



Australian Government
Department of Education

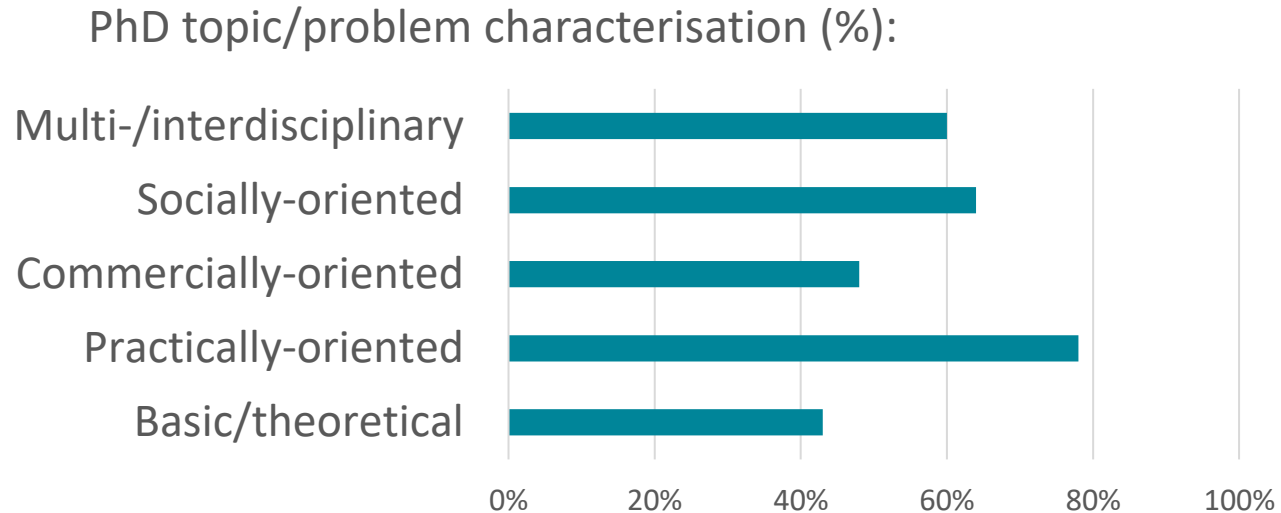
Industry-focused HDR careers

Asher Gentle

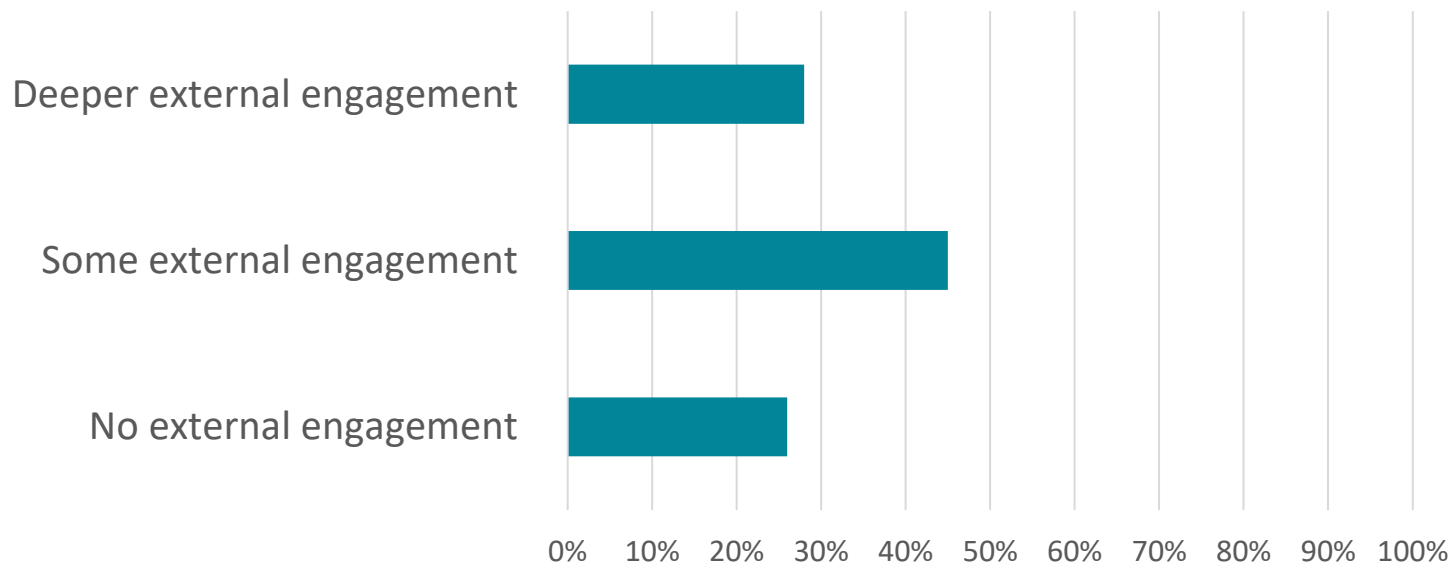
