Knowledge Commercialisation Australasia

# SCOPR® 2022
# Survey of Commercialisation Outcomes from Public Research

## Summary report

techtransfer.org.au/metrics-data

SUPPORTED BY:

Australian Government
Department of Education

SURVEY & REPORT DELIVERED BY:

gemaker
TAKING NEW IDEAS TO MARKET

# Contents



**Disclaimer**

This report has been prepared for KCA solely for the purpose of providing an analysis of the commercialisation activities of Australasian public research organisations. As such, neither KCA or gemaker undertakes responsibility in any way whatsoever to any person or organisation for reliance on any information set out in this report, including any errors or omissions, arising through negligence or otherwise, however caused.

Key metrics have been summarised for 2018-2022 within this report. In all following graphs of the SCOPR® measures, organisations are ranked by 2022 data. Where an organisation either did not provide data for 2022, or provided the answer zero, they have been excluded from that graph, even when historic data were provided. All graphs report data for the current year plus the previous two years.

# Welcome to SCOPR® 2022

We are pleased to provide a summary report of the findings from SCOPR® 2022.

SCOPR® is conducted annually by Knowledge Commercialisation Australasia (KCA), the peak body representing technology transfer professionals and their organisations in Australia and New Zealand. Through its members, KCA has led best practice in industry engagement, technology transfer and entrepreneurship for research organisations since 1978. Conducting SCOPR® is a core activity of KCA, and it is offered to members and non-members alike as a part of our contribution to enhancing the visibility and success of research commercialisation in Australia and New Zealand.

SCOPR® is now in the sixth year of metrics collected from universities, medical research institutes, rural research corporations and other publicly funded research agencies. The data collected by SCOPR® is categorised into Normalising Metrics, Work Outcome Metrics and Commercialisation Outcome Metrics. These metrics enable respondents to undertake national and international benchmarking and inform decision-making within their organisations. The aggregated data presented in the report demonstrate to the broader community the successful outcomes of the commercialisation of publicly funded research.

In 2023, KCA entered into a strategic partnership with the Australian Government Department of Education with the aims of improving response rates for SCOPR® and achieving enhancements to survey questions. As part of this partnership, a joint workshop was held with organisations such as AAMRI, NHMRC, ARC, Universities Australia and the Department of Industry, Science and Resources.

Participation in SCOPR® is voluntary, and the metrics are supplied on a self-reporting basis. In 2022, 64 Australian and New Zealand research organisations participated, an increase of 31% on last year's participation.

Over the past five years, respondents have created 334 new companies, collected AU$1.6B in commercialisation income from deals and brought in more than AU$4.8B in industry research contracts. The data is positive proof that Australasian public research organisations are contributing significantly to the new industries of Australia and New Zealand and are generating products and services of international significance.

We acknowledge that there are many recent commercialisation success stories. To provide good examples of what has been achieved, we have included case studies of the 2022 KCA Australasian Research Commercialisation Awards winners.

Although they comprise a small proportion of the staff of these organisations, technology transfer professionals are critical to the achievement of real-world impact. They facilitate the complex and arduous journey from idea to reality, ensuring that social and economic benefits result from the billions of public dollars spent annually on research. Thanks to all the technology transfer professionals within research organisations who assembled the metrics.

Thank you also to the SCOPR Committee and to gemaker, who KCA engaged to conduct the survey and deliver the report.

**John Grace** AO FTSE FAICD BSc RTTP
Chair SCOPR® Committee

**Quin Chang** BE GAICD RTTP
Chair KCA

# SCOPR® metric groupings

## Normalising metrics

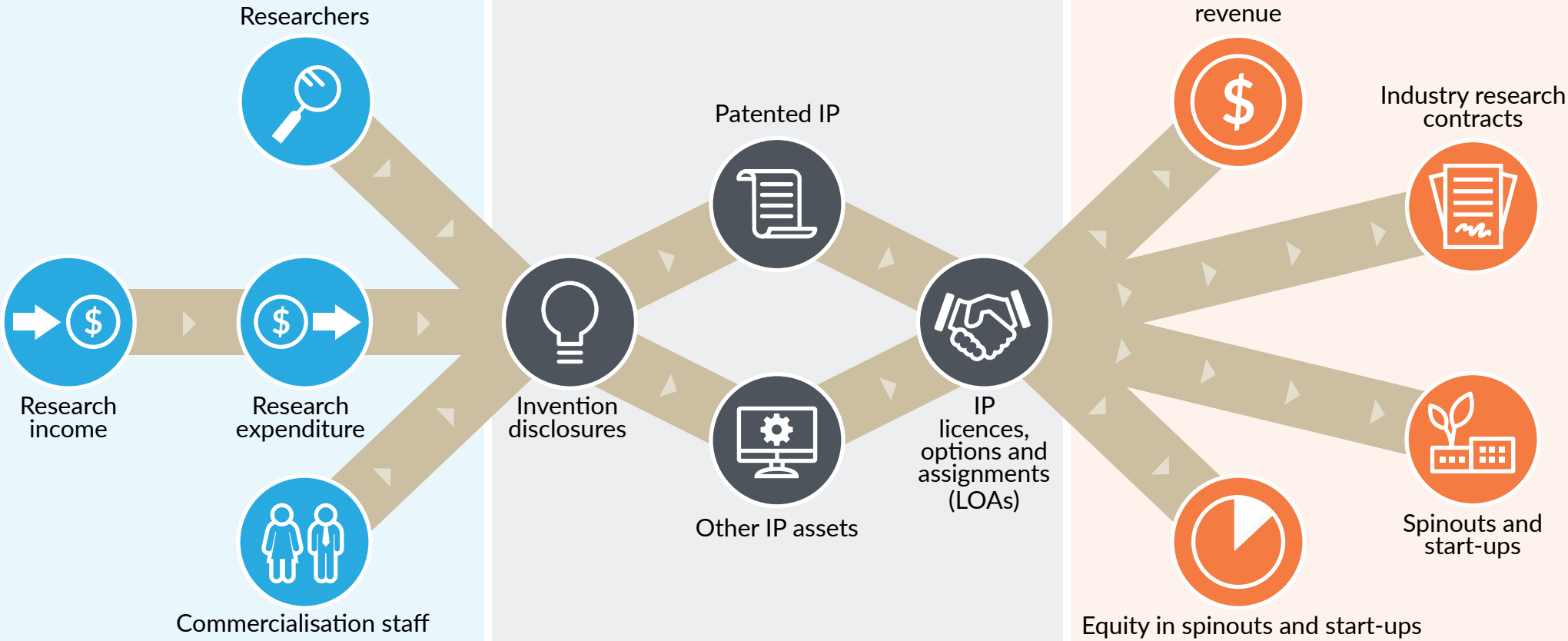
These enable an organisation to compare and benchmark Work and Commercialisation outcomes e.g. Invention disclosures per 1,000 researchers or commercialisation revenue by $'000 research expenditure.

## Work outcomes metrics

These demonstrate output from the efforts of technology transfer offices in defining, protecting and negotiating patented and non-patented IP resulting from the research efforts of an organisation, that may translate to new businesses, products and services.

