Gouthaman Puthan Purayil

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Biology, College of Science, United Arab Emirates University, Al Ain, Abu Dhabi, UAE

Research Associate and Bioinformatician with expertise in comparative genomics, transcriptomics, genome assembly, and plant–microbe interactions. Experienced in RNA-Seq, Hi-C, Omni-C, GWAS, and microbial genomics with first-author publications in Journal of Experimental Botany and Scientific Data. Passionate about developing computational workflows for genomics, transcriptomic research.

CURRENT POSITION

Research Associate (Postdoctoral Researcher)

Department of Biology, College of Science, UAEU, Al Ain, UAE (2025–Present)

EDUCATION

PhD in Cellular and Molecular Biology

United Arab Emirates University, Al Ain, UAE (2021–2025)

MSc in Bioinformatics

Union Christian College, Ernakulam, Keralam, India (Mahatma Gandhi University) (2017–2019)

BSc in Biochemistry

Sir Syed Institute for Technical Studies, Kannur, Keralam, India (Kannur University) (2014–2017)

PREVIOUS POSITIONS

Senior Studies Researcher

Dept. of Biology, College of Science, UAEU, United Arab Emirates (2021–2024)

Teaching Assistant

Dept. of Biology, College of Science, UAEU, United Arab Emirates (2022–2024)

Research Assistant (Bioinformatician)

Dept. of Biotechnology and Bioinformatics, JNTBGRI, Thiruvananthapuram, Keralam, India (2019–2021)

SKILLS

Computational Biology: RNA-Seq, WGS, Hi-C, GWAS, Metagenomics, Metabarcoding, Pan-genomics, Mito-genomics, Population genetics, Phylogenetics, Molecular Dynamics, Proteomics.

Wet lab: DNA/RNA extraction, Cloning, RT-qPCR, Cell culture, Tissue culture, Sequencing DNBSEQ G50, ONT MiniION, Microbiology, Microscopy, Protein extraction, Western blotting.

Programming: Python, R, PERL, RUST, Linux CLI; Docker, Singularity, Anaconda, Nextflow (Groovy), Git.

Software: FastQC, MultiQC, STAR, HISAT2, Salmon, FeatureCounts, DESeq2, edgeR, BUSCO, BRAKER, MAKER, RepeatMasker, EDTA, IQ-TREE, OrthoFinder, BWA, Minimap2, Samtools, Bcftools, GATK, AlphaFold, Galaxy.

SELECT PUBLICATIONS 8 peer-reviewed publications | 5 first-author | H-index: 5 | 139 citations

- **Purayil GP**, El-Tarabily KA, You FM, AbuQamar SF. Time-resolved transcriptome analysis reveals molecular signatures of *F. proliferatum*-induced SDS in date palm. ***J. Exp. Bot.*** 2026;77(6):1676-1696. **[Q1, IF: 6.5]**
- Almazrouei LM, **Purayil GP**, et al. Rhizosphere-competent actinobacterial consortium alleviates salinity stress in tomato. ***BMC Plant Biol.*** 2025;25:1443. **[Q1, IF: 5.6]**
- Mohamed ZA, **Purayil GP**, et al. Rhizosphere-competent actinobacteria with ACC deaminase activity mitigate heavy metal stress in corn. ***Biol. Fertil. Soils*** 2025;61(6):1077-1095. **[Q1, IF: 6.8]**
- **Purayil GP**, Saeed EE, Mathai AM, El-Tarabily KA, AbuQamar SF. A high-quality genome assembly of *Thielaviopsis punctulata* DSM102798. ***Sci. Data*** 2024;11:745. **[Q1, IF: 7.2]**
- **Purayil GP**, Almarzooqi AY, El-Tarabily KA, You FM, AbuQamar SF. Fully resolved assembly of *Fusarium proliferatum* DSM106835 genome. ***Sci. Data*** 2023;10:705. **[Q1, IF: 7.2]**

SELECT CONFERENCE PRESENTATIONS

- **17th Symposium on Bacterial Genetics and Ecology (BAGECO)**, Graz, Austria (2025) **Conference Presentation**
  Streptomycete actinomycetes exhibiting ACC deaminase activity alleviate heavy metal stress in corn in the United Arab Emirates.
- **17th Symposium on Bacterial Genetics and Ecology (BAGECO)**, Graz, Austria (2025) **Conference Presentation**
  Rhizosphere-competent actinobacteria exhibiting plant growth-promoting characteristics and ACC deaminase activity alleviate salinity stress in tomato in the United Arab Emirates.
- **UAE Microbiome Conference**, Abu Dhabi, UAE (2023) **Poster Presentation**
  In vivo evaluation of endophytic actinobacteria as biocontrol agents during the Fusarium solani–date palm interaction.
- **American Phytopathological Society (APS) Annual Meeting**, Pittsburgh, PA, USA (2022) **Conference Proceeding / Poster Presentation**
  Biological control of sudden decline syndrome on date palm caused by Fusarium solani using the ACC deaminase-producing Streptomyces violaceoruber. Published in *Phytopathology*, **112**(11):173.