Director, Research Commercialisation



What are PhD students studying?

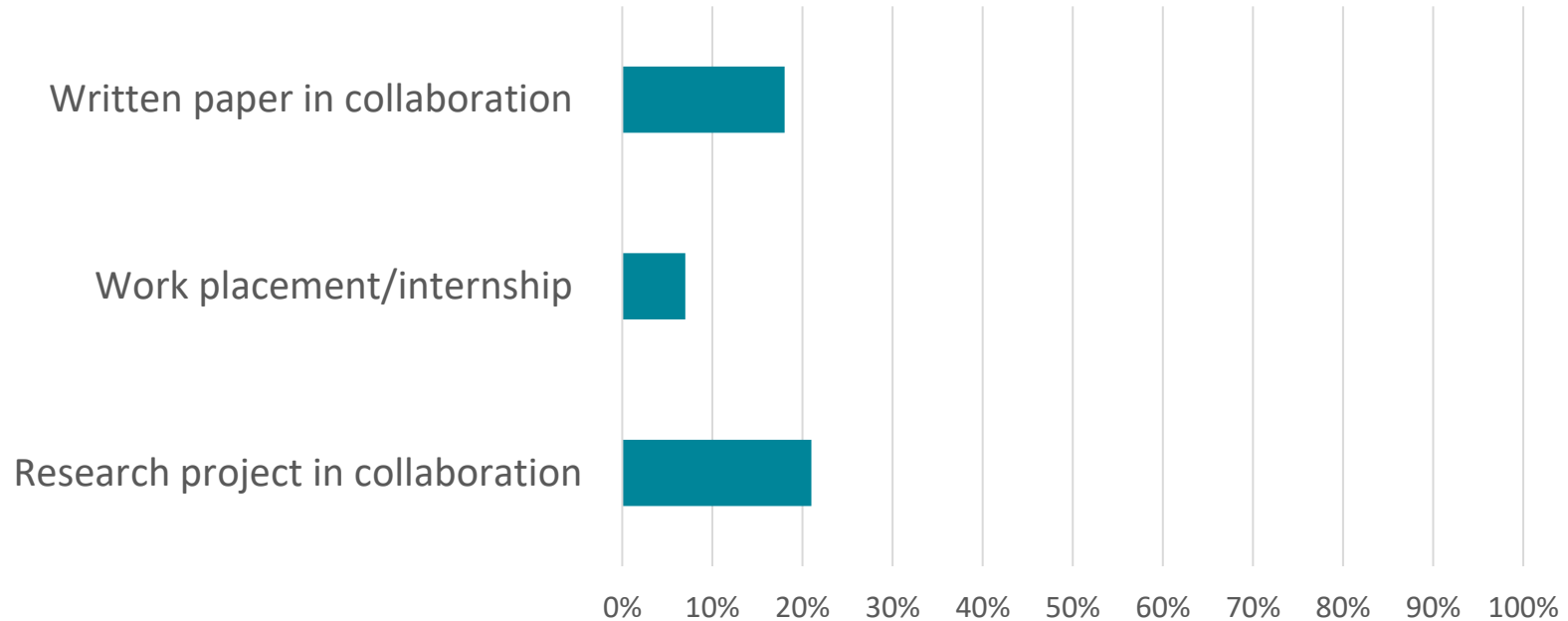


Depth of engagement with non-university organisation during PhD (%)



