

Wan Amirul Syazwan Wan Ahmad Munawar

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SUMMARY

PhD candidate in microbiology with a strong focus on antimicrobial resistance and nanomaterial-based therapeutics, experienced in both experimental and computational approaches. Skilled in antimicrobial susceptibility testing, nanoparticle formulation and characterization, and advanced molecular techniques, complemented by bioinformatics analyses including RNA-seq, differential gene expression, metagenomics and protein–protein interaction networks. Proficient in molecular docking and molecular dynamics simulations to investigate interactions between proteins and drugs. Demonstrates the ability to integrate wet-lab and in silico methodologies to identify and validate novel antimicrobial strategies, with a growing interest in data-driven research and scientific communication.

SKILLS

Computational skills	R | Python | Linux | Molecular Docking | Molecular Dynamics (MD) Simulation | Density Functional Theory (DFT) | Protein Modelling | Transcriptomic | Metagenomics | Primer Designing | SPSS | Network Biology | Structural Biology | Drug Discovery
Technical skills	Cell Culture | qPCR | Western Blot | Cytotoxicity Assays | Bacterial Culture | Whole Genome Sequencing (WGS) | Multi-Locus Sequence Typing (MLST) | Fluorescence Microscopy | BSL-3 Training | Virology Labwork | Research Writing | Drug Synergism

EDUCATIONS

Universiti Sains Malaysia | Penang, Malaysia. **Term: January 2025 - Ongoing**
Doctor of Philosophy, Microbiology

University of Osaka | Osaka, Japan. **Term: Mar – June 2026**
OUICP Student

Universiti Sains Islam Malaysia | Nilai, Malaysia. **Graduation: December 2024**
Master of Medical Science **CGPA: 3.93**

Universiti Malaya | Kuala Lumpur, Malaysia. **Graduation: December 2022**
Bachelor of Science in Microbiology **CGPA: 3.50**

WORK EXPERIENCES

Osaka University International Certificate Program (OUICP) **Mar – May 2026**
University of Osaka

- Attachment under Prof Morikawa Yoshitada – developing method for DFT simulation of materials and proteins.

Graduate Research Assistant **January 2025 - Ongoing**
Pusat Kanser Tun Abdullah Ahmad Badawi(PKTAAB),
Universiti Sains Malaysia

- Analyzing the interaction of bacterial protein with nanoparticle cocktails via in silico.
- Protein prediction, docking and MD simulation.
- Transcriptomic analysis and microbiology lab work.

Research Assistant **June – November 2024**
Institute for Medical Research (IMR)

- Isolation and propagation of *Orientia tsutsugamushi* in different types of mammalian cell lines.
- Transformation and transfection of virus-like particles into cell lines as an expression system.
- Propagation and maintenance of CHO-K1, Vero E6, L929, HEK293T and Hybridoma.
- Genomic quantification of Orientia via qPCR and whole genome sequencing (WGS).

Research Enumerator **Feb – May 2024**
Universiti Sains Islam Malaysia

Short-term project working on the treatment of ovarian cancer cells via drug combination;

- Propagation and maintenance of SKOV3 cells and T4197 cells.
- Treatment of flavonoids and cisplatin on cell lines via cytotoxicity assay.
- Identification of drug synergism at certain concentrations and time points using CompuSyn.

Graduate Research Assistant (GRA) **May 2022 – May 2023**
Universiti Sains Islam Malaysia

- Identifying potential target lipid-related genes from clinical datasets of COVID-19 patients through bioinformatics analysis.
- Propagation and maintenance of virus and cell lines; 3T3-L1 cells and Vero CCL8 cells.
- Gene expression analysis.
- Liaise with local suppliers for reagents and consumables supplies.
- Maintaining and documenting inventory records.

Internship **Oct 2021 – Jan 2022**
Institute for Medical Research (IMR)

Attend as an industrial trainee, which is a course requirement for graduation. Assign to the Bacteriology Unit, mainly working on:

- Characterization of bacteria via MLST.
- Quantification of bacteria via qPCR.
- Documenting daily progress reports for all laboratory-related work.

