

Research Australia

An alliance for discoveries in health

**INQUIRY INTO RESEARCH TRAINING AND RESEARCH  
WORKFORCE ISSUES IN AUSTRALIAN UNIVERSITIES**  
*RESEARCH AUSTRALIA SUBMISSION*

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## **About Research Australia**

Research Australia is a unique national alliance of over 180 member and donor organisations with a common mission to make health and medical research a higher national priority. For more information on Research Australia visit [www.researchaustralia.org](http://www.researchaustralia.org)

This submission was developed with the assistance of Research Australia's University Roundtable, which includes representatives from many of Australia's leading universities.

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## Executive Summary

Australia's excellence in health and medical research is dependent on the skills of our researchers. To ensure that we continue to make new discoveries that improve our health and wellbeing, we need to be training a high-quality new generation of researchers.

Unfortunately, funding insecurity and poor career prospects can deter many students from pursuing a career in research, particularly given more attractive alternatives in our full-capacity economy. Poor flexibility of research training programs can also limit their attractiveness to health professionals wanting to undertake research in addition to their other work. Funding issues and lack of resources can reduce the quality of research training and the standard of the researchers produced.

Several universities are seeking to address these issues through scholarships, flexible training schemes and quality improvements. However, these institution-level initiatives are impaired by low funding levels for research and training. There are a number of improvements that can be made, particularly to funding of research training.

Research Australia recommends that the Australian Government:

1. Increase the size and duration of National Health and Medical Research Council/Australian Research Council grants to provide greater certainty to training institutions and to make research careers more attractive.
2. Develop a co-ordinated program to fund research and research training infrastructure across the health and medical research sector, recognising the real cost of research and training the next generation of health and medical researchers.
3. Introduce specific scholarships for students undertaking an Honours program of research.
4. Provide more opportunities for part-time, distance-education, multi-institution or industry-based PhDs, particularly for health professionals.
5. Increase the value of Australian Postgraduate Awards to reflect the cost of living and competition from graduate opportunities. A stipend of at least \$25,000 should be considered, as well as provision for international conferences and travel.
6. Support a number of short-term 'Transition Fellowships', either through the National Health and Medical Research Council or universities, to tide the best candidates over for 6 months. These would support the preliminary activities leading up to post-doctoral research.
7. Provide funding for a \$4-5 million student career development program, to be conducted by Research Australia. This program would foster the next generation of Australian science leaders, ensure students are attracted to careers in science, technology and mathematics and help attract internationally-based researchers back home to Australia. It would incorporate training, conferences, exchanges and communications programs.

## 1. Research training in Australia

### 1.1 Importance and benefit to Australia

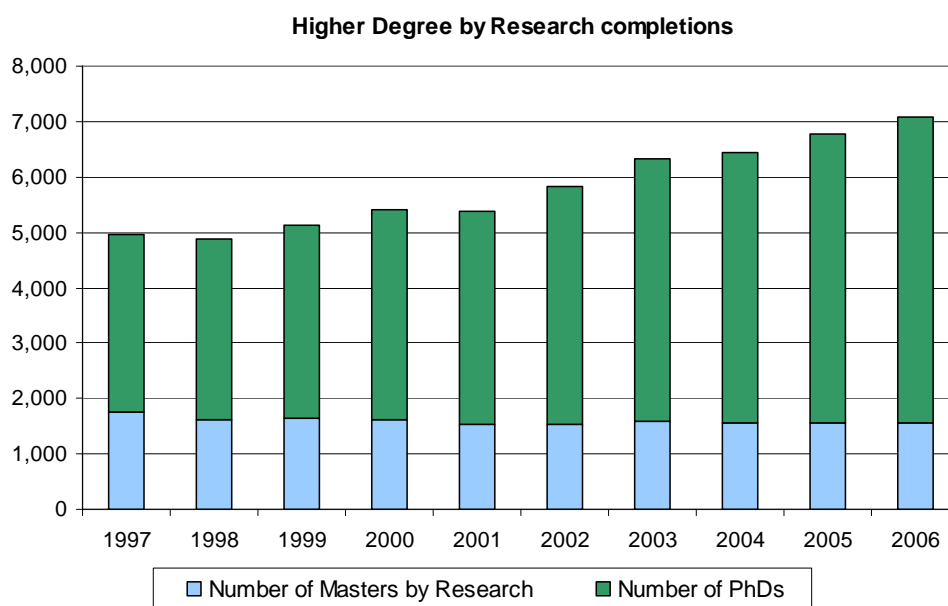
Australia is an outstanding performer of research, particularly in the fields of health and medicine. Despite having only 0.3 per cent of the world's population, Australia contributes 3 per cent of the OECD's medical research publications<sup>1</sup>. This strong position allows Australia to develop solutions to local and global challenges and depends on the quality of our researchers. These researchers can be based in universities, hospitals, independent medical research institutes, government agencies, clinical trial facilities and private laboratories.

