

Prof. Romano Mwirichia Kachiuru

Name: Romano Mwirichia Kachiuru

Title/Qualification: PhD (Microbiology)

Position: Associate Professor

Department: Biological Sciences

School: Pure and Applied Sciences

Area of Specialization: Microbiology

Contact Address: P.O Box 6 (60100), Embu Kenya

Telephone:

E-Mail: mwirichia.romano@embuni.ac.ke



Short Biography:

- July 2020 to Date Associate Professor
- Jan. 2015 to July 2020 Senior Lecturer.
- July 2012 -Dec. 2014 Postdoctoral Fellow (Microbiology), King Abdullah University of Science and Technology, Kingdom of Saudi Arabia
- Feb. 2011 - June 2012 Postdoc Fellow (metagenomics), Institut für Mikrobiologie und Genetik, Georg-August Universität Göttingen, Germany
- January - May, 2010 Postdoc Fellow (Metagenomics), Department of Cell, Molecular and Developmental Biology, Yale University
- 2010 - August 2012 Research Fellow, Institute for Biotechnology Research, Jomo Kenyatta University of Agriculture and Technology.
- 2007 - 2010 Assistant Research Fellow, Institute for Biotechnology Research, Jomo Kenyatta University of Agriculture and Technology.

Research Interests

1. Bioprospecting for novel microorganisms from the environment.
2. Metagenomics of extreme environments.
3. Microbial systematics.
4. Extremophiles diversity and Ecology

Publications in Journals:

1. Karanja Edward Nderitu, Fliessbach Andreas, Adamtey Noah, Kambura AnneKelly, Musyoka Martha, Fiaboe Komi and **Mwirichia R** (2020) Diversity and structure of prokaryotic communities within organic and conventional farming systems in central highlands of Kenya. PLoS ONE 15(8)
2. **Mwirichia Romano** and Boga Hamadi Iddi (2020). Description of *Nitrincola elmenteitensis* nov.; a haloalkaliphilic bacterium isolated from Lake Elmenteita in Kenya. African Journal of Biological Sciences 2 (3), 81-87
3. Karanja, Edward Nderitu, Andreas Fliessbach, Noah Adamtey, Anne Kelly Kambura, Martha Musyoka, Komi Fiaboe, and **Romano Mwirichia** (2020). "Fungal diversity within organic and conventional farming systems in Central Highlands of Kenya." African Journal of Microbiology Research 14, no. 6: 242-258
4. Eunice Mulango, Remmy Kasili, **Romano Mwirichia**, Anne-Kelly Kambura, Christabel Muhonja (2019). Isolation and Characterization of Haloalkaliphilic Bacteria from the Hot Springs of Lake Magadi. African journal of Microbiology Research 14 (7), 294-302.
5. Mutitu, Daniel Karanja, Jackson Muthengia Wachira, **Romano Mwirichia**, Joseph Karanja Thiong'o, Onesmus Mulwa Munyao, and Muriithi Genson (2020). "Biocementation Influence on Flexural Strength and Chloride Ingress by *Lysinibacillus sphaericus* and *Bacillus megaterium* in Mortar Structures." Journal of Chemistry 2020
6. Munyao, Onesmus Mulwa, Joseph Karanja Thiong'o, Jackson Muthengia Wachira, Daniel Karanja Mutitu, and **Romano Mwirichia** (2020). Influence of *Starkeya novella* on Mechanical and Microstructural Properties of Cement Mortars. Journal of Chemistry May 18:2020
7. Munyao, Onesmus Mulwa, Joseph Karanja Thiong'o, Jackson Wachira Muthengia, Daniel Karanja Mutitu, Romano Mwirichia, Genson Muriithi, and Joseph Mwiti Marangu. "Study on the effect of *Thiobacillus intermedius* bacteria on the physico-mechanical properties of mortars of ordinary portland cement." Heliyon 6, no. 1 (2020): e03232.
8. Orwa Philemon, Vitalis Wekesa, George Mugambi and **Romano Mwirichia** (2020) Isolation of haloalkaliphilic fungi from Lake Magadi in Kenya. *Heliyon*. 2020 Jan; 6(1): e02823.

.....