SELECTED RESERCH PROJECTS

- **Transcriptome analysis of date palm response to *Fusarium proliferatum* infection (PhD Thesis)**
  Designed and conducted a time-resolved transcriptomic study to investigate host-pathogen interactions during *Fusarium proliferatum*-induced sudden decline syndrome in date palm. Performed RNA-Seq analysis of multiple tissues collected across infection stages, identifying molecular signatures of host defense and pathogen virulence. The project formed the basis of my PhD dissertation and resulted in publications in ***Journal of Experimental Botany*** **(2026)**.
- **Telomere-to-telomere genome assembly of *Fusarium proliferatum* DSM106835 using Omni-C sequencing**
  Generated a chromosome-level (telomere-to-telomere) genome assembly of a UAE isolate of *Fusarium proliferatum* using long-read and Omni-C sequencing technologies. Produced a high-quality reference genome published in ***Scientific Data*** **(2023)**, which served as the genomic resource for downstream comparative genomics and transcriptomic analyses.
- **Hi-C genome assembly and annotation of *Thielaviopsis punctulata* DSM102798**
  Developed a chromosome-scale genome assembly and structural annotation of the date palm pathogen *Thielaviopsis punctulata* using Hi-C sequencing. The published genome **(*Scientific Data*, 2024)** provides a genomic foundation for ongoing genome-wide association studies (GWAS) investigating black scorch disease in date palm.
- **Biocontrol evaluation of endophytic actinobacteria against date palm sudden decline syndrome pathogens**
  Screened and characterized endophytic actinobacterial isolates for antagonistic activity against *Fusarium solani*, the causal agent of sudden decline syndrome in date palm. Contributed to the identification and validation of promising biological control agents, resulting in multiple peer-reviewed publications in

***Journal of Fungi* (2022)**, ***Frontiers in Plant Science* (2022)**, and ***Journal of Agricultural & Marine Sciences* (2023)**.

- **Evaluation of plant growth-promoting actinobacteria for salinity stress mitigation in tomato**
  Investigated the use of ACC deaminase-producing rhizosphere-competent actinobacteria to enhance tomato tolerance to salinity stress. Evaluated plant growth, physiological responses, and microbial plant growth-promoting traits, contributing to a publication in ***BMC Plant Biology* (2025)**.

ACADEMIC SERVICE AND PROFESSIONAL EXPERIENCE

- **Teaching Assistant**, *Basic Biology*, United Arab Emirates University (2022–2024)
  Assisted in undergraduate instruction for four semesters, facilitating laboratory sessions, tutorials, student assessments, and academic support.
- **Laboratory Instructor**, *Research Project Course*, United Arab Emirates University (2022–2025)
  Supervised undergraduate research laboratories over six semesters, providing instruction in experimental design, laboratory techniques, data analysis, and research methodology.
- **Developer and Administrator, Institutional Galaxy Bioinformatics Server**, Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI), India (2019)
  Designed, deployed, and maintained a customized Galaxy platform with Anaconda-managed bioinformatics workflows to support transcriptomics and genomics research.
- **Organizing Committee Member**, Gulf-4 International Conference, United Arab Emirates University (2024)
  Supported conference organization and event management, coordinating scientific sessions and participant logistics.
- **Organizing Committee Member**, UAE Microbiome Conference (2023)
  Contributed to conference planning, logistics, IT support, scientific content curation, and on-site event management.
- **Peer Reviewer**, Reviewer for international peer-reviewed journals including *Scientific Data*, *Scientific Reports*, *BMC Genomics*, *BMC Plant Biology*, *BMC Microbiology*, *Chemical and Biological Technologies in Agriculture*, *Frontiers in Plant Science*, *Frontiers in Microbiology*, *Frontiers in Fungal Biology*

AWARDS, HONORS & FELLOWSHIPS

- **Khalifa International Award for Date Palm and Agricultural Innovation (KIADPAI) – 15th Session**, **Distinguished Innovative Studies & Modern Technology** Category (2022)
  Recipient of the international **KIADPAI** award for the study *"The 1-aminocyclopropane-1-carboxylic acid deaminase-producing Streptomyces violaceoruber UAE1 can provide protection from sudden decline syndrome on date palm,"* published in *Frontiers in Plant Science* (2022). The study demonstrated the effectiveness of ACC deaminase-producing actinobacteria as a biological control strategy against sudden decline syndrome of date palm.
- **Strategic Research Grant (UAEU–KCGEB)**, United Arab Emirates University (2025–2027)
  Awarded a competitive two-year postdoctoral research grant to conduct research in plant–microbe interactions and functional genomics under the supervision of **Prof. Synan F. AbuQamar**.
- **Fully Funded PhD Scholarship**, United Arab Emirates University (2021–2025)
  Awarded a fully funded PhD scholarship in Cellular and Molecular Biology under the supervision of **Prof. Synan F. AbuQamar**.

References available upon request.