

Steven Runo, PhD

Senior Lecturer, Department of Biochemistry, Microbiology and Biotechnology, Kenyatta University
P O Box 43844 Tel: +254 727 346 496 or +254 722 587 918. Email: runo.steve@ku.ac.ke or smruno@gmail.com

1.0 Personal Profile

Personal Details:

Nationality: Kenya

Designation: Senior Lecturer

Academic and Professional Qualification

2014: Visiting Researcher (Genomics): University of Virginia, Charlottesville USA

2010: Postdoctoral Research Fellow (Molecular Biology): University of Sheffield, Sheffield UK

2008: Ph.D Plant Molecular Biology: University of California, Davis USA /Kenyatta University

2003: M.Sc. Biotechnology: Kenyatta University

1998: B.Sc. Biochemistry Honors: Kenyatta University

2.0 Employment History

January 2017-to date: Chairman, Department of Biochemistry and Biotechnology, Kenyatta University

April 2013-to date: Senior Lecturer, Department of Biochemistry and Biotechnology, Kenyatta University

2009-April 2013: Lecturer, Department of Biochemistry and Biotechnology, Kenyatta University

2007-2009: Tutorial Fellow, Department of Biochemistry and Biotechnology, Kenyatta University

2.1 Major Achievements Since Last Appointment (2013 to date)

- Resource mobilization: Over KES 60 million in research grants
 - Publications: Over 10 publications in high impact peer refereed journals
 - Supervision and mentoring: Successful supervision of 8 PhD and 17 MSc students
 - Networking: Created over 10 international, regional and local partnerships
 - Professional and community development: Keynote speaker in 3 international conferences; organized 2 workshops for dissemination of research findings
 - Administration: Chairman of Department; Developed new curriculum; mentored Ph.D and M.Sc. students in grant writing and research.
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2.2 Research Publications

2.2.1 *Refereed journal papers*

1. Waweru D, Kuria E, Bradley J, Scholes J, **Runo S**. Tissue Culture Protocols for the Obligate Parasitic Plant *Striga hermonthica* and Implications for Host-Parasite Co-cultivation. **Accepted 03 May 2019; Plant Cell Tissue and Organ Culture**
2. **Runo S** Modern breeding approaches for durable resistance against the parasitic plant *Striga* **Accepted 01 April 2019 Afrika Focus**
3. Mutinda S, Masanga J, Mutuku J, **Runo S**, and Alakonya A. KSTP'94, an open pollinated maize variety has post-attachment resistance to Purple Witchweed (*Striga hermonthica*). **Weed Science, 2018.** 66(4):525-529.
4. **Runo S**, Kuria, E. Habits of a Highly Successful Cereal Killer, *Striga*. **PLoS Pathogens, 2018.** 14(1): e1006731. <https://doi.org/10.1371/journal.ppat.1006731>.

