

CURRICULLUM VITAE

Dr. Julius Maina Mathara (PhD)



PERSONAL BIO-DATA

Gender Male
Year of Birth 19th December 1968
Marital status Married

Current address Department of Food Science and Technology,
Jomo Kenyatta University of Agriculture and Technology (JKUAT)
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EDUCATION

Degree	Institution and Year
BSc. (Honours) Food Science & Technology	Dept. of Food Science, Nutrition and Technology (1989 – 1992), Upper Second Honors. University of Nairobi, Kenya
MSc. Food Science & Technology	Dept of Food Science, Nutrition & Technology (1996 – 1999), University of Nairobi, Kenya , MSc. Thesis title: Studies on Lactic acid producing microflora in Mursik and Kule naoto, traditional fermented milks from the Nandi and the Maasai communities in Kenya.
PhD Food Science	Field of Specialisation: Applied Food and industrial microbiology (2000 – 2004), conducted at the Max Rubner-Institut (MRI), Federal Research Centre for Nutrition and Foods (BfEL), University of Karlsruhe, Karlsruhe, Germany.

PhD Thesis Title: Isolation, Identification and Characterisation of
Potential Probiotic lactic acid bacteria from the Maasai Traditional
Fermented milk products (*Kule naoto*) in Kenya. Supervisors: Prof.
Dr. Wilhelm .H. Holzapfel, Prof. S.K.Mbugua, Prof. P.M. Kutima

INTERNATIONAL FELLOWS SHORT TERM TRAINING

**I-HELP
Fellow** Leadership, Food Security and Environmental Sustainability,
August 2000 – November 2000, International Agriculture
Program,
Iowa State University, USA

DAAD Fellow Use of Molecular tools in characterisation of antimicrobial compounds, from Lactic acid bacteria. Development of an optimal method for detection of antimicrobial and antifungal compounds produced by lactic acid bacteria. Federal Research Centre for Nutrition and Food, Karlsruhe **Germany- March 2007 to May 2007.**

APPOINTMENT (EMPLOYMENT)

Senior Lecturer **25th August 2010 – to date**
Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology, Kenya (JKUAT)

Lecturer **27th January 2005 – 2010**
Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology, Kenya (JKUAT)

Tutorial Fellow **2000 – 2005**
Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology (JKUAT)

Teaching Assistant **1994 – 2000**
Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology (JKUAT)

CURRENT TEACHING /RESEARCH /INNOVATION ACTIVITIES

Teaching Activities Food Microbiology, Advanced Food Microbiology, Industrial and Applied Microbiology, Food Biotechnology, Food Safety, Dairy Technology, Processing and preservation, Biosafety, Biopolicy, and Bioethics, Microbial toxicology.
JKUAT
(Both at BSc ,MSc and PhD Levels)

Pan African University (PAU)- Lecturer in MSC Molecular Biology and Biotechnology program offered at PAUISTI – JKUAT (October 2012 – March 2013)

PAUISTI -MSC Student supervisor Supervisor of One MSc (Molecular Biology and Biotechnology) Student

Swedish University of Agricultural Sciences (SLU), SWEDEN Visiting International Lecturer – Conducting Lectures in Food Science and Technology to MSc students in MSc. Food innovation and Market program: January- February 2012

Research Activities **Functional Food Research and Development:** Isolation Identification and characterisation of industrial Microorganisms. Use of multi-functional genomics in characterization of potential and probiotic lactic acid bacteria and other industrial microorganisms.

Design and processing models of functional foods. Antimicrobial compounds and Bio-preservation of Foods. Biosafety- Application and Risk analysis of GMO in food. Screening *Bacillus* species from *Restrineobola argentea* for production of bacteriocin against Bovine mastitis pathogens.

Food Safety: Bio-control of Mycotoxins in foods. Development of analytical procedures in mycotoxins analysis. Microbial safety of Beverages (**Tea and Coffee**)

Biosafety: Biosafety health and safety issues associated with foods derived from GMOs. Risk assessment of Foods derived from genetically modified crops and microorganisms.

International Research project

(Globe
HORTINLEA):

2013 - 2016

Project 1; Title: Quality assurance and preservation of African vegetables during postharvest for reduction of food losses and improving nutritional value, storability and food safety

Project 2; Title: Impact of fresh and processed African leafy vegetables on human health

Activity 1. To identify and quantify protective health-promoting compounds in fresh ALV influenced by African genotype, cultivation, postharvest treatment

Activity 2. To investigate and quantify changes within the level of nutrients and health-promoting compounds,

Innovation Activities

Development of a Sustainable Agro-Processing Technology with health Added Value. The innovation is focused on development of **Probiotics** and other Multi-functional starter cultures for application in Foods processing and preservation. Development of food fermentation strategies that enhance Human Nutrition and Health.

