

## Akeem Ganiyu RABIU



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### Education

Doctor of Philosophy	Environmental Microbiology - University of Ibadan, Ibadan, Nigeria	2018 - 2022
Master of Science	Environmental Microbiology - University of Ibadan, Ibadan, Nigeria	2014 - 2016
Bachelor of Science	Microbiology - Obafemi Awolowo University, Ile Ife, Nigeria	2001 - 2006
Intermediate Diploma	Science Laboratory Technology, University of Ibadan, Ibadan, Nigeria	1999 - 2002

### Research Summary

My research interests concern the evolution of bacterial pathogens; their origin, transmission, and adaptation to selective pressure. I use genome-based methods, especially whole genome sequencing to address my research priorities. I look forward to using large-scale population genomics to identify local and global origin and routes of spread of many human and animal pathogens. In the local population, I aim to address bacterial adaptation to human and animal hosts, antibiotics, and vaccine exposure. The hope is to understand how bacterial genome-wide association approaches can lead to the identification of genetic determinants responsible for bacterial adaptation to the host environment. My research interest seeks to be translational; to enable this, I am presently working with local hospitals, and national and international agencies while maintaining a focus on more basic research.

### Publications

1. A. O Adekanmbi, **A. G. Rabiu**, O. Akinlabi, A. V. Olaposi and A. A. Adebayo **2024**. Solid waste dumpsite leachate and contiguous surface water contain multidrug-resistant ESBL-producing *Escherichia coli* carrying extended-spectrum  $\beta$ -lactamase (ESBL) genes. *BMC Microbiol* 24(1):308. doi: 10.1186/s12866-024-03444-9. <https://www.scopus.com/record/display.uri?eid=2-s2.0-85201532964&origin=inward&txGid=25ac60d728a0dfb0d8701623a1b58c63>
2. **A. G. Rabiu**, A. J Marcus, M.O. Olaitan and O. I. Falodun **2024**. Systematic review and meta-analyses of the role of drinking water sources in the environmental dissemination of antibiotic-resistant *Escherichia coli* in Africa. *International Journal of Environmental Health Research*. DOI: 10.1080/09603123.2024.2320934. <https://www.webofscience.com/wos/woscc/full-record/WOS:001173695200001>
3. **A. G. Rabiu**, A. J. Marcus, O. I. Falodun **2024**. The centrality of bacterial culturing in bacteriology. *Equity Journal of Science and Technology* 11(1): 11 - 15 ISSN 2354-1814; E-ISSN 2683-5961.
4. O. I. Falodun, **A. G. Rabiu**, A. J. Marcus, M. C. Afolabi, R. A. Dada. **2024**. Characterization of virulent *Escherichia coli* in healthy pet dog feces: Implications for public health. *Journal of Istanbul Veterinary Sciences* 8(1), 5-12.
5. A. R. Shittu, O. F. Iwaloye, A. E. Ojewole, **A. G. Rabiu**, M. O. Amechi, O. F. Herve. **2023**. PFAS and Microbes; The Effect of per- and poly-fluoroalkyl substances on environmental and human microorganisms and their potential for bioremediation. *Arch Hig Rada Toksikol* 74:167-178. DOI: 10.2478/aiht-2023-74-3708. <https://www.webofscience.com/wos/woscc/full-record/WOS:001080694100002>
6. O.I. Falodun, A. J. Marcus, **A. G. Rabiu**. **2023**. Extended-spectrum  $\beta$ -lactamases -producing *Enterobacteriaceae* from abattoir wastes. *International Journal of Environmental Studies* (Francis and Taylor Online). <https://doi.org/10.1080/00207233.2023.2177427>.
7. **A. G. Rabiu**, O. I. Falodun, O. E. Fagade, R. A. Dada, Iruka N. Okeke **2022**. Potentially pathogenic *Escherichia coli* from household water in peri-urban Ibadan, Nigeria. *Journal of Water Health* jwh2022117. <https://doi.org/10.2166/wh.2022.117>. <https://www.webofscience.com/wos/woscc/full-record/WOS:000822747000001>
8. **A. G. Rabiu**, O. I. Falodun, and D. A. Adegboyega **2022**. Effect of seasonal variation on groundwater quality in sub-urban Ibadan, Southwest Nigeria. *Environmental and Earth Sciences Research Journal*. <https://doi.org/10.18280/eesrj.090305>