5. King'oria, EM, Obanda, V, Ndambiri, EM, **Runo, SM**, Chiyo, PI. Adding injury to infection: The relationship between injury status and genetic diversity of *Theileria* infecting plains zebra, *Equus quagga*. **Infection, Genetics and Evolution**, 2018. 269-278.
6. Oruru MB, Mugendi EN, Pasquet R, **Runo S**. Response of a wild-type and modern cowpea cultivars to arbuscular mycorrhizal inoculation in sterilized and non-sterilized soil. **Journal of Plant Nutrition**, 2018. 41:1, 90-101, DOI: 10.1080/01904167.2017.1381728
7. Mbuvi, D. A., Masiga, C. W., Kuria, E., Masanga, J., Wamalwa, M., Mohamed, A., Timko, MP, **Runo, S**. Novel Sources of Witchweed (*Striga*) Resistance from Wild Sorghum Accessions. **Frontiers in Plant Science**, 2017 8, 271.
8. Mutege, SM, Muchugi, A, Carsan, S, Kariba, R, Jamnadass R, Oballa P, Brunner AM, **Runo, S**. Genetic diversity of the African poplar (*Populus ilicifolia*) populations in Kenya. **Tree Genetics & Genomes**, 2016. 12:66
9. Kirigia D, **Runo S**, Alakonya A. A virus-induced gene silencing (VIGS) system for functional genomics in the parasitic plant *Striga hermonthica*. **Plant Methods** 2014, 10:16.
10. Ogugo V, Semagn K, Beyene Y, **Runo S**, Olsen M, Warburton ML. Parental genome contribution in maize DH lines derived from six backcross populations using genotyping by sequencing. **Euphytica** 2014, 1-11.
11. Mwangia IN, Sanchez MC, Mkoji GM, Agola LE, **Runo SM**, Cupit PM, Cunningham C. Praziquantel sensitivity of Kenyan *Schistosoma mansoni* isolates and the generation of a laboratory strain with reduced susceptibility to the drug. **International Journal of Parasitology: Drugs and Drug Resistance** 2014, 4:287-295
12. Macharia MW, **Runo SM**, Muchugi AN. Genetic structure and diversity of East African taro [*Colocasia esculenta* (L.) Schott]. **African Journal of Biotechnology** 2014.
13. Matheka JM, Anami S, Gethi J, Omer RA, Alakonya A, Machuka J, **Runo SM** A new double right border binary vector for producing marker-free transgenic plants. **BMC Research Notes** 2013, 6:448.
14. **Runo S.**, Macharia, S., Alakonya, A., Machuka, J., Sinha, N, Scholes, J.D. *Striga* parasitizes transgenic hairy roots of *Zea mays* and provides a tool for studying plant-plant Interactions. **Plant Methods**. 2012; 8:20.
15. Alakonya, A., Koenig, D., Kumar, R., Kimura, S., Townsley, B., **Runo, S.**, Garces, H., Kang, J., Machuka, J., Sinha, N. "Interspecific RNAi of STM disrupts *Cuscuta pentagona* plant parasitism. **Plant Cell** 2012, 24(7):3153--66.
16. Adam O.R., Matheka M.J., **Runo S.R.**, Ali A.M., Kuria A., Masiga C., Mugoya C., Machuka J. Effects of auxin and source of explants on callus induction of tropical maize. **Biotechnology** 2012, 11: 225--231.
18. Bedada LT, Seth MS, Runo SM, Tefera W, Machuka J. Regenerability of Elite Tropical Maize (*Zea mays* L.) Inbred Lines Using Immature Embryo Explants. **African Journal of Biotechnology**. 2012; 11(3): 598-605.
19. **Runo S**. Engineering host derived resistance against plant parasites through RNA interference- Challenges and opportunities. **Bioengineered Bugs**. 2011;2(4):1--6.
20. **Runo S**, Alakonya, A., Machuka, J., Sinha, N. RNA interference as a resistance mechanism against crop parasites in Africa: a 'Trojan horse' approach. **Pest Manag Sci**. 2011;67:129-36.
21. Bedada LT, Seth MS, **Runo SM**, Tefera W, Machuka J. Plant Regeneration of Ethiopian Tropical Maize (*Zea mays* L.) Genotypes. **Biotechnology**. 2011;10(6):506 -13.
22. Alakonya AE, **Runo, S.M.**, Keonig, D., Monda, E., Machuka, J., Sinha, N. Lack of GFP Trafficking from Transgenic *Nicotiana benthamiana* to Parasitizing *Cuscuta pentagona*. **Global Journal of Biotechnology & Biochemistry** 2010;5 (4):237--42.