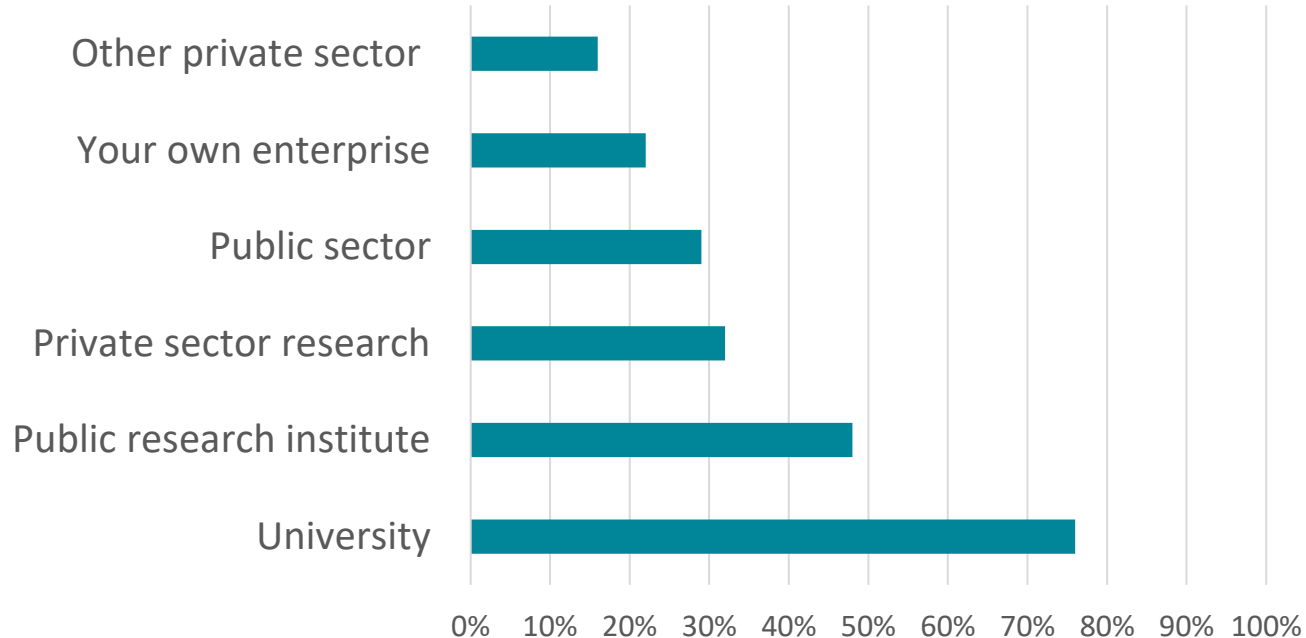
Source: Australian Council of Graduate Research, 2017.

Engagement with non-university organisations during PhD, by field and type (%)



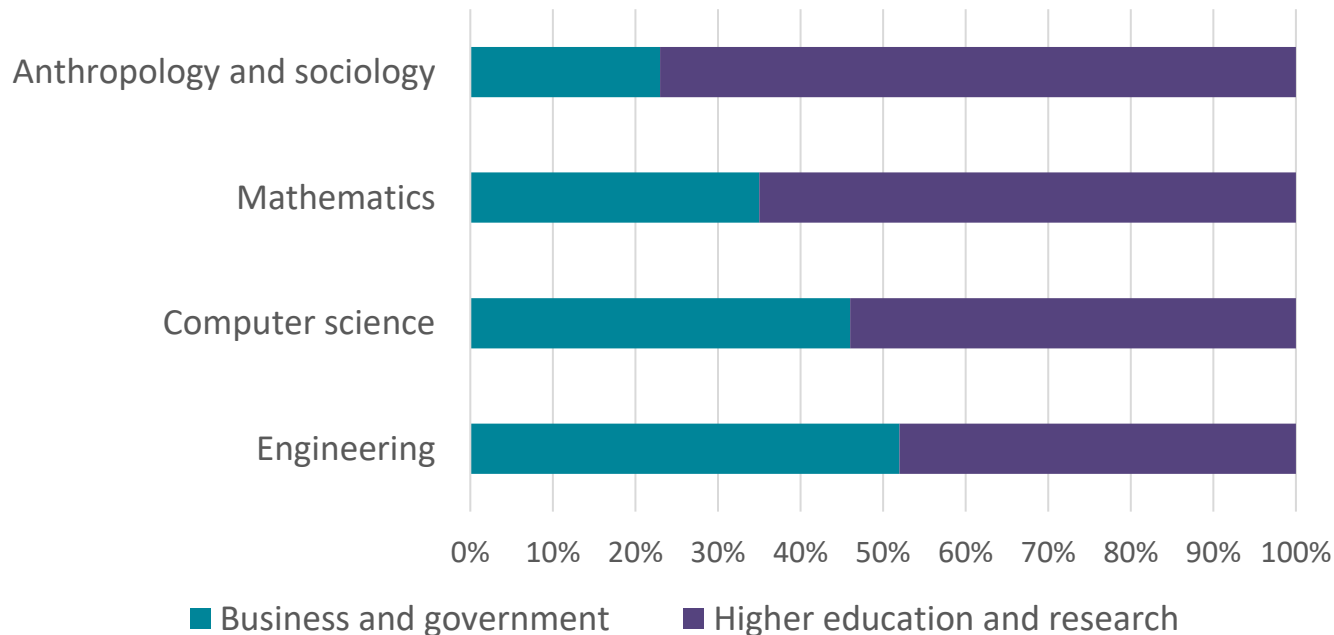
Source: Australian Council of Graduate Research, 2017.

