality, Uashin Gishu County of Kenya. MScN, University of Eastern Africa, Baraton
Biego, Stella (2011). An evaluation of the strengthening Mathematics and Science in Secondary Education in-service training project in Nandi Central Distric of Kenya, MEd. University of Eastern Africa, Baraton

GRANTS

2012: Small Grant No. INASP0532012 of US\$ 2500 from AuthorAID/ International Network for Availability of Scientific Publications for organising a Scientific Writing Workshop in Kenya.

2010 Co-recipient of US\$ 100,000 from Bill and Melinda Gates, Grand Challenges Exploration for the study of “Malaria Diagnosis Using Iron and Plasma”.

AWARDS AND SCHOLARSHIPS RECEIVED.

1980 - 1981: The Rattansi Mohammed Ali Bursary while at Fergusson College, India.

1989-1990: Received a one-year fellowship from the International Atomic Energy Agency (IAEA) to carry out guided research in molecular biology of *Bacillus thuringiensis* var *israelensis* δ -endotoxin, and to learn techniques in the use of radioisotopes and molecular biology for insect pathology at Ben-Gurion University of the Negev, Israel.

1993: ICIPE-Hebrew University Collaboration
Attended an intensive two-week course in Molecular Biology entitled "Eucaryotic Gene Expression - From Gene Protein" at the Hebrew University, Israel, and another two-week on the bench state-of-the-art training in the same University.

1996: Kenya Government / Moi University scholarship for Master of Philosophy in Environmental Studies degree course.

LANGUAGES.

	<u>SPOKEN</u>	<u>WRITTEN</u>	<u>READING</u>
English	Excellent	Excellent	Excellent
Kiswahili	Excellent	Excellent	Excellent
French	Fair	Fair	Fair
Hebrew	Fair	Fair	Fair
Dholuo	Excellent	Excellent	Excellent

LIST OF PUBLICATIONS

- Gichuhi, A.W., Kamau, S.M., Nyangena, E. & **Otieno-Ayayo, Z.N.** (2015). Health care workers' adherence to infection prevention practices and control measures: A case of a level four district hospital in Kenya. *American Journal of Nursing Science*, 4(2), 39-44. doi: 10.11648/j.ajns.20150402.13
- Yugi, J.O, **Otieno-Ayayo, Z.N.**, Ochanda, H. & Mukabana, W.R. (2014). The silver cyprinid *Rastrineobola argentea* as the main diet source for rearing *Anopheles arabiensis* mosquitoes, *Journal of Mosquito Research*, 4(17),1-6. doi:10.5376/jmr.2014.04.0017
- Chihava – Shoko, M., Sibanda, N., Sibanda, M.M. & **Otieno-Ayayo, Z. N.** (2012). Factors contributing to bacterial diversity and load in Bulawayo restaurants, Zimbabwe. In Press, *Baraton Interdisciplinary Research Journal*. 2(2), 7-19
- Otieno-Ayayo, Z.N.**, Ben-Dov, E., Cahan, R., Manasherob, R. & Zaritsky, A. (2012). Response of three mosquito species to recombinant bacterial toxins from *Bacillus thuringiensis* subsp. *israelensis* expressed in two model systems, *Baraton Interdisciplinary Research Journal* 2(1), 17 -32.
- Seroney, G.C., Minnie, K., **Otieno-Ayayo, Z.N.**, Mulaudzi, F.M., & Nyangena, E. (2012). Knowledge, attitudes and practices of trained traditional birth attendants on HIV/AIDS, Kenya, *Baraton Interdisciplinary Research Journal* 2(1), 8 – 16.
- Otieno-Ayayo, Z.N.**, Zaritsky, A., Wirth, M.C., Manasherob, R., Khasdan, V., Cahan, R. & Ben-Dov, E. (2008). Variations in the mosquito larvicidal activities of toxins from *Bacillus thuringiensis israelensis*. *Environmental Microbiology* 10(9), 2191-2199
- Otieno-Ayayo, Z.N.**, Overholt, W.A. & Jeske, R. (2003). Natural enemies of cereal stem borers: *Cotesia flavipes* Cameron as a model indicator organism. In Hoorweg, J and Muthiga, N. eds. *Recent Advances in Coastal Ecology, Studies from Kenya*, pp.396+xvi. ISBN 90.5448.054.8. African Studies Centre, Leiden, NL.
- Manasherob, R; **Otieno-Ayayo, Z.N.**, Ben-Dov, E., Miaskovsky, R., Boussiba, S. & Zaritsky, A. (2003). Enduring toxicity of transgenic *Anabaena* PCC 7120 expressing mosquito larvicidal genes from *Bacillus thuringiensis* subsp. *israelensis*. *Environmental Microbiology* 5(10), 997-1001.
- Otieno-Ayayo, Z.N.**, Saxena, R.C., & Okeyo-Owuor, J.B. (2001). Relative safety of neem (*Azadirachta indica* A. Juss) extracts to *Cheilomenes lunata* (Coleoptera: Coccinellidae) in the okra micro-ecosystem. *Solusi University Research Journal* 2, 31-41.
- Otieno-Ayayo, Z.N.** (1998) Effect of neem, (*Azadirachta indica*) A. Juss extracts on non-target arthropods occurring on okra in western Kenya. M.Phil. Thesis, Moi University.
- Otieno-Ayayo, Z.N.**, Chipman, D.M; Zaritsky, A. & Khawaled, K. (1993) "Integrity of 130 kDa