2.2.2 Conference papers

1. **Runo S.**, Honaas, L., Wamalwa M., dePamphilis C., Timko, M. Sorghum resistance and *Striga* virulence as two sides of the same coin. Presented at the **14th World Congress in Parasitic Plants. June 25-30, 2017**. Asilomar Conference Center. Pacific Grove, California. USA. **Keynote Paper**
 2. **Runo S**, Honaas, L., Wamalwa M., dePamphilis C., Timko, M. *Striga*/sorghum arms race during domestication as revealed by Dual RNA-seq. Keynote Paper. **7th International Weed Science Congress (IWSC). June 19-25, 2016**, Prague, Czech Republic. **Keynote Paper**
 3. **Runo S.**, Honaas, L., Wamalwa M., dePamphilis C., Timko, M. *Striga*/sorghum arms-race during domestication. Presented at the **13th World Congress in Parasitic Plants 5-10 July 2014**
 4. **Runo S.**, Macharia S., Alakonya A., Machuka J., Sinha S. and Scholes JD. Agrobacterium rhizogenes transformation of zea mays: a functional genomics tool for host-parasite interactions. Presented at the 12th World Congress on Parasitic Plants. The University of Sheffield **5th -10th July 2012**
 5. **Runo S**, David--Schwartz, R., Townsley, B., Machuka, J., Sinha, N. siRNAs Against Parasitic Plants: A Trojan Horse Approach. Bio--Earn/ VIRES Scientific Conference Harnessing Bioresources for Socia-- economic Transformation for Eastern Africa; 2009 24th --- 26th November, 2008; Speke Resort and Conference Centre Kampala Uganda, Kampala Uganda; 2009.
 6. **Runo S**, Oduor, R., Binnot, J., Machuka, J., Thomson, J. Genetic transformation of tropical maize for drought tolerance. Third World Academy of Sciences Biosafenet workshop on Plant Abiotic Stress Tolerance 2009 10--12 June 2009; Rome, Italy; 2009.
 7. **Runo S**, David--Schwartz, R., Townsley, B., Machuka, J., Sinha, N. Biotechnological approaches to parasitic plants control Breeding and Seed Systems for African Crops 2007 26th --- 29th March, 2007; Instituto de Investigacao Agraria de Mocambique (IIAM), Maputo Mozambique; 2007.
 8. **Runo MS**, David--Schwartz, R., Townsley, B., Machuka, J., Sinha, N. RNAi as a resistance mechanism against parasitic plants. International Symposium on Integrating New Technologies for Striga Control: Towards Ending the Witch--hunt 2006 November 5--11, 2006; Hilton Hotel Addis Ababa, Ethiopia; 2006.
 9. **Runo MS**. Striga KNOX1 RNAi as a resistance mechanism in maize and sorghum. 48th annual maize genetics conference; 2006 9th--12th march 2006; Asilomar conference grounds. Pacific Grove, California USA; 2006.
 10. **Runo MS**. Striga KNOX1 RNAi as a resistance mechanism in maize. 47th annual maize genetics conference. Grand Geneva resort. Lake Geneva, Wisconsin, USA.; 2005.
 11. **Runo S**, Townsley, B., Machuka, J., Sinha, N. . A strategy to make maize resistant to Striga. 2nd general meeting of The Rockefeller Foundation--supported program Biotechnology, Breeding and Seed Systems for African Crops. Safari Park hotel Nairobi, Kenya.; 2005.
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2.3 Quality Teaching and Learning

- (i) *Student evaluation of instructor and course*
 - 96% in 2016/2017 First semester student-Lecturer evaluation: HMB 202
 - 94% in 2016/2017 First semester student-Lecturer evaluation: HMB 200
- (ii) *Training in higher education teaching since last appointment*
 - Leadership and management skills course supported by Bill and Melinda Gates Foundation. Old Windsor, UK. October, 27-29th 2016.
 - Training in teaching methodology, which covered: Teaching methodology; Setting Examinations; Administration of Examinations; Marking and Analysis of Scores. Conducted by Centre for Teaching Excellence and Evaluation. Kenyatta University. 28th May and 14th November 2013.
 - Advanced Genomics and Bioinformatics training workshop. BecA-ILRI Hub, Nairobi, Kenya. 7th-18th September 2015.

