Knowledge Commercialisation Australasia

SCOPR™ 2021
Survey of Commercialisation Outcomes from Public Research

Summary report

techtransfer.org.au/metrics-data

Survey and report delivered by gemaker TAKING NEW IDEAS TO MARKET

Contents

Welcome to SCOPR™ 2021

We are pleased to provide a summary report of the findings from SCOPR™ 2021. The emphasis of this report is on aggregate outcomes, commercialisation outcomes and a demonstration of case studies where successful commercialisation has occurred. The individual respondents have full access to all the data for their own analysis.

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 fifth year of metrics collected from Australian and New Zealand universities, medical research institutes, rural research corporations and publicly funded research agencies. The metrics provide data on Normalising Metrics, Work Outcome Metrics and Commercialisation Outcome Metrics. These metrics enable national and international benchmarking by respondents and help to inform decisions by research organisations. The aggregated data demonstrates to the broader community the successful outcomes of the commercialisation of publicly funded research.

The data are also available to select government bodies seeking to enhance research-industry engagement and research commercialisation.

Participation in SCOPR™ is voluntary, and the metrics are supplied on a self-reporting basis. In 2021, 49 Australian and New Zealand research organisations participated.

Over the past five years the respondents have created 307 new Companies. Respondents have collected AU$1.6B in Commercialisation Income from Deals; Industry Research Contracts have amounted to more than AU$3.6B. The data is positive proof that Australasian public research organisations are contributing significantly to the new industries of Australia and New Zealand and are producing products and services of international significance.

It must be highlighted that the 307 Technology Professionals were able to maintain and, in some cases, increase the commercial return from public funded research, in 2021 in spite of the impact of COVID on the commercial world.

We acknowledge that there are many recent commercialisation success stories. To provide good examples of what has been achieved, we have showcased case studies of the 2021 KCA Australasian Research Commercialisation Awards winners. Next year's report will contain case studies from this year's winners.

Thanks to all the technology professionals within research organisations who assembled the metrics. Although they comprise a small proportion of the staff of any research organisation, technology transfer professionals are critical to their organisations' 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 gemaker, who KCA engaged to conduct the survey and deliver the report.

John Grace AO FTSE FAICD BSc
Chair SCOPR™ Committee

Quin Chang BE, GAICD, RTTP
Chair KCA

SCOPR™ metric groupings

Normalising metrics

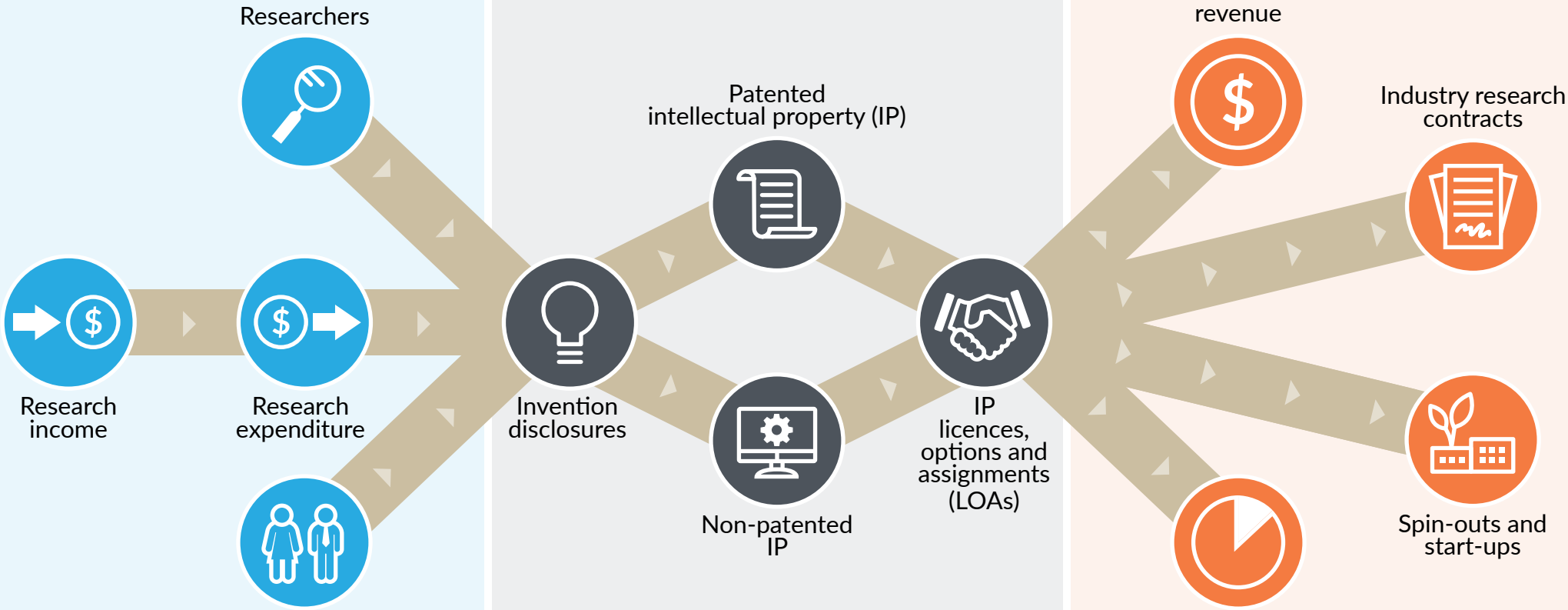
These enable an organisation to compare and benchmark Work and Commercialisation outcomes e.g. Invention disclosures per 1,000 researchers or commercialisation revenue by $'000 research expenditure.

