George Abu-Aqil, Ph.D.

Post-Doctoral – Boston University

Gabuaqil@bu.edu, George.amg65@gmail.com
+(972) 50 9556560, +1 (857) 972 4307

Summary

Ph.D.-trained microbiologist and postdoctoral researcher with hands-on experience in applied microbiology, microbial diagnostics, and microbiome-focused analytical technologies. Expert in designing and executing experiments to monitor microbial community dynamics, detect pathogens, and evaluate bio-interaction with environments.

Core Skills

- **Applied Microbiology & Microbial Ecology**. Experience with food/environmental microbes, clinical pathogens, fungi & phytopathogens; aerobic & anaerobic culturing; rapid microbial diagnostics & AST.
- **Microbiome & Analytical Methods**. IR/Raman microbial profiling, qPCR/RT-PCR, NGS data interpretation, microbial community characterization, and ML-assisted microbial analysis.
- **Experimental Design & Lab Operations**. Method development, statistical analysis, SOP/WI creation, BSL-2 workflows, lab safety & QA compliance, and data-driven experiment planning.
- **Leadership, Collaboration & Communication**. Mentoring researchers; cross-functional work with chemists, engineers & clinicians; strong record of publications, technical reporting, and conference presentations.

Education

2019-2023

Ph.D. degree in Medical Science

Department of Microbiology, Immunology and Genetics, Faculty of Health Science, Ben-Gurion University of the Negev in Combined Doctoral Track.

- Awards: Mid-way Negev–Tsin Scholarship; Dean's Excellence Prize.
- Thesis and publications focused on spectroscopy-driven diagnostics with ML.

2017-2019

M.Sc. degree in Medical Science

Department of Microbiology, Immunology and Genetics, Ben-Gurion University of the Negev.

2014-2017

B.Sc. degree in Medical Laboratory Science,

Faculty of Health Science, Ben-Gurion University of the Negev.

Employment experience

2024-Current

Postdoctoral Researcher, Optical Imaging & Spectroscopy

Photonic Center, Department of Electrical and Computer Engineering, Boston University.

- Investigating microbial metabolic signatures and single-cell phenotyping using advanced spectroscopy systems (Mid-IR photothermal & fluorescence imaging).
- Designing multidisciplinary experiments integrating microbiology, optics, and computational analysis.
- Training graduate researchers and establishing laboratory workflows.
- Preparing publications, grant materials, and technical reports.

2023-2024

Postdoctoral Researcher, Medical Science

Department of Microbiology, Immunology and Genetics, Ben-Gurion University of the Negev.

- Led translational projects developing microbial detection and antibiotic susceptibility assays.
- Conducted studies on bacterial & fungal clinical isolates
- Supervised students and maintained laboratory SOPs and safety protocols. Collaborated with clinicians & data scientists for large-scale studies.

2022-2023

CTO, bFAST.ai

Startup, Beer-Sheva

- Directed technology development for rapid microbial analysis & diagnostic automation.
- Built experimental validation pipelines & coordinated with academic and industry partners.
- Translated scientific outputs into scalable product workflows.

2021-2023

Shift manager, Electra – Tel-Aviv University COVID-19 Laboratory

Omer

- Supervised RT-PCR workflows; ensured quality, and turnaround time.
- Maintained SOPs, QA compliance, and biosafety protocols; trained staff.

Technical Toolbox

Biomedical Data Integration & Computational Health	Research Strategy & Multidisciplinary Collaboration
Spectroscopy, Imaging, and Signal Processing	Machine Learning & Bioinformatics
Grant Writing & Scientific Communication	Team Leadership & Mentoring

Selected Publications

1. **Abu-Aqil, G.,** Adawi, S., & Huleihel, M. (2024). Early and swift identification of fungal-infection using infrared spectroscopy. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, *325*, 125101.
2. **Abu-Aqil, G.**, Suleiman, M., Lapidot, I., Huleihel, M., & Salman, A. (2024). Infrared spectroscopy-based machine learning algorithms for rapid detection of Klebsiella pneumoniae isolated directly from patients' urine and determining its susceptibility to antibiotics. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, *314*, 124141.
3. **Abu-Aqil, G.**, Lapidot, I., Salman, A., & Huleihel, M. (2023). Quick Detection of Proteus and Pseudomonas in Patients' Urine and Assessing Their Antibiotic Susceptibility Using Infrared Spectroscopy and Machine Learning. *Sensors*, *23*(19), 8132.
4. **Abu-Aqil, G.**, Suleiman, M., Sharaha, U., Lapidot, I., Huleihel, M., & Salman, A. (2023). Instant detection of extended-spectrum β-lactamase-producing bacteria from the urine of patients using infrared spectroscopy combined with machine learning. *Analyst*, *148*(5), 1130-1140.
5. **Abu-Aqil, G.,** Tsror, L., Shufan, E., Adawi, S., Mordechai, S., Huleihel, M., & Salman, A. (2020). Differentiation of Pectobacterium and Dickeya spp. phytopathogens using infrared spectroscopy and machine learning analysis. *Journal of biophotonics*, *13*(5), e201960156.

Selected Conferences

1. **Chemical Imaging GRC 2025** – Gordon Research Conference on Chemical Imaging, Jul. 27-Aug. 1, 2025, Easton, Massachusetts, USA. *(Poster Presentation)*
2. **SPEC 2024** – 13th International Conference on Clinical Spectroscopy. Jun. 2-6, 2024, Ioannina, Greece. *(Poster Presentation)*
3. **MedOptics 2023** – 2nd International Conference on Medical Optics. Oct. 11-17, 2023, Oludeniz, Turkey. *(Invited Speaker)*
4. **ICAVS 2023** – 12th International Conference on Advanced Vibrational Spectroscopy. Aug. 27-Sep. 1, 2023, Krakow, Poland. *(Oral Presentation)*
5. **INTERM 2023** – 10th International Congress on Microscopy & Spectroscopy. Apr. 13-19, 2023, Oludeniz, Turkey. *(Poster Presentation)*
6. **ECSBM 2022** - 19th European Conference on Spectroscopy of Biological Molecules. Aug. 29-Sep.1, 2022, Reims, France. *(Poster Presentation)*
7. **SPEC 2022** – 12th International Conference on Clinical Spectroscopy. Jun. 18-23, 2022, Dublin, Ireland. *(Oral Presentation)*
8. **MLE 2022** – Machine Learning in Engineering**.** Apr. 26th, 2022, Beer-Sheva, Israel. *(Oral Presentation)* **Best presentation award.**