- Training in grant writing: 'Program for Emerging Agricultural Research Leaders' (PEARL) proposal proposal-writing workshop. Sponsored by the Bill & Melinda Gates Foundation. Addis Ababa, Ethiopia. February 17th-22nd, 2014.
- Research visit and postdoctoral training: University of Virginia 2014.
- *Training of trainers (Capacity Development)*
 - Facilitator: Training to strengthen research skills and capacity of KU staff. 31st May 2017.
 - Facilitator: Molecular Training course. Plant transformation lab. Kenyatta University. 22nd to 29th June 2012.
 - Facilitator: Application of Bioscience Technologies in sorghum production and value addition. 15th to 19th April 2013. Kenyatta University.

Post-graduate supervision

(iii) Ongoing Supervision

PhD

- Joel O Masanga (Year 1). Thesis Title: Stability and Biosafety Evaluation of Locally-Developed Aflatoxin and *Striga*-Resistant Transgenic maize.
- Muruthi Carolyn Wanjira (Year 1). Thesis title: In Vitro Antiproliferative and Antioxidant Activities of *Carissa edulis* and *Pappea capensis*.
- Kwalima Daniel Anyika (Year 1). Thesis title: Characterization and insecticidal potential of *Bacillus thuringiensis* delta-endotoxins from selected Kenyan agro-ecological zones on African Fall Armyworm.
- Lagat R. Chemutai (Year 2). Title: Genetic transformation of Farmer Preferred Basmati 370 and Nerica4 using XVPRX2 and IPT genes for drought tolerance.
- Muuia Ann Ndanu (3rd year PhD) Thesis title: Uncoupling interaction between maize chlorotic mottle virus (MCMV) and sugarcane mosaic virus (SCMV) to develop virus resistant maize
- Kavuluka Muthini Jacinter (3rd Year PhD). Thesis title: Genome wide association mapping of *Striga* resistance gene for sorghum improvement.

MSc

- Okwaro Louis Allan Thesis title: Protein-protein interactions between witchweed *Striga* and host sorghum bicolor L. Moench.
- Chelangat Irene Sugut. Thesis title. Genome wide association mapping of East Africa sorghum for *Striga* resistance
- Magdalene Wanjiku Kibe. Thesis title: Genomewide association mapping of *Striga hermonthica* resistance in sorghum landraces
- Calvins Okoth Odero. Thesis title: *Striga* resistance response of maize varieties grown in Western Kenya region.
- Kibet Willy Kiprotich. Thesis title: Strigolactone profile of selected legumes and their potential for use as trap crops for *Striga*.
- Nyabera Lameck Amangalia. Thesis title: Morphological and genetic diversity of pumpkins (*Cucurbita spp.*) from Western Kenya
- Ahija Laban Anyolo. Thesis title: Mutations in effector genes of *Striga* from ecotypes across the *Striga* endemic countries of East Africa.

(iv) Successful supervision of four Masters and one PhD students (minimum requirement)

PhD

- Eric Kimani Kuria (2017). Thesis title: Genomic approaches to understanding resistance and virulence in the rice-*Striga* interaction for targeted breeding of durable defense.

MSc

- Mbuvi Dorothy (2017). Thesis title: Post-germination resistance of wild and cultivated sorghum against *Striga hermonthica*
- Kithinji Hildah (2017). Thesis title: Strigolactone profile of wild and cultivated sorghum

- Mwangi Ibrahim Ndungu (2017). Thesis title Schistosoma mansoni susceptibility to praziquantel in endemic localities in Kenya
- Kariuki Njau Simon (2017). Thesis title: Production of hybrid rice using environmental sensitive genic male sterile (EGMS) and Basmati rice lines.