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 2021 - 2017

AGGREGATED DATA

Australia

		Research income	Research expenditure	Research staff (FTE)	Research commercialisation staff (FTE)
43 respondents	2021	$7.1B	$11.9B	38,717	237
39 respondents	2020	$6.8B	$12.6B	39,022	219
34 respondents	2019	$6.1B	$7.4B	32,301	not requested
34 respondents	2018	$5.6B	$9.7B	32,277	not requested
34 respondents	2017	$5.3B	$6.3B	31,245	not requested

New Zealand

6 respondents	2021	NZ$991M	NZ$1.1B	5,151	70
17 respondents	2020	NZ$1.0B	NZ$986M	9,762	89
15 respondents	2019	NZ$590M	not reported	7,400	not requested
15 respondents	2018	not reported	not reported	6,158	not requested
15 respondents	2017	not reported	not reported	not reported	not requested

Not all respondents reported data for all measures.

Work outcomes data 2021 - 2017

AGGREGATED DATA

Australia

		Invention disclosures	New patent families	New non-patented IP	New licences, options and assignments (LOAs)
43 respondents	**2021**	1,333	434	354	832
39 respondents	**2020**	1,399	428	254	610
34 respondents	**2019**	1,355	455	363	594
34 respondents	**2018**	1,362	428	330	553
34 respondents	**2017**	1,263	454	294	559

New Zealand

6 respondents	**2021**	272	36	62	106
17 respondents	**2020**	478	69	40	103
15 respondents	**2019**	274	144	69	not reported
15 respondents	**2018**	154	80	58	not reported
15 respondents	**2017**	186	90	47	not reported

Not all respondents reported data for all measures.

Commercialisation outcomes data 2021 - 2017

AGGREGATED DATA

Australia

		Commercialisation revenue	New spin-outs and start-ups	Active spin-outs and start-ups	Equity held in spin-outs and start-ups	Value of research contracts with for-profit companies
43 respondents	**2021**	$251M	69	311	$726M	$800M
39 respondents	**2020**	$240M	54	256	$555M	$708M
34 respondents	**2019**	$179M	44	231	$262M	$554M*
34 respondents	**2018**	$119M	48	217	$178M	$513M*
34 respondents	**2017**	$452M#	45	199	$146M	$461M*

New Zealand

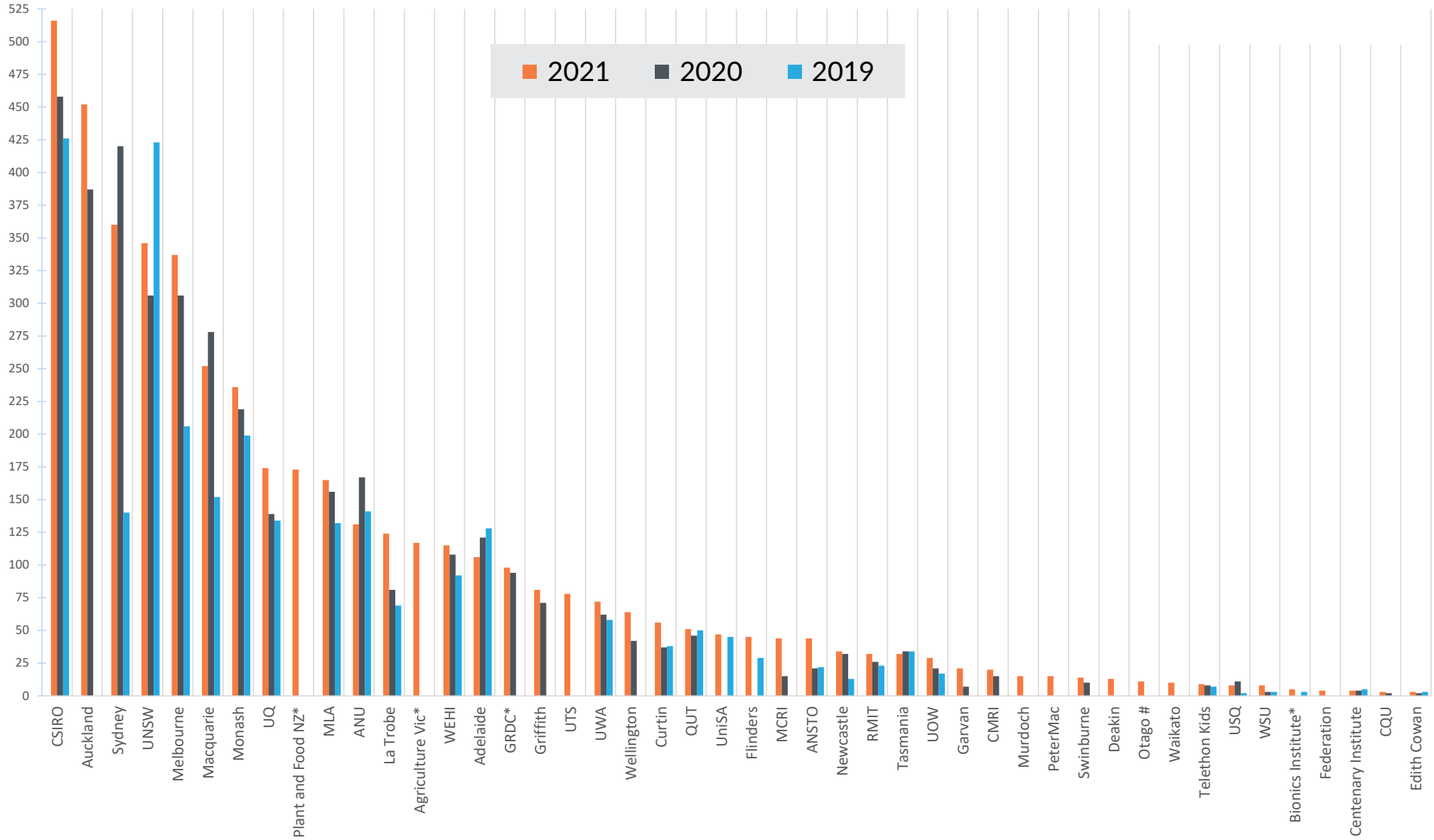
6 respondents	**2021**	NZ$128M	10	70	NZ$92M	NZ$79M
17 respondents	**2020**	NZ$141M	12	78	NZ$91M	NZ$546M
15 respondents	**2019**	NZ$81M	10	60	not reported	not reported
15 respondents	**2018**	not reported	10	50	not reported	not reported
15 respondents	**2017**	not reported	5	45	not reported	not reported