## Commercialisation outcomes metrics

These demonstrate both direct monetary impact from the Work Outcome metrics through engaging with industry, and the number of new businesses created through such efforts.



# Normalising data 2022 - 2018

AGGREGATED DATA

## Australia

| | | Research income | Research expenditure | Research staff (FTE) | Research commercialisation staff (FTE) |
|---|---|---|---|---|---|
| 53 respondents | 2022 | $7.6B | $14.3B | 39,850 | 278 |
| 43 respondents | 2021 | $7.5B | $11.9B | 37,088 | 237 |
| 39 respondents | 2020 | $6.9B | $12.6B | 34,885 | 227 |
| 34 respondents | 2019 | $6.2B | $7.6B | 28,044 | not requested |
| 34 respondents | 2018 | $5.7B | $9.7B | 27,379 | not requested |

## New Zealand

| | | | | | |
|---|---|---|---|---|---|
| 11 respondents | 2022 | NZ$1.3B | NZ$1.3B | 9,657 | 78 |
| 6 respondents | 2021 | NZ$1.1B | NZ$1.3B | 5,680 | 76 |
| 17 respondents | 2020 | NZ$1.1B | NZ$1.1B | 9,899 | 108 |
| 15 respondents | 2019 | NZ$590M | not reported | 7,400 | not requested |
| 15 respondents | 2018 | not reported | not reported | 6,158 | not requested |

*Not all respondents reported data for all measures.*

# Work outcomes data 2022 - 2018

AGGREGATED DATA

## Australia

| | | Invention disclosures | New patent families | New non-patented IP | New licences, options and assignments (LOAs) |
|---|---|---|---|---|---|
| 53 respondents | **2022** | 1,318 | 422 | 281 | 836 |
| 43 respondents | **2021** | 1,350 | 436 | 360 | 791 |
| 39 respondents | **2020** | 1,423 | 447 | 260 | 629 |
| 34 respondents | **2019** | 1,372 | 468 | 363 | 598 |
| 34 respondents | **2018** | 1,362 | 428 | 330 | 553 |

## New Zealand

| | | | | | |
|---|---|---|---|---|---|
| 11 respondents | **2022** | 303 | 36 | 42 | 97 |
| 6 respondents | **2021** | 305 | 43 | 68 | 110 |
| 17 respondents | **2020** | 539 | 79 | 43 | 113 |
| 15 respondents | **2019** | 274 | 144 | 69 | not reported |
| 15 respondents | **2018** | 154 | 80 | 58 | not reported |

*Not all respondents reported data for all measures.*

# Commercialisation outcomes data 2022 - 2018

AGGREGATED DATA

## Australia

| | | Commercialisation revenue | New spinouts and start-ups | Active spinouts and start-ups | Equity held in spinouts and start-ups | Value of research contracts with for-profit companies |
|---|---|---|---|---|---|---|
| 53 respondents | **2022** | $307M | 49 | 338 | $808M | $934M |
| 43 respondents | **2021** | $299M | 69 | 311 | $728M | $847M |
| 39 respondents | **2020** | $258M | 55 | 258 | $557M | $770M |
| 34 respondents | **2019** | $180M | 45 | 233 | $262M | $714M* |
| 34 respondents | **2018** | $119M | 48 | 217 | $178M | $643M* |

## New Zealand

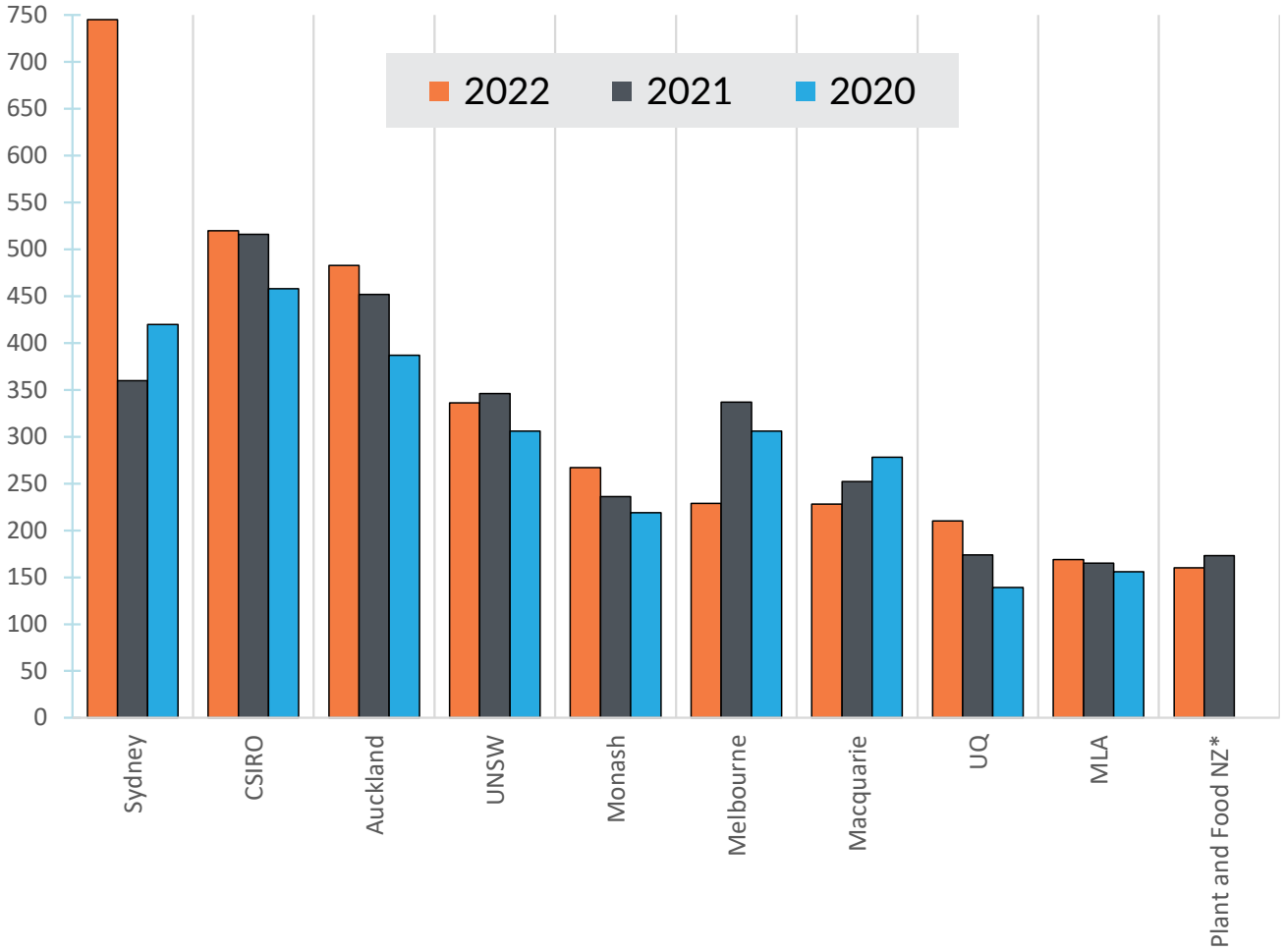
| | | | | | | |
|---|---|---|---|---|---|---|
| 11 respondents | **2022** | $NZ155M | 18 | 113 | $NZ96M | $NZ178M |
| 6 respondents | **2021** | $NZ130M | 13 | 86 | $NZ100M | $NZ178M |
| 17 respondents | **2020** | $NZ147M | 17 | 88 | $NZ94M | $NZ559M |
| 15 respondents | **2019** | $NZ81M | 10 | 60 | not reported | not reported |
| 15 respondents | **2018** | not reported | 10 | 50 | not reported | not reported |