(v) Successful supervision of additional PhD and MSc students

PhD

- Elizabeth Njuguna (2017). Thesis title: Modulation of energy homeostatis in maize and Arabidopsis to develop lines tolerant to drought, genotoxic and oxidative stress. **Ghent University, Belgium.**
- Kahariri Easther (2016) Thesis title: Optimization of genetic transformation for selected banana and plantain (*Musa spp.*) cultivars preferred in Africa
- Wamalwa Lydia (2015) Thesis title: Development of transgenic events from selected sub-saharan africa sweetpotato cultivars (*Ipomoea batatas* (L.) Lam) expressing bt proteins for sweetpotato weevils (*Cylas puncticollis*)
- Agyrifo Daniel (2015) Thesis title: Metagenomic Analysis of Microbial Fermentation and Flavour Formation of Ghanaian Cocoa Beans.
- Leta Tulu Bedada – (2014). Thesis title ‘Enhancing drought tolerance in maize (*Zea mays*).
- Matheka Jonathan Thesis title: Enhancement of drought tolerance in tropical maize through silencing of poly (adp-ribose) polymerase gene
- Rasha Adam Omer Abdalla (2013). Thesis title ‘Cloning and characterization of ANNEXIN-like genes for use in enhancement of drought stress tolerance in maize’ l.) through genetic transformation with ISOPENTYL TRANSFERASE (IPT) gene’.

MSc

- Muindi Jane Mbithe (2016). Thesis title: Morphological characterization and proximate analysis of selected Ugandan sweetpotato (*Ipomea batatas* L.) varieties or food and feed use.
- Bilha Moemi (2016) Thesis title: Optimization of a regeneration and transformation protocol from selected tropical inbred maize genotypes through cell suspension and semi-protoplast cultures.
- Felix Matheri (2016). Thesis title: Phenotypic characterization and molecular studies of Kenyan passion fruit (*Passiflora edulis* (Sims) genotypes based on SSR markers.
- Kingori Edward Mutethis (2016). Thesis title: The relationship between injury, leucocyte count and molecular diversity of *Theileria* in zebras’ in Naivasha-Kenya.
- Perpetua Arusei (2016): Thesis title: Quantitative trait loci analysis of maize (*Zea mays* L.) for maize streak virus resistance.
- Rwigi Susan (2016). Thesis title: Assessing diversity of *Solonum nigrum* L. grown in Kenya
- Adam Juma Okinyi – (M.Sc. 2015) Thesis title: Determination of phytoplasma host range among wild grasses in Western Kenya for phytoplasma disease management.
- Carolyin Mukiri Kamboba – (2015) Thesis title: Analysis of Beta-Glucan Trait Inheritance In *Hordeum vulgare* L. (Barley) Using Recombinant Inbred Lines Populations
- Mbaluto Crispus Musyoki (2015) Thesis title: Characterisation and Development of Propagation Spawns For Selected Wild Edible Mushrooms From Aberdare National Forest, Kenya
- Mutege Sammy Muraguri (2015) Thesis title: Genetic diversity of *Populus ilicifolia* Populations in Kenya as revealed by Amplified Fragment Length Polymorphism (AFLP) markers
- Omingo Daniel Omari (2015) Thesis title: Genetic Variation in Coffee Accessions in Kenya and Introgression from Robusta To Arabica Using Random Amplified Polymorphic DNA and Microsatellites
- Macharia Sarah Wanjiku (2015) Thesis title: Genetic Transformation Of Banana With Extracellular Secreted Plant Ferredoxin-Like Protein (ES-PFLP) Gene