1. Kiplimo, Denis, Julius Mugweru, Sarah Kituyi, Alex Kipnyargis, and **Romano Mwirichia** (2019). "Diversity of esterase and lipase producing haloalkaliphilic bacteria from Lake Magadi in Kenya." *Journal of Basic Microbiology* 59, no. 12 (2019): 1173-1184.
2. Mutitu, Daniel Karanja, Jackson Muthengia Wachira, **Romano Mwirichia**, Joseph Karanja Thiong'o, Onesmus Mulwa Munyao, and Genson Muriithi (2019). Influence of *Lysinibacillus sphaericus* on compressive strength and water sorptivity in microbial cement mortar. *Heliyon* 5, no. 11 (2019): e02881.
3. Edwin, Ngetha, Julia Khayeli Akhwale, and Romano Mwirichia (2019). "Phylogenetic and morphological diversity of culturable cyanobacteria from Lake Magadi in Kenya." *African Journal of Biological Sciences* 1, no. 4: 24-31.
4. Munyao, Onesmus Mulwa, Joseph Karanja Thiong'o, Jackson Muthengia Wachira, Daniel Karanja Mutitu, **Mwirichia Romano**, and Genson Murithi. "Use of Bacillus Species Bacteria in Protecting the Concrete Structures from Sulphate Attack-A Review." *Journal of Chemical Reviews* 1, no. 4, pp. 252-299 (2019): 287-299.
5. Mutitu, Karanja D., Mulwa O. Munyao, Muthengia J. Wachira, **Romano Mwirichia**, Karanja J. Thiong'o, and Mwititi J. Marangu (2019). Effects of biocementation on some properties of cement-based materials incorporating Bacillus Species bacteria—a review. *Journal of Sustainable Cement-Based Materials* 8, no. 5 (2019): 309-325.
6. Munyao, Onesmus Mulwa, Joseph Karanja Thiong'o, Jackson Wachira Muthengia, Daniel Karanja Mutitu, **Romano Mwirichia**, Genson Muriithi, and Joseph Mwititi Marangu. "Study on the effect of *Thiobacillus intermedius* bacteria on the physico-mechanical properties of mortars of ordinary portland cement." *Heliyon* 6, no. 1 (2020): e03232
7. Evans Nyakeri Manyara, **Romano Mwirichia**, Hamadi Boga. (2018). Isolation and characterization of enzyme producing bacteria from Lake Magadi, an extreme soda lake in Kenya. *J Microbiol Exp*. 6(2):57–68. DOI: 10.15406/jmen.2018.06.00189
8. Makonde, Huxley Mae, Romano Mwirichia, Edith Mnyazi Muwawa, Hans-Peter Klenk, and Hamadi Iddi Boga (2017). Fungal diversity and community structure in gut, mound and surrounding soil of fungus-cultivating termites. *African Journal of Microbiology Research*, 11(12), 504-515.

9. Kambura, Anne Kelly, Romano Mwirichia, Remmy Wekesa Kasili, Edward Nderitu Karanja, Huxley Mae Makonde, and Hamadi Iddi Boga. "Bacteria and Archaea diversity within the hot springs of Lake Magadi and Little Magadi in Kenya." *BMC microbiology* 16, no. 1 (2016): 1-12.
10. Kambura, Anne Kelly, Romano Kachiuru Mwirichia, Remmy Wekesa Kasili, Edward Nderitu Karanja, Huxley Mae Makonde, and Hamadi Iddi Boga. "Diversity of fungi in sediments and water sampled from the hot springs of Lake Magadi and Little Magadi in Kenya." *African Journal of Microbiology Research* 10, no. 10 (2016): 330-338.
11. Mwirichia, Romano, Intikhab Alam, Mamoon Rashid, Manikandan Vinu, Wail Ba-Alawi, Allan Anthony Kamau, David Kamanda Ngugi et al. "Metabolic traits of an uncultured archaeal lineage-MSBL1-from brine pools of the Red Sea." *Scientific reports* 6, no. 1 (2016): 1-14.
12. Ndwigah FI., Boga IH., Wanyoike, W and Romano K. 2016. An *Aspergillus* isolate and its secondary metabolites from Lake Elmenteita in Kenya. *Journal of Agriculture, Science and Technology*, 17(1) 2016.
13. Makonde H., **Mwirichia R.**, Osiemo Z., Boga H., Klenk H-P. (2015). 454 Pyrosequencing-based assessments of bacterial diversity and community structure in termite guts, mounds and surrounding soils. 2015, 4:471. DOI: 10.1186/s40064-015-1262-6.
14. Wafula, E.N., Kinyua, J., Kariuki, D., Muigai, A., **Mwirichia, R.**, Kosgei, T.K. Morphological characterization of soil bacteria in Ngere tea catchment area of Murang'a County, Kenya. *International Journal of Life Sciences Research* 3 (1), 121-134
15. Ndwigah FI., Boga IH., Wanyoike, W and Romano K. 2015. Characterization, Enzymatic Activity, and Secondary Metabolites of Fungal Isolates from Lake Sonachi in Kenya. *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)* e-ISSN: 2278-3008, p-ISSN:2319-7676. Volume 10, Issue 2 Ver.1 (Mar -Apr. 2015).
16. Wafula, E.N., Kinyua, J., Kariuki, D., Muigai, A., Mwirichia, R., Kosgei, T.K. Molecular and culture-based analyses of soil bacteria in Ngere tea catchment area of Murang'a county, *Science Journal of Biotechnology*, Volume 2014, Article ID sjbt-105, 10.7237/sjbt/105
17. Wafula, E.N., Kinyua, J., Kariuki, D., Muigai, A., Mwirichia, R. Isolation and characterization of bacillus species from soil in Ngere tea catchment area of Murang'a County, Kenya. *International Journal of Life Sciences Research* ISSN 2348-3148 (online) Vol. 2, Issue 3, pp: (27-35)