PhD student career ambitions, by sector (%)



Source: Australian Council of Graduate Research, 2017.

Australian PhD employment by sector and field of study



Source: AMSI & CSIRO Data61's Ribit.net, 2019

Benefits of an industry-focused HDR career

- Take advantage of growth opportunities in knowledge-intensive companies
- Capitalise on increased focus on research and development
- See the practical impact of your research
- Strong employment opportunities



Encouraging collaboration between universities and industry in the HDR workforce

- Increasing entrepreneurship and commercialisation skills within academia.
- Broadening and making visible a variety of pathways within a research career.
- Encouraging and supporting flexibility in academic career paths.



Industry-focused HDR careers: University-industry collaboration

- QUT Centre for Agriculture and the Bioeconomy – Banana Biotechnology Program
 - Working on the genetic improvement of bananas to provide real world solutions to the global banana industry.
 - Projects focusing on disease resistance and addressing food insecurity.
 - Research undertaken in collaboration with business and non-profit sector.



Industry-focused HDR careers: Cooperative Research Centres

- FoodAgility
 - FoodAgility works in partnership with Charles Sturt University, along with other universities, technology companies and agrifood businesses.
 - Design and deliver innovation programs in the agrifood industry to increase profits and improve sustainability.



Industry-focused HDR careers: Spin-offs and start-ups

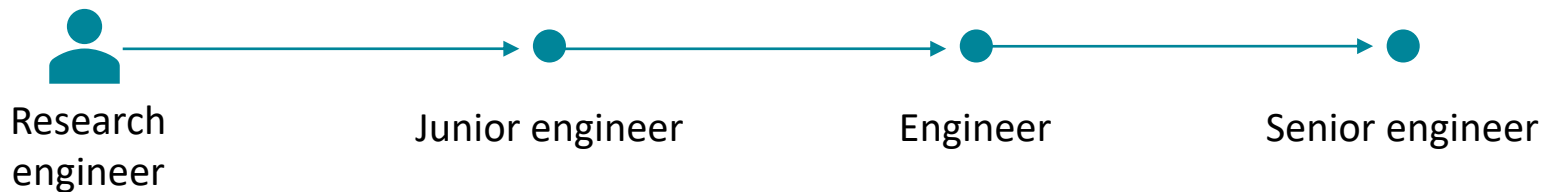
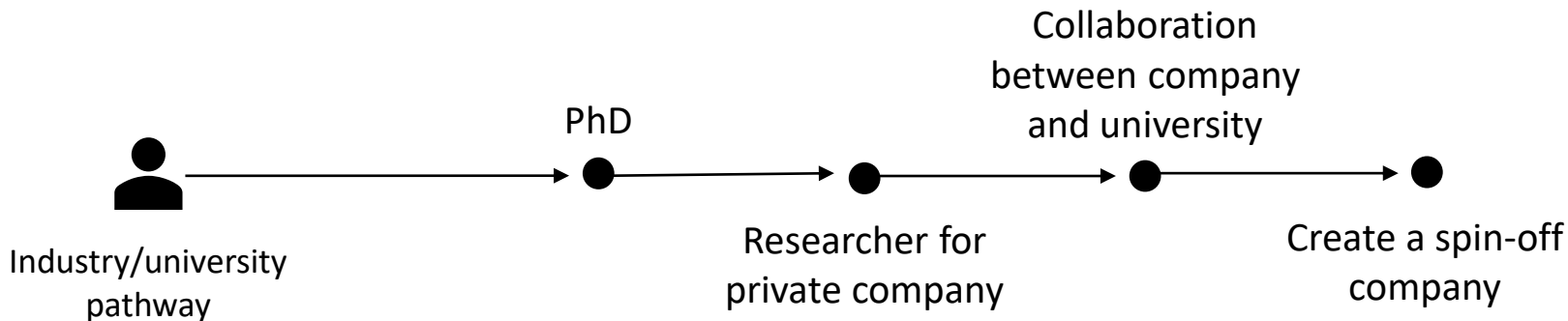
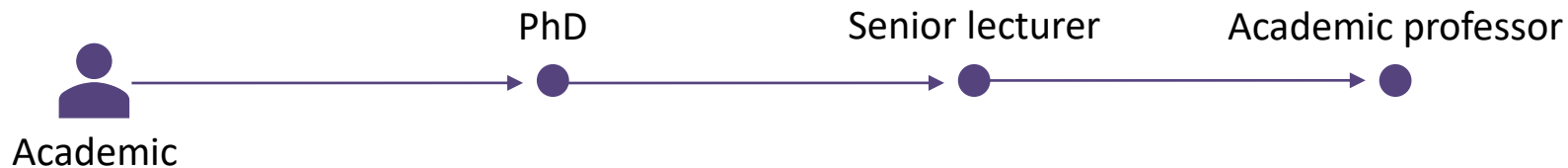
- Q-CTRL – spin-off from the University of Sydney
 - Founded in 2017.
 - Quantum technology company producing firmware for quantum computing and other applications.
 - Raised \$72 million (USD).
 - Company now has a team of over 100 and international headquarters in Sydney, Los Angeles, Berlin, and London.



Industry-focused HDR careers: Working in the private sector

- Dr Milica Ng, Senior Director, Head of Data Science at CSL
 - Holds a PhD from the Medical Faculty at the University of Melbourne, and a Masters in Engineering from the University of Adelaide.
 - Began as a PhD intern at CSL.
 - Has worked to develop CSL's capacity for fast and accurate genetic sequencing and analysis.

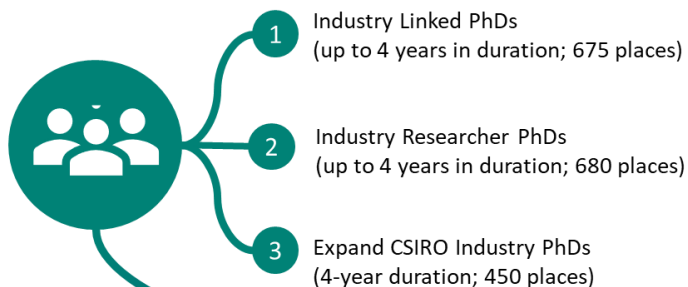




Increased workforce mobility

Industry PhDs

Department of Education and CSIRO

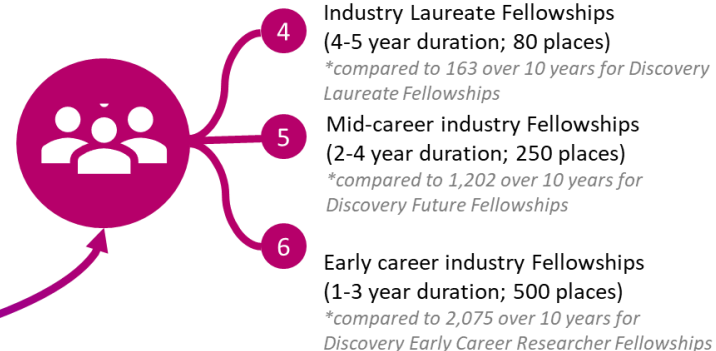


Funding for PhDs

- Government stipend
- Financial and in-kind contribution from industry
- Professional/Industry relevant training

Industry Fellowships

Australian Research Council



Funding for Fellowships

- Government stipend and fellow salary
- Project support
- Industry/university in-kind contribution

National Industry PhD Program

An Industry PhD is a doctoral program designed with an industry application.