9. O. I. Falodun, M. C. Afolabi, **A. G. Rabi** 2022. Detection of Extended Spectrum  $\beta$ -Lactamase (ESBL) genes in *Escherichia coli* isolated from fecal samples of apparently healthy dogs in Ibadan, Nigeria. *Animal Gene* 26 200133. <https://doi.org/10.1016/j.angen.2022.200133>.
10. Falodun, O. I., Akinbamiro, T. F. and **A. G. Rabi** 2019. Hospital wastewater: a reservoir of antibiotic-resistant *Pseudomonas* strains in Ibadan, Nigeria. *Emergent Life Sciences Research* 5(1): 1-7 E-ISSN: 2395-6658 P-ISSN: 2395-664X DOI: <https://doi.org/10.31783/elsr.2019.5117>
11. **A. G. Rabi** and Falodun I. O. 2017. Multidrug-resistant *Pseudomonas* species Isolated from the wastewater of an Abattoir in Ibadan, Nigeria. *Journal of Applied Life Sciences International* 13(1): 1-9, 2017. DOI: 10.9734/JALSI/2017/34522
12. Falodun I. O. and **A. G. Rabi** 2017. Physico-chemical and bacteriological quality of abattoir wastewater discharged into water bodies in Ibadan, Nigeria and drug-resistant profile of isolated *Salmonella* species. *Journal of Microbiology and Biotechnology Research* 7(4): 23-31. DOI: 10.24896/jmbr.2017743.
13. Falodun I. O., **A. G. Rabi**. and Fagade O. E. 2016. Antibiotics Susceptibility Profile of *Listeria* species isolated from untreated Abattoir wastewater in Akinyele, Ibadan, Nigeria and its implication on public health. *British Microbiology Research Journal* 16(6): 1-10, 2016, DOI: 10.9734/BMRJ/2016/28066
14. A. O Adekanmbi, **A. G. Rabi**, O. Akinlabi, A. V. Olaposi and A. A. Adebayo 2024. Leachates from municipal solid waste dumpsites are a hotspot of extended-spectrum  $\beta$ -lactamase (ESBL)- producing *Escherichia coli* harbouring blaCTX-M gene. Review at Molecular Biology Reports (Springer Nature) under review.
15. A. O Adekanmbi, **A. G. Rabi**, O. Akinlabi and A. V. Olaposi 2024. Carriage of ESBL genes by cefotaxime-resistant PMQR-positive *Escherichia coli* isolated from surface-leaking sanitary sewers. BMC Microbiology (Springer Nature) under revision.

