

PERSONAL INFORMATION

Shenkutie, Abebe Mekuria

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Current Position: **Post-doctoral fellow in Medical Microbial Genomics and Bioinformatics**

Department of Health Technology and Informatics,
The Hong Kong Polytechnic University, Hong Kong

Research Interest: **Antibiotic resistance and drug discovery, pathogenicity and virulence factor, Emerging infectious diseases, Host-microbe interactions, Diagnostic methods, Microbiome therapeutics, Microbial genomics and bioinformatics**

Knowledge & skills: **Genomic Analysis, Comparative Genomics, Metagenomics and Microbiome Studies, Data Integration and Systems Biology**
Obtained

ORCID <https://orcid.org/0000-0002-6717-3948>

EDUCATION & TRAINING

04/09/2017 -21/07/2021

Ph.D. in Medical Microbial Genomics **cGPA: 4.1/4.3**

Department of Health Technology and Informatics,
College of Health and Social Sciences,
Hong Kong Polytechnic University, Hong Kong

Ph.D. Thesis Title

Molecular mechanisms of biofilm-specific antibiotic resistance in *Acinetobacter baumannii*

<https://theses.lib.polyu.edu.hk/handle/200/11551>

Knowledge and skills obtained

- **In-depth knowledge on Molecular biology, Microbiology, and bioinformatics**
 - ✓ Disease Mechanisms study
 - ✓ Advanced Molecular Diagnostics techniques
 - ✓ identification of specific molecular targets for developing novel therapies
 - ✓ Advanced Medical Microbiology skills,
 - ✓ Advanced Bioinformatics (Big data analysis for biological samples)
 - ✓ Advanced Statistical skills
 - ✓ Application of genetics concept for Personalized Medicine

20/08/2010-08/07/2012

MSc in Medical Microbiology **cGPA: 3.62/4.00**

School of Medicine, College of Health Sciences,
Addis Ababa University, Ethiopia

15/09/2002–19/07/2008

Degree in Doctor of Veterinary Medicine(DVM). **cGPA: 3.53/4.00**

Mekelle University, Ethiopia

PROFESSIONAL EXPERIENCES

20/01/2023 till now

Post-doctoral fellow in Bioinformatics, Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong (under POLYU DISTINGUISHED /

RGC POSTDOCTORAL FELLOWSHIP SCHEME (DPFS)
2024/25

- 01/10/2021-02/01/2023** Educator-Researcher at The Department of Microbiology & Immunology, St Paul's Hospital Millennium Medical College, Ethiopia
- 21/05/2017 - 03/09/ 2017** Educator-Researcher at the Department of Microbiology, Immunology, and Parasitology, St Paul's Hospital Millennium Medical College, Ethiopia
- 18/12/2015-20/05/2017** Educator-Researcher, Arsi University, Medical Laboratory Sciences Department, College of Health Sciences, Ethiopia
- 30/08/2014 - 17/12/ 2015** Educator-Researcher in Medical Microbiology, Arsi University, Medical Laboratory Sciences Department, College of Health Sciences, Ethiopia
- 09/07/2012-30/08/2014** Educator-Researcher in the Department of Microbiology and Immunology, Mekelle University, Ethiopia
- 22/09/2008-30/08/2012** Educator-Researcher in the department of microbiology and immunology, Mekelle University, Ethiopia.

Main Responsibility
Research activities

Research, teaching, Community, and consultancy services

Completed research work

SELECTED PUBLICATIONS (last five years)