 # In 2017, WEHI received $325M from the partial sale of royalty rights for the anti-cancer treatment venetoclax

** Australian Universities only*

Not all respondents reported data for all measures.

Active LOAs 2021-2019



| * = FY DATA | # = Estimate only

Research commercialisation case study 1

CASE STUDY

NextOre mines science, engineering and industry expertise for gold

NextOre formed in 2017 as a hybrid licence/spinoff venture between the national science agency CSIRO, corporate advisory group RFC Ambrian, and engineering consultancy Advisian Digital (Worley), to commercialise magnetic resonance (MR) technology with promising applications in mining and mineral processing.

NextOre has deployed equipment to mines in five countries, expanded its product portfolio to three distinct systems, published ground-breaking technical results in the emerging field of ore preconcentration and real-time systems control, and raised $5.2m in capital and $1.07m in grant funding.

Using safe, non-ionising radio fields, NextOre's MR technology delivers highly accurate, real-time measurements of mineral concentrations in broken rock at full-scale mining rates. This allows waste rock to be identified and removed early, allowing essential metals like copper, gold and iron to be processed more efficiently.

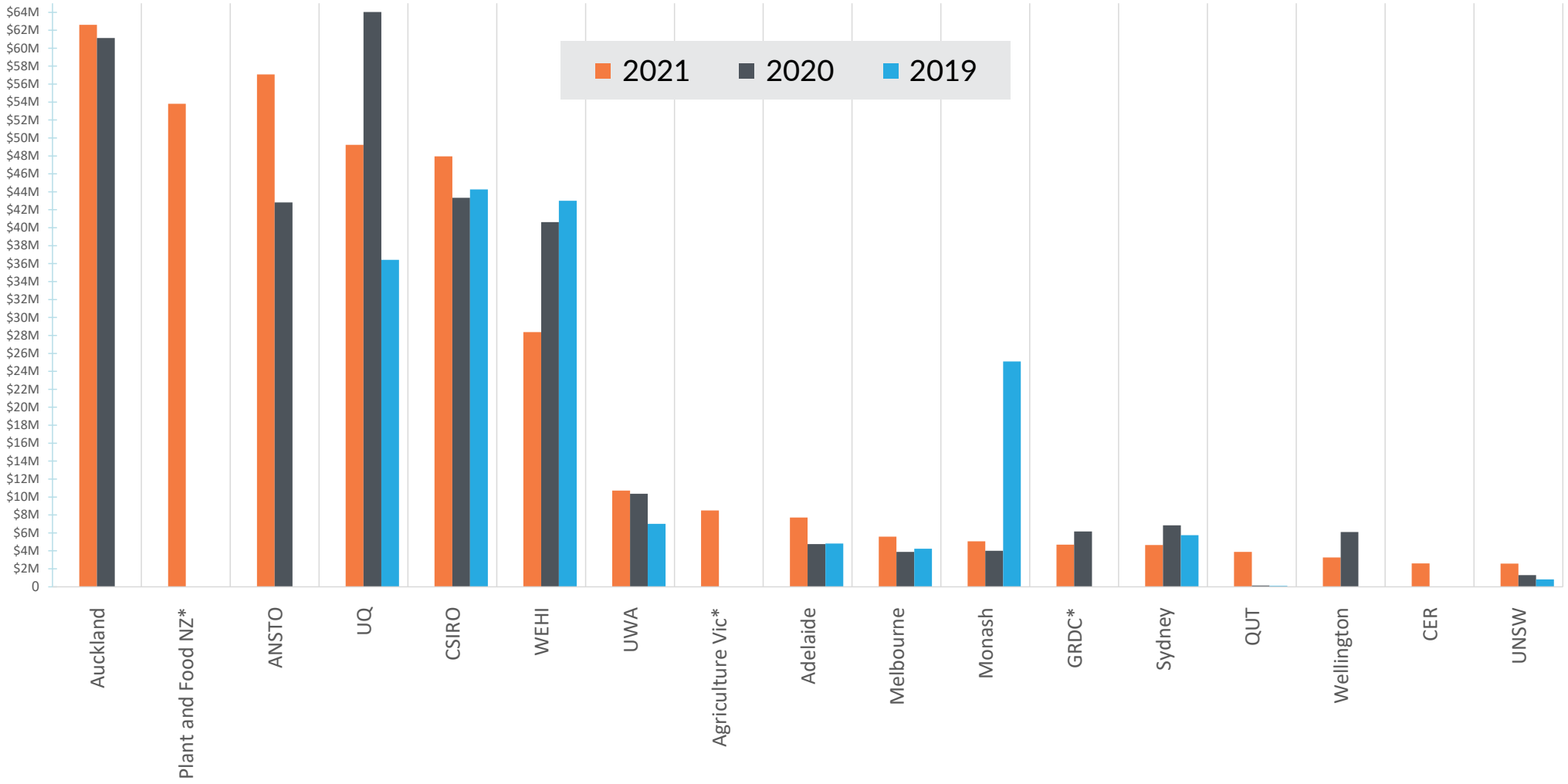
CSIRO vended an exclusive global licence for application of the MR technology in exchange for a material equity stake in NextOre. The remaining equity split between RFC Ambrian and Advisian (Worley) ensured that all parties were incentivised to promote business growth. Their global reputations and networks were crucial in attracting early adopters.