SELECTED POST GRADUATE STUDENTS SUPERVISION

1. **Godfrey Nattoh MSc PAU-PAUISTI** - Industrial Application of Edible Mushroom Dyes and Use of Spent Compost in Biodegrading Industrial Effluents. Status – **Ongoing Since November 2013.**
2. **Juliana W. Maina MSc. JKUAT**-Screening *Bacillus* species from *Restrineobola argentea* for production of bacteriocin active against bovine mastitis pathogens. **Ongoing since October 2013**
3. **Terry Wangechi Kabea, MSc JKUAT** Virulence factors in Shiga toxigenic *Escherichia coli* isolated from retail beef in Nairobi; **Ongoing Since May 2013**
4. Virginia Wambui Kimani: MSc. Isolation and characterization of yeast strains

capable of converting Whey to Bio-ethanol. **Status: successfully Completed**

5. Christine Kalui, MSc. JKUAT, 'Studies on potential probiotic characteristics of lactic acid bacteria isolated from ikii a fermented porridge in Kenya, Kenya Bureau of Standards; ; **Status: Successfully Completed**
6. Lucy Wambura, MSc. JKUAT 'Preservation potential of indigenous plants commonly used by the Maasai community in Food processing and preservation, Submitted, waiting for defense JKUAT; ; **Status: Successfully Completed**
7. Micah Ongeri, MSc. JKUAT, Studies on the use of herbs to Preserve Meat and Milk among the Pastoral Communities of West Pokot in Kenya; **Status: Successfully Completed**
8. Everlyne Muyanga, MSc, Wagenigen University, Process optimization of Stirred camel milk yoghurt. ; **Status: Successfully Completed**
9. Jennifer N. Wambugu; MSc. Characterization of Lactic acid bacteria Isolated from Coconut wine for their probiotic Potential **Status: Ongoing** ,
10. Orina Irene Nyagoge: MSc. Evaluation of contamination levels of honey produced in different regions of Kenya. **Completed**
11. Mwangi Daniel Waweru." MSc. Effects of different formulation, processing conditions and storage on the phyto-chemical and sensory characteristics of papaya based yoghurt. **Status: Completed**
12. Mikah Ongeri Nyaberi PhD, Development of a Preservative from *Tamrindus indicus* and *Ziziphus abyssinica* A. Rich herbs and determination of the phytochemical and nutritive constituents for the preservation and value addition of Fish and Meat. **Status: Ongoing**

UNIVERSITY APPOINTMENTS AND ADMINISTRATIVE DUTIES

1. Student's **Research Projects coordinator:** Dept. of Food Science and Technology.
2. **Chairman,:** JKUAT - University Biosafety Committee, - to handle biosafety issues in research activities in JKUAT.
3. **Staff Secretary,** Food Science Department Teaching May 2004 to date
4. **Member,** departmental training recruitment and postgraduate committee
5. **Member,** departmental Quality Management committee
6. **Class academic Advisor,** Second Year BSc. Class.
7. Acting Chairman, Department of Food Science and Technology August - Sept 26th 2009, 29th March – 16 April 2010, 2011 , 2012, 2013, at various dates .
8. Member Technical Committee, Farmer Voice Radio, An ongoing Outreach/Extension February 2014

program of the JKUAT, 2009 to June 2012.

9. Member, JKUAT Scientific Technological and Industrialisation Conference organising Committee 2008 to date.

10. Internal Examiner for MSc. and PhD thesis, JKUAT

11. External Examiner for MSc and PhD thesis, Dept of Food Science, Nutrition & Technology University of Nairobi.

12. External Examiner: Department of Food Science and Technology, Kenya Technical University, September 2011.

13. External Examiner: Department of Food Science and Technology, Karatina University From February 2012 to date.

14. External Examiner: Department of Food Science and Technology, Meru University of Science and technology (MUST) From June 2013 to Date.

INTERNATIONAL SCIENTIFIC JOURNAL REVIEWER:

- Current Microbiology,
- IJFAD

International Scientific Journal Editor

- **Associate Editor** – Frontiers in Food Microbiology Journal (Frontiers Research Foundation, Switzerland – **Appointed on 19th July 2010 to date**)

PROFESSIONAL CONSULTANCY WORK

Meru Dairy Goat Bleeders Association – Revival and processing of Goat milk fermented products Starting August 2009

Food Value addition, Juja Community, youth and women groups through the FVR program

Food safety and quality analysis.