- ✓ **Shenkutie Abebe Mekuria**, Daniel Gebrelibanos, Mianzhi Yao, Gadissa Bedada Hundie, Franklin W. N. Chow, Polly H. M. Leung. Impairment of novel Small RNA00203 reduces biofilm formation and biofilm-specific antibiotic resistance in *A. baumannii*. *International Journal of Antimicrobial Agents*, Elsevier <https://doi.org/10.1016/j.ijantimicag.2023.106889>. .
- ✓ **Shenkutie Abebe Mekuria**, Jiaying Zhang, Mianzhi Yao, Daniel Asrat, Franklin W. N. Chow, and Polly H. M. Leung. 2022. "Effects of Sub-Minimum Inhibitory Concentrations of Imipenem and Colistin on Expression of Biofilm-Specific Antibiotic Resistance and Virulence Genes in *Acinetobacter baumannii* Sequence Type 1894" *International Journal of Molecular Sciences* 23, no. 20: 12705. <https://doi.org/10.3390/ijms232012705>.
- ✓ Yao, Mianzhi, Qianhui Zhu, Jin Zou, **Shenkutie Abebe Mekuria**, Songnian Hu, Jiuxin Qu, Zilong He, and Polly HM Leung. "Genomic Characterization of a Uropathogenic *Escherichia coli* ST405 Isolate Harboring bla CTX-M-15-Encoding IncFIA-FIB Plasmid, bla CTX-M-24-Encoding IncI1 Plasmid, and Phage-Like Plasmid." *Frontiers in Microbiology* 13 (2022): 845045-845045. [10.3389/fmicb.2022.845045](https://doi.org/10.3389/fmicb.2022.845045).
- ✓ **Shenkutie Abebe Mekuria**, Mian Zhi Yao, Gilman Kit-hang Siu, Barry Kin Chung Wong, and Polly Hang-mei Leung. "Biofilm-induced antibiotic resistance in clinical *Acinetobacter baumannii* isolates." *Antibiotics* 9, no. 11 (2020):817. <https://doi.org/10.3390/antibiotics9110817>.
- ✓ Demisie S, Oh D, Wolday D, Rinke deWit TF, Abera A, Tasew G, **Shenkutie AM**, Girma S, Tafess K. 0. Diversity of culturable bacterial isolates and their potential as antimicrobial against human pathogens from Afar region, Ethiopia. *Microbiol Spectr* 0:e01810-24. <https://doi.org/10.1128/spectrum.01810-24>
- ✓ Hamde, F., Chala, B., Bekele, M., **Shenkutie, A. M.**, Abubeker, R., & Tafess, K. (2024). Isolation and Antimicrobial Resistance Patterns of Bacterial Pathogens

from Community-Acquired Pneumonia at Adama Hospital Medical College, Adama, Ethiopia. *Journal of Tropical Medicine*, 2024(1), 8710163.

- ✓ Demisie S, Oh DC, Abera A, Tasew G, Satessa GD, Fufa F, **Shenkutie AM**, Wolday D, Tafess K. Bioprospecting secondary metabolites with antimicrobial properties from soil bacteria in high-temperature ecosystems. *Microb Cell Fact*. 2024 Dec 19;23(1):332. doi: 10.1186/s12934-024-02589-6. PMID

Ongoing research

- ✓ Developing Cell-Penetrating Peptide-PNA Prototypes Targeting Small RNA00203: Pioneering Antimicrobial Solutions for Biofilm-Producing, Multidrug-Resistant *Acinetobacter baumannii*. 2024
- ✓ Abebe Mekuria and Leung Polly(2023). sRNAs in the regulatory mechanism of biofilm-specific antibiotic resistance in *A. baumannii*
- ✓ Investigation of a plasmid carrying antibiotic-resistant and virulent genes in biofilm-forming strains of *A. baumannii*
- ✓ Molecular characterization of carbapenem-resistant *A. baumannii* isolated from CSF.
- ✓ Ketema Tafess, Abebe Mekuria, Alemu Gonfa, Adugna Abera, Tolesa Muleta, Fetena Fufa (2022). Synthesis of Pharmaceutical Compounds from Extreme Environment Streptomyces
- ✓ Abebe Mekuria, Wondowsen Tsegaye, Semaria Solomon, Gebremeskel Gebremariam, Tamrat Abebe, Merga Gonfa, Delesa Demena(2017). Production of recombinant nisin peptides with enhanced bioactivity against Multidrug-resistant microbes and its industrial application

TEACHING EXPERIENCES

Main courses taught (2008-to date)