18. Scheuner C, B J. Tindall, Megan Lu, Matt Nolan, AllaLapidus, Jan-Feng Cheng, Lynne Goodwin, Sam Pitluck, Marcel Huntemann, KonstantinosLiolios, IoannaPagani, KonstantinosMavromatis, Natalia Ivanova, Amrita Pati, Amy Chen, Krishna Palaniappan, Cynthia D. Jeffries, Loren Hauser, Miriam Land, **Romano Mwirichia**, Manfred Rohde, BirteAbt, John C. Detter, TanjaWoyke, Jonathan A. Eisen, Victor Markowitz, Philip Hugenholtz, Markus Göker, Nikos C. Kyrpides and Hans-Peter Klenk (2014). Complete genome sequence of *Planctomycesbrasiliensis* type strain (DSM 5305T), phylogenomic analysis and reclassification of *Planctomycetes* including the descriptions of *Gimesia* nov., *Planctopirus* gen. nov. and *Rubinisphaera* gen. nov. and emended descriptions of the order *Planctomycetales* and the family *Planctomycetaceae*. Stand. Genomic Sci. 2014 Dec 8: 9-10.
19. Huxley M. Makonde, Hamadi I. Boga, **Romano Mwirichia**, Lucy M. Mackenzie, Markus Göker, Hans-Peter Klenk (2013). 16S-rRNA-based analysis of bacterial diversity in the gut of fungus-cultivating termites (*Microtermes* and *Odontotermes* species)", *Antonie van Leeuwenhoek* volume 104: 869–883
20. Huxley M. Makonde, Hamadi I. Boga, ZipporahOsiero, **Romano Mwirichia**, J. Benjamin Stielow, Markus Göker, Hans-Peter Klenk (2013). Diversity of *Termitomyces* Associated with Fungus-Farming Termites Assessed by Cultural and Culture-Independent Methods. PLOS ONE
10.1371/journal.pone.0056464
21. Daniel Anyika, HamadiBoga and **Romano Mwirichia** (2013). Development of cost-effective media for the culture of *Chilopartellus*larvicide in Kenya. *International Journal for Biotechnology and Molecular Biology Research* Vol. 4(1), pp. 1-8, March 2013 DOI: 10.5897/IJBMBR12.011
22. Kambura AK, **Mwirichia RK**, Ngaira J, Boga HI. 2013. Isolation and characterization of bacterial isolates from Lake Magadi. *Trop. Microbiol. Biotechnol.* 8:17-25 17
23. Regina C. Ronoh, Nancy L. M. Budambula, **Romano K. Mwirichia** and Hamadi I. Boga (2013). Isolation and characterization of Actinobacteria from Lake Magadi, Kenya. *African Journal of Microbiology Research.* 7(32), pp. 4200-4206.
24. Atuncha, H., Amata, E. A. R., Mwirichia, R., Kasina, M., Mbevi, B., & Wakoli, E. (2013). Evaluation of predation potential of coccinellids on cassava whiteflies. *Journal of Entomology and Nematology*, 5(7), 84-87
25. Mathu Samuel, Herrmann Laetitia, Pypers Pieter, MatiruViviene, **Mwirichia Romano**, Lesueur Didier (2012). Potential of indigenous *Bradyrhizobia* versus commercial inoculants to improve cowpea

