Follow the leader

INTERNATIONAL RESEARCH TRAINING PARTNERSHIPS FRAMEWORK 2018
FOREWORD

It is often said that entwined in every successful global economy is a strong university system. In a similar vein, I regularly suggest to colleagues that the engine room of every successful university is a quality research training program. Over the past decade, Macquarie University has firmly established itself as the Australian leader in research training on two core and unequivocal fronts.

We were the first university in Australia to introduce the international-standard two-year research training pathway program – the Master of Research (MRes) – as Macquarie’s core pathway to higher degree research (HDR) study. This system brings Macquarie into line with practices in Europe and North America, and complements the Chinese undergraduate to higher degree research structure. Secondly, our cotutelle and joint PhD programs are the largest in Australia and reinforce Macquarie’s unwavering commitment to preparing world-ready HDR candidates, as well as our fundamental desire to be a world-recognised research collaborator of choice, as clearly expressed in World-Leading Research; World-Changing Impact.

Our leadership standing is further reinforced by the fact that Macquarie was the first non-European university to be accepted as a partner in the International Doctorate for Experimental Approaches to Language and Brain (IDEALAB) consortium. Our global partners in this program include the Universities of Groningen (Netherlands), Newcastle (UK), Potsdam (Germany) and Trento (Italy).

Similarly, in 2015 DAAD (the German Exchange Funding agency) awarded significant funding to Hamburg University (Germany), Fudan University (China) and Macquarie University for a strategic partnership including cotutelle and joint PhD programs. Again, Macquarie is the only Australian university to be awarded such a partnership.

If we are to maintain and strengthen this leadership position, as others attempt to emulate our programs, we must chart a course and navigate an evidence-based path that builds on our strong international research training and partnership foundations, and enables deeper and more extensive collaboration with prestigious and recognised world-leaders.

This International Research Training Partnerships (IRTP) Framework seeks to ensure we continue to lead as we expand our international research training programs with a particular and deliberate focus on quality across four perspectives; candidates, programs, collaborating university partners and funding sources.

Professor Sakkie Pretorius
DEPUTY VICE-CHANCELLOR (RESEARCH)
Macquarie University has developed its HDR program to become a sector leader in research training.

Leading the way in research training

OUR GLOBAL PERSPECTIVE

Major changes include the internationalisation of our PhD programs through the cotutelle and joint PhD schemes, an increasing focus on strategic partnerships with international funding agencies, and the introduction of the Master of Research (MRes) as the main pathway to a PhD.

Macquarie’s global perspective is central to the development of an International Research Training Partnerships Framework. Deep, durable relationships with international research universities through joint research candidate supervision is a significant priority for the Research portfolio and a core component of our broader strategy to strengthen collaborative partnerships globally.

We have had more than 316 joint and cotutelle PhD enrolments arising from agreements with 110 universities in more than 30 countries. Partner universities are selected based on already established collaborative research relationships and a combination of factors, including international and national research rankings and/or recognition, relevant disciplinary strengths, program governance and funding support capabilities.

Importantly, cotutelle and joint PhD schemes are open to both international and domestic high-quality PhD candidates. Cotutelle arrangements are of huge benefit to candidates as they provide them with an international experience at a high-ranking partner university, effectively doubling the size of their research networks.

International research training programs deepen and strengthen research collaborations and networks at an individual and institutional level, and foster a higher level of cooperation between researchers in their respective fields through co-supervision. They provide access to new funding schemes and international enrolments, and importantly, create an opportunity to increase joint publications, citation rates and rankings.
Our strategic research framework will enable us to deliver world-leading research with world-changing impact.

Our strategic context

AN ACCELERATING AND IMPACTFUL PERFORMANCE IN DISCOVERY

Macquarie’s 10-year strategic research framework, World-Leading Research; World-Changing Impact, develops our ambitions further by articulating our key research objectives and goals. The preparation of world-ready HDR candidates is a core objective of the framework, as is our desire to engage as a world-recognised research collaborator of choice. Together, these objectives are central to the International Research Training Partnerships Framework and underpin its development.

1. ACCELERATE WORLD-LEADING RESEARCH PERFORMANCE
   - Top-performing staff: Increase the number and proportion of research-productive staff
   - World-leading research concentrations: Build on disciplinary areas of current and emerging research strength and enhance cross-disciplinary capability
   - Growing research investment: Accelerate growth of external research income to facilitate world-leading research
   - Pervasive best practice: Continuously improve policies, processes and systems that support the pursuit of excellence and integrity in research and scholarship
   - Leading-edge infrastructure: Secure world-leading research infrastructure, facilities and equipment.