NextOre secures development projects with corporate mining groups and contracts CSIRO for R&D as a service. This mitigates downside risk and provides greater capability to grow the business in an eager market. A strong working relationship has resulted in a second licence agreement between CSIRO and NextOre for a new MR system, scaling the technology to measure the ore payload in a mining truck.

Image credit: NextOre.

Commercialisation revenue 2021-2019

Institutions with 2021 commercialisation revenue greater than AU$2M

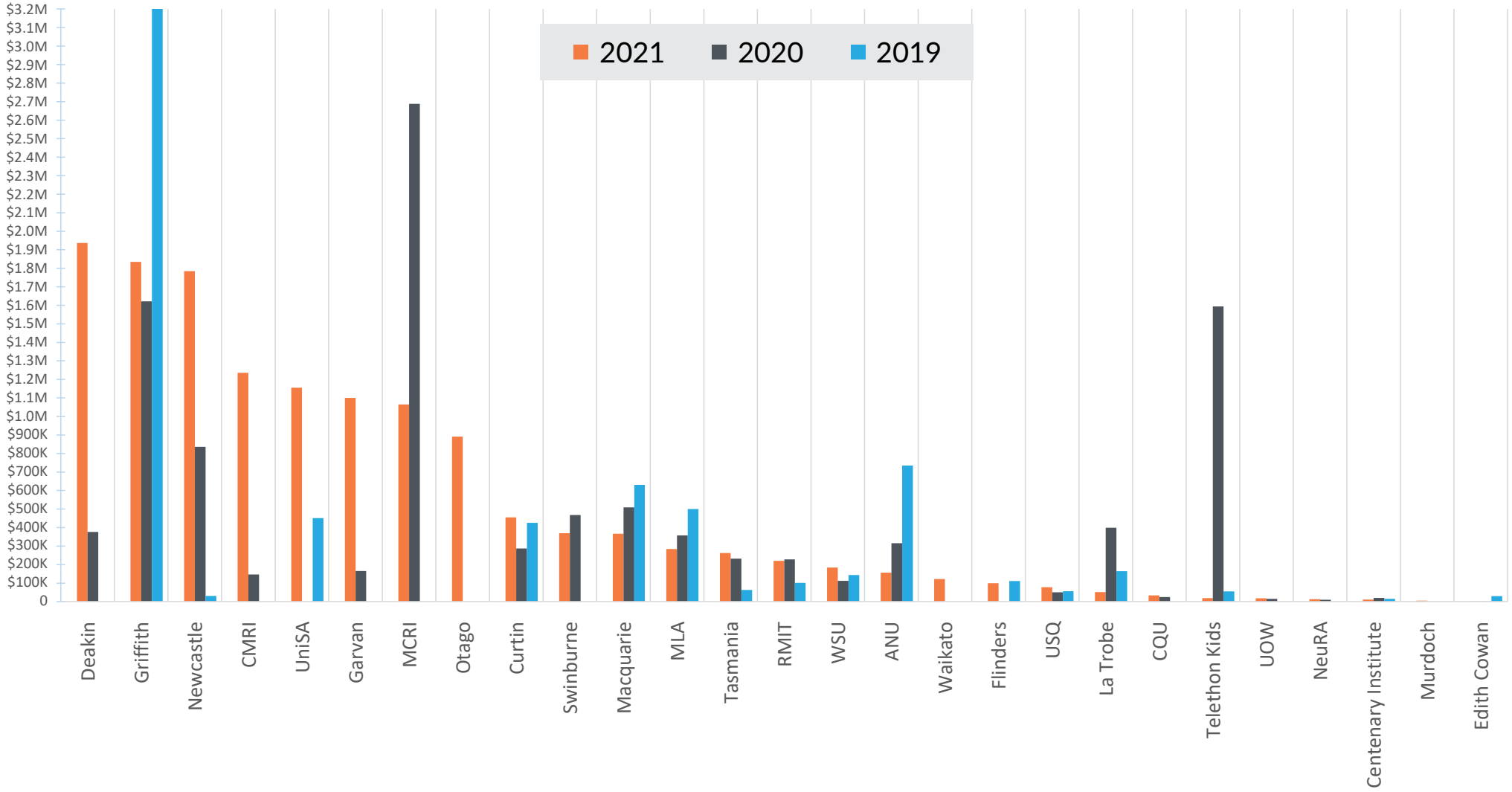


* = FY DATA

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

Commercialisation revenue 2021-2019

Institutions with 2021 commercialisation revenue less than AU$2M



* = FY DATA

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

Research commercialisation case study 2

CASE STUDY

While we sleep, REMi® will transform aged care