- Manene Diana Wanja (2015) Thesis title: Screening Selected Sorghum [*Sorghum bicolor* (L.) Moench] lines for post attachment resistance levels against Ecotypes of Witch weed [*Striga hermonthica* (del.) Benth]
 - Solomon Maina – (2014). Thesis title: Molecular characterization of genetic diversity of Begomoviruses infecting sweetpotato in Kenya.
 - Alex Ngetich Kibet – (2013) thesis title: Low cost micropropagation of elite varieties of taro (*Colocasia esculenta* spp.) in Eastern Kenya
 - Mercy Wairimu Macharia – (2013). Thesis title ‘Population structuring and diversity of East African taro [*Colocasia esculenta* (L.) Schott]’.
 - Josephine N. Wokabi – (2013). Thesis title: Optimization of in vitro micropropagation protocol for cocoyam [*Colocasia esculenta* (L) Schott] and [*Xanthosoma sagittifolium* (L) schott] cultivars grown in Kenya
 - John Muturi Mwangi (2012). Thesis title: Molecular characterization and sequence variation in the rDNA region of root--knot nematode (*Meloidogyne* spp.) in indigenous leafy vegetables.
 - Jacinta Muthini Kavuluko – (2012). Molecular characterization and genetic variation of root-knot nematode (*Meloidogyne* spp.,) in selected legume production areas of Mbeere district.
 - Cecilian Njoki Ngugi (2012) Entomopathogenic nematodes *Heterohabditis indica* and *Steinernema karii* as control agents of legume pod borer *Maruca vitrata* syn *testulalis* in cow pea
 - Erick Kuria Kimani – (2012).. Thesis title ‘Development of drought tolerant maize using C-REPEAT BINDING FACTOR 1 (CBF 1) gene through *Agrobacterium* mediated gene transfer’.
 - Geoffrey Mugambi Meru – (2010). Thesis title: ‘Genotyping BC3F2 populations of four Ethiopian sorghum varieties for Stay Green QTLs introgression through Marker assisted selection with SSRs’.
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2.4 Professional/ Consulting

(i) *Networking with External organizations*

International partnerships on funded active projects

- University of Cambridge (United Kingdom): Partnership Year 2016. Collaboration on the project: “Engineering resistance to maize lethal necrosis”.
- University of Virginia (USA): Partnership Year: 2014. Collaboration on the project: “Derailing witchweed (*Striga*) virulence in rice to achieve durable and broad-spectrum resistance”.
- University of Ghent (Belgium): Partnership Year 2013: Collaboration on PhD supervision and project on “Modulation of energy homeostatis in maize and *Arabidopsis* to develop lines tolerant to drought, genotoxic and oxidative stress”.
- United States Department of Agriculture Research Service, Georgia USA. Collaboration on project “Silencing of Aflatoxin Synthesis Through RNA Interference (RNAi) in Peanut Plants”.

Local partnerships on active funded projects

- Kenya Agricultural and Livestock Research Institute (KALRO). Partnership Year: 2017. Collaboration of USAID funded project “Evidence based Utilization and conservation of *Striga* (witchweed) resistant wild sorghum”
- Kenya National Farmers Federation (KENAFF). Partnership Year: 2017. Collaboration of USAID funded project “Evidence based Utilization and conservation of *Striga* (witchweed) resistant wild sorghum”

International Partnerships in Proposals Under Consideration

- Virginia Tech University (USA). Partnership Year, 2018 on USAID PEER proposal, “*Striga* (witchweed) control in sorghum through integrated resistance and hypo-virulence”.
- Makerere University (Uganda). Partnership Year, 2018. On proposal by IDRC/CERD under Cultivate Africa’s Future – Phase 2 project; titled New technologies for predicting, preventing

and controlling *Striga* (witchweed) for increased food and nutritional security in Eastern Africa's smallholder farms.

- Addis Ababa University Institute of Biotechnology (Ethiopia). Partnership Year, 2018. On proposal by IDRC/CERD under Cultivate Africa's Future – Phase 2 project; titled New technologies for predicting, preventing and controlling *Striga* (witchweed) for increased food and nutritional security in Eastern Africa's smallholder farms.
- Agricultural Research Institute – Uyo (Tanzania). Partnership Year, 2018. On proposal by IDRC/CERD under Cultivate Africa's Future – Phase 2 project; titled New technologies for predicting, preventing and controlling *Striga* (witchweed) for increased food and nutritional security in Eastern Africa's smallholder farms.
- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Partnership Year, 2018. On proposal by IDRC/CERD under Cultivate Africa's Future – Phase 2 project; titled New technologies for predicting, preventing and controlling *Striga* (witchweed) for increased food and nutritional security in Eastern Africa's smallholder farms.
- Biosciences Eastern and Central Africa (BecA). Partnership Year, 2018. On proposal by IDRC/CERD under Cultivate Africa's Future – Phase 2 project; titled New technologies for predicting, preventing and controlling *Striga* (witchweed) for increased food and nutritional security in Eastern Africa's smallholder farms.