** Australian Universities, CSIRO and QIMRB only*

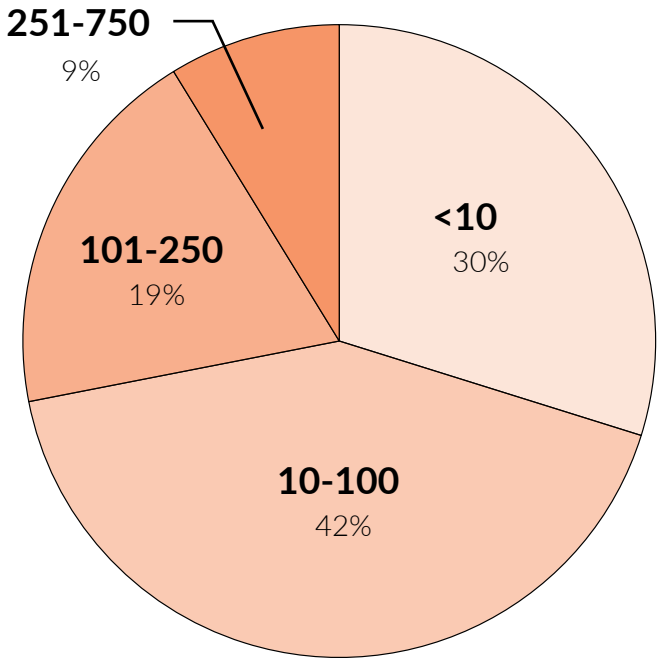
*Not all respondents reported data for all measures.*

# Active LOAs 2022-2020

## Top 10 Institutions (2022)




## % of all respondents by number of active LOAs (2022)




57 respondents

** = FY DATA*

*Sydney: Review of commercial licenses (non-exclusive) has resulted in higher number for 2022.*

*CSIRO: Current year figures are based on 12-month reporting period to 30 June 2022. Prior year figures have been submitted on 12-month periods ending in December. Figures provided are for a full year for comparative purposes, however, current year results may include some duplication from the prior year due to overlapping periods reported.*

# Best Licensing Deal 2022

CASE STUDY

## Addressing Iron Deficiency: Nestlé's Acquisition of FERRI-PRO Technology

The world's most important nutritional deficiency, iron deficiency anaemia, impacts over 1.6 billion people globally. Predominantly affecting young children and pregnant women, if left untreated it can cause serious mental and physical harm. Nutrient deficiencies are commonly addressed by food fortification, but conventional sources of iron supplementation compromise food quality and taste.

In response, Massey University researchers, based at the Riddet Institute Centre of Research Excellence, have developed FERRI-PRO - a novel protein-iron complex, made from food-grade materials that enables the fortification of food products and beverages, without compromising taste or quality.

With a strategic commitment to address under-nutrition, global food company Nestlé proved to be the ideal commercialisation partner for Massey University. Massey engaged with Nestlé's headquarters in Switzerland, establishing an exclusive trial period and ultimately negotiating the sale of the intellectual property.

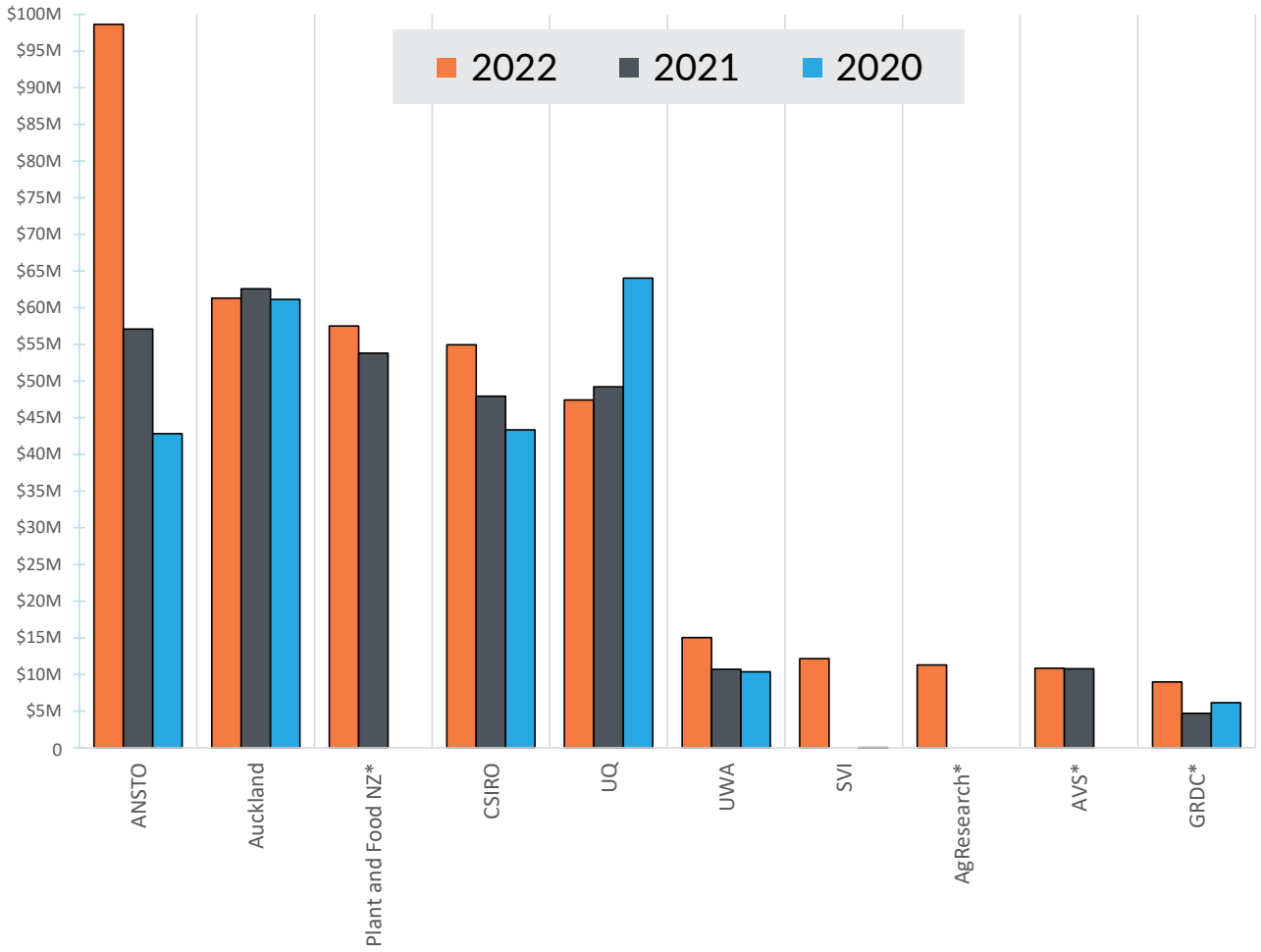
Acquiring the FERRI-PRO technology in December 2018, Nestlé announced BUNYAD IRON+ in 2022, an affordable dairy-based drink fortified with iron. Initially launched in Pakistan where half of children are iron deficient, Nestlé will consider additional products and markets for the technology.