- ✓ Molecular Techniques and Microbial Genetics for MSc in Medical Microbiology at St. Paulo's Hospital Millennium Medical College
- ✓ Advanced Laboratory Diagnostics Techniques for Specialty Students in Forensic Medicine
- ✓ Medical Microbiology for Medicine at College of Health Sciences Arsi University
- ✓ Medical Mycology, Medical Virology, and Molecular biology for medical laboratory students (Arsi University)
- ✓ Medical Microbiology and Immunology for Public Health, Anesthesia, Midwifery, and Clinical nursing students (Arsi University)
- ✓ Public Health Microbiology for Medical lab. Students (Arsi University)
- ✓ Basic Molecular Biology (Arsi University)
- ✓ Advanced Vaccinology and Molecular Biology (Mekelle University)
- ✓ Microbiology courses for Veterinary Medicine, Biochemical engineering, and medical student (Mekelle University)

Thesis and seminar advisory

8 Ph.D. students, 20 MSc theses for MLS and food safety, more than 20 undergraduate theses, and seminar papers in Microbiology and Immunology have been supervised to date

AWARD RECEIVED

Scholarship and Research grant awarded

- ✓ **Research Grant Award (2024/2025) by Hong Kong Polytechnic University on the Title: "Deciphering the Regulatory Mechanisms of Small RNA 00203 in Biofilm-Specific Antibiotic Resistance in *Acinetobacter baumannii*."**
- ✓ **"RGC Postdoctoral Fellowship Scheme 2024/25
Awarded by the Research Grants Council of the Hong Kong Government**
- ✓ **PolyU Distinguished Postdoctoral Fellowship Scheme (DPFS) 2024/2025
Awarded by The Hong Kong Polytechnic University, Hong Kong**
- ✓ **Research grant award by Adama Science and Technology University on proposal entitled Synthesis of Pharmaceutical Compounds from Extreme Environment *Streptomyces*, 2022 (4.8 million Ethiopian Birr)**
- ✓ **Research grant award by Federal Democratic Republic of Ethiopia Ministry of Science and Technology (national level) on proposal entitled the production of recombinant nisin peptides with enhanced bioactivity against Multidrug-resistant microbes and its industrial application (4.3 million Ethiopian Birr ~400,000USD).**
- ✓ **Conference Travel Award to attend the 2018 WC2 Symposium on global health in Toronto, Canada**
- ✓ **The Hong Kong Ph.D. Fellowship Award, 2017**

SCIENTIFIC PRESENTATION AT INTERNATIONAL

CONFERENCES ATTENDED

- ✓ Presentation on Impact of Small Non-Coding RNA00203 on Biofilm-Specific Antibiotic Resistance in *A. baumannii*, at The Hong Kong Polytechnic University (HTI) Postgraduate Symposium 2021.
- ✓ Presentation on Biofilm-associated Antibiotic Resistance in *Acinetobacter baumannii* at The Hong Kong Polytechnic University (HTI) Postgraduate Symposium 2019.
- ✓ Presentation on Molecular mechanism of biofilm-specific antibiotic resistance at 4th Annual WC2 Summer Symposium to be hosted by Ryerson University in Toronto, Canada, from August 12 to 17, 2018
- ✓ Presentation on Antimicrobial Resistance of Bacterial zoonosis, 1st OHCEA International One Health Conference held at the Hilton Hotel, in Addis Ababa, Ethiopia
- ✓ Antibiogram of *Escherichia coli* strains isolated from food of Bovine origin in selected Woredas of Tigray, 2nd OHCEA International One Health Conference held at Kampala, Uganda
- ✓ Presentation on Biolog Identification and Antimicrobial Susceptibility of *Staphylococcus aureus* isolated from cow's milk and farm Workers in Selected dairy farms around Addis Ababa, Ethiopia. 2nd Annual Conference, Enhancing the Combat against Neglected Tropical Diseases (NTDs) through community participation
- ✓ Presentation, author aid conference, held at Lalibela, Ethiopia
- ✓ Presentation on Antimicrobial resistance: current threats, participation in science, technology, and sustainable development visioning med-levelled