polypeptide of *Bacillus thuringiensis* var *israelensis* δ -endotoxin in K-S defined (sporulation) medium." *International Journal of Tropical Insect Science*. 14(3), 377-381. <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=7463204>

Otieno-Ayayo, Z.N. (1990) Training in Peaceful Use of Atomic Energy. *Embassy of Israel Bulletin* 2(9),1-2.

Odindo, M.O., Nour, A.M., Ajala, S.O., Kiros, F.G., Chitere, P.O., Among-Nyarko, K., Mohamed Ali, M.A., & **Ngalo, Z.O.** (1997). Integration of *Bacillus thuringiensis* with elite sorghum and maize genotypes to enhance productivity of small-scale farms in the coastal region of Kenya. In *Integrated Biological Control and Host Resistance*. Proceedings of a CTA / IAR / IIBC Seminar, Addis Ababa, Ethiopia. 9-14 October 1995. CTA Publication. ISBN 92 9081 1625.

Peer Reviews

Peer reviewer for The Open Toxinology Journal.

Collaborations Initiated

1. Initiated collaboration between University of Eastern Africa, Baraton and the International Center of Insect Physiology and Ecology (ICIPE), culminating in a MoU with African Regional Postgraduate Programme in Insect Sciences
2. Initiated collaboration with Society for Exploration Geophysicists (Draft MoU produced)
3. Initiated collaboration between Rongo University, Wuhan Textile University (China) and Migori County Government (Kenya), (MoU signed)
4. Initiated collaboration between Rongo University and Ariel University, MoU signed.

Community Service

2017 –Current: Chair, Board of Management, Nyabikaye Adventist Secondary School.

2015 to 2017: Chair, Joint Ranen Adventist Secondary School and Nyabikaye Adventist Secondary School Board of Management.

2012 to 2014: Member of Board of Governors of Baraton International School

1999: Founding Chairman, Coastal Schools Environmental and Agricultural Research and Extension Programme (CSEAREP)

2001 – 2005: Cleanup Bulawayo

2012: Cleanup Baraton,

Relevant Conferences and Seminars.

Wekesa, E.M., Ojunga, M. and **Z. Ngalo Otieno-Ayayo** (2018). Efficacy of *Securidaca longipenduclulata* Fresen (Polygalaceae) against two standard isolates of *Neisseria gonorrhoeae*. Rongo International Interdisciplinary Research Conference, 6th -8th March 2018.

Wekesa, C., Ombok, M., Bayoh, N. & **Otieno-Ayayo, Z.N.** (2017). Life Performance of *Anopheles gambiae* Giles (Diptera: Culicidae) Based on Host Bloodmeal. 22nd AAIS Meeting and Scientific Conference, 23rd to 26th October 2017, Wad Medani, Sudan

