

# Assyfa Atha

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## Education

### Apothecary Professional Program, Universitas Gadjah Mada

08/2025 – 08/2026 | Yogyakarta, Indonesia

- Completed five Pharmacy Professional Practice (PKPA) rotations across different sectors of the pharmaceutical industry and healthcare system:
  - Primary Healthcare (Gadjah Mada Medical Center) | September 2025 – October 2025
  - Pharmaceutical Distribution (AAM Yogyakarta) | October 2025
  - Community Pharmacy (Apotek Suci) | November 2025 – December 2025
  - Hospital Pharmacy (Dr. Sardjito General Hospital) | February 2026 – March 2026
  - Quality Control, Pharmaceutical Manufacturing (PT Bintang Toedjoe) | April 2026 – May 2026

### Bachelor of Pharmacy, Universitas Gadjah Mada

08/2021 – 08/2025 | Yogyakarta, Indonesia

IPK 3.72 | Recognized as The Most Outstanding Student in Faculty of Pharmacy 2024

- Performed analytical characterization of topical SNEDDS hydrogel formulations through TLC-densitometry, particle size analysis, Sirius Red staining, and sample preparation while supporting formulation quality evaluation across 14 formulations and 27 in vivo samples
- Performed analytical data processing and interpretation from TLC characterization, molecular docking, and network pharmacology to support formulation evaluation and experimental decision-making.
- Initially funded as a PKM-RE research project by the Indonesian Ministry of Education, where I served as team leader, and later expanded into my bachelor's thesis.

## Professional Experience

### Quality Control - Student Intern, PT Bintang Toedjoe, Cikarang

04/2026 – 05/2026 | Cikarang, Indonesia

- Shelf life study:** Designed and executed end-to-end shelf-life studies for in-house reagents (4 samples) and silica gel (8 samples test). The developed study framework will be adopted for the project's continuation.
- Work Instruction Review:** WI HPLC and UPLC Column Maintenance Procedures and give feedback based on regulatory and scientific protocol
- Risk Talks:** Identified, analyzed, and presented a potential analytical process risk at the department's Risk Talks on "Risk of Analytical Process Failure Due to Non-Compliance with Critical Testing Procedures."
- Safety Talks:** Identified, analyzed, and presented workplace safety risks during the department's Safety Talks: "Risk of Falls and Workplace Injuries Due to Improper Placement of Laboratory Equipment."
- Internal Audit Readiness:** Performed pre-audit observations of Quality Control processes, identified potential non-conformities based on predefined audit checkpoints, and reported findings to support audit readiness.
- Supported the formulation development team in developing three semisolid formulations through hands-on laboratory experimentation.
- Completed in 13 cross-departmental Good Manufacturing Practice (GMP) training and discussions.
- Recognized as Best Participant in the Leaders Talk program hosted by Kalbe Consumer Health and contributed as a Team Leader to the team's Best Team award
- Skills:** Liquid-Liquid Extraction, Total Saponin Content, LOD, Shelf-Life Study, Experimental Design, GMP, GDP, Quality by Design (QbD), SOP, Quality Target Product Profile (QTPP), Critical Quality Attributes (CQA), ISO, ISO 9001:2015, ISO 45001 SMK, ISO 14001:2015, HAS 23000:2012, FSSC:22000, CPOB, CPOTB

## Project Experiences

### SALTY: Salt-Inducible TYDV-Based Expression System for Plant-Based Dengue Vaccine Production

03/2024 – 05/2026

Team Leader & Wet Lab Researcher | iGEM UGM 2025

- Led a one-year synthetic biology project involving 20 students and 17 academic advisors to develop a recombinant protein expression platform, contributing to a Gold Medal achievement at the iGEM Grand Jamboree 2025.
- Performed construct verification and analytical evaluation throughout molecular cloning workflows using PCR, gel electrophoresis, sequencing, and spectrophotometric analysis. Investigated cloning failures through systematic troubleshooting, construct validation, workflow optimization, and analysis of approximately 20 experimental samples to improve data reliability and construct quality.
- Skills:** Synthetic Biology, Molecular Biology Techniques, Microbial Handling (*E. coli* and *A. tumefaciens*), Aseptic Technique, Construct Design (Benchling and SnapGene), Golden Gate Assembly, PCR, Gel Electrophoresis, Experimental Design, Data Analysis, Sequence Analysis, Spectrophotometry (UV/VIS), NanoDrop, Immunoinformatics, Data Analysis, Project Coordination (Notion and Trello)

