The Master of Research (MRes) combines advanced disciplinary coursework and structured research training, to provide graduates with greater recognition for their academic progress, enhanced employment opportunities and pathways to further study in Australia and overseas. Applied BioSciences offers some compelling MRes pathways to a PhD at Macquarie University.

**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 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.

Otherwise, students will complete their first year in another department (e.g. Molecular Sciences) prior to transferring to Applied BioSciences for their second year.

The second year of the MRes will be made up of structured research preparation and training, where candidates will:

- Extend their knowledge of research innovations in their discipline;
- Survey the current literature related to their particular research interest;
- Engage with the latest research methods in their field;
- Receive training in project management and plan a major research project, and
- Complete a significant individual research project of their own design, with support of a thesis supervisor.

**PROGRAM STRUCTURE**

Although the MRes is a two year program, Applied Biosciences exclusively focuses on the second year of the program which is research intensive and culminates in a written thesis.

Applicants with an honours or master’s degree may be directly admitted to the Applied BioSciences second year MRes.

Prepping mosquito embryos for DNA microinjection

Prepping insect physiology experiments

<table>
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<tr>
<th>Program Structure: (Jan-Oct) or (Jul-Apr)</th>
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<tr>
<td><strong>Five Core Activities</strong></td>
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<tr>
<td>1) Thesis (50 pages) based on a research project</td>
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<td>2) Research Frontiers 2</td>
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<td>3) Literature Review</td>
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<td>4) Research Planning</td>
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<td>5) Research Methods</td>
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The Faculty members Applied BioSciences have the required expertise and experience to assist students in taking their 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. The research skills developed by students through the MRes program are extremely valuable for the generation of research outcomes in a future PhD program.

**Year 2 Example Projects**
- Behavioural biology of fruit flies
- Engineering speciation events in mosquitoes
- Prevalence and Predictors of Polyandry and Paternity
- Expression of microbial bioremediation enzymes in animals
- Physiology and genetics of Queensland fruit fly fitness
- Development of male only production system for sterile insect technique
- Composition and function of fruit fly pheromones
- Using base-editors to sex bias invasive rodent populations
- The biochemistry of remating inhibition in Queensland fruit flies
- Threshold dependent gene drives for invasive fish population control

**APPLICATION DEADLINE for 2021 PROGRAM**
- **Domestic**: 21 May 2021 (candidature and scholarship)

**STIPENDS AND SCHOLARSHIPS**
Information on Domestic and International MRes Scholarships can be found at: mq.edu.au/research/phd-and-research-degrees/scholarships

**FURTHER INFORMATION**
mq.edu.au/research/phd-and-research-degrees
Contact us directly via email: AppliedBioSci@mq.edu.au

Examining bacterial colonies on agar plate

Examining bacterial colonies on agar plate

Rearing Queensland fruit flies

Rearing Queensland fruit flies