MEMBERSHIP OF INTERNATIONAL/REGIONAL PROFESSIONAL ORGANISATION

Member	American Society of Microbiology (ASM)
Member	Society for Applied Microbiology (SFAM)
Member	Institute of Food Technologist (IFT)
Member	Kenya DAAD Scholars Association (KDSA)
Member	Kenya Society for Microbiology (KSM)
Member	African Biological Safety Association (AfBSA)

SOME PUBLICATIONS IN PEER-REFEREED JOURNALS

1. Kimani V. Wambui., Abd El-Latif Heshan, Henly Ogola J.O. and **Julius Maina** (2014) Molecular genetic identification and phylogeny of bio-ethanol producing yeast isolated from cheese whey. **Journal of Pure and Applied Microbiology Vol. 8 (2) 2014**
2. Onyango C. A, Gakuya L. W, Mathooko F. M, **Maina J. M**, Nyaberi M. O, Makobe M, Mwaura, F. (2013) Preservative effect of various indigenous plants on fermented milk from Maasai community of Kajiado County. **Journal of Applied Biosciences 73: 5935– 5941.**
3. Onyango C. A, Gakuya L. W, Mathooko F. M, **Maina J. M**, Nyaberi M. O, Makobe M, Mwaura F. (2013) Phytochemical studies on herbal plants commonly used for processing and preserving meat and milk. **Journal of Applied Biosciences 73:5942– 5948**
4. Gyu-Sung Cho, Melanie Huch, **Julius Maina Mathara**, Marco J. van Belkum, and Charles M.A.P. Franz (2013) Characterization of pMRI 5.2, a rolling-circle-type plasmid from *Lactobacillus plantarum* BFE 5092 which harbours two different replication initiation genes. **Plasmid. Vol 69 Issue 2: 160 - 171**
5. Onyango C. A. ; Nyaberi M. O. ; Mathooko F. M. ; **Mathara J. M.**; Makobe, M.; Mwaura, F. (2012) Evaluation of *Ziziphus abyssinica*, fruit paste extract as used by the pastoral community of West Pokot Kenya for the preservation of fresh pork sausages. **Journal of Animal & Plant Sciences. Vol. 13, Issue 3: 1781-1790**
6. Christine M. Kalui, **Julius M. Mathara**, Philip M. Kutima. (2010). Probiotic potential of spontaneously fermented cereal based products (A Review). **African Journal of Biotechnology, Vol. 9: 2490 – 2498, 2010**
7. Nyaberi, M.O., Onyango, C.A., Mathooko, F.M., **Maina, J. M.**, Makobe, M., Mwaura, F., (2010). Evaluation of phytochemical, antioxidant and antibacterial activity of edible fruit extracts of *Ziziphus abyssinica* A. Rich. **Journal of Animal and Plant Sciences, Vol. (2): 623 – 629, 2010.**
8. Nyaberi, M.O., Onyango, C.A., Mathooko, F.M., **Maina, J. M.**, Makobe, M., Mwaura, F., (2010) Bioactive fractions in the stem charcoal of *Ozaroa insignis* used by the pastoral communities in West Pokot to preserve milk. **Journal of Applied Biosciences 26: 1653 – 1658, 2010.**
9. Christine M Kalui, **Julius M. Mathara**, Phillip M. Kutima, C. Kiiyukia and Lawrence Wongo (2009) Functional characteristics of *Lactobacillus rhamnosus* from *ikii*, a Kenyan traditional fermented maize porridge. **African Journal of Biotechnology Vol. 8 (18): 4363 – 4373, 2009.**
10. **Julius Maina Mathara**, Ulrich Schillinger, Claudia Guigas, Charles Franz, Phillip Museve Kutima, Samuel K Mbugua, Heuyn K Shin, Wilhelm H Holzapfel. (2008), Functional characteristics of *Lactobacillus* spp. from traditional Maasai fermented milk products in Kenya, **International Journal of Food Microbiology 126: 57 - 64**

(2008)