#### Advanced Courses, Abstract Presentations, and Conferences

- (i) Participation in the Training on Technology Transfer and Commercialization for Tertiary Education Trust Fund (TETFund)-Beneficiary Institutions facilitated by Thrivent at Sandralia Hotel, Abuja between 25-29th November, 2024
- (ii) African BioGenome Project (AfricaBP) Open Institute for Genomics and Bioinformatics Southern Africa Regional Workshop on Driving West African Bioeconomy through Biodiversity Genomics held on 6th and 7th May 2024 at the CBN Centre of Excellence, University of Port Harcourt, Choba, Rivers State, Nigeria.
- (iii) Participation in the West African Research Innovation Management Association (WARIMA) and West African Network for Tuberculosis, AIDs and Malaria (WANETAM) Epidemiology and Biostatistics training organised and funded by the United Kingdom Research and Innovation (UKRI), Medical Research Council (MRC) Unit at the Gambia, the London School of Hygiene and Tropical Medicine (LSHTM) and the GlaxoSmithKline (GSK) in Dakar, Senegal from 11th – 22nd December 2023 at Dakar, Senegal (in-person)
- (iv) Workshop on Plasmids as Vehicles of AMR Spread held at the Abdus Salam International Centre for Theoretical Physics (ICTP) Trieste, Italy from 18th – 22nd September 2023.
- (v) Akeem Ganiyu Rabi, Olutayo Israel Falodun, Rotimi Ayodeji Dada, Ayorinde O. Afolayan, Olabisi C. Akinlabi and Iruka N. Okeke. 2023. Household water: A potential hotspot of the environmental spread of antimicrobial resistance in southwestern Nigeria presented at the West African Centre for Cell Biology of Infectious Diseases held at the University of Ghana from July 26th – 28th 2023.
- (vi) African BioGenome Project (AfricaBP) Open Institute for Genomics and Bioinformatics Southern Africa Regional Workshop 2023 coordinated by the University of South Africa (UNISA), Pretoria, South Africa, from 21st - 25th August 2023.
- (vii) Involvement as a Staff member in the Wellcome Connecting Science and H3ABioNet Next Generation Sequencing Bioinformatics Training course (NGS Bioinformatics\_2022) held from 22nd March 2022 – 20th June 2022.
- (viii) Akeem Ganiyu Rabi, Olutayo Israel Falodun, Rotimi Ayodeji Dada and Iruka N. Okeke, 2023. Multi-drug resistant *Klebsiella pneumoniae* and *K. quasipneumoniae* in household drinking water in northern Ibadan, Nigeria. *KlebClub Virtual Series* hosted by the Department of Microbiology and Immunology at the University of Michigan.
- (ix) Involvement as a participant in the Antimicrobial Resistance - Genomes, Big Data and Emerging Technologies 2022 (VIRTUAL event) organized by the Wellcome Connecting Science (United Kingdom) from 27th - 29th April 2022.

- (x) Involvement as a participant in the Antimicrobial Resistance in Bacterial Pathogens (Africa) organized by the Wellcome Connecting Science (United Kingdom) from 27 September to 1st October 2021.
- (xi) Akeem Ganiyu Rabi, Olutayo Israel Falodun, Obasola Ezekiel Fagade and Iruka, N. Okeke 2021. Mobile antimicrobial resistance genes in *Escherichia coli* from household water sources in Ibadan, Nigeria. 1st Nigerian Conference of Applied and Field Epidemiology-NICAFE-2021 (Virtual Presentation)
- (xii) Akeem Ganiyu Rabi, Olutayo Israel Falodun, Obasola Ezekiel Fagade, Rotimi Ayodeji Dada and Iruka N. Okeke. 2021. Rainfall-Driven Household Water Contamination in Peri-urban Ibadan is Linked to Diverse Enteric Bacteria. Science Association of Nigeria Conference held at the University of Ibadan, Ibadan between 21st – 24th June 2021 (Oral Presentation).
- (xiii) Bioinformatics For Biologists: An Introduction to Linux, Bash Scripting, and R Programming Language organized Under Wellcome Genome Campus Advanced Courses and Scientific Conferences. Issued 20th March 2021 available online at [futurelearn.com/certificates/0e0qx7k](https://futurelearn.com/certificates/0e0qx7k)
- (xiv) Akeem Ganiyu Rabi, Falodun, Obasola Ezekiel Fagade and Iruka N. Okeke 2020. Diversity of Enterobacteriaceae and detection of *Klebsiella pneumoniae* complex  $\beta$ -lactamase genes in household water sources in Ibadan, Nigeria. American Society for Microbiology-ASM Microbe 2020 (Online Poster Presentation) held June 2020 in Chicago, USA.
- (xv) Participation as a Postgraduate Researcher in the University of Ibadan Collaborative Academic Resuscitation and Transformation (UI-CART) Project in Science and Technology (2019) supported by MacArthur Foundation & Grants, University of Ibadan.
- (xvi) Akeem Ganiyu Rabi and Olutayo Israel Falodun 2016. physicochemical and bacteriological quality of abattoir effluents discharged into water bodies: implications of total drug-resistant salmonella species isolated from abattoir wastewater (Oral presentation) at the Obafemi Awolowo University Faculty of Science International Conference- Science: A tool for diversification & sustainability of the economy and health on 4th-8th September 2016.