(ii) *Referee of international periodicals (Journals) and invitation to Editorial Board*

Referee of international journals

- 2017: Pest Management Science
- 2016: Plant Cell Reports
- 2015: Theoretical and Applied Genetics

Invitation to Editorial Board

- 2012: Weed Science

(iii) *Consulting for external institutions*

- 2012: Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)
- 2011: Bill and Melinda Gates Foundation
- 2013: African Biodiversity Conservation and Innovations Centre (ABCIC)

(v) *Membership of professional bodies*

- 2014-todate: The International Parasitic Plants Society (IPPS)

(vi) *Appointment as an External Examiner*

- 2018: Pan African University Institute for Basic Sciences, Technology and Innovation (PAUSTI) hosted at Jomo Kenyatta University of Science and Technology (JKUAT) – PhD thesis
 - 2017: University of Nairobi – PhD thesis
 - 2017: South Eastern Kenya University – MSc thesis
 - 2017: Makerere University – PhD thesis
 - 2013: Jomo Kenyatta University of Science and Technology (JKUAT) – MSc thesis
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2.5 Administration and Responsibilities

2.5.1 *Recognized University administrative positions*

(iii) *Chairman of Department*

- January 2017-todate: Chairman of the Department of Biochemistry and Biotechnology

(x) *Member of University Board*

- December 2017-todate: Member of the University Research and Advisory Board (URAB)
- May 2014-todate: Institutional Biosafety Committee (KUIBC)
- February 2013: Institutional Biosafety Officer

2.5.2 *Other responsibilities in the University*

- 2017: Staff Mentor

2.6 Community Engagement and other contributions

(i) *Attracting research and development funding*

Active Research Grants: 2018

- **Principal Investigator: Dr Steven Runo.** Deciphering resistance and virulence in Sorghum-*Striga* interactions. Funding agency: International Genetic Centre for Genetic Engineering and Biotechnology (ICGEB). Grant dated **2017-2020. Grant amount Euros: 36,000.**
- **Principal Investigator: Dr Steven Runo,** Interdisciplinary *Striga* Management Approaches (ISMA). Funding agency: National Research Fund (NRF). Grant dates – **2017--2020. Grant Amount – KES 13.2 Million.**
- Principal Investigator: Renee Arias, United States Department of Agriculture Research Service, Georgia USA. **CoPI: Dr Steven Runo** Kenyatta University. Project title: Silencing of Aflatoxin Synthesis Through RNA Interference (RNAi) in Peanut Plants. Funding Agency: USDA. Grant dates: 2015-2018. **Grant amount – USD 36,000.**
- **Principal Investigator: Dr Steven Runo.** SAHARA: Project title: *Striga* resistant sorghum for small holder farmers. Funding Agency: Kenyatta University – Vice Chancellors Research Grant. Grant dates: 2017-2018. **Grant amount – KES 750,000.**

