SHERLYN WIJAYA

PhD Candidate in Genetics · Mechanisms of synaptic maintenance during aging in *C. elegans*

✉ spwijaya@wisc.edu • in sherlynpw • sherlyn.pw

Education

University of Wisconsin-Madison **Sep 2022 - Dec 2027 (expected)**
Doctor of Philosophy (PhD), Genetics

University of Wisconsin-Madison **Sep 2022 - Jul 2024**
Master of Science (MS), Genetics · CGPA: 3.806

Atma Jaya University, Indonesia **Sep 2020 - Aug 2022**
*Master of Science (MSc), Biotechnology (**summa cum laude**) · CGPA: 4.00*
Thesis: Hydrolyzed Nile tilapia skin proteins as MMP-2 inhibitors

Surya University, Indonesia **Sep 2013 - Sep 2017**
*Bachelor of Science, Biology (**magna cum laude**) · CGPA: 3.88*
Thesis: Rice husk ash wastewater media for spirulina growth

Research Experiences

Richardson Lab, Department of Genetics, University of Wisconsin-Madison **Sep 2022 - present**
Graduate Research Assistant

- Investigating **synaptic maintenance mechanisms** during aging to determine how neurons preserve communication capacity over long lifespans
- Identified **TGFβ/DAF-3 signaling** as a regulator of the abundance of synaptic vesicles in long-lived neurons of *C. elegans* , providing a mechanistic foundation for my dissertation
- Applying **endogenous fluorescent tagging, confocal imaging, and quantitative image analysis** to measure age-dependent synaptic architecture with subcellular precision
- Developing automated **FIJI/ImageJ workflows and statistical models** to quantify synaptic vesicle dynamics across conditions
- **Designing and executing experiments** independently, including strain generation and functional assays, with results being prepared for publication

Biopharmaceutical Laboratory, Dexa Laboratory of Biomolecular Sciences **Jul 2021 - Mar 2022**
Research Co-op (MSc Thesis Research)

- Investigated **bioactive peptides from tilapia skin** for potential **tissue regeneration and wound-healing applications**
- Optimized **enzymatic hydrolysis and extraction workflows**, increasing peptide yield and reproducibility
- Identified and profiled peptide species using **chromatographic and spectroscopic methods**
- Designed and implemented a **cell-free wound-healing assay** to evaluate tissue regeneration potential
- Supported **scale-up** of promising peptide extract; findings published in the *Journal of Applied Pharmaceutical Sciences*

Emmerich Research Center (EMRC) **Jun 2018 - Jun 2021**
Senior Research Associate and Lab Manager

- Led an industry-funded R&D project optimizing **biological conversion of oil-palm waste**, increasing protein content 2.5× for **black soldier fly feed** now implemented in partner production workflows
- Engineered a **silk–alginate biomaterial** with tunable mechanical and antimicrobial properties for **tissue repair applications**
- Managed **laboratory operations, quality control, and biosafety compliance**, ensuring research continuity and high data integrity
- **Collaborated with stakeholders and presented technical updates** to support investment decisions and guide product development
- **Mentored and supervised student interns**, fostering experimental design skills and independent project ownership
- **Contributed to writing and editing research proposals and manuscripts** across biomaterials and bioprocessing projects

Food Business and Technology, Prasetiya Mulya University **Jan 2017 - Jul 2017**
Research Assistant (BSc Thesis Research)

- Optimized **wastewater reuse as sustainable growth media** for spirulina, increasing biomass yield and protein content
- Evaluated **productivity and nutrient profiles** to support bioprocessing applications and cost-efficient microbial cultivation

Research Center of Biology, Indonesia Institute of Sciences **Jan 2016 - Mar 2016**
Research Intern

- Investigated **food safety concerns** in *Rhizopus microsporus* following reports of contamination
- Identified **toxin-associated endosymbiotic bacteria** using 16S rRNA sequencing

Surya University **Jan 2014 - Aug 2016**
Undergraduate Student Researcher

- Contributed to **multiple independent projects** across biofuel production, computational drug discovery, and microbial cultivation
- Developed foundational skills in **experimental design, *in silico* screening, and biomaterial assessment**

Honors & Awards

- **American Heart Association (AHA) Predoctoral Fellowship** (2025 - 2026)
- **Honorable Mention – Poster Presentation**, 24th International *C. elegans* Conference (2023)
- **Student Research Grant Competition Awardee**, University of Wisconsin–Madison (2023)
- **Valedictorian**, Atma Jaya University, Indonesia (2022)
- **Research Grant Awardee**, Indonesian Ministry of National Education (2016)
- **President's List**, Surya University, Indonesia (2015 - 2016)
- **Dean's List**, Surya University, Indonesia (2013 - 2015)

Publications & Presentations

Publications

Molecular studies of bioactive peptides of Nile tilapia (*Oreochromis niloticus*) skin protein hydrolysate DLBS3D33 as MMP-2 inhibitor **2023**
Journal of Applied Pharmaceutical Sciences, doi.org/10.7324/JAPS.2023.53543
Sherlyn P. Wijaya, Puji Rahayu, Maggy T. Suhartono, and Raymond R. Tjandrawinata