11. **Julius Maina Mathara**, Ulrich Schillinger, Phillip Museve Kutima , Samuel Kuria Mbugua , Claudia Guigas, Charles Franz, Wilhelm Heinrich Holzapfel.(2008) Functional properties of *Lactobacillus plantarum* strains isolated from Maasai traditional fermented milk products in Kenya. **Current Microbiology** **56: 315-321 (2008)**
12. Kalui C. M, P. M. Kutima, **J. M. Mathara**, C. Kiiyukia, L. E. Wongo (2008) Partial characterisation and identification of lactic acid bacteria involved in production of *ikii*: a traditional fermented maize porridge in Kenya. **J. Trop. Microbiol. Biotechnol** **4 (1): 3-15. 2008.**
13. Patrignani, F., Iucci, I. Lanciotti, R, Vallicelli, M, **Maina Mathara J**, Holzapfel, W. H. and Guerzoni, M. E. (2007). Effect of High-Pressure Homogenization, Nonfat Milk Solids, and Milkfat on the Technological Performance of a Functional Strain for the Production of Probiotic Fermented Milks, **Journal of Dairy Science.** **90 (10): 4513-4523, 2007**
14. Francesca Patragnani, **Julius Maina Mathara**, Phillip M. Kutima, Samuel K. Mbugua, Lanciotti Rosalba, Wilhelm H. Holzapfel (2006). Potential of functional strains, isolated from traditional Maasai fermented milk, as starters for the production of fermented milk. **International Journal of Food Microbiology, Vol. 107 (1): 1 – 11, 2006.**
15. **Mathara, Julius Maina. 2005**, Probiotic properties of lactic acid bacterial strains in the traditional Maasai fermented milk in Kenya. **Microbiologist, Vol. 6 (1): 42- 43, 2005**
16. **Mathara, J. M.**, Schillinger, U., Kutima, P.M., Mbugua, S.K., and Holzapfel, W. H., 2004. Isolation, identification and characterisation of dominant microorganisms of *Kule naoto*: the Maasai traditional fermented milk in Kenya. **International Journal of Food Microbiology Vol. 94 (3): 269-278, 2004**
17. Nakamura, S. Araki, M., Miyamoto T., Kataoka, K. **Mathara, J. M. 1996**, Isolation and Identification of lactic acid bacteria from fermented milk products in Kenya. **Japanese Journal of Dairy and Food Science Vol. 45 (2): 35-42.**
18. **Mathara, J. M.**, Miyamoto, T., Koaze, H., Kiiyukia, C., Yoneya, T., 1996. Production of traditional fermented milk in Kenya. Review. Shizuoka Prefectural University publication, Japan 257-265

BOOKS / BOOK CHAPTERS PUBLISHED

Probiotic Potential of Lactic Acid Bacteria from Fermented Porridge Ikii - A fermented porridge in Kenya. Authors: Chritine Kalui, Philip Kutima and **Julius Maina**. ISBN 978-3-8484-3982-9, 116 Pages; LAP Lambert Academic Publishing, 2012.