Previous research grants

- Principal Investigator: Prof Julie Scholes University of Sheffield UK, Co--PIs: Dr Steven Runo Kenyatta University, Dr Jonne Rodenburg, African Rice Center (AfricaRice), Dr Jenipher Bisikwa, Makerere University, Dr Mathias Lorieux, Int Centre for Tropical Agriculture, Prof Roger Butlin, University of Sheffield, Prof. Mark Blaxter, University of Edinburgh and Dr Santie De Villiers, International Centre for Research in Tropical Agriculture (GBP 1 million). Title: Genomic approaches to understanding resistance and virulence in the cereal--*Striga* interaction for targeted breeding of durable defense. Funding agency: Sustainable Crop Production Research for International Development (SCPRID). Biotechnology and Biological Sciences Research Council (BBSRC)--Department for international Development (DfID). Grant dates – 2013--2017. Grant amount – GBP 1 million.
- **Principal Investigator: Dr Steven Runo,** Kenyatta University: Title: Production of maize hairy roots induced by *Agrobacterium rhizogenes* and infection with the parasitic plant *Striga* – Novel tools for *Striga* research in Africa. Funding agency: International Foundation for Science. Grant dates: 2012-2013. **Grant amount – USD 10,000.**
- Principal Investigator: Dr Dan Kiambi, African Biodiversity Conservation and Innovations Centre (ABCIC), Kenya. CoPIs: Dr Steven Runo, Kenyatta University, Dr Abdalla Mohamed, Agricultural Research Council (ARC) Dr Robert Olupot, National Agricultural Research Organization (NARO), Dr. Juma Kayeke Mohamed, Mikocheni Agricultural Research Institute, Dr Yusuf Byaruhanga, Makerere University, Mr. Theogene Niyibigira, Rwanda Agricultural Board (RAB), Mr. Negusse Abraha Russom National Agricultural Research Institute (NARI), Eritrea. Title: Evaluation of *Striga* resistant and drought tolerant farmer preferred sorghum. Funding agency: Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). Grant dates – 2013--2014. Grant Amount – USD 500,000.

(iii) *Professional affiliations and portfolios*

- 2017: Member of Scientific Committee: World Congress in Parasitic Plants14.
- 2007 to date: Editorial member – Journal of Microbiology and Tropical Medicine.

(iv) *Invitation as Keynote/guest speaker:*

- August 21st 2017 till September 8th 2017: Invited guest speaker by The International Plant Biotechnology Outreach (IPBO/VIB-UGent), Ghent University, and the VIB-UGent Center for Plant Systems Biology to discuss “Modern breeding techniques of maize” Ghent, Belgium.

- July 2016: Invitation as a guest speaker: Nara Institute of Science and Technology. NAIST Interdisciplinary workshop “Frontiers in parasitic plants and host interactions”. Nara Japan.
 - November 8, 2017: International Service for the Acquisition of Agribiotech Applications (ISAAA). Discussion was featured in an article in the Crop Biotech Update: Kenyan Scientists find new *Striga* resistance genes in wild sorghum.
 - February 2 2016: Featured in Science and Development Network: Local Scientists creating global impacts in agriculture. Page 4.
 - September 2014: Invited speaker at Local Experts’ Views About Biotechnology and Biosafety by the International Service for the Acquisition of Agribiotech Applications (ISAAA). Page 18-21.
 - October 21, 2013: Contributed on a Daily Nation article: Poor data on GMOs hampers adoption. Page 2. Online.
 - September 25 2013: Invited speaker: Kenya Science Journalists Congress 2013 to discuss biotechnology perceptions. Page 14.
- (iv) *Initiating and leading a research project*
- **Principal Investigator: Dr Steven Runo**, Kenyatta University, co--PI Dr Mike Timko, University of Virginia, USA. Title: Derailing witchweed (*Striga*) virulence in rice to achieve durable and broad- spectrum resistance. Funding agency: Partnerships for enhanced engagement in research (PEER) SCIENCE. National Science Foundation--United States International Development and administered by the National Academies USA. Grant dates - **2013--2015 with 2017-2018 supplements. Grant Amount - USD 137,000.**
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Referees

1. Prof Michael Gicheru. Dean, School of Pure and Applied Sciences, Kenyatta University. P. O. Box 43844--00100 GPO Nairobi, Kenya. Email: dean-spas@ku.ac.ke or gicheru.michael@ku.ac.ke Tel: +2547222609765
 2. Prof Julie Scholes. Department of Animal and Plant Sciences, University of Sheffield. Sheffield, S10 2TN, United Kingdom, e-mail: j.scholes@sheffield.ac.uk Tel: +44 (0) 114 222 4780
 3. Prof Neelima Sinha. Professor, Division of Plant Sciences, University of California, Davis, CA USA. 2237 Life Science Building University of California, Davis. Davis, CA 95616: Email: nrsinha@ucdavis.edu Tel: +15307548692
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