This deal represents the single biggest commercial deal to emerge from Massey University, both in terms of commercial impact and societal benefits. The team at Massey has been awarded "Best Licensing Deal" at the 2022 KCA Australasian Research Commercialisation Awards and the PwC Commercial Impact Award at the 2020 KiwiNet Awards.

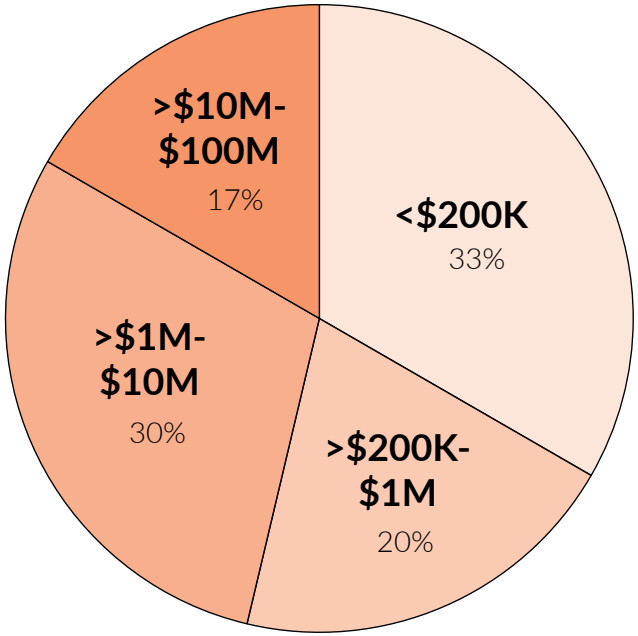
Groundbreaking Ferri-Pro ingredient

# Commercialisation revenue 2022-2020

## Top 10 Institutions (2022)




## % of all respondents by commercialisation revenue (2022)




**54 respondents**

** = FY DATA*

*Value converted to AUD based on NZ Reserve Bank exchange rate data average for the 2022, 2021 & 2020 calendar years.*

*CSIRO: Current year figures are based on 12-month reporting period to 30 June 2022. Prior year figures have been submitted on 12-month periods ending in December. Figures provided are for a full year for comparative purposes, however, current year results may include some duplication from the prior year due to overlapping periods reported.*

# Best Industry Collaboration 2022

CASE STUDY

## Going Bananas for Collaborations

QUT's Centre for Agriculture and the Bioeconomy's Banana Biotechnology Program has been transforming bananas for over 25 years, delivering significant economic, social and community benefits in Australia and globally.

QUT Distinguished Professor James Dale and his team, are trialling the QCAV-4 banana, at the QUT facility in the Northern Territory. From left to right: Dr Jean-Yves Paul, Ms Maiko Kato, Distinguished Professor James Dale and Station Manager Mark Smith

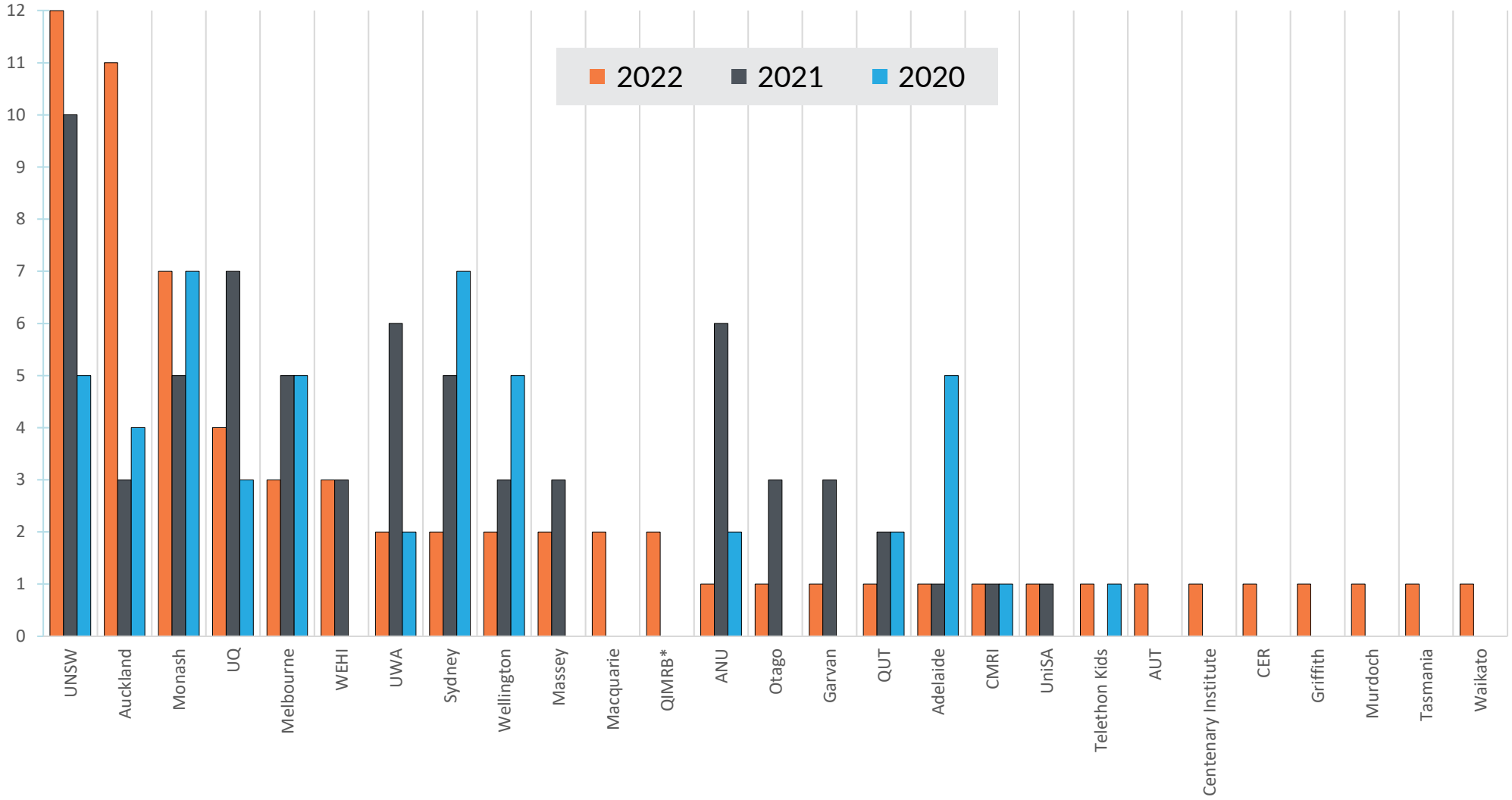
Its multi-million-dollar Golden Banana project, a pro-vitamin A fortified banana funded by The Bill & Melinda Gates Foundation, that will deliver life-saving health benefits to millions of people in Africa, is ready for release to farmers.