PUBLICATIONS

1. **Munawar, W. A. S. W. A.**, Rashid, A. A. A., Harun, M. S. R., Sulaiman, S., & Shuid, A. N. (2026). Integrative RNA-seq identifies differentially expressed genes and protein targets of titanium dioxide and zinc oxide in Escherichia coli. World journal of microbiology & biotechnology, 42(12), 689. https://doi.org/10.1007/s11274-026-05373-3

2. **Munawar, W. A. S. W. A.**, Elias, M. H., Addnan, F. H., Hassandarvish, P., AbuBakar, S., & Roslan, N. (2024). Gene expression profiling of host lipid metabolism in SARS-CoV-2 infected patients: a systematic review and integrated bioinformatics analysis. BMC infectious diseases, 24(1), 124. https://doi.org/10.1186/s12879-024-08983-0

3. Rashid, A. A. A., **Munawar, W. A. S. W. A**., Elias, M. H., & Sulong, S. (2026). Trends in genetics and genomics publications in Malaysia: A Web of Science bibliometrics review. Asia-Pacific Journal of Molecular Biology and Biotechnology, 34(1), 193–206. https://doi.org/10.35118/apjmbb.2026.034.1.18

4. Rosli, S. N. Z., Dimeng, S. R., **Munawar, W. A. S. W. A.**, Hendri, N. A. M., Zahidi, J. M., Yong, T. B., Hashim, R., Abdad, M. Y., Ahmad, N., & Ramli, S. R. (2025). Adaptation of archival egg-cultured Orientia tsutsugamushi to L929 mammalian cells enables persistent Qpcr-detectable growth. Asia-Pacific Journal of Molecular Biology and Biotechnology, 33(4), 323–329. https://doi.org/10.35118/apjmbb.2025.033.4.27

5. Jamalut, Y., Mazalan, N. H. M., Salehuddin, N. L., **Munawar, W. A. S. W. A.**, Hendri, N. A. M., Yunus, N. I., Zahidi, J. M., Amin-Nordin, S., Hadi, Z. L. A., Mahamud, M., Azil, A., Loong, S. K., Hassan, M., & Ali, M. R. M. (2026). Cat scratch disease without skin lesions: A case report of fatal underdiagnosed ST1 Bartonella henselae bacteremia. Frontiers in Tropical Diseases, 7, Article 1787654.

CONFERENCES

9th AMDI INTERNATIONAL POSTGRADUATE COLLOQUIUM 2025 **10 & 11 Sept 2025**
Oral presenter
Title: Intersecting RNA-seq DEGs across studies reveals protein targets of metal oxide action in *Escherichia coli*

8th International Conference on Molecular Biology & Biotechnology (ICMBB 2025) **25 & 26 June 2025**
In conjunction with 9th UITM International Medical Innovation Competition (IMIC25)
Poster presenter
Title: Molecular docking analysis of metal oxide nanoparticles against ESBL *Escherichia coli*

7th International Conference on Molecular Biology & Biotechnology (ICMBB 2024) **26 & 27 June 2024**
In conjunction with 6th USIM International Health Conference (IHEC 2024)
Oral presenter
Title: Deciphering the genes of lipid metabolism in SARS-CoV-2-infected adipocytes

15th Malaysia International Genetics Congress 2023 **7 – 9 Mar 2023**
Oral presenter

Title: Deciphering the expression of host lipid metabolism genes in SARS-CoV-2 infected patients: a systematic review and integrated bioinformatics study

International Congress on Infectious Diseases (ICID 2022) **17 – 20 Nov 2022**
Participant
Joining as a participant for ICID 2022 organized by the International Society for Infectious Diseases (ISID) in collaboration with the Malaysian Society of Infectious Diseases and Chemotherapy**.**

58th Annual Scientific Conference of the Malaysian Society of Parasitology and Tropical Medicine (MSPTM) **21 & 22 Mar 2022**
Oral presenter
Title: Detection of *Bartonella henselae* via real-time polymerase chain reaction (Qpcr) among febrile patients with negative blood culture.