2. PREPARE WORLD-READY HIGHER DEGREE RESEARCH CANDIDATES
   - Attracting quality candidates: Attract high-potential higher degree research candidates
   - Inspirational supervision: Provide outstanding supervisory expertise and mentoring
   - Transformative research environment: Embed higher degree research candidates in areas of current and emerging strength

3. ENGAGE AS A WORLD-RECOGNISED RESEARCH COLLABORATOR OF CHOICE
   - Strategic engagement: Pursue local, national and international partnerships to complement and enhance areas of current and emerging research strength
   - Deep and authentic collaborations: Build mutually beneficial, long term engagement with institutional, national and international colleagues
   - Synergistic end-user partnerships: Pursue shared goals with end users to maximise delivery of solutions and return on investment
   - Streamlined support: Practice efficient and effective facilitation of research collaborations.

4. DELIVER RESEARCH WITH WORLD-CHANGING IMPACT
   - Discovery for innovation: Strengthen basic research capability to drive discovery and underpin innovation
   - Cross-disciplinary inquiry: Optimise the opportunities for inquiry across disciplines and structures
   - Diversity of impact: Foster an environment that facilitates and values diverse forms of knowledge creation, application, and creative practice to benefit society
   - Challenge-focused research: Conduct research that addresses national and global challenges, and delivers significant benefits.
316+ candidates from 110+ universities in 30+ countries*

Key foundations

INTERNATIONAL RESEARCH TRAINING PARTNERSHIPS – BASELINE (2016)

- 316+ cotutelle and joint PhD candidates*
- 110+ cotutelle and joint PhD collaborating partners*
- 30+ countries involved in cotutelle and joint PhD arrangements*
- 175 cotutelle candidate completions*
- 75 priority partners in 31 countries (and 68 preferred partners)
- 3 strategic tri-lateral partnerships: MQ-FU-HAM, JLU-MQ-JLU and NU-UG-MQ*
- 25 disciplines involved in current programs
- 3 regional partnership tiers – strategic, developing and emerging
- 10 MRes exchange partners established (a pathway to cotutelle/joint PhD)
- 3 regional partnership tiers – strategic, developing and emerging
- 21% of current candidates with Chinese universities
- 68% of current candidates with European universities
- 148 current cotutelle and joint PhD candidate enrolments
- 41 universities with Academic Senate approval for joint PhDs
- 35 IDEALAB PhD candidates (including 30 current enrolments)

*Since 1999

#Macquarie – Fudan – Hamburg, Jilin – Macquarie – Justus Liebig and Nanjing – Göttingen – Macquarie
Key targets
SUPPORTING MACQUARIE’S 10-YEAR RESEARCH FRAMEWORK

By Macquarie’s 60th anniversary, and in support of World-Leading Research; World-Changing Impact, we will:

- Maintain and strengthen Macquarie’s standing as the provider of the region’s leading international research training program
- Establish five successful Trilateral Strategic Partnerships for joint PhD degrees (building on the MQ-FU-HAM model)
- Establish at least three multi-institutional joint PhD programs* of critical mass (building upon the successful IDEALAB model)
- Develop a strong and sustainable presence in the United States
- Double the number of HDR candidates participating in international research training programs
- Double the number of active national and international funding partners
- Secure significant industry-based funding sources, including at least one strategic industry partner funding a program of significant critical mass

*More than three institutions and funded by quality funding agencies (e.g. IDEALAB Consortium Program)
Core framework

OBJECTIVES, GOALS AND KEY TARGETS

QUALITY PROGRAMS AND EXPERIENCES
Develop, maintain and partner with leading international research training programs to ensure outstanding experiences.

Benchmark, emulate and partner with globally recognised international research training programs.
Continuously advance our cross-institutional partner relationships, governance and administration.

Constantly innovate our international research training programs and infrastructure.
Provide the best possible academic and personal support to HDR candidates, through quality supervision and our innovative support programs.

QUALITY FUNDING SOURCES
Expand the quality and number of funding sources to support international research training.

Continuously and rigorously assess current research collaborations for IRTP potential.
Target prestigious international research training partners in strategic and developing regions.