The innovative Banana Biotechnology Program is led by Distinguished Professor James Dale, an awarded entrepreneurial scientist and humanitarian, who collaborated with plant biologists and growers in Uganda to develop and field trial the genetically modified cultivar.

The Banana Biotechnology Fusarium wilt TR4 Program has also developed a genetically modified Cavendish banana, resistant to the devastating Panama Disease TR4. The QCAV-4 banana has recently been submitted for regulatory approval by the Australian Government and is the first Australian GM fruit, and the first banana globally, to be submitted for assessment. If approved, it would offer a potential safety net against the devastating Panama Disease which threatens the world's US$25 billion banana industry.

Phase 2 of the TR4 Cavendish resistance program is progressing well, with corporate and grower partners across Australia and around the world. This program has enabled the researchers to use gene editing to develop a non-genetically modified variety of Cavendish that will also be resistant to TR4.

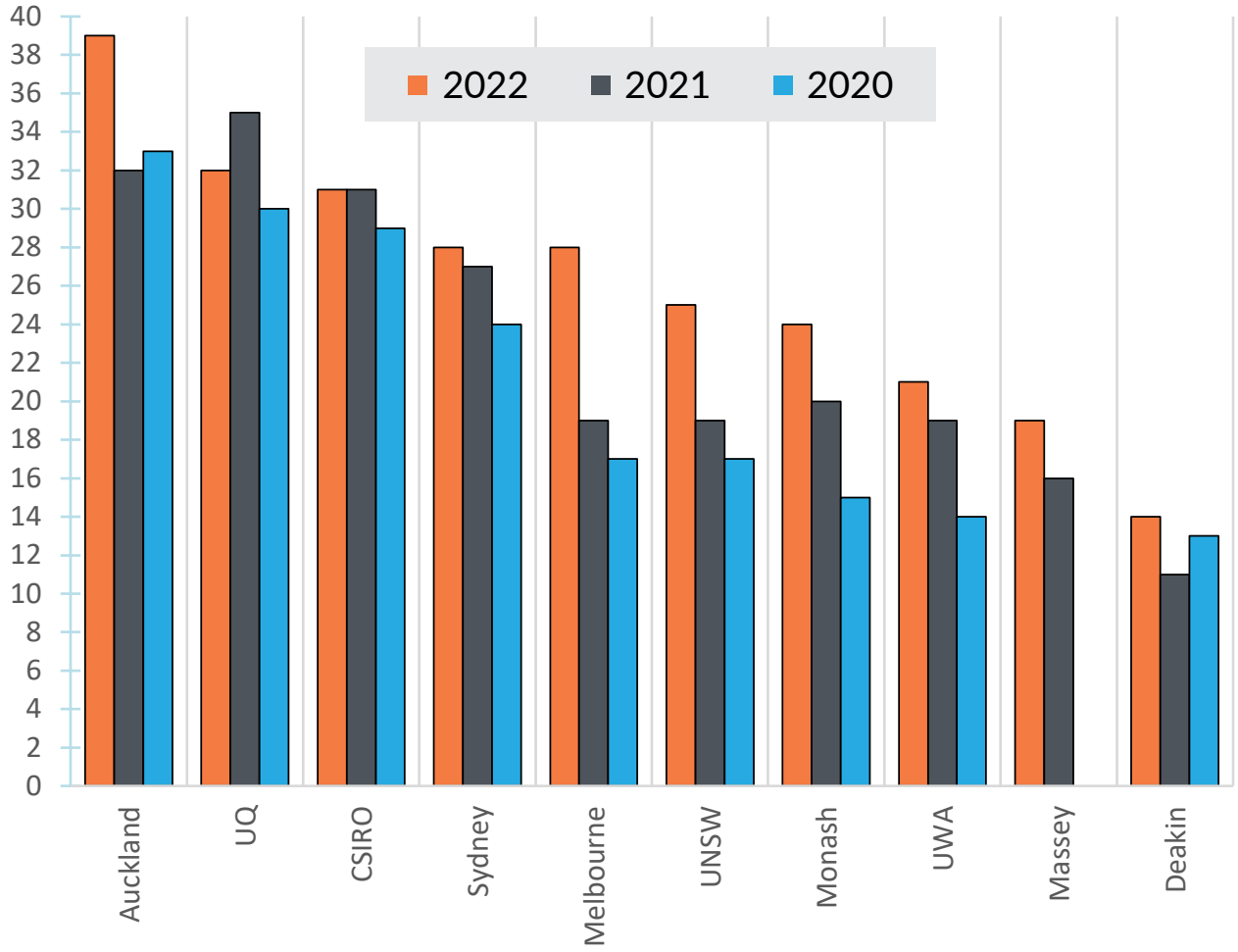
# New start-up and spinout companies 2022-2020



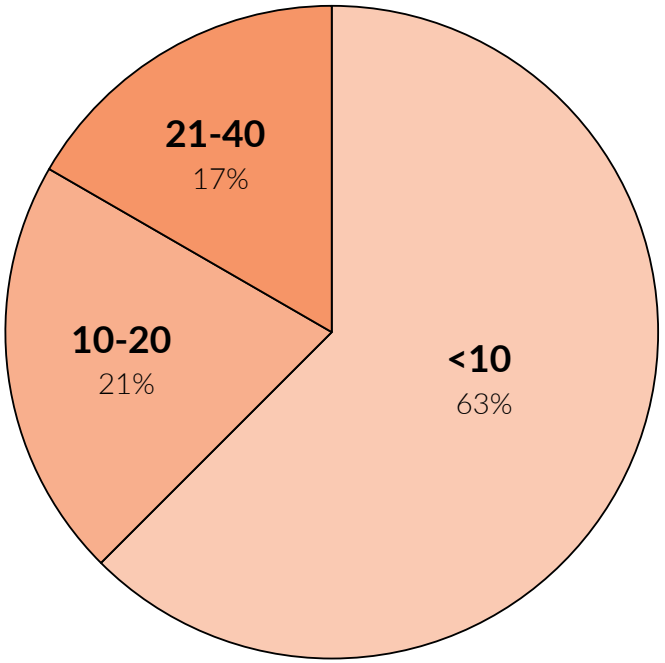

* = *FY DATA*

# Active start-up and spinout companies 2022-2020

## Top 10 Institutions (2022)




## % of all respondents by number of active start-ups and spinouts (2022)




48 respondents

*CSIRO: Current year figures are based on 12-month reporting period to 30 June 2022. Prior year figures have been submitted on 12-month periods ending in December. Figures provided are for a full year for comparative purposes, however, current year results may include some duplication from the prior year due to overlapping periods reported.*

## Enhancing Manufacturing Excellence through Additive Assurance

Additive Manufacturing (AM), commonly known as 3D printing, has the potential to revolutionise advanced manufacturing industries by enabling rapid and intricate production of complex parts. However, the fabrication process of AM poses challenges to ensuring consistency and repeatability without significant downtime, or low material yields.