The National Industry PhD Program supports PhD Research Projects co-designed between university and industry.



Campus+

Science &
Technology
AUSTRALIA

CRUXES

National Industry PhD Program



The Program consists of two streams:

- **Industry Linked PhDs:** This stream is for outstanding PhD candidates to undertake research projects co-designed by university and industry, with opportunities to be embedded in an industry setting and participate in a 12-week training program.
- **Industry Researcher PhDs:** This stream is for highly capable industry professionals who are supported by their employers to undertake PhD projects in partnership with a university while retaining industry employment and salary benefits.



National Industry PhD Program – what's involved?

- Industry/University co-designed research project that has an industry application
- Embedment of PhD candidates:
 - Industry Linked – are required to spend between 20 – 50% of their time in the industry setting
 - Industry Researcher – undertake study and work concurrently and are required to spend between 20 – 50% of the time in the university setting
- Embedment arrangements need to be outlined in the application and agreed by all parties under their collaborative agreement.



Stream 1: Industry Linked PhDs

Outstanding PhD Candidates undertake a research project co-designed by university and industry, with opportunities to be embedded in an industry setting

$$\begin{array}{ccccccc}
 \$6^K & + & \$10^K_{(min)} & + & \$30^K_{(min)} & = & \$46^K_{(min)} \\
 \text{Stipend top-up} & & \text{Stipend top-up from} & & \text{Research Training Program (RTP)} & & \text{Total stipend amount} \\
 \text{from government} & & \text{Industry Partner} & & \text{stipend under the Research Block Grant**} & & \text{PhD Candidates** receive} \\
 & & & & \text{(or equivalent)} & & \\
 \text{Additional funding provided under the program*} & & & & \text{Existing funding or allocation} & &
 \end{array}$$



Stream 2: Industry Researcher PhDs

Highly capable industry professionals undertake a PhD project in partnership with a university while retaining industry employment and full salary benefits



\$41K

Employers to receive subsidy to support staff salary and other costs, per annum, up to four years from government



Participating University

Receive \$10K* per PhD for both streams



\$10K

Participating universities to receive annual administration fee from government

* The funding is for per annum, up to 4 years for a full-time PhD candidate. This funding will be up to 8 years for a part-time PhD at 50 per cent of the full-time rate.

** Industry Linked PhDs are offered a 12-week training program in addition to the funding.

** Other equivalent stipends offered will need to be at the full-time base RTP stipend rate as a minimum.

National Industry PhD Program: Examples

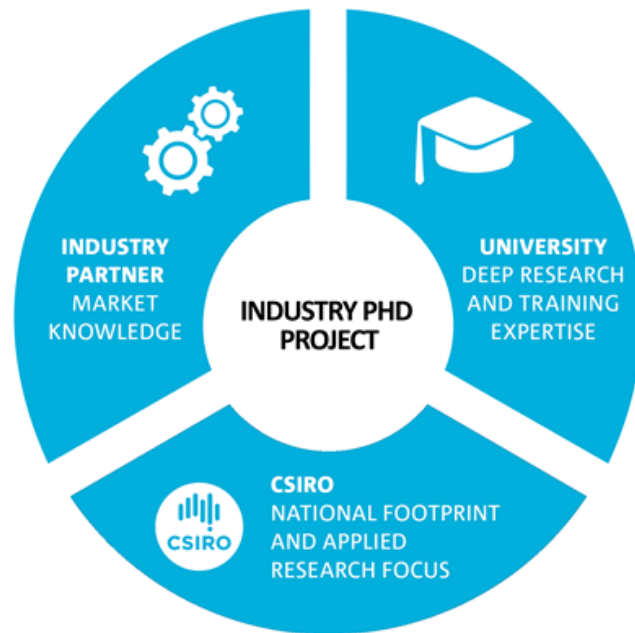
Charles Sturt University - Artificial intelligence-guided personalized medical and assistive device prescription for improving clinical outcomes and adherence.