REMi® is a world-first, non-invasive monitoring and alert system that will significantly increase the efficiency and quality of aged care, while giving elderly people greater security, privacy, dignity and independence. Hospitals, acute-care and neonatal facilities will also benefit from the REMi® system.

Developed by RMIT University, Sleeptite and Sleepeezee Bedding Australia, the REMi® monitoring system uses a mattress protector with embedded, flexible sensors that are comfortable and robust. The system reliably detects changes to a person's presence, position and posture in bed – direct early indicators of distress, discomfort, or potential accident. A PCT patent application covers the design and fabrication of REMi®'s stretchable sensors, and the communication and data analysis system.

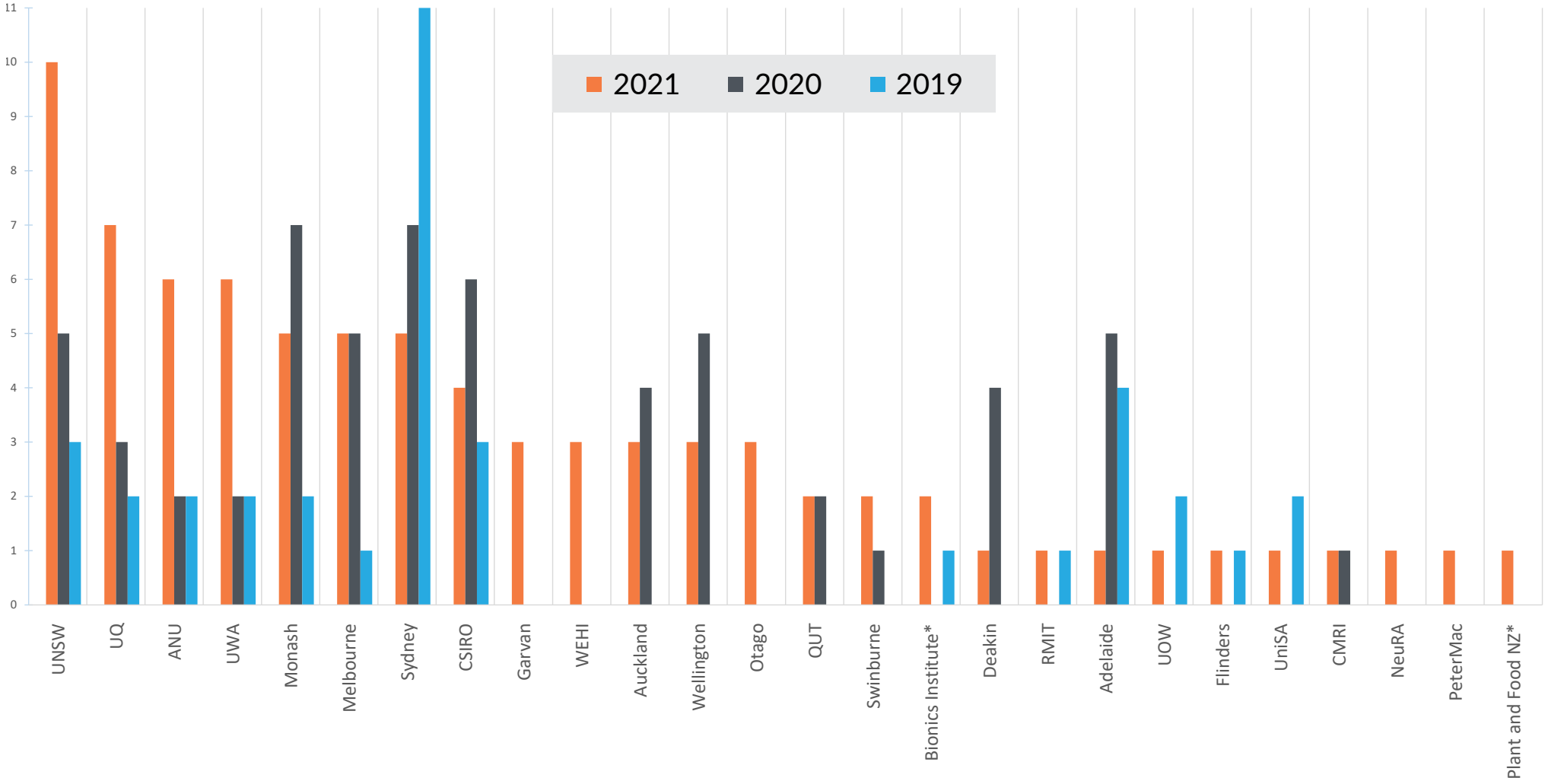
Sleeptite CEO demonstrating flexibility of the sensor. Image © Mark Dadswell.