Otieno-Ayayo, Z.N., Kioko, E. and Odongo, Y. (2015). Occurrence and Diversity of

- Stingless Bees Around Kitere Hill, Kenya. 21st AAIS Conference and Scientific Meeting, 19th to 23rd October, Cotonou-Benin.
- Otieno-Ayayo, Z.N.** (2013), 20th AAIS Conference and Scientific Meeting, 27th to 31st October 2013, Yaounde, Cameroun.
- Otieno-Ayayo, Z.N.** (2015). Transgenic Technologies for Mosquito Control. 2nd Baraton International Interdisciplinary Research Conference and Exhibition, 14th-16th April 2015
- James Omulo, Samuel Kitonga Ndunda & **Z. Ngalo Otieno-Ayayo** (2014). Integration of E-Infrastructure and Enhanced Biological Control in Mosquito Vector Management in Kenya. 1st Baraton Annual Interdisciplinary Research Conference, Baraton Community Training and Research Centre, 15th-17th April 2014
- Brenda Opondo, Evance Odiwuor Oluoch & Dixon Anjejo **Z. Ngalo Otieno-Ayayo** (2014). Efficacy, Efficiency and Impact of Long-Lasting Insecticidal Nets Utilization and Indoor Residual Spraying: A Survey of Rural Kaptumo Location, Nandi County, Kenya. 1st Baraton Annual Interdisciplinary Research Conference, Baraton Community Training and Research Centre, 15th-17th April 2014
- Obey Jackie K., Amimo Fred A., **Otieno-Ayayo, Zachariah N.**, Anjejo, D., Cheruiyot, Samson K. & Role Elizabeth (2014). Malaria Diagnosis Using Iron and Plasma. 1st Baraton Annual Interdisciplinary Research Conference, Baraton Community Training and Research Centre, 15th-17th April 2014
- Yugi, J. O., **Otieno-Ayayo, Z.N.**, Ochanda, H., & Mukabana, W.R. (2014). The Silver Cyprinid *Rastrineobola argentea* as the Main Diet Source for Rearing *Anopheles arabiensis* Mosquitoes. 1st Baraton Annual Interdisciplinary Research Conference, Baraton Community Training and Research Centre, 15th-17th April 2014
- C. Wekesa, M. Ombok, N. Bayoh and **Z. N. Otieno-Ayayo** (2013). The performance of host blood and its effects on reproduction, hatchability, fitness and longevity of *Anopheles* mosquitoes. 20th Conference of the African Association of Insect Scientists, 27th – 31st October, Yaounde, Cameroon,
- Otieno-Ayayo, Z. Ngalo**, Ben-Dov, E. Manasherov R. Miaskovsky, R. Khasdan, V. Wirth, M.C., Cahan, R., Zaritsky, R. and Boussiba, S. (2011). Emerging alternative systems for biocontrol using recombinant bacteria expressing genes from *Bacillus thuringiensis* subsp. *israelensis*. 19th Conference of the African Association of Insect Scientists, 9-11 November, 2011, Nairobi, Kenya.
- Obey, J.K., F. Amimo, **Z. Ngalo Otieno-Ayayo**, D. Anjejo, E. Role, S. Cheruiyot, S. Mule, A. Kittur, G. Manani, H. Barchok, A. Limo, O. Phillip (2010). Malaria Diagnosis Using Iron and Plasma. Fifth Annual Research Week and International Conference, Agriculture Resources Centre, Egerton University, Njoro, Kenya.
- Africa Animal Welfare Action Conference 2010: Tackling Animal Welfare in Africa for Development, 6th-8th September 2010, Nairobi, Kenya.
- Otieno-Ayayo, Z. Ngalo** (2006). Effects of Environment on Human Health. Seminar presented at the Ben Gurion University's International Medicine Programme, 21st September 2006.
- Otieno-Ayayo, Z. Ngalo** (2006). Emerging Alternative *Bacillus thuringiensis* subsp. *israelensis*-Based Mosquito Control Model Systems: Gene Expression, Efficacy and Environmental Impact Analysis. 17th December 2006 at Ariel University Centre of

Samaria, Israel.

Otieno-Ayayo, Z. Ngalo (2001). (Poster) Strategic and Integrated Malaria Control with Special Focus on Biological Control and Environmental Biotechnology. *Southern Africa Malaria Control Conference, Victoria Falls, Zimbabwe, 23-28 July 2001*

Otieno-Ayayo, Z. Ngalo (2002). Efficacy and Environmental Analyses of Transgenic *Anabaena* for (Malaria) Mosquito Control. *Life Sciences Department, Ben-Gurion University of the Negev, Israel. Annual Seminar Series, 26th June 2002.*

Otieno-Ayayo, Z. Ngalo. (2002). Degradation of *Bacillus thuringiensis* subsp. *israelensis* δ -endotoxin in vitro and in mosquito larval gut. *Paper presented at the Biochemical and Molecular Biology Society of Zimbabwe, 3-4 October 2002 at Bronte Hotel, Harare*

Otieno-Ayayo, Z. Ngalo (2003). Efficacy and Environmental Analyses of Transgenic *Anabaena* for (Malaria) Mosquito Control. *Faculty Research Seminar, Solusi University, 27th May 2003.*

WORKSHOPS ATTENDED

Participated in Workshop on Writing Fundable Research Proposal held at Rongo University on 2nd February, 2018

Participated in the Leadership and Management Training of Rongo University College held on 20th May and 21st May 2014 at Tausi Hotel, Rodi Kopany.