Universities are the primary source of research training in Australia. In 2006, Australian universities enrolled 2,232 Doctorate students and 351 Masters by Research students in medicine<sup>2</sup>. From early training in Honours and Higher Degree by Research (HDR) studies through to post-doctoral work, Australia's universities provide the necessary research skills.

Given the endemic skills shortages in an economy operating at full capacity, the development of our next generation of researchers is a major challenge. The research training system must be able to produce the necessary number and quality of researchers that will address the health and medical challenges of tomorrow. The National Health and Hospitals Reform Commission has recognised the importance of research and training in creating and applying new knowledge to improve health care<sup>3</sup>. It also identified the need for cross-sectoral collaboration to ensure that training and research are appropriate to meeting future challenges.

### 1.2 Current schemes and programs

The principal vehicle for research training in Australia is the HDR, either a Doctor of Philosophy (PhD) or a Masters by Research. In undertaking these degrees, students are required to produce a significant work of original research. Through the process of supervision and completing a thesis, students acquire the high-level research skills needed to undertake major research projects.



**Figure 1**

Source: Universities Australia  
Note: Universities Australia members only

<sup>1</sup> Grant, J. 2004. *Sustaining the Virtuous Cycle*. Australian Government, Canberra

<sup>2</sup> Universities Australia from Department of Education, Science and Training records

<sup>3</sup> National Health and Hospitals Reform Commission. 2008. *Ending the Blame Game*, [http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/504AD1E61C23F15ECA257443000E2B4/\\$File/BeyondTheBlameGame.pdf](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/504AD1E61C23F15ECA257443000E2B4/$File/BeyondTheBlameGame.pdf), p38

HDR completions in Australia have grown over the last decade (see Figure 1). However, commencements have declined over the same period and HDR completion rates are still very low by international standards. Australia produces 2.3 new doctorates per 100 university graduates, compared with Canada's 3.9, Switzerland's 10.1 and Germany's 11.2<sup>4</sup>. There are also concerns around the spread of HDR students between disciplines. For example, commencements for PhDs in a number of health sciences are low, including dental, optical and radiography studies<sup>5</sup>. This presents a significant challenge for the future of research in these disciplines.

HDRs typically follow an undergraduate degree either with an Honours year or other training in basic research skills. In health and medical research, undergraduate studies are typically in science/social sciences or professional qualifications such as medicine, nursing or physiotherapy. Honours studies are part of undergraduate degree programs and are funded through the Commonwealth Grants Scheme.

Academic and administrative support for HDR studies is provided through a range of research funding and training schemes. These include competitive grants for research projects, scholarships for individual HDR students and block grants for research and training infrastructure.

Direct funding for HDR students is provided through Australian Postgraduate Awards (APAs). Institutions are awarded a number of APA places based on overall research performance and funded with stipends for each student. The associated costs of research training (supervision, equipment, facilities, travel) are provided through block grants, including:

- Research Training Scheme
- Institutional Grants Scheme
- Research Infrastructure Block Grants Scheme
- Regional Protection Scheme
- Commercialisation Training Scheme

Funds from these programs are mostly allocated according to research training and performance: HDR completions, research income from competitive grants and publications. The Regional Protection Scheme is provided to regional institutions to compensate for lost income resulting from previous funding reforms.

## **2. Pipeline issues**

### *2.1 Attractiveness of research training programs*

The ability of higher education institutions to attract students into Honours programs and HDRs is strongly impacted by economic conditions, particularly in the labour market. Australia is currently at full employment, with unemployment of only 4.1 per cent in April 2008<sup>6</sup>. Demand for workers is high and salaries have risen in a number of sectors to attract the best employees. Research training schemes must compete with graduate employment options and the opportunity cost of training may be very high.

This problem is particularly evident in health professions such as medicine, nursing and biomedical science. Jobs are readily available and salaries are attractive. The median salary for graduate nurses is around \$40,000 and the median medicine graduate earns \$50,000 per annum<sup>7</sup>. This is in contrast to Honours programs that can cost the student up to \$8,499 for a Commonwealth supported place. While some universities now provide Honours scholarships (see Box 1), these are still not competitive with graduate salaries.

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<sup>4</sup> Group of Eight. 2007. *Researcher supply and demand*, Go8 backgrounder No. 3

<sup>5</sup> Ibid

<sup>6</sup> Australian Bureau of Statistics. 2008. *Labour Force, Australia, Apr 2008*, 6202.0

<sup>7</sup> Graduate Careers Australia. 2008. *GradsOnline*, <http://www.gradsonline.com.au/gradsonline/>

### **Box 1 – Improving attractiveness of Honours programs**

At the University of Queensland a number of the health professional undergraduate programs now include completion of Honours requirements (including the research project) during the main degree (rather than as an extra year) for outstanding students. The excellent students thus graduate with their research Honours degree and are eligible for entry into HDR straight after their main professional program.