In 2018, the REMi® collaborators received a grant from the Cooperative Research Centres Project scheme. Market and manufacturing insights provided by Sleeptite and Sleepeezee shaped RMIT University's research program from the beginning.

In 2021, the collaborators partnered with one of Australia's premier aged care providers to undertake extensive field trials of their commercial prototype. Meanwhile, researchers from Flinders University will work with Sleeptite and RMIT University to test if the REMi® system can diagnose sleep disorders, such as sleep apnoea.

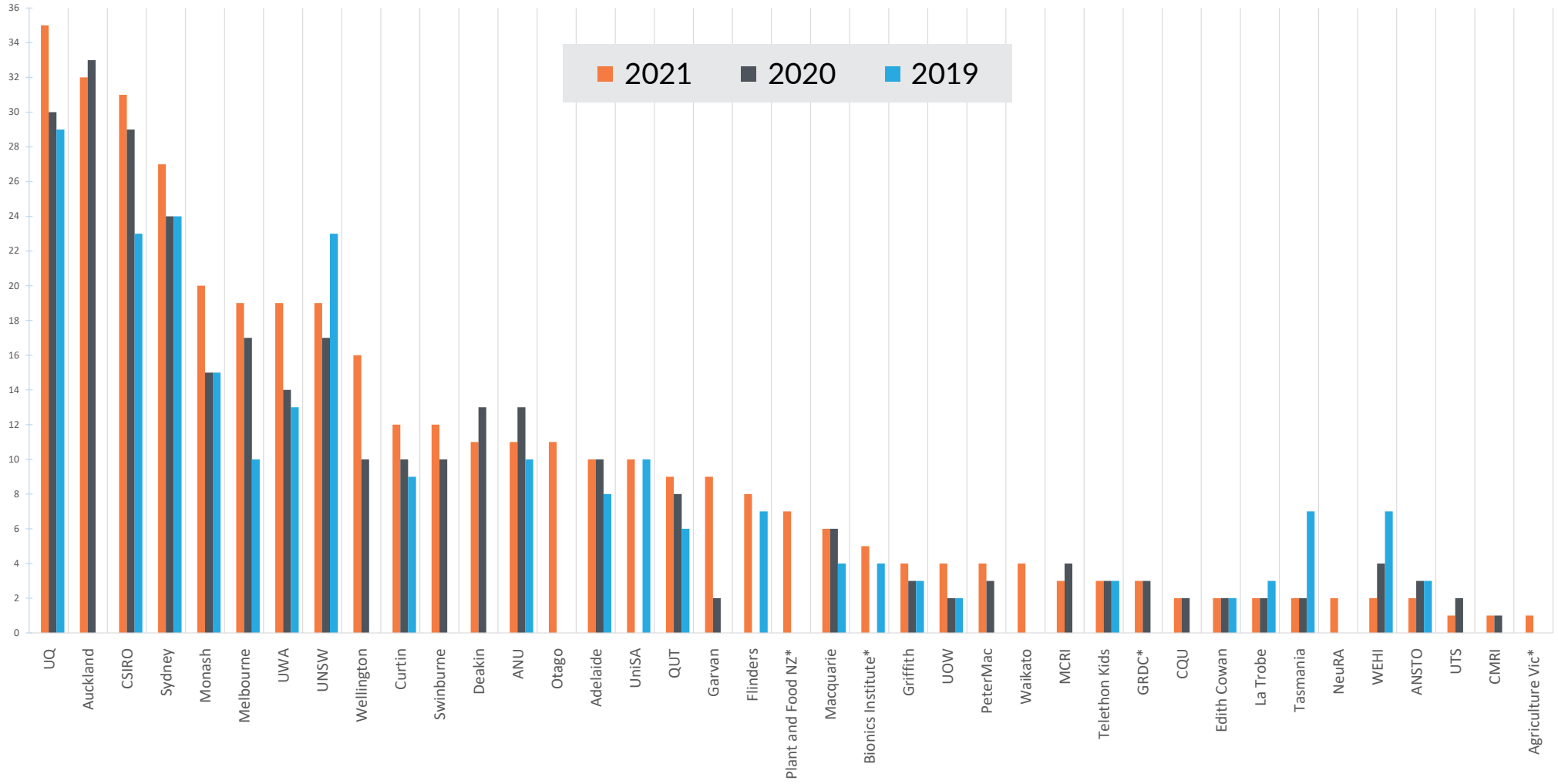
REMi®'s sensor technology can also be used in wearable garments, for health and human performance monitoring in sport, space, or defence applications. It could be deployed in prisons, boarding schools or school camps, to alert staff to night-time movements. There is also the potential for the REMi® system to calculate an alertness score from sleep data, helping pilots, truck drivers and defence force workers to boost productivity and mitigate risks.

