Achieving our Goals in a Changing Research Landscape

David Coutts, Associate Dean, Research, Faculty of Science and Engineering
Research Highlights

Context for Research:
- Macquarie University,
- Faculty of Science and Engineering
- A changing research landscape

Support for Research in the Faculty of Science and Engineering
Research Highlights

Major achievements over the last ~ 12 months

ARC Training Centre for Fruit Fly Biosecurity opened 27 June 2017

Fellowships: Darrel Kemp, 2017 ARC Future Fellow,
6 ARC DECRA Fellows 2 CSIRO Future Science Fellows

Grants: 11 ARC Discovery, 1 ARC Linkage, 3 Citizen Science, 3 NHMRC Project Grants.

Four new/renewed Macquarie University Research Centres:
- Species Spectrum Research Centre ● Centre for Green Cities ● Centre for Astronomy, Astrophysics and Astrophotonics ● Biomolecular Discovery and Design Research Centre.

Grant submissions 2016/17:
- NHMRC: 5 project, 2 Career Dev. Fellowships, 1 EC Fellowship submissions

Articles: Since Jan 2016: 15 Articles in Science and Nature
$10M INITIATIVE TO CHANGE THE WAY WE GREEN PUBLIC SPACES

1 JULY 2016

A future where landscapers, local councils and developers can quickly determine the best plant species to establish for longevity, in the face of climate change and...

$20.5 MILLION TOWARDS QUEENSLAND FRUIT FLY BIOSECURITY RESEARCH AND DEVELOPMENT

9 JULY 2015

A landmark research co-investment of $20.5 million has been agreed between Macquarie University and Horticulture Innovation Australia focusing on the management of Queensland fruit fly (Qfly) through Sterile Insect Technique (SIT).

A research team led by Associate Professor Phil Taylor will focus on developing an effective SIT program to curb the prevalence of fruit flies in Australia. The team hopes to parallel the successful area-wide SIT programs that have been implemented to control other fruit fly species overseas. The funding was provided through Horticulture Innovation Australia, with co-investment by Macquarie University.
Research Highlights

Recent researcher honours

**Faculty support:**
- Identifying opportunities
- Encouraging people to nominate
- External experts to help you prepare nominations for prizes and awards
- 19 nominations so far this year
- Celebrating your success

Winners of the 2017 Anton Hales Medal from the Australian Academy of Science:
- Associate Professor Juan Carlos Afonso
- Professor Ewa Goldys
- Winning team member 2016 NSW Eureka Prize for Innovation in Citizen Science:
  - Dr Emilie Ens
- Named as one of ten honourees of the MIT Technology Review Innovators Under 35 competition for Southeast Asia, Australia, New Zealand and Taiwan:
  - Dr Simon Gross

Faculty support:
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- Celebrating your success
Macquarie in Context
University rankings based on research

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# ARWU Calculated by MQ Analytics
@ World Ranking Using total publication (P)

It is important to be in the top 200
Macquarie in Context

HDR Completions 2010-2015

[Bar chart showing HDR completions for ANU, Adelaide, QUT, Macquarie, UNSW, UQ, Melb, USyd, and Monash, with Macquarie's completion rates highlighted and showing an upward trend.]
Macquarie in Context

Australian Universities Research Income Landscape

External Research Income ($M)

Level B-E FTE Staff

2015

ANU
UWA
Adelaide
Curtin, Deakin, Griffith, QUT, RMIT,

Melbourne
UNSW
Sydney
Monash
Queensland

Go8

The rest

Macquarie
Importance of STEM

Reputation and Rankings rely heavily on STEM disciplines

2016 External HERDC Income Breakdown by Faculty

- FSE $31.5m
- FMHS
- FHS
- ARTS
- Other
- FBE

Reputation and Rankings rely heavily on STEM disciplines.
3 Aligning the nature and size of the University for the future
Faculty of Science and Engineering
Research Income (HERDC by Category) – 2005-2016

Faculty Income by Category

- Cat 4 CRC
- Cat 3 Industry
- Cat 2 Other Public
- Cat 1 CGS
Building Capacity in FSE

New Academic Staff

Over 10 new continuing academics recruited in the last ~12 months
Six Professors: Sheng, Mukhopadhyay, French, Bagnall, Rodgers, Skidmore (50%)

Engineering growing very rapidly:
+3 in 2015, +7 in 2016 and up to +13 in 2017

Attracting external fellows to relocate to MQ (DECRA Fellows, Future Fellows)
Challenges and Opportunities

How can I get funding for my research?