Additive Assurance's AMiRIS™ Sensor deployed on the factory floor

Research led by PhD candidate Marten Jurg and Dr Andrey Molotnikov at Monash University sought to address this issue and, to commercialise the resulting intellectual property, Additive Assurance was spun-out from the university in 2019, with support from IP Group and a seed round of $1.6m.

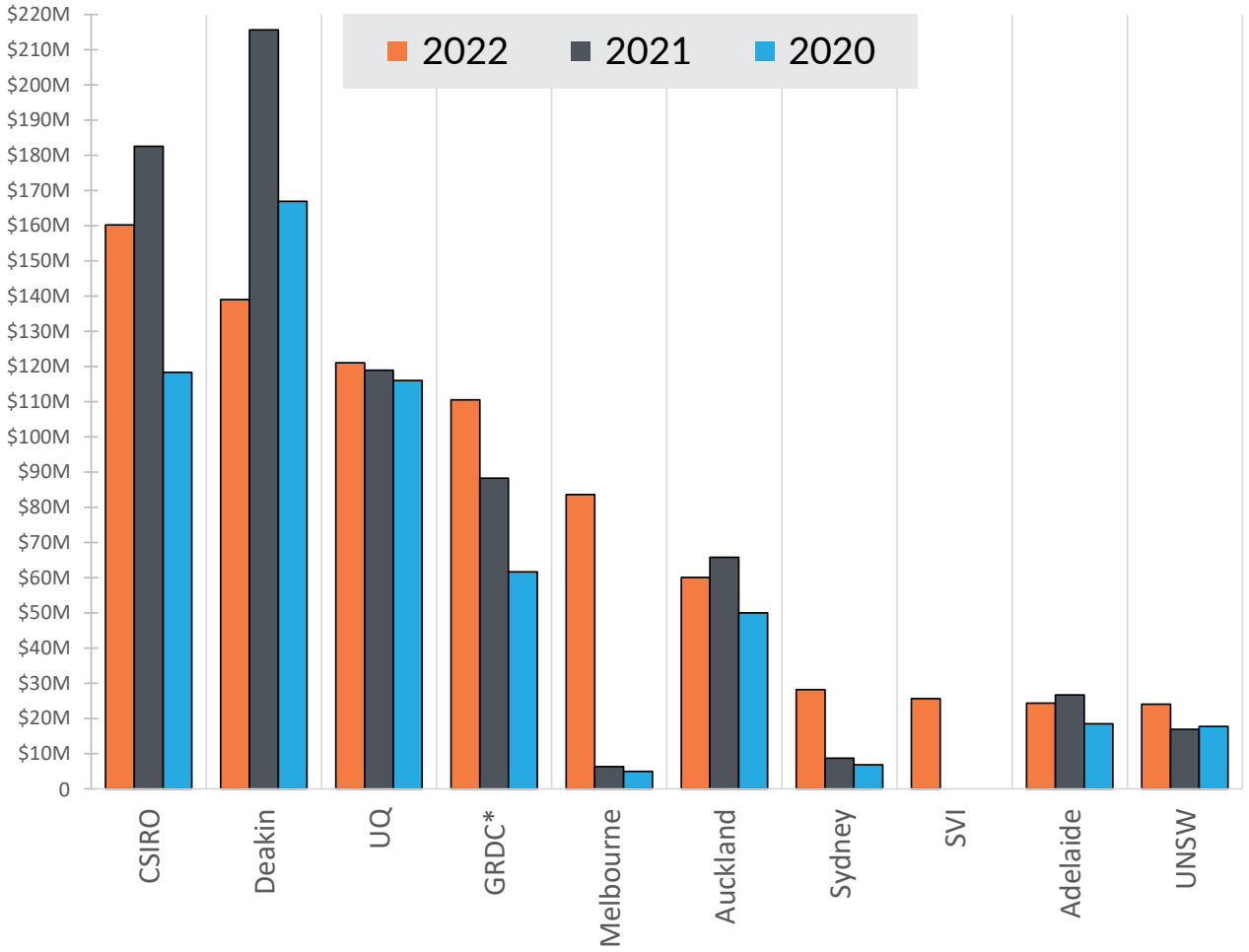
Additive Assurance supplies a novel sensing technology, AMiRIS™, powered by machine learning analytics that enables metal 3D mass production with the stringent consistency and reliability modern manufacturers require. AMiRIS™ promises to transform industries from automotive to aerospace and even medical devices with specialised, localised, precision production on demand.

Early customers include major German automotive companies, a major manufacturing conglomerate, US aerospace primes, and Australian partners in the defence and energy sectors. By mid-2022, Additive Assurance had a growing order book as it sought to make its mark in the global manufacturing ecosystem.

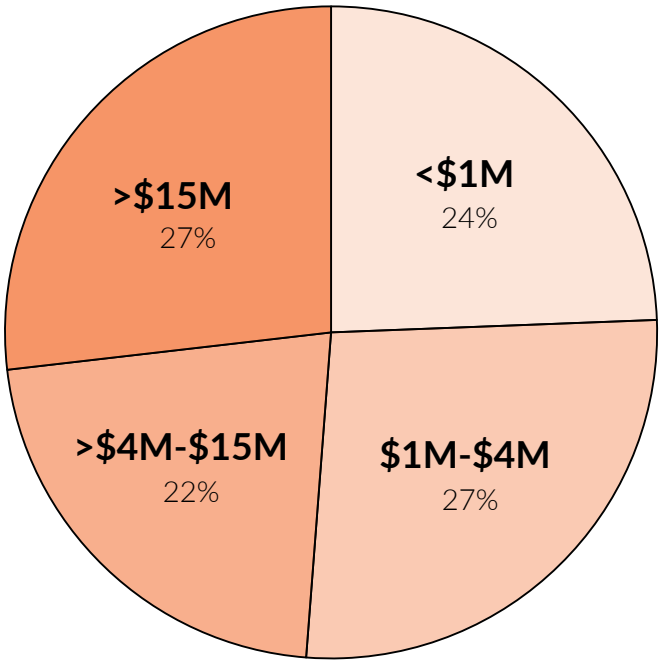
In late 2022, the company successfully raised a subsequent round of funding, led by Significant Capital Ventures. This funding will enable the move to production and installation at scale and allow the company to capture the burgeoning global demand. On the back of its early commercial success, the company has deployed systems globally, set up a manufacturing demonstration facility at its Oakleigh office, and continues to grow.

# Equity in start-up and spinout holdings 2022-2020

## Top 10 Institutions (2022)




## % of all respondents by value of equity in start-up & spinout holdings (2022)




41 respondents

** = FY DATA*

*NZ institutions - Value converted to AUD based on NZ Reserve Bank exchange rate data average for the 2022, 2021 & 2020 calendar years.*

*CSIRO: Current year figures are based on 12-month reporting period to 30 June 2022. Prior year figures have been submitted on 12-month periods ending in December.*

*Figures provided are for a full year for comparative purposes, however, current year results may include some duplication from the prior year due to overlapping periods reported.*

# Best Knowledge Exchange Initiative 2022

CASE STUDY

## Transforming Industry through the Advanced Robotics for Manufacturing Hub

The Advanced Robotics for Manufacturing (ARM) Hub was established in 2020 as a world-leading knowledge exchange centre for the Australian manufacturing community. Initiated by QUT in partnership with Brisbane-based art fabricator UAP, the Hub has grown into a leading research translation centre.