(*Vignaunguiculata* walp.) and green gram (*Vignaradiata*L. wilczek.) yields in Kenya. Soil Science and Plant Nutrition. **58(6). p.750.**

26. Beatrice N. Irungu ,Murungi J. Mbabu , Daniel M. Kiboi , EnockMoindi , Johnson Kinyua , and **Mwirichia Romano** (2012). In vivo antimalarial and acute toxicity properties of hexane and chloroform extracts from *Clausenaanisata* (Willd.) Benth. J. Pharmacol. Ther. **1** (1): 24-29.
27. Amrita Pati, Xiaojing Zhang, AllaLapidus, Matt Nolan, Susan Lucas, TijanaGlavina Del Rio, Hope Tice, Jan-Fang Cheng, Roxane Tapia, Cliff Han, Lynne Goodwin, Sam Pitluck, KonstantinosLiolios, IoannaPagani, Natalia Ivanova, KonstantinosMavromatis, Amy Chen, Krishna Palaniappan, Loren Hauser, Cynthia D. Jeffries, Evelyne-Marie Brambilla, Alina Röhl,**Romano Mwirichia**, Manfred Rohde, Brian J. Tindall, Johannes Sikorski, Reinhard Wirth, Markus Göker, TanjaWoyke, John C. Detter, James Bristow, Jonathan A. Eisen, Victor Markowitz, Philip Hugenholtz, Nikos C. Kyrpides, Hans-Peter Klenk, Miriam Land. Complete genome sequence of *Oceanithermusprofundus* type strain (506^T) Genomic Sci.**4** (2) 210-220
28. Cliff Han, **Romano Mwirichia**, Olga Chertkov, Brittany Held, AllaLapidus, Matt Nolan, Susan Lucas, Nancy Hammon, Shweta Deshpande, Jan-Fang Cheng, Roxanne Tapia, Lynne Goodwin, Sam Pitluck, Marcel Huntemann, KonstantinosLiolios, Natalia Ivanova, IoannaPagani, KonstantinosMavromatis, Galina Ovchinnikova, Amrita Pati, Amy Chen, Krishna Palaniappan, Miriam Land, Loren Hauser, EvelyneBrambilla, Manfred Rohde, Stefan Spring, Johannes Sikorski, Markus Göker, TanjaWoyke, James Bristow, Jonathan A. Eisen, Victor Markowitz, Philip Hugenholtz, Nikos C. Kyrpides, Hans-Peter Klenk, John C. Detter. **2011**. Complete genome sequence of *Syntrophobotulusglycolicus* type strain (FIGlyR^T) Genomic Sci.**4** (3):371-380 Doi:10.4056/sigs.2004648
29. TanjaWoyke, Olga Chertkov, AllaLapidus, Matt Nolan, Susan Lucas, TijanaGlavina Del Rio, Hope Tice, Jan-Fang Cheng, Roxanne Tapia, Cliff Han, Lynne Goodwin, Sam Pitluck, KonstantinosLiolios, IoannaPagani, Natalia Ivanova, Marcel Huntemann, KonstantinosMavromatis, Natalia Mikhailova, Amrita Pati, Amy Chen, Krishna Palaniappan, Miriam Land, Loren Hauser, Evelyne-Marie Brambilla, Manfred Rohde, **Romano Mwirichia**, Johannes Sikorski, Brian J. Tindall, Markus Göker, James Bristow, Jonathan A. Eisen, Victor Markowitz, Philip Hugenholtz, Hans-Peter Klenk, Nikos C. Kyrpides. Complete genome sequence of the gliding freshwater bacterium *Fluviicolataffensis* type strain (RW262^T) Genomic Sci.2011 5:1