Build scale in a small number of strategic and prestigious partners.
Establish strategic multi-region partnerships to leverage funding, quality and scale.

QUALITY CANDIDATES
Attract, develop and retain international HDR candidates of the highest quality.

Maximise the MRes pathway as a vehicle for international research training and partnerships.
Leverage our IRTP leadership position in Australia, to promote our research strengths and future-shaping priorities globally.

Provide opportunities for real-world engagement that help prepare world-ready HDR candidates.
Align international HDR candidate recruitment processes with World-Leading Research, World-Changing Impact and ITRP goals.

QUALITY INSTITUTIONAL PARTNERS
Develop, secure and maintain international research training partnerships with world-leading research institutions.

Replicate the successful multilateral, multi-discipline funding models.
Establish industry-based funding sources and key partners.

Maximise the funding provided by international and key national funding agencies.
Leverage Macquarie’s leading position with respect to Australian funding sources and general policy influence.

Key targets

Maintain and strengthen Macquarie’s standing as the provider of the region’s leading international research training program

Establish five successful Triilateral Strategic Partnerships for joint PhD degrees (building on the MQ-FU-HAM model)

Double the number of active national and international funding partners

Establish at least three multi-institutional joint PhD programs of critical mass (building upon the successful IDEALAB model)

Establish programs with a critical mass in at least 10 institutions

Secure significant industry-based funding sources

Develop a strong and sustainable presence in the United States

Double the number of HDR candidates participating in international research training programs
Partnering with quality programs, while maintaining, enhancing and developing our own program, is critical to our ability to sustain our leadership position.

Macquarie is the first non-European university to be accepted as a partner in the International Doctorate for Experimental Approaches to Language and Brain (IDEALAB) consortium. Our global partners in this program include the Universities of Groningen (Netherlands), Newcastle (UK), Potsdam (Germany) and Trento (Italy).

IDEALAB has received funding of €5.6 million from the European Commission. Macquarie currently has 30 HDR candidates enrolled in this program and has achieved seven HDR completions to date.

In 2015, the DAAD (German Exchange Funding agency) awarded €1 million to Hamburg University (Germany), Fudan University (China) and Macquarie University for a strategic partnership including cotutelle and joint PhD programs. Once again, Macquarie University is the only Australian institution that has been awarded such a program. We are currently exploring the potential to replicate this three-way arrangement with other universities in Germany, South Africa and China.

In terms of our own programs, much has been done in recent years to develop and enhance Macquarie’s cotutelle and joint PhD programs and experiences, largely on the back of broader improvements associated with the domestic PhD program.

These include four inter-related programs:

- Supervision enhancement
- HDR learning skills
- HDR professional skills
- HDR Mentors.

Macquarie must continue to refresh and revise these programs in the context of an expanding international research training strategy, while leveraging the recent public recognition of the MRes program as the most innovative research training pathway in Australia.

Establishing individual international research training programs can be a complex process involving multiple stakeholders, at various levels in each institution. Macquarie must strive to minimise the frustrations for academics, professional staff and candidates alike, and work with partners to find ways to streamline processes at every step.

**Quality programs and experiences**

**SUSTAINING OUR LEADERSHIP POSITION**

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**MAJOR PARTNERSHIPS**

- Macquarie University
- Fudan University
- Hamburg University
- University of Groningen
- Newcastle University
- University of Potsdam
- University of Trento
- Macquarie University

*Refer to Appendix for a full list of partners*
Macquarie has hosted more than 316 cotutelle and joint PhD candidates from more than 30 countries, including 148 current candidates.

**ENROLMENT TYPES**

Europe (including the UK) is our largest collaborating region, representing around 70 per cent of current and historic candidate numbers. Collaborations with China currently represent around 22 per cent of enrolments, with the balance shared between Japan, Latin America and North America.

**ENROLMENT DISTRIBUTION BY FACULTY**

Historically, science and engineering, human sciences and arts have accounted for around 90 per cent of enrolments. The top five countries (excluding IDEALAB candidates) in terms of historic enrolments have been Germany (65), China (68), France (33), United Kingdom (19), and The Netherlands (8).

Macquarie must leverage its Australian leadership position with respect to international research training in order to continue to attract quality HDR candidates. We must continue to maximise the MRes pathway and build upon the 10 MRes exchange partners already secured. We must continue to promote Macquarie’s research performance, strengths and future-shaping research priorities in order to attract the ‘best of the best’.