Funding for postdocs
Funding for HDR students (Scholarships)
Funding for new equipment
Funding for travel (conferences, field trips)
Funding for project costs

Everyone is very busy…
What are the external funding opportunities?
(Internal schemes are now geared towards seeding external opportunities)
Changing Landscape
The Changing Landscape

Traditional ARC Funding

Replaced by new opportunities
The Changing Landscape
Traditional ARC Funding

Faculty Support:

• External consultants to provide expert feedback on draft research proposals

• FSE Safety-Net to complement MQ Safety-Net
The Changing Landscape

More directed research funding, more partner engagement

$1.1B over 4 years
The Changing Landscape
More directed research funding, more partner engagement

Industry Growth Centres: $250M over four years

- Advanced Manufacturing
- Cyber Security
- Food and Agribusiness
- Medical Technologies and Pharmaceuticals
- Mining Equipment, Technology and Services
- Oil, Gas and Energy Resources.

In part to: Improve engagement between research and industry
The Changing Landscape
More directed research funding, more partner engagement

Cyber Security ● Enhanced human performance
Quantum ● Space ● Materials,
Medical countermeasures ● Autonomous systems
Integrated surveillance and reconnaissance
Advanced sensors, hypersonics & directed energy

$730M Next Generation Technologies Fund over 10 years:
• Grand Challenges Program
• Defence Cooperative Research Centres
• Strategic Research Projects…

Macquarie is a member of the Defence Science Partnerships program
The Changing Landscape
More directed research funding, more partner engagement

Smart Cities Plan ($50M): includes Smart Technology

CSIRO Synthetic Biology: Future Science Fellowships

Inspiring Australia Science Engagement Program: Citizen Science Grants

New opportunities on our doorstep
• Macquarie Park Innovation District (MPID)
Navigating the Opportunities
Finding and Creating Opportunities

Read *Research Matters* fortnightly newsletter
read the spreadsheet list of opportunities

Subscribe to funding opportunity services:

*Research Professional* - alerts that match your interests:
www.researchprofessional.com

*Nine Sigma* – industry problems
www.ninesigma.com
Navigating the Opportunities
Finding and Creating Opportunities

Build your network
Attend meetings & workshops that bridge to industry/defence/government
apply for a FSE Visiting Research Fellowship grant

Build your public profile
Log on to PURE via the Research Hub (staff.mq.edu.au/research/research-hub)
and update your profile

Help us to promote you
Tell us your good news stories, use social media (@MQSciEng), apply for
prizes and awards
Navigating the Opportunities

Responding to Opportunities

“Sandpit” events – cross-Departmental/Faculty collaborations
  Fluid mechanics (2016)
  Imaging, Smart Cities, 3d-printing, what would you like to see?

FSE Partnership Clinics - Targeting Category 2, 3, 4 Grants
  Mike Heimlich: AD Industry and Corporate Engagement
  Mark Berlage: Research Partnerships Manager – FSE
  make an appointment!

Support with developing proposals:
  Expert consultants to review draft proposals (not just ARC Discovery)
Navigating the Opportunities

Supporting open Linkages

- 3 internal rounds for easy support – aligned to academic calendar
- Safety-net scheme for Linkage

Internal grants for engaging with end-users:
  - Partnership Seeding Grants (match dollar for dollar up to $50k)
  - Industry co-Funded Fellowships (2-3 years, at least 50% industry funded)

Excellent resources on MQ Research Partnerships web pages
A Streamlined Process

Optimising our ability to partner with industry / end-users

Research Office Rapid Improvement Exercise with FSE – outcomes:

- Keep Cat-1 processes the same
- Fast-track: Low-touch with standardized template
- Customized: complex funding- and IP-related projects
Navigating the Opportunities

Other initiatives

• Engagement with MPs and government ministry
• Industry Growth Centre memberships and dialogue
• Building relationships with DST Group
• Developing international partnerships: delegations
  - Europe, Japan, China (including via AusTrade, DFAT)
• Building major partnerships with industry:
  - Optus Macquarie Cyber Security Hub
  - Thermo Fisher Scientific
• Strategic approach to Centres of Excellence
Entrepreneurship Opportunities

Impact through entrepreneurship

Macquarie University Incubator
- Pop-up Incubator (E3B 114)
- New building nearly ready

CSIRO
- On-Prime
- On-Accelerator
- FLEDGE (MedTech)

Other Accelerators
- MedTech Actuator
- Innov8

Incorporating entrepreneurship into PhD and UG programs
Summary

The landscape for supporting research in Australia has changed
New challenges, and new opportunities!

Many opportunities require partnering – multi-institutional and/or with industry
Lots of support to help you take advantage of new opportunities
FSE is working hard to build success – we need you to seize the new opportunities

Your FSE team is there to help!
  David Coutts, ADR, Mike Heimlich AD ICE, Ian Wright Deputy ADR
  Irina Zakoshanski FRM, Cathi Humphrey-Hood, Katherine Shevelev
  Mark Berlage – Research Partnerships Manage, Science and Engineering