#### Editorial responsibilities

- Junior Reviewing Editor – Letters in Applied Microbiology 2023 till date
- Reviewer – International Journal of Environmental Studies (Taylor and Francis) 2022 till date
- Discover Water (Springer Nature) From 2024
- Discover Public Health (Springer Nature) From 2024

#### Prizes/Scholarship/Grants/Awards/Fellowships/Membership of Professional Bodies with dates

- Honoured with a 1<sup>st</sup> Class Award Plaque by Obafemi Awolowo University Alumni 2006
- Federal Government Scholarship for studies in Nigerian Public Universities PhD Category Award No. FSB/NA/2020/01832 2021
- Small Research Grant by the Thomas-Bassir Biomedical Foundation, University of Ibadan, Nigeria 2021
- Award for publication of research article(s) from Ph.D. Thesis before final defense by the University of Ibadan Postgraduate College 2022
- Member, American Society for Microbiology (ASM) 2020 till date
- Honorary Member, Science Association of Nigeria (SAN) 2021 till date
- Applied Microbiology International (AMI) 2023
- Sources and reservoirs of human-infecting ESBL *Escherichia coli* in Osogbo, Nigeria, funded by the Cambridge-Africa ALBORADA Research Fund, University of Cambridge (Research Grant Number: G127153, UFS Project: PNAG/825) 2023
- Best Reviewer of the Year 2023 by the Letters in Applied Microbiology 2023

#### Current Research Activities and Research Collaboration

- Ph.D. study is supported by African Research Leader's Award, awarded to Professor Iruka N. Okeke, jointly funded by the UK Medical Research Council (MRC) and the UK Department for International Development

under the MRC/DFID Concordant agreement and is also part of the EDCTP2 program supported by the European Union.

- Source and reservoir of human-infecting ESBL *Escherichia coli* in Osogbo, Nigeria (Funded by the University of Cambridge).
- Drinking water sources as an environmental sink of Enterobacteriaceae in Africa (Partly funded by Thomas-Bassir Biomedical Foundation).
- Treatment of contaminated household drinking water using zeolite-photocatalyst-activated carbon in Osogbo, Nigeria (Funded by the Tertiary Education Trust Fund).

### Teaching roles

• General Biology I	(BIO 101)	2 units	Year 1
• General Biology II	(BIO 102)	2 units	Year 1
• Experimental Biology I	(BIO 107)	1 unit	Year 1
• Experimental Biology II	(BIO 108)	1 unit	Year 1
• Introduction to Biostatistics	(MCB 202)	2 units	Year 2
• Introduction to Biotechnology	(MCB 241)	2 units	Year 2
• Basic Techniques in Microbiology	(MCB 231)	2 units	Year 2
• Microbial Ecology	(MCB 305)	3 units	Year 3
• Soil Microbiology	(MCB 311)	3 units	Year 3

### Administrative responsibilities

- Principal Assistant Registrar, National Teachers' Institute, Kaduna 2009 – 2023
- Lecturer II at the Federal University of Health Sciences, Ila-Orangun, Osun State, Nigeria 2023 to date
- Examination Officer, Microbiology Department, Federal University of Health Sciences, Ila-Orangun, Nigeria 2023 to date
- Deputy Director, Academic Planning Unit of the Federal University of Health Sciences, Ila-Orangun, Nigeria 2023 to date
- TETFund Desk Officer, Federal University of Health Sciences, Ila-Orangun, Nigeria From 2024

### Academic Referees

#### 1. Professor Iruka N. Okeke

Department of Pharmaceutical Microbiology,  
University of Ibadan, Ibadan, Nigeria  
Email: [iruka.n.okeke@gmail.com](mailto:iruka.n.okeke@gmail.com)

#### 2. Dr. Olutayo Israel Falodun

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University of Ibadan, Ibadan.  
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