Macquarie must ensure that the positioning of our cotutelle and joint PhD programs in international student markets is clear in the context of broader undergraduate recruitment campaigns.

Attracting the best candidates is not enough. They also need the best support through the HDR Support and Development Program.
Macquarie has collaborated with more than 110 institutional partners on international research training programs since 1999.

Our goal is to partner with prestigious universities and pre-eminent research institutes of international and national standing in fields of recognised research strength.

In recent years we have identified 75 priority research-intensive universities with strong research collaboration relationships (or potential) with Macquarie University. Scholarships can be awarded at any time for qualified applicants with these institutions. Refer to Appendix A for the complete list of priority research-intensive universities.

Macquarie has also identified a group of preferred institutions that have an existing, or are in the process of establishing, a formal research collaboration relationship. Applicants from these universities are assessed competitively by the Higher Degree Research Management Committee (HDRMC).

A special case needs to be made by the principal supervisor and Associate Dean – HDR for prospective candidate applications with universities not identified as a priority or preferred institution.

More than 40 universities have also been specifically approved by Academic Senate for joint PhD programs. Refer Appendix B.

Macquarie is also ambitiously expanding exchange programs for MRes candidates, encouraging them to develop research relationships at the MRes level that may lead to joint and cotutelle PhDs down the track. Agreements covering MRes exchange are now in place with more than 10 universities.

Leaders attract leaders, and the real opportunity for Macquarie is to focus its attention on prestigious partners in strategic regions (including Europe, North America, Latin America and China), and developing regions (including Japan, Korea and South East Asian countries, as well as South Africa, Israel and Iran). Building a critical mass where we have existing relationships and expanding our penetration of world-leading universities are also key goals.

Cotutelle and joint PhD programs typically succeed when built on existing strong links, largely at the level of individual researchers who have already established successful research collaborations. Macquarie must continuously and comprehensively assess all existing international research collaborations for future international research training and partnership potential.

MAJOR PARTNERSHIPS*
Chinese Academy of Sciences
Centre National de la Recherche Scientifique
Universität Giessen
Jilin University
Katholieke Universiteit Leuven
Universidade de São Paulo
University of Toronto

*Refer to Appendix for a full list of partners
Quality funding sources
CURRENT FOUNDATIONS AND FUTURE OPPORTUNITIES

Macquarie University has signed joint funding agreements with more than 15 top international funding agencies. These include the China Scholarship Council, National Sciences Foundation (US), VIED (Vietnam), Science without Borders (Brazil); CONICYT (Chile), CONACYT (Mexico), National Research and Innovation Agency of Uruguay, and the Bolashak Scholarship with the Republic of Kazakhstan. Refer to Appendix C for the complete list.

These arrangements strengthen the flow of high-quality candidates into the system and supplement Macquarie's internal scholarship funding, which enables scholarships to be offered to greater numbers of high-potential HDR candidates.

In the past, Macquarie relied exclusively on individual student approaches, but connecting directly with major national programs makes Macquarie a priority partner for international universities and funding agencies. We must continue to expand Macquarie's network of major national and international funding programs.

Both the IDEALAB and DAAD international research training programs have enabled access to new strategic funding sources and represent a model that we must maintain and replicate in other thematic and multidisciplinary fields and/or geographies. Similarly, the EU Horizons 2020/Erasmus Mundus Joint Doctorate program has been a valuable source of quality funding (and programs) with strong critical mass – again, a model to be leveraged in other geographies.

The China Scholarship Council has been a key collaborator and strategic source of funding support to our second largest cotutelle and joint PhD country program, with potential for continued growth.

The Australian Research Council and National Health and Medical Research Council continue to be the prime sources of Australian funding for Macquarie's international research training programs – a focus and strength we must maintain.