The Hub aims to de-risk technology adoption, development, and commercialisation, working with companies to increase Australia's global competitiveness through the development and adoption of AI, robotics and other Industry 4.0 technologies.


Australian Government Ministers Anika Wells and Ed Husic investigate the cutting edge technology at the ARM Hub factory.

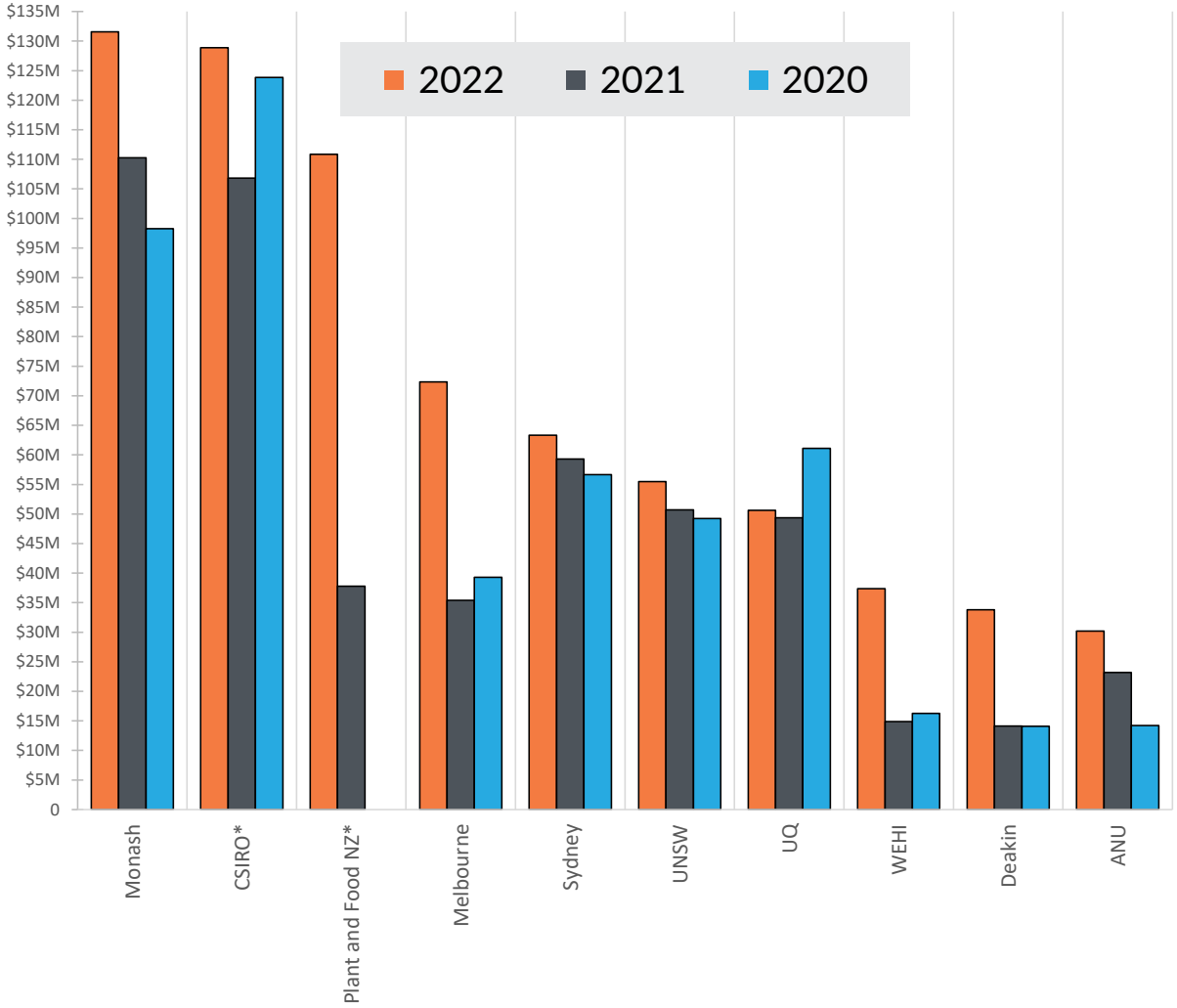
In the last three years, ARM Hub has engaged with over 700 businesses, helping 68 to develop commercial solutions, reaching industry across Australia and the world, and raising $254 million in additional industry funds with its partners.

The ARM Hub sits at the forefront of industrial transformation, providing industry with access to a world-leading network of R&D expertise. For example, Young Guns Container Crew has been working with ARM Hub and the QUT School of Design to reduce the downtime of pallet stackers and forklift drivers, by investigating the automation of the shipping container de-stuffing process and thus improving safety, productivity, and efficiency in the supply chain. The AI-enabled automated packing solution has been shown in simulations to reduce labour by up to 50%. The next stages of the project involve building a prototype at ARM Hub's Learning Factory and certification.

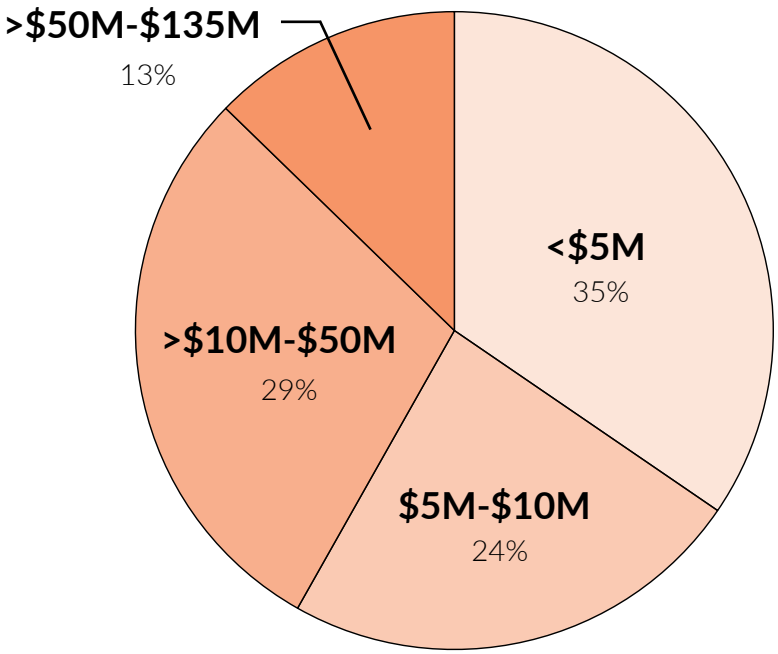
In 2022 the ARM Hub was awarded KCA's Research Commercialisation Award for Best Knowledge Exchange Initiative. Having celebrated its third birthday in 2023, ARM Hub was delighted to receive the news that the Queensland Government has extended its support for the Hub for another 4 years ($8.8 million) - allowing it to continue its collaborative technology development with industry and government partners.