### Genome Mining of Novel Enzymes and Bioactives from Termite (*Coptotermes* sp.) Gut Microbial Isolates through Comparative Pangenomics Approaches

11/2024 – 02/2025

Research Assistant (Wet Laboratory) | DIPI Small Research Grant Project | Member of BEAMS Lab research team

- Performed high-molecular-weight (HMW) DNA extraction from termite gut bacterial isolates, followed by ONT library preparation and whole-genome sequencing using the PromethION platform while maintaining sample quality and experimental documentation.
- Conducted PCR amplification, gel electrophoresis, and construct verification during molecular cloning workflows for candidate enzyme genes and secondary metabolite biosynthetic gene clusters (smBGCs), supporting accurate construct assembly and documentation across up to 10 samples.
- Skills:** Bacterial Culture (Including Facultative Anaerobes), HMW DNA Extraction, ONT Library Preparation, Polymerase Chain Reaction (PCR), Gel Electrophoresis, Molecular Cloning (Restriction-ligation & Golden Gate/MoClo), and Experimental Documentation

### Anticancer Potential of Kepel (*Stelechocarpus burahol*) Leaf Extract Against MCF-7 Breast Cancer Cells

04/2024 – 09/2024

PKM Researcher | Universitas Gadjah Mada

- Performed flavonoid profiling using TLC-densitometry, maintained MCF-7 cell cultures, and conducted MTT and AO/PI assays while ensuring consistent sample handling, experimental documentation, and data recording across approximately 50 samples.
- Skills:** Mammalian cell culture (MCF-7), Maceration extraction, TLC Densitometry, Cell Culture, MTT Assay, AO/PI Staining, Data Analysis, Experimental Research

## Organizations

### iGEM UGM ☞, Student Team Leader

09/2024 – 05/2026 | Yogyakarta, Indonesia

Led a 20-member synthetic biology team and contributed to the wet-lab development of a plant-based recombinant protein expression platform for dengue vaccine antigens.

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| <b>Komunitas ONMIPA UGM, Vice President</b><br>Led a 20-member ONMIPA community at UGM, creating a supportive environment for skill development among students, lecturers, and university academic divisions.                                                                                       | 01/2024 – 12/2024   Yogyakarta, Indonesia |
| <b>Synbio.id, Executive Committee</b><br>Organized and executed offline biotechnology and synthetic biology discussion between researcher, industry, and science enthusiast. The initiative promotes collaboration between academia and industry while cultivating an engaged scientific community. | 03/2025 – 03/2026   Hybrid, Indonesia     |

Awards

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| <b>Gold Medalist iGEM Competition 2025</b>  , <i>iGEM</i><br>11/2025<br>The team name: UGM-Indonesia  <ul style="list-style-type: none"> <li>Led and coordinated laboratory, bioinformatics, and documentation activities in a multidisciplinary project that aimed to create a new host platform for protein production</li> <li>Conducted market analysis and BEP with comparison analysis  of production parameter between designed host platform and mammalian cells system</li> <li>Directly involved in fundraising and public engagement activities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Gold Medal and Best Computational Projects of GOGEC 2025</b>  , <i>GOGEC Conference</i><br>01/2025<br>Role: Team Leader   The team name: iGEM UGM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Grand Prize Winner   Gold Medalist   Best Website   Best Presentation   Best Synthetic Biology of BIOS 2024</b>  , <i>Synbio ID</i><br>11/2024<br>A synthetic biology national competition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>3rd Winner Pharmaceutical Industrial Case Study Pharmanova ITB 2024</b>  , <i>ITB</i><br>12/2024 <ul style="list-style-type: none"> <li>Designed GMP-compliant manufacturing scale-up workflows and established quality considerations for SEDDS soft gelatin capsule formulations.</li> <li>Defined QA and QC parameters based on pharmaceutical regulations to support product quality and manufacturing readiness.</li> <li>Reviewed regulatory requirements and evaluated commercial feasibility through break-even analysis and product development planning.</li> <li><b>Skills:</b> Formulation Development, Manufacturing, Research and Development (soft gelatin capsule), Scale-up Readiness, Stability Evaluation, GMP, Pharmaceutical Regulatory, Clinical Research, Pharmaceutical Development, Regulatory Strategy, Quality by Design (QbD)</li> </ul> Our paper:<br><a href="https://docs.google.com/document/d/1dOzsTyiZAAC9SVUctHzge1GlczlFpqb6izfmvAZ2QBU/edit?usp=sharing">https://docs.google.com/document/d/1dOzsTyiZAAC9SVUctHzge1GlczlFpqb6izfmvAZ2QBU/edit?usp=sharing</a>  |

