JULIA HUILIAN HUANG

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EDUCATIONAL QUALIFICATIONS

Doctor of Philosophy **January 2023 – December 2026**
School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Australia

- PhD research project "Inhibiting Inflammasomes with Small Molecules for the Treatment of Inflammatory Diseases" supervised by Professor Avril Robertson and Dr Jemma Mayall.
    - Synthesised a small molecule inhibitor that suppresses pro-inflammatory inflammasome responses while enhancing antiviral signalling in bronchial epithelial cells during IAV infection. Developed potent analogues and fluorescent probes, then evaluated their inhibition against inflammasome and NF-κB activation. Conducted cell viability assays and computational studies including structural modelling, docking and drug repurposing.

Bachelor of Advanced Science (Honours) **February 2019 – December 2022**
School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Australia

- Honours Class I
- Cumulative GPA: 6.4/7.0
- Honours research project "Synthesis of Novel Broad-spectrum Antifungals" supervised by Professor Avril Robertson and Dr Kylie Agnew-Francis.
    - Synthesised a series of cyclic lipopeptides using solid-phase and solution-phase techniques and characterised through 1D and 2D NMR and MS. Antifungal susceptibility assays (MIC and MFC) against pathogenic fungi demonstrated novel biological activity, providing insights into structure-activity relationships.
- Undergraduate research project "Synthesis and Anti-microbial Evaluation of Nitroarene Hydrazones as Potent Growth Inhibitors of *Staphylococcus aureus* and *Pseudomonas aeruginosa*" supervised by Professor Elizabeth Krenske and Associate Professor Jack Wang.
    - Designed a set of novel nitroarene hydrazones and investigated their binding to the active site of nitroreductase through CADD and SeeSAR docking studies. Synthesised the small molecules through solution-phase methodology and characterised by NMR and IR. Prepared compounds were tested against pathogenic bacteria via colony formation assays.

RESEARCH EXPERIENCE

Chemist **February 2025 – Present**
Racing Science Centre, Queensland Racing Integrity Commission, Brisbane, Australia

- Industry placement project "Development and Validation of Targeted Extraction Methods for Peptides from Equine Plasma" supervised by Dr Shawn Stanley.
    - Developed solid-phase extraction methods (WCX and WAX) to isolate doping peptides from equine plasma, achieving > 60% extraction efficiency and sufficient selectivity to support a limit of detection of 1 ng/mL.

Research Assistant **July 2024 – August 2024**
Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Australia

- Research project "Investigating the Efficacy of New Cyclic Lipopeptide Antifungals" supervised by Professor Avril Robertson and Professor James Fraser.
    - Evaluated the *in vivo* efficacy of antifungal peptides in a mouse model of *C. neoformans* infection. Trained in intraperitoneal and subcutaneous administration and cardiac bleeding.

Research Assistant **March 2024 – August 2024**

Hunter Medical Research Institute, The University of Newcastle, Newcastle, Australia

- Research project "Unlocking the Therapeutic Potential of an Under-explored NLR in Influenza A Virus Infections" supervised by Professor Avril Robertson and Professor Jay Horvat.
    - Tested a series of small molecules for their inhibition against NLRP3 inflammasome and NF-κB activation. Identified a promising compound that was subsequently evaluated for *in vivo* efficacy in a mouse model of IAV infection.

Research Assistant **September 2023 – December 2023**

Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Australia

- Research project "Validation of Antifungal Targets in *Cryptococcus neoformans* using a Mouse Model of Meningitis" supervised by Professor James Fraser.
    - Investigated the role of multiple genes in modulating *C. neoformans* virulence. Trained in isoflurane anaesthesia, intranasal administration, CO_2 euthanasia and quantification of fungal load through organ burden assessment.

UQ Summer Research Program Scholar **November 2021 – January 2022**

School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Australia

- Summer research project "Antifungals targeting *Cryptococcus neoformans*" supervised by Professor Avril Robertson and Dr Kylie Agnew-Francis.
    - Synthesised a cyclic lipopeptide using solid-phase and solution-phase techniques. Trained in purification methodologies such as MPLC, HPLC, silica column chromatography, recrystallisation and trituration.