Virtual Biosymposium 2021 **June 2021**
Presenter
Title: Effect of nickel(II) amino acid complexes on bacteria isolated from rhizospheric soil of rice field and growth of rice seedlings

PROJECTS / INVOLVEMENTS

i-BIOHACKATHON 2026 **July - Sept 2026**
Participating in "Track 3: Systems Biologist – Postgraduate" analyzing the association between microbiome and jumper-laggard phenomenon in prawn.

Mobility Matching Fund (MOMAF) Program, Universitas Malang **Nov 2025**
Collaboration between USM-UM exchange program entitled "Science Without Borders: Collaborative Pathways in Research, Education & Community Impact"

Fulbright Specialist Program **June – July 2025**
Committee
Organizing a 3-week program between a Fulbright specialist from Nevada State University, USM and stakeholders from various niches with the theme of "Bone Health-Bioeconomy".

Journal Club Meeting, FPSK USIM **27 February 2024**
Presenter
Title: Expression of lipid-related genes in SARS-CoV-2-infected adipocytes

SMILE TALK SERIES 9/2023, FPSK USIM **20 November 2023**
Moderator

Malaysian Society of Human Genetics (MSHG) **Since 2023**

Student Member

Biorisk Management Training Program **24 – 28 July 2023**

Participant

40 hours of biosafety and biosecurity training at Wisma R&D, Universiti Malaya, which is organized by HiCoE Tropical Infectious Diseases Research and Education Centre (TIDREC), Universiti Malaya.

Doctor Planet Apprentice Program – The Future Guardians of Planetary Health **14 July 2023**

Committee

Participating as a facilitator in nurturing awareness of cancer diseases, targeting secondary school students through various educational games and entertainments, which was held in SMK Simpang Pertang, Negeri Sembilan.

Journal Club Meeting, FPSK USIM **27 February 2023**

Presenter

Article title: ssRNA Virus and Host Lipid Rearrangements: Is There a Role for Lipid Droplets in SARS-CoV-2 Infection?

PSN SCIFEST 2022, Kuala Lumpur **14 & 15 November 2022**

Facilitator

Theme "Anat2me: Exploring the Brain"

Science Exhibition, Virtual Science Fair **April 2021**

Presenter

Festival Belia Islam Universiti Malaya 2020 **Sep 2019 – April 2020**

Director

A national project organized by Kolej Kediaman Kinabalu, Universiti Malaya, which mainly focuses on preaching via entertainment.

- Lead the movement and execution of the project as a whole.
- Supervision of all bureaus to ensure project succession.
- Ensure the welfare of all committees during the period of project progression.

Volunteer's International Project 2.0, Cambodia **Sep 2018 – July 2019**

Committee

An international project organized by Kolej Kediaman Kinabalu, Universiti Malaya. The project focuses on helping, educating, and donating to those who live in isolated areas in Preak Sandai, Kratie, Cambodia.

- Assigned to the Bureau of Aqiqah and Food, responsible for the menu, ingredients, food preparation for all committees, and organizing Aqiqah for residents in Preak Sandai.
- Educate the children in Preak Sandai through early childhood education.

Festival Belia Islam Universiti Malaya 2019 **Sep 2018 – May 2019**

Committee

A national project under Kolej Kediaman Kinabalu, Universiti Malaya, which mainly focuses on preaching via entertainment, such as Nasyid competitions between universities, forums and motivational talks from Islamic celebrities.

- Assigned as Programs and Protocols Bureau, responsible for all the programs run and the protocols implemented.
- Search for forum panels, hosts for motivational talks, and all the positions involved during the programs.

Social Engagement, Betterment Brigade **Feb 2019 – May 2019**

Director

- Led the charity programs at Rumah Anak Yatim Sri Kundang.
- Facilitate the funding and donation drive through profits obtained from sales and crowdfunding.

REFERENCES

Available on request.