CERTIFIED TRAINING ATTENDED

Training Attended

- ✓ **Generative AI Tools to Support Research, June 29, organized by The Hong Kong Polytechnic University**
- ✓ **Training workshop with Oxford Nanopore technologies on the GridION system from May 18-19,2023 Co-organized by the University Research facility in life sciences, The Hong Kong Polytechnic University.**
- ✓ **Genomic Epidemiology: Laboratory and Fundamental Bioinformatics on Nanopore sequencing given by Johns Hopkins University Applied Physics Laboratory from June 28th-29th, 2022**
- ✓ Training on Scientific communication organized by VLIR IUC Ghent and Mekelle University from February 22-24, 2010
- ✓ Scientific Grant writing training organized by Tuft Clinical and translational science in the United State
- ✓ Summer school 2014 on the international Certificate on Disease Surveillance and Public Health held at Makerere University in Uganda supported by USAID from June 9- July 4, 2014.
- ✓ Practical Training on Molecular biology training given at Hirsch Institute of Tropical Medicine, Germany, and Arsi University, Ethiopia, from May 5 to 6,2015.
- ✓ Author aid /Taylor and Francis's workshop on research writing with Train- trainer component was held at Lalibela from February 24-27, 2015
- ✓ Teaching methods organized by Japigo
- ✓ Training of Trainer Certificate on Research Methodology from Author aid
- ✓ Certificate of recognition by Hirsch Institute of Tropical Medicine, Heinrich –Heine University, and Arsi University for giving Training on Research Methodology from March 30 –April 2015.
- ✓ Certificate of recognition for participating in the Ethiopian Society of Microbiology
- ✓ Certificate of recognition for participation as chairperson of the international conference organized by Wachemo University, From June 5 to 6, 2015
- ✓ Certificate of Training on Bio risk management given by Défense Threat Reduction Agency (DTRA), Sandia National Laboratories (operated by Sandia Corporation), USA, November 14-15, Kampala, Uganda.
- ✓ Training on Antimicrobial stewardship given by Ohio State University and Addis Ababa University

Leadership Experiences

- Organizational/managerial skills** ✓ Postgraduate program coordinator, at Mekelle University from September 2013 to August 2014.
- ✓ Research and community service council member, at Mekelle University from October 2013 to June 2014.
- ✓ Head of Microbiology and Immunology Department, Mekelle University from September 2013 to June 2014
- ✓ Laboratory Unit Director, Mekelle University from September 2012 to June 2014. Laboratory animal Unit coordinator from November 2012 to June 2014

Society Membership

- ✓ Member of the American Society of Microbiology
- ✓ Member of the Ethiopian Society for Microbiology
- ✓ Member of the Ethiopian Society of Tropical and Infectious Diseases
- ✓ Member of the Ethiopian Society of Veterinary Medicine

Committee Membership

- ✓ College action plan preparing committee member, Mekelle University from September 2013 to June 2014.
- ✓ International conference organizing committee member, Mekelle University
- ✓ Demographic survey and research site establishment committee, Arsi University from November 2015 to May 2016.
- ✓ Curriculum Review and Discipline Committee, Arsi University from October 2014 to June 2015.
- ✓ The examination Review committee, Arsi University from October 2014 to June 2015.
- ✓ Arsi University Demographic Survey and Research Site Organizing Committee
- ✓ 10th TB Trac conference organizing committee, Arsi University from January 2015 to May 2015.
- ✓ Academic Quality and standardizing committee, Arsi University from March 2015 to September 2015
- ✓ Founding Members of Ethiopian Society of Microbiology committee(national) from May 2014 to April 18, 2015

LANGUAGE SKILLS

English

Listening	Reading	Spoken interaction	Spoken production	Writing
Excellent	Excellent	Excellent	Excellent	Excellent

REFERENCES

1. Professor Leung HM Polly (Ph.D.) Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong.
E-mail: polly.hm.leung@polyu.edu.hk
2. Professor Margaret L. Khaita, Ph. D, ACVPM, Professor, Dept. Pathobiology and Population Medicine, Mississippi State University, USA. E-mail: mkhaita@cvm.msstate.edu
3. Professor Daniel Asrat, MD, M.Sc., Ph.D., HDP, School of Medicine, College of Health Sciences, Addis Ababa University
E-mail: daniel.asrat@aau.edu.et
4. Professor Skip Jack, PHD : Mississippi State University, USA ,
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