SELECTED PRESENTATIONS AND ABSTRACT AT INTERNATIONAL AND REGIONAL CONFERENCES

1. **Mathara, J. M.** Schillinger, U.; Holzappel, H. W. Studies on functional properties of lactic acid bacteria isolated from the Maasai traditional fermented milk products in Kenya. 4 Fachsymposium, der Fachgruppe Lebensmittelmicrobiologie und Hygiene (Deutsche Gesellschaft für Hygiene und Microbiologie e.V (DGHM). 21st to 22nd March **2002. Karlsruhe, Germany**
2. **Mathara, J. M.**; Franz, C.A.M.P.; Schillinger, U.; Kutima, P.M.; Mbugua, S.K.; Holzappel, H. W. Characterisation of antilisteria bacteriocin production by *Leuconostoc* strains isolated from *Kule naoto*, the traditional Maasai fermented milk products in Kenya. 2nd Regional Microbiology Conference, Kenya School of Monetary studies, Nairobi, **Kenya**, 16th to 19th March **2004**.
3. **Mathara, J. M.**; Schillinger, U.; Kutima, P.M.; Mbugua, S.K.; Holzappel, H. W. Isolation, identification and characterization of the dominant microorganisms of *Kule naoto*: the Maasai traditional fermented milk in Kenya 2nd Regional Microbiology Conference, **Kenya** School of Monetary studies, Nairobi, Kenya, 16th to 19th March **2004**.
4. **Mathara, J. M.**; Schillinger, U.; Kutima, P.M.; Mbugua, S.K.; Guigas, C., Holzappel, H. W.; Properties of potential probiotic *Lactobacillus plantarum* strains isolated from the Maasai traditional fermented milk, *Kule naoto*, in Kenya. Society for Applied Microbiology (SFAM) summer conference **Cork, Ireland**. 12 to 15th July **2004**.
5. **Mathara, J. M.**; Schillinger, U.; Kutima, P.M.; Mbugua, S.K.; Guigas, C., Holzappel, H. W.; Functional characteristics of lactic acid bacteria isolated from traditional Maasai fermented milk products in Kenya. In: Proceedings of the 19th International ICFMH Symposium, FoodMicro 2004 - New tools for improvement microbial food safety and quality biotechnology and molecular approaches, **Portoroz, Slovenia**, 12-16 September **2004**, 384.
6. Gakuya, M.W., Onyango, C.A., Mathooko, F.M. and **Maina, J. Mathara**. Phytochemical constituents of herbal plants commonly used in food processing and preservation by the Maasai community in Kajiado district. Proceedings of 2008 JKUAT Scientific, Technological and Industrialization Conference: Scientific and Technological Solutions for Sustainable Industrialization and Socio-Economic Growth. AICAD, 4th to 5th December **2008**.
7. Gakuya, M.W., Onyango, C.A., Mathooko, F.M. and **Maina, J. Mathara**. Antimicrobial and antioxidant activity of selected herbal plants commonly used in milk processing and preservation by the Maasai community of Kajiado district. Proceedings of the 2008 JKUAT Scientific, Technological and Industrialization Conference: Scientific and Technological Solutions for Sustainable Industrialization and Socio-Economic Growth, AICAD, Nairobi from 4th to 5th December **2008**.
8. **Julius M. Mathara**; P.M. Kutima; U. Schillinger, C. Guigas; F. Charles; H. K. Shin; S. K. Mbugua, and W. H. Holzappel. Probiotic Functional characteristics of Lactic acid bacteria isolated from traditional Maasai fermented milk products in Kenya. 8th symposium on Lactic acid Bacteria, Genetics Metabolism and Applications. **Egmond aan Zee, The Netherlands** August 28th to September **2005**.
9. **Julius Maina Mathara**. Food Industry in Kenya: Actual situation, Development and Perspectives. ANUGA Food Tech International Conference, **Cologne, Germany**. 5th to 7th April **2006**

19. **10.** F. Patrignani, L. Iucci, R. Lanciotti, M. Vallicelli, **J.M. Mathara**, M.E. Guerzoni and W.H. Holzapfel. The use of CCD as tool to optimize physico- chemical variables for fermented milks, in relation to specific sensorial and rheological features. p. 69 Scientific and technological challenges in fermented milk. 2nd IDF Dairy Science and Technological week 15-17 May **2006, Sirmione, Italy**
10. Iucci, L., Patrignani, F., Vallicelli, M, .Lanciotti, R., **Mathara, J.M.**, Holzapfel, W.H., Guerzoni, M.E. Improvement of sensory characteristics of probiotic fermented milks using milk high pressure homogenization treatment FOOD MICRO 2006 - food safety and food biotechnology: diversity and global impact.. 20th International ICFMH Symposium, 29th August to 2nd Sept. **2006 Bologna, Italy**
11. **Julius M. Mathara**, Innovations in Functional Food Technology: Opportunities and Challenges, **Second IUMS-ICFMH African Workshop on Food Safety: 25th November to 1st December 2007**, University of Stellenbosch, **Stellenbosch, South Africa.**
12. **Julius Maina Mathara**, Aflatoxins in Foods; The Role of Biotechnology. Presentation During the 38th Session of the Open Forum on Agricultural Biotechnology in Kenya (AFAB), **Jacaranda Hotel, Nairobi 24th June 2010.**

INTERNATIONAL ASSIGNMENTS, COGRESS INVITATIONS AND PARTICIPATIONS

Visiting International Lecturer – Conduct Lectures in Food Science and technology to MSc students in MSc. Food innovation and Market program at Swedish University of Agricultural Sciences (SLU), Sweden. January- February 2012.

Global Biological Resource Centre Network, Methodist Guest House, Nairobi. February 2011

International participant at The World Food Prize. **Des Moines**, Unites States of America (**USA**), 12th –13th October 2000.

International Participant: International Yakult Symposium 2003. Probiotics, Immunology and Cancer. Scientific Challenges and Opportunities. 9th to 10th October **Heidelberg Germany.**

INTERNATIONAL CORROBORATIONS INITIATED :

Kansas State University (KSU), USA . Academic and research collaboration between JKUAT and KSU 2007 – to date

Referees:

Prof. Dr. Wilhelm Heinrich Holzapfel, PhD
(Personal Career mentor and Chief academic and research Advisor)
Professor of Food Microbiology, President ICFMH
School of Life Sciences, Handong Global University
Pohang, Gyeongbuk, 791-708, **South Korea**
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Prof. Dr. Hamadi Iddi Boga

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