New start-ups and spinouts 2021-2019



| * = FY DATA

Active start-ups and spinouts 2021-2019



* = *FY DATA*

Research commercialisation case study 3

CASE STUDY

Targeting inflammation ignites investment in Inflazome

In 2012, researchers from The University of Queensland (UQ) and Trinity College Dublin joined forces to investigate a key biological pathway: inflammasome formation. They aimed to identify compounds that could improve the treatment of chronic inflammatory diseases, without limiting beneficial inflammatory responses that fight infection and heal tissue. Their research and its commercialisation led to the formation of the start-up company, Inflazome Limited in 2016.

In 2020, Swiss drug giant Roche, seeing the potential to address an unmet need, paid €380 million upfront (with milestone payments that could multiply that price) for Inflazome.

Implicated in a range of inflammatory diseases, the NLRP3 inflammasome senses intracellular changes, leading to the release of proinflammatory cytokines. UniQuest, UQ's commercialisation company, filed patents on compounds shown to inhibit the NLRP3 inflammasome which led to the formation of Inflazome to further develop them.

Inflazome successfully completed two Phase 1 clinical trials for Inzomelid and Somalix, two drug candidates. These small molecule, orally administered drugs should enable broad distribution and use.

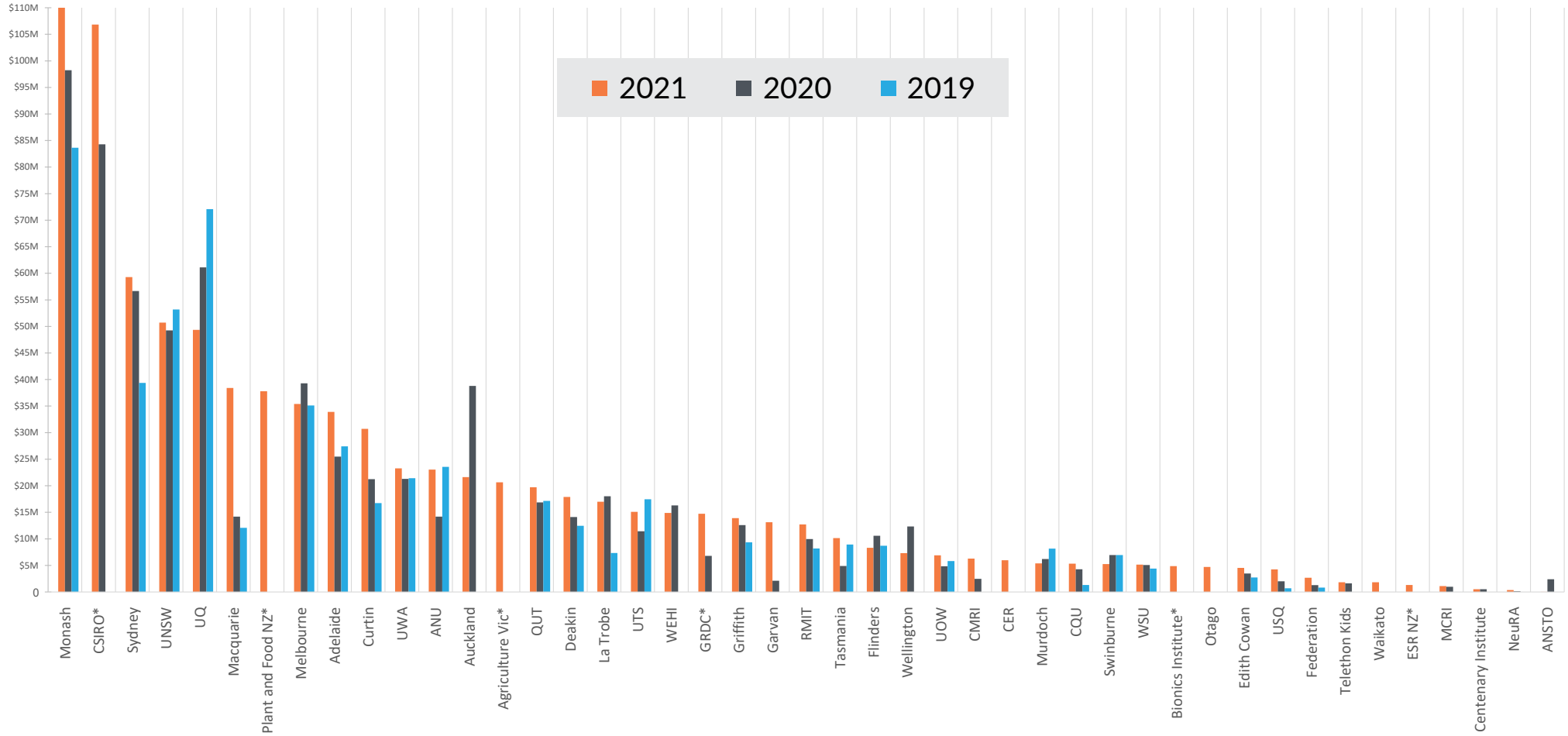
Inzomelid has been designed to cross the blood-brain barrier, so Inflazome targeted diseases of the central nervous system (CNS), such as Parkinson's, Alzheimer's and motor neurone disease, which are increasing with aging populations. Somalix targets inflammatory diseases in the periphery, including gout, cardiovascular disease and osteoarthritis.