At the University of Tasmania, in-house “Honours Scholarships” are provided in the range of \$3,000-5,000 per annum. These are disbursed tax-free through the scholarships office and normally require students to teach or assist in laboratory.

The University of Adelaide provides a mid-year Honours student intake in addition to the standard January intake. Flexibility is also improved by the option to undertake Honours part-time including summer vacation period and mid year break

Deakin University seeks to identify high performers with research potential at an early stage of their undergraduate degree. They are then provided with coaching and mentoring through professionally relevant streams of research methods and exposure to research. Funding is also available for holiday employment as a Research Assistant.

Source: University of Queensland, University of Tasmania, University of Adelaide, Deakin University

APA stipends for HDR studies are only \$20,000 per annum. While some institutions provide “top-up” funding, this usually brings the stipend up to around \$25,000 (see Box 2). The base stipend of \$20,000 corresponds to the poverty line for a single person (see Figure 2) and is below the line for a family<sup>8</sup>. For mature age HDR students with family commitments this is not viable. This is a pressing issue at several institutions, such as the University of Tasmania where 40-50 per cent of HDR students are mature age.

### **Box 2 – “Top-up” scholarships**

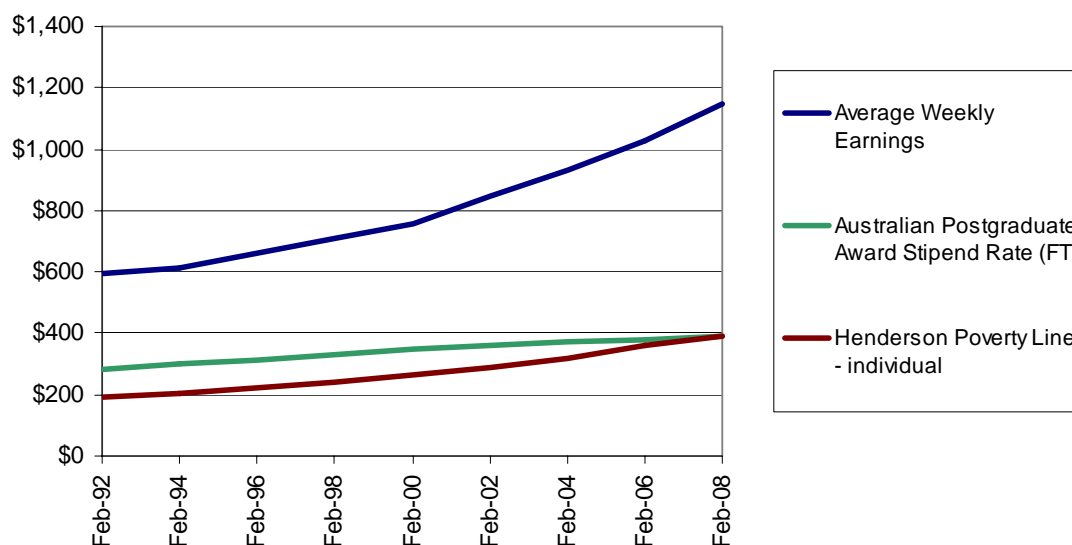
“Top-up” PhD scholarships under various Cooperative Research Centres (CRCs) often consist of both a stipend and some maintenance allowance. These supplement the living allowance under APA or internal scholarships and provide additional support for the research itself. In addition, receipt of a scholarship makes the student eligible to apply for additional support from the CRC under various schemes (such as travel allowance).

The Centre for Sustainable Resource Processing (CSRP), in addition to providing PhD “top-ups”, also provides scholarships (approximately \$5,000 with some maintenance funding) for Honours students associated with existing projects established under the Centre. Honours students at Curtin University of Technology have been supported to participate in the highly successful Geopolymers Project. This exposure to collaborative research involving industry, government and multiple research providers provides an incentive to pursue further research training. At least one Honours student associated with the project and in receipt of an Honours Scholarship progressed to a PhD, and was awarded a CSRP “top-up”.

Source: Curtin University of Technology

<sup>8</sup> Melbourne Institute of Applied Economic and Social Research. 2007. *Poverty Lines: Australia*, December Quarter 2007

**Australia Postgraduate Awards and the poverty line**



**Figure 2**

Source: Council of Australian Postgraduate Associations

HDR programs also compete for students with professional postgraduate studies, such as Masters by Coursework. The advantage in future employment and salary prospects from these programs can be significantly higher than HDRs, particularly for students who do not want to pursue research as a primary career. The median salary for HDR graduates in full-time employment in 2006 was \$60,900, whereas coursework Masters graduates earned a median of \$65,000<sup>9</sup>.