# Annual gross income for research contracts from for profit companies 2022-2020

## Top 10 Institutions (2022)




## % of all respondents by value of research contracts (2022)




55 respondents

* = FY DATA

*Value converted to AUD based on NZ Reserve Bank exchange rate data average for the 2022, 2021 & 2020 calendar years.*

*For Australian universities only, published HERDC data were used for the years 2020-2021.*

# Research Commercialisation Professional of the Year 2022

SPOTLIGHT

## Erin Rayment – Executive Director (Industry Engagement) QUT

While the spark of an idea may start with an academic researcher, it is rare that any one person has all the skills needed to successfully take a technology from research topic to successful product or service. A collaboration of people with different skill sets is ideal to shepherd a technology through each different development stage. Erin Rayment is one of these people – currently leading commercialisation and industry engagement at the Queensland University of Technology.

Erin has been involved in the university commercialisation sector for just over 10 years and yet she has an impressive set of achievements under her belt. In less than 4 years in her current role she has created five university startups, driven an increase in commercialisation deals and directly negotiated and executed several large multi-party transactions.

Her achievements include leading a 10-year R&D partnership between UniSQ and the world's largest agricultural machinery company - resulting in the licensing of an industry-first technology - and the management of a multi-million dollar commercialisation deal between QUT and a multinational produce company with a net worth of over US$1.4 billion. Her work on the commercialisation of bananas hopes to enable the release of a genetically modified Cavendish banana; with the potential to save the US$25 billion a year global export industry from the devastating Panama Disease TR4.

At the same time, Erin has represented the sector at the highest level. As Director and past Chair of KCA she has represented Australia at international forums, government working groups and on review panels. Erin holds a PhD in tissue engineering, is a Graduate of the Australian Institute of Company Directors, and is a Registered Technology Transfer Professional. In recognition of her achievements, Erin was awarded the 2022 KCA Research Commercialisation Professional of the Year.

Dr. Erin Rayment

# SCOPR® 2022 respondents

## Australia 53 respondents

### UNIVERSITIES (33)

- Central Queensland University (CQU)
- Charles Sturt University (CSU)
- Curtin University (Curtin)
- Deakin University (Deakin)
- Edith Cowan University (Edith Cowan)
- Flinders University (Flinders)
- Griffith University (Griffith)
- La Trobe University (La Trobe)
- Macquarie University (Macquarie)
- Monash University (Monash)
- Murdoch University (Murdoch)
- Queensland University of Technology (QUT)
- RMIT (RMIT)
- Southern Cross University (SCU)
- Swinburne University of Technology (Swinburne)
- The Australian National University (ANU)
- The University of Adelaide (Adelaide)
- The University of Melbourne (Melbourne)
- The University of Notre Dame Australia (Notre Dame)
- The University of Western Australia (UWA)
- Torrens University Australia Limited (Torrens)
- University of Canberra (Canberra)
- University of New South Wales (UNSW)
- University of Newcastle (Newcastle)
- University of Queensland (UQ)
- University of South Australia (UniSA)
- University of Southern Queensland (USQ)
- University of Sydney (Sydney)
- University of Tasmania (Tasmania)
- University of Technology Sydney (UTS)
- University of the Sunshine Coast (USC)
- University of Wollongong (UOW)
- Western Sydney University (WSU)

### MEDICAL RESEARCH INSTITUTES (14)

- Baker Heart and Diabetes Institute (Baker Institute)
- Black Dog Institute (Black Dog Institute)
- Centenary Institute of Cancer Medicine and Cell Biology (Centenary Institute)
- Centre for Eye Research Australia (CER)
- Children's Medical Research Institute (CMRI)
- Garvan Institute of Medical Research (Garvan)
- Neuroscience Research Australia (NeuRA)
- Peter MacCallum Cancer Centre (PeterMac)
- QIMR Berghofer Medical Research Institute (QIMRB)
- St Vincent's Institute of Medical Research (SVI)
- Telethon Kids Institute (Telethon Kids)
- The George Institute for Global Health (George)
- Walter and Eliza Hall Institute of Medical Research (WEHI)
- Westmead Institute of Medical Research (WIMR)

### OTHER PUBLIC RESEARCH ORGANISATIONS (3)

- Australian Nuclear Science & Technology Organisation (ANSTO)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- National Measurement Institute (NMI)

### OTHER RESEARCH ORGANISATIONS (3)

- Agriculture Victoria Services (AVS)
- Grains Research and Development Corporation (GRDC)
- Meat & Livestock Australia Limited (MLA)

## New Zealand 11 respondents

### UNIVERSITIES (7)

- Auckland University of Technology (AUT)
- Massey University (Massey)
- The University of Auckland (Auckland)
- University of Canterbury (Canterbury)
- University of Otago (Otago)
- University of Waikato (Waikato)
- Victoria University of Wellington (Wellington)

### OTHER PUBLIC RESEARCH ORGANISATIONS (4)

- AgResearch Limited (AgResearch)
- Institute of Environmental Science and Research (ESR NZ)
- Lincoln Agritech Limited (Lincoln)
- Plant and Food Research (Plant and Food NZ)

**Note:** Kiwi Innovation Network Limited (KiwiNet) provided aggregated data for all organisations except the University of Auckland for 2017-2020.

# Glossary of terms

GLOSSARY

**ASSIGNMENTS**
Convey all rights and title to, and interest in, the IP to the assignee.

**COMMERCIALISATION REVENUE**
Gross income from all LOAs and sales of products or services based on expertise or IP, plus cashed-in equity, less any the costs of acquiring the equity.
Excluded: research funding, copyright income (unless related to an LOA), non-cash value exchanged for equity holdings, value of equity not cashed-in, patent expense reimbursement, consultancies and contract research.

**EQUITY**
A share of ownership in a spinout/start-up company based on institutional IP and held by the research organisation.

**HIGHER EDUCATION RESEARCH DATA COLLECTION (HERDC)**
The annual collection of research income data from Australian universities and collected by the Department of Education.

**INTELLECTUAL PROPERTY (IP)**
Novel proprietary knowledge. It may be registered (patent, trademark, plant breeders right, design), or unregistered (copyright for commercial purposes, unregistered software/code, trade secret or application of an idea).

**INVENTION DISCLOSURE**
Describes an invention in detail and is used to determine its creators, novelty and potential for social impact and/or commercialisation.

**LICENCES**
Grant another party (licensee) the rights to make/sell/use the IP owned by the licensor.

**OTHER IP ASSETS**
Includes plant breeders' rights, trade marks, confidential know-how, registered designs, circuit layouts, trade secrets, software, apps etc.

**OPTIONS**
Grant the potential licensee time to evaluate the IP and negotiate the terms of a licence or assignment agreement.

**RESEARCH CONTRACT**
A key means of commercialising the capabilities of research organisations.

**RESEARCH EXPENDITURE**
The total spent on research, whether funded through public or private grants or research contracts or from general organisational funds.

**RESEARCH INCOME**
Total income for research performed by the institution regardless of funding source. For Australian universities, this includes research income in HERDC Categories 1 (competitive grants), 2 (other public sector), 3 (industry and other) and 4 (Cooperative Research Centres).

**START-UPS / SPINOUTS**
Founded through licensing or assignment of IP and launched by the research organisation or by other parties.