Participated in the CRISP-HEI ICI Capacity Building in Crisis Preparedness in Health Care Education, Funded by the Ministry of Foreign Affairs, Finland and held at the University of Eastern Africa, Baraton, February 24-28, 2014

Organised 1st Baraton Annual Interdisciplinary Research Conference, Baraton Community Training and Conference Centre, 15th-17th April 2014

Attended the 5th Annual Daystar University Research Colloquium, "Towards Advancing Research in Private Universities in Kenya: A Multidisciplinary Approach" 27th -28th March 2013, held at Gracia Gardens, Nairobi.

Participated in the 5th Science, Technology and Innovation fair organised by the School of Science and Technology of the University of Eastern Africa, Baraton, held on 2nd June 2013

Organised Medical Missionary Movement Intensive Leadership Training Workshop at the University of Eastern Africa, Baraton, December 31st, 2012, with participants from five different countries.

Organised Biosafety, Industrial and Fire Safety Seminar at the University of Eastern Africa, Baraton, in collaboration with Texas A&M in Qatar, October 30th, 2012.

Organised and hosted AuthorAID Scientific Writing Workshop at the University of Eastern Africa, 10th-12th July 2012

Attended 2nd National Research to Policy Workshop at Windsor Golf & Country Club, Nairobi, 21st-22nd June 2012

Attended Stakeholders Consultative Meeting on Initiation of University Science, Technology and Innovation Congress and Prioritization of National Research Agenda, held at the Laico Grand Regency, June 14th, 2012

Participated in the UEAB Strategic Planning Workshop held between 5th-7th December 2011

Attended 1st National Research-to-Policy Workshop on Using Research Results for Dialogue, Action and Change, held at Windsor Golf and Country Club, Nairobi, Kenya, 21-22 June,

2011.

Organised and hosted Bill and Melinda Gate Foundation Grand Challenges Research Sensitization Workshop 14th September 2011 at University of Eastern Africa, Baraton.

Attended Africa Animal Welfare Workshop and Alternatives Seminar Kenya, 21st-24th September 2009

Participated in Commission for Higher Education's Internal Quality Assurance Workshop for Deans, Chairs and Internal Quality Assurance Officers held at Multi-Media University College, Mbagathi Nairobi, 8th-10th December 2008

Participated in the Workshop on Sustainable Funding Mechanism held on 15th-18th December 2008 at Jumuia Guest House, Nakuru

Attended National Training Workshop on Risk Assessment and Risk Management held at Bronte Hotel, Harare, 29th to 31st October 2003

MEMBERSHIP IN SOCIETIES AND COMMITTEES.

1. Member, African Association of Insect Scientists
2. Treasurer of the African Association of Insect Scientists;
3. Member of the Music Copyright Society of Kenya;
4. Board Member, School of Environmental Studies (SES), Moi University 1998;
5. Founder, Coastal Schools Environmental and Agricultural Research and Extension Programme (CSEAREP) [Based in Kenya];
6. Founder, The Solusi Initiative for Creating Wealth Through Science [Based in Zimbabwe].
7. Member, Zimbabwe National Environmental Health Education Committee (2005).

NAMES AND ADDRESSES OF REFEREES.

Prof. (Emeritus) Arieh Zaritsky
Department of Life Sciences
Ben-Gurion University of the Negev
POB 653, Beer Sheva 84105, ISRAEL:
Tel: +972-8-6461712, Fax: 6278951
E-mail: ariehz@bgumail.bgu.ac.il
<http://www.bgu.ac.il/life/zaritsky.html>

Prof. Charles Mbakaya
Dean, School of Science Technology and Engineering
Rongo University College,
P.O. Box 103, Rongo 40404
Tel: +254 726782015
E-mail: