



PhD 2023

APPLIED BIOSCIENCES

The Doctor of Philosophy (PhD) enables you to undertake extensive, independent research that forms a distinct contribution to the knowledge of your chosen subject. Your work should afford evidence of coherence and originality shown by the discovery of new knowledge. Applied BioSciences offers a PhD program that will challenge you and provide you a skill-set to broaden your career opportunities.

APPLIED BIOSCIENCES

Applied BioSciences is a joint enterprise of Macquarie University, CSIRO, NSW Department of Primary Industries, and the Australian Institute of Marine Science.

Developing solutions to major global and regional challenges requires interdisciplinary and partnered research that builds on a foundation of quality basic research that is then 'translated' into outcomes and impact.

Applied BioSciences conducts translational research that draws on and applies diverse disciplines including entomology, microbiology, molecular biology, synthetic biology, genetics, chemical ecology, and marine science.



Preparing sperm samples

PROGRAM STRUCTURE

The PhD program at Applied BioSciences is a three-year program. Admission to the PhD program is conditional upon availability of appropriate supervision and resources, submission of a PhD research proposal and your suitability to undertake higher degree research.

Throughout the PhD program candidates will:

- Survey the current literature related to their particular research interest;
- Extend their knowledge of research innovations in their discipline;
- Engage with the latest research methods in their field;
- Gain significant skills in project management;
- Initiate, conduct and complete a significant individual research project of their own design, with support of a supervisor;
- Participate as presenters in domestic and international conferences;
- Have the opportunity to publish their research in high impact scientific journals;
- Gain national and international exposure and be able to build a network with world-leading experts in their field.

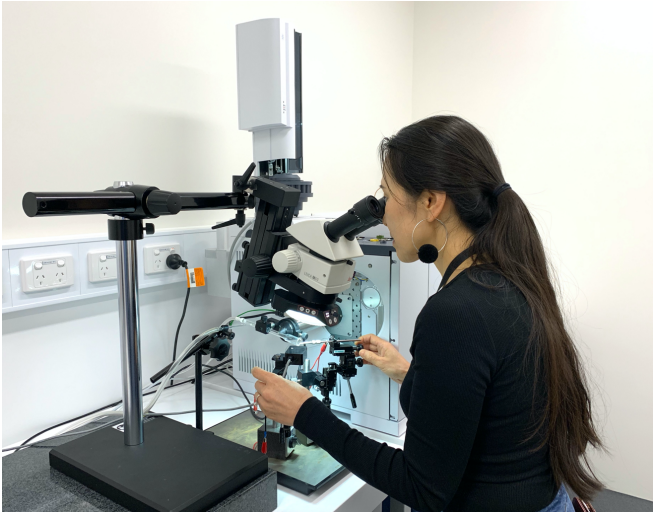


Inspecting an insect monitoring trap in the field

How to apply for a PhD program

- 1) Verify the entry requirements
- 2) Find a supervisor
- 3) Prepare a Research Proposal
- 4) Explore Scholarship opportunities
- 5) Submit your application online

Academic staff of Applied BioSciences have deep expertise and experience to assist students in taking their PhD research projects from initial definition to successful completion. Students in Applied Biosciences will also have unique opportunities to build professional networks with industry and government partners.



Electrophysiology

Examples of PhD Projects:

- Chemistry of interactions between pest insects and plants;
- Cuticular chemistry of fruit flies;
- Genetics of lure response in fruit flies;
- Infection, immune response and communication in insects;
- Attractants, repellents and toxicants to control insect pests;
- Costs and benefits of fruit fly metabolic enhancers;
- Composition and function of insect pheromones;
- Biological control, biology and behaviour of insect parasitoids;
- Entomopathogenic fungi of moth pests;
- Systems biology for Bt resistance and susceptibility in moths;
- Population genomics of *Helicoverpa* in Australia;
- Stress markers in insect pests;
- Insect comparative functional genomics;
- Expression of microbial enzymes in animals for bioremediation and waste management;
- Synthetic speciation of mosquitoes for population control and disease resistant strains for population replacement;
- Controlling invasive species by sex-biasing populations with CRISPR based systems;
- Genetic biocontrol approaches for invasive vertebrates;
- Mating-induced behavioural switches in jumping spiders;
- Chemical Ecology of jumping spiders.

ELIGIBILITY

The minimum requirement for admission to a PhD degree is:

- Completion of a Master of Research (MRes) with a grade of at least a Distinction level (75% or greater in second year; or
- A Master of Philosophy; or
- A two-year Masters degree with a major research component at

Distinction level (75% or greater).

Peer-reviewed research output may be taken into consideration for admission to the program. You must also demonstrate your suitability for entry to the program by:

- Including a detailed research proposal;
- Providing evidence of the required level of English language proficiency.

Candidates who have not completed an MRes and do not meet the above criteria may be asked to undertake the Master of Research as a research training pathway to the PhD program.

APPLICATION

Applications are submitted online.

mq.edu.au/research/phd-and-research-degrees/how-to-apply

STIPENDS AND SCHOLARSHIPS

Information on Domestic and International PhD Scholarships can be found at: mq.edu.au/research/phd-and-research-degrees/scholarships

The International HDR Main Scholarship Round for 2023 Closes AEST 3 March 2023

The Domestic HDR Scholarship round for 2023 TBC

mq.edu.au/research/phd-and-research-degrees/important-dates

COTUELLE AND INTERNATIONAL OPPORTUNITIES

Macquarie University offers options for Cotutelle PhD training to facilitate collaborations with partner universities around the world. Students pursuing this avenue will spend time engaged in research at both universities and receive a doctorate from each institution.

mq.edu.au/research/phd-and-research-degrees/explore-research-degrees/cotutelle-and-joint-phd

FURTHER INFORMATION

mq.edu.au/research/phd-and-research-degrees

Contact us directly via email: AppliedBioSci@mq.edu.au

Visit our website: [Applied BioSciences](http://AppliedBioSciences)



Rearing fruit flies

FIND OUT MORE

mq.edu.au/research/phd-and-research-degrees

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