- Collaboration with Foot Balance Technology Pty Ltd.
- Project expects to develop an innovative tool for the pedorthic industry, assisting clinicians in prescribing personalised medical devices



CSIRO Industry PhD Program

- CSIRO's Industry PhD (iPhD) Program brings together an industry partner, a university and Australia's leading science agency, CSIRO, to co-develop a four-year industry-focused PhD project.
- It provides PhD students with a unique skill set to focus on impact driven research.
- Sustained involvement with industry partner over the course of the PhD.



CSIRO Industry PhD Program: CSU examples

- Charles Sturt University was part of two PhD projects in the most recent round of CSIRO Industry PhDs.
- In partnership with Data 61 and Telstra, these projects will consider:
 - Enhancing cybersecurity in telecommunications through human-machine teaming
 - Navigating cyber risk management operational complexity in the telecommunication sector using digital twin and synthetic data



Australian Research Council – Industry Fellowship Program

- Fellowships for early and mid-career academics, along with senior academic researchers or industry-based research professionals.
- Aims to build the collaboration, commercialisation and translation skills of researchers.
- Researchers work with industry partners to tackle industry problems.



Industry-focused HDR careers: Industry fellowships

- Senior Professor Gerhard Swiegers, Intelligent Polymer Research Institute, University of Wollongong
- Received \$3.6 million in ARC funding through the Industry Laureate Fellowship Scheme for his project 'Accelerating Green Hydrogen Production with High Efficiency Electrolysers'.
- Commercialising a new type of electrolyser for use in the production of green hydrogen alongside industry partner and start-up, Hysata Pty Ltd



Trailblazer Universities Program

- The Government has invested \$270.3 million through the Trailblazer Universities Program to build research commercialisation capacity.
- The Program provides funding to six Trailblazer Universities, who are to become leaders in commercialising research in priority areas.
- The Trailblazer Universities are prioritising industry engagement in their research and in doing so creating opportunities for researchers to work across both academia and industry.



Industry-focused HDR careers: Trailblazer Universities

- Defence Trailblazer – partnership between UNSW and University of Adelaide, supported by the Department of Education
 - Defence Trailblazer aims to strengthen Australia's defence capabilities with cutting edge technologies and solutions, while equipping the next generation of innovators with specialised knowledge and skills to meet the needs of defence.
 - The Industry Research Program provides opportunities to work on higher degree research projects developed in consultation with industry partners and leading academics within the Defence Trailblazer.



Startup Year Program

Startup Year will support student participation in incubator and accelerator programs to build their entrepreneurial skills and develop their innovative startup ideas. To support participation, the Government has created a new income-contingent loan program for final year undergraduate students, postgraduate students and recent graduates. Startup year will:

Build a pool of knowledgeable new entrepreneurs, including from disadvantaged or underrepresented groups

Grow links between higher education providers, industry, and the startup community

Create new startups, including social enterprise

Drive innovation and job creation

"Universities do need funding to support student entrepreneurs and other community engagement, research translation and commercialisation activities . . . Student entrepreneurialism benefits the wider economy and community and should have its own funding stream."

ATN Submission

Key Features

Up to **2,000 loans per year** for students enrolled in a course

Loans through **Higher Education Loan Program (HELP)**

Legislated under the ***Higher Education Support Act 2003***

Australian Universities and University Colleges can apply for places



Research Block Grants


Research block grants (RBG) are provided to universities to support research and research training through the Research Support Program (RSP) and the Research Training Program (RTP).

Research Support Program - \$ 967.5 million (2023)

The Research Support Program (RSP) provides block grants, on a calendar year basis, to higher education providers to support the systemic costs of research not supported directly through competitive and other grants, such as libraries, laboratories, consumables, computing centres and the salaries of support and technical staff.

Research Training Program - \$1.1 billion (2023)

The Research Training Program (RTP) provides funding to higher education providers (HEPs) to support higher degree by research students by the provision of RTP scholarships.



Research Training Program (RTP) forms of support

HEPs can award one or more of three different forms of scholarships:

RTP fees offset

To cover a student's HDR tuition fees.