MAJOR PARTNERSHIPS*
China Scholarship Council
National Sciences Foundation
European Commission
CNPq
DAAD German Academic Exchange Service
CONICYT

*Refer to Appendix for a full list of partners
Appendices

APPENDIX A
Priority 1: Priority cotutelle and joint PhD partners

- Belgium
  - Ghent University
  - Katholieke Universiteit Leuven
- Brazil
  - Federal University of Santa Catarina
  - Universidade de Sao Paulo
- China
  - Beijing University of Posts and Telecommunications
  - Chinese Academy of Sciences
- Canada
  - University of Toronto
  - University of Waterloo
- Colombia
  - Universidad de los Andes
- Denmark
  - Aarhus University
- Germany
  - RWTH Aachen University
  - LMU Munich
- Hungary
  - Eotvos Lorand University
- Italy
  - Sapienza University of Rome
- Belgium
  - Université Libre de Bruxelles
- Canada
  - University of Toronto
- Denmark
  - Aarhus University
- Finland
  - University of Helsinki

APPENDIX B
Joint PhD Partner Universities

The following universities have been approved by the Macquarie University Academic Senate for Joint PhD Degree programs.

- Belgium
  - Katholieke Universiteit Leuven
  - Université Libre de Bruxelles
- Canada
  - University of Toronto
- Denmark
  - Aarhus University
- Finland
  - University of Helsinki
- France
  - École Normale Supérieure de Lyon
  - Université de Lyon (including St Etienne)
  - Université de Toulouse
  - Université Montpellier
  - Université Paris-est-Marne-Cure
  - Université de Strasbourg
- Germany
  - Goethe University Frankfurt
  - Heidelberg University
  - Hamburg University
  - Leipzig University
  - Goettingen University
  - LMU Munich
  - Ruhr-University Bochum
  - University of Freiburg
- Italy
  - Università degli Studi di Bergamo
  - Università degli Studi di Padova
- Japan
  - Tohoku University
  - Tohoku University
- Portugal
  - University of Lisbon
- Russia
  - Russian Academy of Sciences
- South Africa
  - University of Stellenbosch
  - North-West University
- Sweden
  - Uppsala University
  - Stockholm University
- Switzerland
  - University of Fribourg
  - Thurgau University
- United Kingdom
  - Cardiff University
  - Lancaster University
  - Heriot-Watt University
  - Imperial College London
  - University of Bristol
  - University of Dundee
  - University of Durham
  - University of Edinburgh
  - University of Exeter
  - University of Glasgow
  - University of Manchester
  - University of Newcastle
  - University of Nottingham
  - University of Sheffield
  - University of St Andrews
- United States
  - Georgia Institute of Technology
  - Colorado University
  - University of Wisconsin
- Canada
  - Université de Montréal
  - University of British Columbia
  - Université Laval
- China
  - Tsinghua University
  - Peking University
- France
  - École Normale Supérieure de Lyon
  - University of Paris-Sud 11
  - University of Montpellier 2
- Germany
  - Goethe University Frankfurt
  - University of Konstanz
  - University of Siegen
- Italy
  - Università degli Studi di Padova
  - University of Florence
  - University of Naples
- Japan
  - Tohoku University
  - University of Tokyo
- Netherlands
  - University of Amsterdam
  - University of Twente
- South Africa
  - University of Witwatersrand
  - University of Pretoria
- Spain
  - Universidad de Barcelona
  - Complutense University of Madrid
- Chile
  - University of Santiago
  - University of Chile
- UK
  - University of Cambridge
  - University of Warwick
- United States
  - Massachusetts Institute of Technology
  - Stanford University

APPENDIX C
Funding agency agreements

- Australia
  - Australia Award
  - Australian Research Council
  - National Health and Medical Research Council
- Brazil
  - Science Without Borders – CNPq and CAPES
- Chile
  - CONICYT
  - Chilean Bicentennial Fund Scholarship
- China
  - China Scholarship Council
- Colombia
  - Colciencias Colombia
- EU
  - EU Horizon 2020 Erasmus Mundus Program
- Germany
  - German Academic Exchange Service (DAAD)
  - German Research Foundation (DFG)
- Indonesia
  - Indonesian Government Scholarship Program
- Kazakhstan
  - The Bolashak Scholarship with the Republic of Kazakhstan
- Malaysia
  - Malaysia Government Scholarship Program
- Mexico
  - CONACHT
- Peru
  - Peru Government Scholarship
- Russia
  - Russian Government Scholarship 2014-2016
- USA
  - National Institute of Health
  - National Sciences Foundation
- Vietnam
  - VED
- Uruguay
  - National Research and Innovation Agency of Uruguay
  - ANI Uruguay

(*) Joint PhD WHO only implemented in selected cases
(**) Member of the consortium agreement for the Joint International Doctorate in Experimental Approaches to Language and Brain (IDEALAB)