Publications

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| <b>Rational Structural Modeling and Dynamics-Driven Design of an NS4B-Based Multi-epitope mRNA Vaccine Candidate Against Dengue Virus</b><br><i>Manuscript in preparation</i><br><b>Atha, A.</b> , Raysendria, N. R., Siregar, A. R., Rahmadhani, M. O., Rizkita, A. I., Rattyananda, B. S., Nafiah, Z., Sahid, M. N. A., Ujiantari, N. S. O., Alwi, R. S., Utami, S. T., & Hermawan, A.                                                           | 2026    |
| <b>Structure-Guided Design of a Multi-Epitope mRNA Vaccine Targeting the Dengue Virus NS4B Protein Using Bioinformatic Approaches</b><br><i>Selected paper presented at First Indonesia Structural Biology Summit 2025</i><br><b>Atha, A.</b> , Raysendria, N. R., Siregar, A. R., Rahmadhani, M. O., Rizkita, A. I., Rattyananda, B. S., Nafiah, Z., Sahid, M. N. A., Ujiantari, N. S. O., Alwi, R. S., Utami, S. T., & Hermawan, A.              | 12/2025 |
| <b>Genome Assembly and Annotation of Bacillus velezensis BSR2 Isolated from Termite Gut</b><br><i>Paper presented at the 6th International Conference on Bioinformatics, Biotechnology, and Biomedical Engineering (BioMIC 2025)</i><br>Nuhamunada, M., Marsetyo, F.A., Adyatama, M.R., Sophie, R.G., <b>Atha, A.</b> , Raysendria, N.R., Bagus, T.Z.E., Mulyani, P.D., & Purwestri, Y.A.                                                          | 07/2025 |
| <b>Recent update on multi-epitope vaccine development for treating breast cancer</b>  , <i>Vacunas</i><br>Nafiah, A., <b>Atha, A.</b> , Rizkita, A.I., Ujiantari, N.S.O., Hermawan  , A.  | 06/2025 |
| <b>Vaccine candidate of Japanese encephalitis for Indonesia population: In-silico approaches</b><br><i>Paper presented at the 2nd Gadjah Mada International Conference on Tropical Medicine</i><br>Rahmadhani, M. O., <b>Atha, A.</b> , & Hanifah, W.                                                                                                                                                                                              | 02/2025 |

Languages

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| <b>English</b><br>Fluent<br>Extensive experience working in English-speaking academic and research environments through international collaborative projects, including iGEM, GOGEC, and BioHackathon, as well as scientific writing, publication, and presentation activities. |
| <b>Indonesia</b><br>Native                                                                                                                                                                                                                                                      |

Conference

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| <b>First Indonesia Structural Biology Summit 2025: Embracing the Future of Structural Biology in Indonesia through the Utilization of the National Cryo-EM Facility (BRIN),</b><br><i>Selected as Oral Poster Presenter</i><br>12/2025 – 12/2025   Serpong, Indonesia |
| <b>The 8th International Conference on Pharmacy and Advanced Pharmaceutical Sciences (ICPAPS 2023),</b> <i>3MP Presenter</i><br>11/2023 – 11/2023   Yogyakarta, Indonesia                                                                                             |
| <b>2nd Gadjah Mada International Conference on Tropical Medicine (GAMA-ICTM),</b> <i>Selected Oral Presentation Team Member</i><br>02/2025 – 02/2025   Yogyakarta, Indonesia                                                                                          |

Teaching Experience

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| <b>Faculty of Pharmacy, Universitas Gadjah Mada, Laboratory Teaching Assistant (Immunology   Molecular Biology   Microbiology &amp; Cell Biology)</b><br>2022 – 2024   Yogyakarta, Indonesia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Ensured laboratory safety, SOP compliance, and proper experimental practices during laboratory sessions.</li> <li>Supervised and instructed hands-on experiences in immunology, molecular biology, and microbiology practicums for 3 classes (200+ students), covering the following techniques: <ul style="list-style-type: none"> <li><i>Immunology:</i> ELISA, Western Blot, Macrophage/lymphocyte proliferation assay, agglutination</li> <li><i>Molecular biology:</i> MTT Assay, PCR, Mammalian DNA Isolation, Gel Electrophoresis, DNA Extraction, NCBI, GEO, DAVID</li> <li><i>Microbiology:</i> Bacterial culture, MIC &amp; MBC determination, Aseptic Technique, Total Yeast and Mold Count, Total Plate Count</li> </ul> </li> </ul> |