Assessment of *Agaricus bisporus* mushroom as protective agent against ultraviolet exposure **2021**
bioRxiv. doi.org/10.1101/2021.10.21.465111
Chae Yeon Hwang, Yuniwaty Halim, Marcelia Sugata, Dela Rosa, **Sherlyn P. Wijaya**, and Eden Steven
Mentored first-author high school student researchers as part of this work

Conference Presentations

DAF-3–dependent regulation of synaptic maintenance during dauer aging in *C. elegans* **2025**
Poster Presentation, 25th International C. elegans Conference
Sherlyn P. Wijaya, Claire E. Richardson

Extended presynaptic maintenance during stress-resistant dauer aging **2024**
Poster Presentation, MAPSS: Metabolism, Aging, Pathogenesis, Stress, and Small RNAs in C. elegans
Sherlyn P. Wijaya, Claire E. Richardson

Structural preservation of synapses in long-lived dauer neurons **2024**
Poster Presentation, CeNeuro: Neuronal Development, Synaptic Function & Behavior Meeting
Sherlyn P. Wijaya, Claire E. Richardson

Synaptic resilience during dauer diapause protects neuronal function **2023**
Poster Presentation, 4th ChAWM: Chicago Area Worm Meeting
Sherlyn P. Wijaya, Claire E. Richardson

Presynaptic maintenance during dauer diapause opposes neurodegenerative decline **2023**
Poster Presentation, 24th International C. elegans Conference (Honorable Mention)
Sherlyn P. Wijaya, Claire E. Richardson

Patents

Method for circular rearing of black soldier fly using protein-enriched empty fruit bunch as feedstock **2020**
Patent pending (Indonesia): P00202007080

Biodegradable synthetic leather fabrication using empty fruit bunch and natural polymer binders **2020**
Patent pending (Indonesia): P00202002332

Multifunctional silk–alginate biocomposite fabrication without osmotic purification **2020**
Patent pending (Indonesia): P00202002325

Leadership, Outreach & Advocacy

Genetics Graduate Student Committee, University of Wisconsin–Madison **Sep 2023 - Aug 2024**
Graduate Student Representative

- **Advocated for graduate student needs**, including supporting accessibility and improved communication with faculty
- Organized **community-building activities** to support student well-being and a positive training environment

Biotechnology Graduate Student Association, Atma Jaya University **Aug 2021 - Jul 2022**
President

- Launched recurring **student–faculty forums** to improve communication and address trainee concerns
- **Allocated organization funding** to support student participation in scientific conferences

The Catalyst Magazine, Surya University **May 2016 - Jun 2017**
Biotechnology Content Director

- Co-founded the university's first **science communication platform** focused on biotechnology
- **Planned, edited, and authored articles** to translate research advances for the public

Surya University **2013 - 2016**
Early Leadership Roles

- **Led student teams** (6–30 members) in organizing outreach and education programs
- **Strengthened cross-department collaboration** through student government initiatives

Teaching & Mentoring Experience

University of Wisconsin–Madison **Summer 2024**
Teaching Assistant, Zoology 523: Neurobiology

- Supported student learning through **office hours and pre-exam review sessions**
- **Graded assignments and assessments** with attention to fairness and consistency

University of Wisconsin–Madison **Fall 2023**
Teaching Assistant, Genetics 466: Principles of Genetics

- **Evaluated homework and exams** with attention to fairness and accuracy
- Provided student support through **discussion-based help sessions** and clarification of course material

Richardson Lab, University of Wisconsin-Madison & Emmerich Research Center **2018 - present**
Research Mentor

- **Richardson Lab: Trained undergraduate researchers in neurobiology techniques** including *C. elegans* handling, fluorescence imaging, image analysis, and experimental troubleshooting
- **EMRC: Mentored high school and undergraduate students**, guiding experimental design and interpretation; projects led to a **BioRxiv preprint** and inspired students to pursue STEM degrees

Skills

Neuroscience & *C. elegans* Biology: Neuronal imaging and quantification; genetic crossing and strain maintenance; RNA interference (RNAi); dauer assays; microinjection

Microscopy & Image Analysis: Fluorescence and confocal live imaging; FIJI/ImageJ; quantitative synaptic morphology analysis

Molecular Biology: DNA/RNA extraction and purification; PCR; cloning; gel electrophoresis; protein extraction; SDS-PAGE; Western blot; basic bioinformatics (BLAST)

Data Analysis, Statistics, & Computational Tools: macro automation for synaptic quantification; GraphPad Prism; statistical testing (t-tests, ANOVA, linear models); data visualization and reproducible figure workflows; R (basic); Python (basic)

Communication & Leadership: Scientific writing; conference presentations; mentoring trainees; project coordination

Additional Laboratory Experience: Aseptic technique; microbial culturing; enzymatic digestion workflows; cell-free bioassays; biomaterial characterization assays; assay optimization and reproducibility testing