AWARDS

2023 – 2026	Research Training Program Earmarked Scholarship
2024 – 2025	Wonder of Science Young Science Ambassador Award
2025	UQ Science HDR Industry Placement Travel Assist Award
2024	9th Queensland Annual Chemistry Symposium Best Oral Presentation Prize
2022	UQ Chemistry Honours Research Prize
2019 – 2022	UQ Young Achievers Scholarship
2019 – 2022	UQ Dean's Commendation for Academic Excellence
2021	UQ Summer Research Program Scholarship

TEACHING EXPERIENCE

Academic Tutor **February 2023 – November 2024**

School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Australia

- Cumulative tutor evaluation: 4.9/5.0
- Delivered weekly practicals and workshops for Chemistry 1 (CHEM1100), Chemistry 2 (CHEM1200), Intermediate Chemistry 2 (CHEM2060) and Advanced Intermediate Chemistry 2 (CHEM2902). Marked laboratory reports, mid-semester and end-of-semester exams.

Teaching Assistant **October 2020 – December 2022**

Brisbane Chinese Language School, Brisbane, Australia

- Evaluated the academic performance and behaviour of over 500 students. Contributed to course material development, and graded assignments and exams, providing detailed feedback.

CONFERENCE ABSTRACTS

Julia H. Huang, Jun X. Ang, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Advancing Antifungal Frontiers with Cationic Cyclic Peptides. *Medicinal Chemistry & Chemical Biology Conference 2025*, Darwin, Australia, 2025.

Julia H. Huang, Jun X. Ang, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Combatting Multidrug-Resistant Fungal Infections: The Promise of Cationic Cyclic Peptides. *9th Queensland Annual Chemistry Symposium*, Brisbane, Australia, 2024.

Julia H. Huang, Jun X. Ang, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Combatting Multidrug-Resistant Fungal Infections: The Promise of Cationic Cyclic Peptides. *2024 SCMB Research Student Symposium*, Brisbane, Australia, 2024.

Julia H. Huang, Rachel M. Chen, Annie G. Correa, Nicholas L. Massey, Thomas Wood, Katie Daly, Kylie A. Agnew-Francis, Rebecca Coll, Jay C. Horvat, Jemma R. Mayall, Avril A. B. Robertson. Targeting Inflammatory Diseases: Unveiling a Dual NLRP3 and AIM2 Inflammasome Inhibitor. *2024 Joint Biomolecular and Medicinal Chemistry Theme Symposium*, Brisbane, Australia, 2024.

Jun X. Ang, **Julia H. Huang**, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Understanding the SAR of a Novel Broad-Spectrum Antifungal. *TIDES Asia 2024: Oligonucleotides & Peptide Therapeutics*, Kyoto, Japan, 2024.

Jun X. Ang, **Julia H. Huang**, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Understanding the SAR of a Novel Broad-Spectrum Antifungal. *2023 SCMB Research Students Symposium*, Brisbane, Australia, 2023.

Jun X. Ang, **Julia H. Huang**, David A. Wells, Rachel M. Chen, William W. Hunt, Nicholas L. Massey, Kylie A. Agnew-Francis, James A. Fraser, Avril A. B. Robertson. Understanding the SAR of a Novel Broad-Spectrum Antifungal. *13th International Peptide Symposium and 15th Australian Peptide Conference*, Brisbane, Australia, 2023.

PROFESSIONAL AFFILIATIONS AND SERVICE

2024 – Present	Wonder of Science Young Science Ambassador
2024 – Present	SCMB Research Student Advisory Group Finance Officer and 2024 SCMB Research Students Symposium Session Chair
2023 – Present	Royal Australian Chemical Institute Postgraduate Student Member, 2023 RACI Titration Competition Volunteer
2025	National Youth Science Forum Volunteer
2024	2024 Joint Biomolecular and Medicinal Chemistry Theme Symposium Chair
2023 – 2024	UQ Open Day Volunteer

ACADEMIC REFEREES

Professor Avril Robertson
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Professor of Biotechnology, School of Chemistry and Molecular Biosciences
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Professor Joanne Blanchfield
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Dr Jemma Mayall
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