30. Markus Göker, Hajnalka Daligault, **Romano Mwirichia**, Alla Lapidus, Susan Lucas, Shweta Deshpande, Ioanna Pagani, Roxanne Tapia, Jan-Fang Cheng, Lynne Goodwin, Sam Pitluck, Konstantinos Liolios, Natalia Ivanova, Konstantinos Mavromatis, Natalia Mikhailova, Amrita Pati, Amy Chen, Krishna Palaniappan, Cliff Han, Miriam Land, Loren Hauser, Chongle Pan, Evelyne-Marie Brambilla, Manfred Rohde, Stefan Spring, Johannes Sikorski, Reinhard Wirth, John C. Detter, Tanja Woyke, James Bristow, Jonathan A. Eisen, Victor Markowitz, Philip Hugenholtz, Nikos C. Kyrpides, Hans-Peter Klenk. Complete genome sequence of the thermophilic sulfur-reducer *Desulfurobacterium thermolithotrophum* type strain (BSA^T) from a deep-sea hydrothermal vent. **Genomic Sci.** **2011** **5:3**
31. H Atuncha, K Monjero, L Ateya, I Mbogo, **R Mwirichia**, R Amata, E M Ateka (2011). Mitochondrial DNA variation of *Bemisia tabaci* (Gennadius) (*Hemiptera: aleyrodidae*) infesting cassava in Kenya. Proceedings of 2011 JKUAT scientific technological and industrialization conference.
32. D Anyika, H Boga, **R Mwirichia** (2011). Characterisation of various *Bacillus thuringiensis* strains having larvicidal activity on *Chilopartellus* first-instar larvae, after culture on cost-effective medium, in Kenya. Proceedings of 2011 JKUAT scientific technological and industrialization conference.
33. **Mwirichia, R.**, Muigai, A.W., Cousin, S., Boga H.I. and Stackebrandt, E. (2011): Bacterial Diversity in the Haloalkaline Lake Elmenteita in Kenya *Current Microbiology* (2010) 62:209–221 DOI:10.1007/s00284-010-9692-4).
34. **Mwirichia, R.**, Muigai, A.W., Cousin, S., Boga H.I. and Stackebrandt, E. (2010): Archaeal diversity in the haloalkaline Lake Elmenteita in Kenya *Current Microbiology* 60: 47-52.
35. **Mwirichia, R.**, Muigai, A.W., Tindall, B., Boga H.I. and Stackebrandt, E. (2010): Isolation and characterization of bacteria from the haloalkaline Lake Elmenteita, Kenya. *Extremophiles* 14, Number 4, 339-348 DOI 10.1007/s00792-010-0311-x
36. Ntabo, R., Boga H.I., Muigai A.W. and **Mwirichia, R.** (2010): Isolation and Characterization of Bacteria Isolates from soil feeding termites and soil from Juja and Kakamega forest in Kenya: In: Proceeding of the 2010 JKUAT scientific conference 177-191.
37. **Mwirichia, R.**, Nancy, M.B and Hamadi, I. B. (2009): Isolation, Characterization and Identification of *Enterobacteriaceae* from well water in Juja Town in Kenya. *Journal of Tropical Microbiology and Biotechnology* 5:31-36

38. Microbial Diversity of Lake Elmenteita, Kenya, PhD Thesis

Workshops, Trainings, Seminars and Conferences

Presentation of Papers at Academic and Professional Conferences

1. 17th to 20th July, 2012: Microbial Ecology of the Kenyan Soda lakes: Humboldt Kolleg, Voi-Kenya
2. 20th to 21st January 2012: Genetic Resources and Traditional Knowledge: Research Cooperation and Facilitated Access, Göttingen, Germany.
3. 31st May - 1st June, 2011: GBRCN meeting: Partnerships for Sustainable Solutions Workshop Exploratory and Preparatory Measures - Bonn/Germany
4. 21th - 25th Feb, 2011: Isolation and characterisation of local biodiversity GBRCN Seminar in Kenya, Nairobi
5. 20th Nov - 4th Dec, 2010: Meeting and Training towards the Establishment of a BRC in Kenya, DSMZ Germany.
6. 29th -30th November 2010: The Kenyan Biological Resource Centre- A long Journey: Capacity building in Africa – a Kenyan experience Joint human & microbial domain GBRCN pilot phase meeting. Federal Ministry of Science and Research Freyung 3, 2nd Floor, A-1010 Vienna

7. 3rd to 8th October, 2010: Third Bio-prospecting strategy developing workshop, Sai Rock hotel, Mombasa Kenya
8. 21st to 25th April, 2010: Second Bioprospecting Policy and Strategy meeting, Voi safari Lodge, Voi Kenya
9. 8th -11th, September 2009: Microbial Diversity in Kenya -Current status and the potential Mukonyi, K. W, & Lusweti, A. M., 2009. *Proceedings of Bioprospecting Experts Brainstorming Workshop* at Lake Bogoria Spa Resort, Baringo, Kenya.
10. 24thApril, 2009: Trainer, PhD Proposal Writing workshop. ICIPE Conference Center, Nairobi
11. 13th - 15th January, 2009. Facilitator for the HINARI/AGORA/OARE (HINAGOA) Training-Of-Trainer National Workshop (AICAD), Nairobi, Kenya