

AHMAD ZUHAIRI BIN ABDUL MALEK

BIOINFORMATICS / METAGENOMICS DATA SCIENTIST & SOFTWARE ENGINEER

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PROFILE

Bioinformatics & metagenomics practitioner experienced in end-to-end workflows (assembly, taxonomic/functional annotation, profiling, and genome-resolved binning), plus microbial WGS and transcriptomics. Concurrently building production web applications — learning management systems, e-commerce platforms, and API integrations — using Laravel and modern web technologies.

RELEVANT EXPERIENCE

2021 – Present

Bioinformatics & Metagenomics (Research Support)

UPM / Collaborations

- Metagenome assembly and binning across insect, fish, and soil microbiomes to reconstruct MAGs; produced functional annotation summaries and visualizations for interpretation.
- UPM metagenomics workshop support: prepared Linux server environment and guided A-Z pipeline run-through using SqueezeMeta + R.
- Microbial WGS and transcriptomics on Linux: Nanopore basecalling/assembly, GTDB-Tk taxonomy, genome annotation; Trinity assembly and DESeq2 differential expression with report-ready plots.
- PGPR classifier from gene-annotation-derived features across labeled bacterial genomes; compared classical models (RF, Naive Bayes, Voting) with stratified cross-validation and tuning.
- Built magprofile, a reproducible pipeline for genome-resolved microbiome ecology integrating MAG filtering, compositional analysis, functional profiling, PGPR screening, and network inference.

2025 – Present

Independent Projects (Freelancing)

Web Development

- Built a multi-tenant e-learning LMS with role-based access for admins, instructors, and students; certification tracking, progress reporting, and course management (Laravel, Livewire, MySQL).
- Developed an e-commerce platform with product catalog, payment gateway integration, and admin dashboard for inventory and order management (Laravel, Blade, Tailwind CSS).
- Created ShopBridge, an eBay API integration tool for automated listing sync, multi-account inventory management, and error handling with retry logic (Laravel, eBay REST API, Queue Workers).
- Delivered 6+ production landing pages across health, food, and trade sectors with AI-assisted rapid development, clear user journeys, and mobile-first design.
- Built personal portfolio at ahmadzuhairi.com — Laravel full-stack with animated constellation UI, seeded content from MySQL, and automated Forge deployment.

2024 – Present

Sourcing & Operations Lead

Pharmaceutical / Medical Devices & Equipment (QTEC)

- Liaised with manufacturers, internal stakeholders, and buyers on specifications, quality expectations, lead times, and document revisions for pharmaceutical/medical procurement.
- Prepared costing breakdowns and procurement documentation for RM1M+ medical device procurements and RM3M+ factory machinery/equipment acquisition.

- Tracked procurement readiness timelines to support container booking and shipment planning; maintained clear status tracking across parties.

2017 – 2021

Microbiology & Bacterial Genomics (MPhil Research)

University of Nottingham Malaysia

- Wet-lab microbiology with lactic acid bacteria (culture work, basic phenotyping) plus DNA extraction and WGS workflows.
- Genome analysis and interpretation of predicted genes to support research write-ups.

CORE SKILLS

Omics

Metagenomics (end to end workflow analysis); transcriptomics (Trinity, DESeq2).

Machine learning

Feature-based classification using genomic annotation/k-mer features; model validation (StratifiedKFold; ROC-AUC/F1); basic hyperparameter tuning (GridSearchCV).

Programming

Working proficiency in Python (pandas, scikit-learn) and R (tidyverse/DESeq2); Bash for Linux workflows.

Microbial genomics

Nanopore WGS (basecalling, assembly), GTDB-Tk taxonomy, genome annotation; comparative genomics.

Workflow & reproducibility

Snakemake, Git/GitHub, conda environments, Docker/Singularity, and software maintenance.

Web development

Laravel, Livewire, Blade, Tailwind CSS, Alpine.js, MySQL, Vite; REST API integration (eBay); Laravel Forge deployment.

EDUCATION

2021 – Present

PhD Candidate (Final thesis write-up stage) Bioinformatics & Plant-Microbe Interaction

Universiti Putra Malaysia

2017 – 2021

MPhil, Biotechnology

University of Nottingham Malaysia

2014 – 2017

BSc, Biotechnology

University of Nottingham Malaysia

PUBLICATIONS

2025 **Lactococcus lactis subsp. lactis as a biocontrol agent against phytopathogens causing rice bacterial leaf blight**

Scientific Reports

2025 **Probiogenomic insights into Bacillus velezensis MFSS1 for controlling aquaculture pathogens**

Microbial Pathogenesis

2024 **Genome mining of Lactiplantibacillus plantarum PA21: insights into its antimicrobial potential**

BMC Genomics

2024 **Genomic Analysis And Synergistic Biocontrol Potential of Bacillus thuringiensis MPOB Bt1 With Flubendiamide Against Oil Palm Bagworm, Metisa plana Walker (Lepidoptera: Psychidae)**

Malaysian Applied Biology

2024 **Complete genome sequences of five bacteria isolated from rice plants in a paddy field in Sekinchan, Selangor, Malaysia**

Microbiology Resource Announcements

2023 **Mining the genome of *Bacillus velezensis* FS26 for probiotic markers and secondary metabolites with antimicrobial properties against aquaculture pathogens**

Microbial Pathogenesis

2021 **In silico prediction and in vitro analysis of bacteriocin and probiotic properties of *Weissella cibaria* NM1 isolated from Asian sea bass**

Malaysian Journal of Microbiology