Professor Kate Schroder heads UQ's Inflammasome Laboratory at UQ's IMB.

UniQuest managed the commercialisation of the intellectual property (IP) developed by the two collaborating universities. In 2016, UniQuest closed a series A investment in Inflazome of AU$23 million, co-led by Novartis Venture Fund and Fountain Healthcare Partners, one of the largest series A investments for a university spinout company.

Following its development of the university IP, Inflazome secured series B investment of AU$63 million from venture capital firms Forbion, Longitude Capital, and the founding investors in 2018. Inflazome also won a grant of more than AU$1.4 million in 2019 from the Michael J. Fox Foundation, supporting its Parkinson's disease research. This led to the acquisition of Inflazome by Roche to progress the drug candidates through later stage clinical trials and towards the market.

Value of research contracts from for profit companies 2021-2019



** = FY DATA*

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

Value of industry research contracts for 2019 is solely Australian Universities published HERDC data.

Research commercialisation case study 4

CASE STUDY

How La Trobe University helped businesses pivot in the pandemic

When COVID-19 lockdowns hit, La Trobe University's Innovation and Entrepreneurship team focused on supporting struggling businesses. From July 2020 to May 2021, in partnership with venture capital firm Investible, Business Victoria, Agriculture Victoria, Outcome.Life, and La Trobe Business School, they produced four free, online training courses. This collaboration helped 1,500 rural, regional and city-based entrepreneurs to adapt their business models and upskill for a digital future, improving their revenue, profit, network, and mindset.

Andrew and Kimberley from Shingleback Offroad, based in Beechworth Victoria were program participants from the COVID 19 Industry Response Program.

The initial program delivered in 2020 was the 12-week 'COVID-19 Industry Response Program' which attracted applications from 89 Victorian businesses from hospitality, fitness, allied health, retail, manufacturing and the arts. 20 of these applicants were accepted into the first cohort. This was followed by 'Design and Grow your Digital Presence', an eight-week course that again drew participants from a range of industry sectors across Victoria.

The third program, delivered over eight-weeks, saw over 300 participants guided by industry experts, learn how to position their business to thrive not just survive. Topics included digital strategy, analytics, email marketing, SEO & SEM, social media, storytelling and more, helping participants to grow their online audiences and engagement, customer base and conversion rates.

The final 12-week program (delivered in 2021) was 'Digital Harvest', that focused on developing their e-commerce and online marketing skills for over 130 Victorian farmers, artisans, manufacturers and ag-tech businesses. 84% of the program rated the program as excellent, and it helped two businesses save over $150,000 by streamlining internal processes and overcoming supply chain issues.

Course content was delivered on Coassemble in addition to a variety of supplementary digital communication platforms like Facebook and Whatsapp. These platforms were used to guide participants, and were key to successful community building and ongoing peer support.

SCOPR™ 2021 respondents

Australia 43 respondents

UNIVERSITIES (28)

- Australian National University (ANU)
- Central Queensland University (CQU)
- Curtin University (Curtin)
- Deakin University (Deakin)
- Edith Cowan University (Edith Cowan)
- Federation University Australia (Federation)
- 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 University (RMIT)
- Swinburne University of Technology (Swinburne)
- University of Adelaide (Adelaide)
- University of Melbourne (Melbourne)
- University of Newcastle (Newcastle)
- University of New South Wales (UNSW)
- 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 Western Australia (UWA)
- University of Wollongong (UOW)
- Western Sydney University (WSU)

MEDICAL RESEARCH INSTITUTES (10)

- Bionics Institute (Bionics 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)
- Murdoch Children's Research Institute (MCRI)
- Neuroscience Research Australia (NeuRA)
- Peter MacCallum Cancer Centre (PeterMac)
- Telethon Kids Institute (Telethon Kids)
- WEHI

OTHER PUBLIC RESEARCH ORGANISATIONS (2)

- Australian Nuclear Science and Technology Organisation (ANSTO)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)

OTHER RESEARCH ORGANISATIONS (3)

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

New Zealand 6 respondents

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

UNIVERSITIES (4)

- Victoria University of Wellington (Wellington)
- University of Auckland (Auckland)
- University of Otago (Otago)
- University of Waikato (Waikato)

OTHER PUBLIC RESEARCH ORGANISATIONS (2)

- Institute of Environmental Science and Research (ESR)
- Plant and Food Research (Plant and Food NZ)

Glossary of terms

GLOSSARY

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

COMMERCIALISATION REVENUE
Gross income from all LOAs, commercial material transfers and sales of products or services based on expertise or IP, plus cashed-in equity, minus any cost of acquiring the equity.
Excluded: research funding, copyright income, 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 spin-out or start-up company, held by the research organisation.

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

INTELLECTUAL PROPERTY
Novel proprietary knowledge. It can be an invention, trade mark, design, brand, or application of an idea.

INVENTION DISCLOSURES
Describe 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.

NON-PATENTED IP
Includes plant breeders' rights, confidential know-how, registered designs, circuit layouts, trade secrets, software, trademarks, apps etc.

OPTIONS
Grant the potential licensee time to evaluate the IP and negotiate the terms of a licence 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).

SPIN-OUTS
Founded through licensing or assignment of IP and launched by the research organisation.

START-UPS
Founded through licensing or assignment of IP and launched by other parties.