RTP allowances

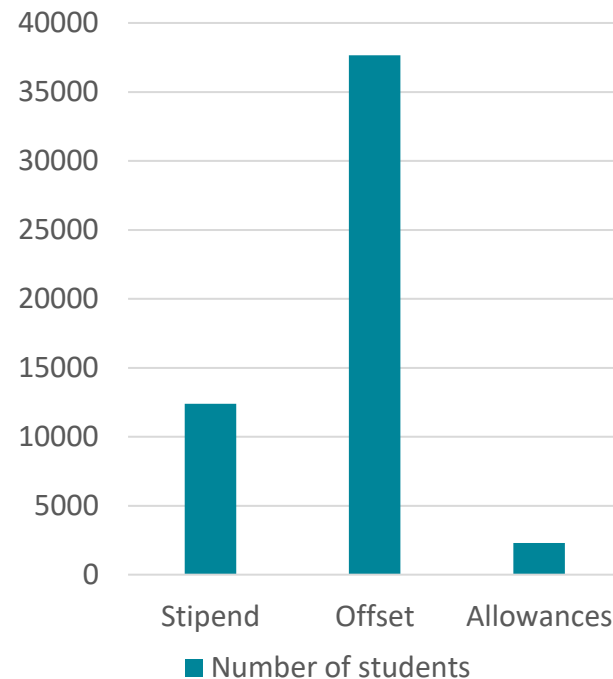
To assist with the ancillary costs of undertaking a HDR.

RTP stipends

To assist students with general living costs.

60% of enrolled HDR students received at least one form of RTP support in 2021.

HDR student enrolments 2021,
RTP status



Note: Students receiving multiple forms of support appear against each category

Research Training Program (RTP) stipends

The Commonwealth Scholarships Guidelines (Research) 2017 establish how HEPs can spend RTP funding, including for RTP stipends.

Stipend rates are indexed on a yearly basis in accordance with Part 5-6 of the *Higher Education Support Act 2003*.



In 2021, 12,389 students received a RTP Stipend

11,220
domestic students

1,169
overseas students

This represents:
32% of RTP recipients and
19% of all HDR students in 2021

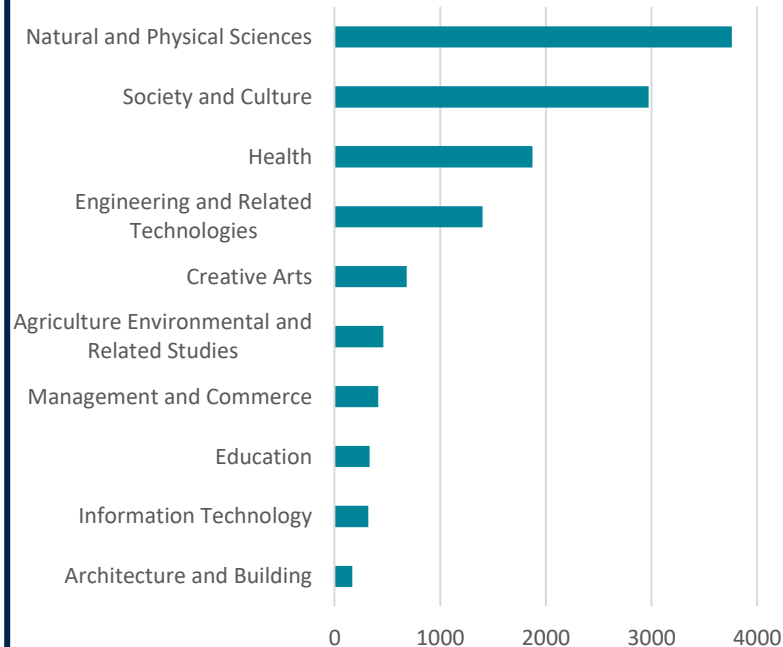


**RTP Stipend rates
(full-time)**

Year	Base	Maximum
2023	\$29,863	\$46,653
2024	\$32,192	\$50,291

HEPs have discretion to
determine the rate they
provide within this range

**Number of RTP Stipend recipients
by Broad Field of Education, 2021**



RTP PhD internship weighting

Eligible research internships are undertaken by **research doctorate students** and must:



3 months

Be a minimum of three calendar months in duration.



60 days of R&D

Include 60 full-time equivalent days of engagement in R&D activities undertaken by the student.



Related

Be related to the student's research doctorate area of research.



Agreement

Be agreed to in written form by the student, university and industry partner within 18 months for full-time students, or 36 months for part time students.

Thank you

- Any questions?