**Box 3 – Embedding research training into professional programs**

The WA Centre for Health Promotion Research, in conjunction with the School of Public Health, conducts a number of specialised short courses to up-skill practitioners within government and non-government organisations. One course also targets Indigenous health professionals. Participants who complete the course plus additional assessments are able to use the accreditation towards a postgraduate degree. Several course participants with appropriate undergraduate qualifications have gone on to complete a Professional Masters. Courses have also been conducted in regional and rural Western Australia.

Source: Curtin University of Technology

**2.2 Career prospects**

The ability to attract the best students to research training programs is also affected by the nature of research careers including salaries, career pathways and research opportunities. Students are not being drawn to research because of poor career prospects subsequent to PhD.

Uncertainty in funding is an issue even from the point of PhD completion. The National Health and Medical Research Council (NHMRC) Training Fellowships permit applicants who will have submitted their doctoral thesis by 31 December of the year in which they are applying. However, thesis submission dates vary significantly due to project and personal factors. Hence the gap between submission and fellowship commencement can be large. A candidate submitting their thesis in January could face a wait of nearly twelve months prior to funding.

<sup>9</sup> Op cit 4

#### **Box 4 – Supporting the transition from PhD to fellowships**

The University of Western Australia's Whitfeld Fellowships support late-stage PhD students for six months from the date of their thesis submission. These Fellowships are designed to support students during that pivotal transition time from student to career researcher. During this time recipients are also supported to prepare publications arising from their theses and to prepare grant applications. This is a competitive scheme however so many students still receive no financial support during this transition phase. Also beyond the six month tenure of the Fellowship these outstanding researchers may still face a significant gap prior to gaining funding from other sources.

Source: University of Western Australia

Funding is also an issue for established researchers. A recent survey by the Australian Society for Medical Research found poor financial rewards are a leading cause of researchers leaving or considering leaving the field<sup>10</sup>. By contrast, salaries in clinical practice have risen in order to attract and retain personnel. The new NSW Health allied health pay scale pays more for similar qualifications and experience than the typical academic pay scale.

Research positions are also unattractive in terms of sustainability, flexibility and workload. Scarce funding for research projects and the need to focus heavily on achieving and retaining grants can place great pressure on researchers. Funding under NHMRC competitive grants is only awarded to 20 per cent of applicants. Australian Research Council (ARC) grants are similarly competitive. The average duration of most project grants averages is around 3 years, providing little certainty of funding.

There is significant dissatisfaction in the Australian health and medical research workforce regarding employment insecurity and the lack of career structure<sup>11</sup>. While the number of Project Grants is increasing, the transient nature of the employment acts as a deterrent to researchers taking up the opportunity, particularly at post-doctoral level.

#### **2.3 Flexibility for non-career researchers**

Many health professionals do not want to pursue research as a primary career. This can be for the reasons outlined above as well as a desire to focus on clinical care. However, research by health professionals is important for turning knowledge into improved health care and patient outcomes. It is therefore necessary that research training and research activities are sufficiently attractive and flexible for clinicians to participate in research.

#### **Box 5 - Helping rural clinicians undertake research**

The NSW Institute for Rural Clinical Services and Teaching offers scholarships to health staff in rural areas of NSW Health who want to undertake research in their area of practice. While these scholarships pay for backfill of time, there are issues with availability of staff to backfill. It also supports mentoring relationships, although these are usually informal and not built into the research program.

Source: Charles Sturt University

As noted above, health professionals considering further study will often have to choose between research training and further professional study, usually coursework. Coursework options are

<sup>10</sup> Kavallaris et. al. 2008. "Perceptions in health and medical research careers: the Australian Society for Medical Research Workforce Survey", *Medical Journal of Australia*, 188 (9), pp520-4

<sup>11</sup> Ibid



often selected because the career benefits are more apparent (see 2.1) but also because of the poor flexibility of research training schemes.

Professional development courses widely recognise that most students will be undertaking study alongside work, whereas research training is often less accommodating. More part-time and flexible learning (e.g. distance) options for study would not only make study alongside continuing clinical practice more attractive financially, it would enable health professionals to remain embedded in the health system, progressing within their organisation and maintaining currency of skills and knowledge.

#### **Box 6 – Attracting allied health professionals**

The School of Physiotherapy within Curtin University of Technology has found it difficult to attract Honours and HDR students given the current level of salaries that physiotherapists can attract with an undergraduate degree. One rather innovative strategy has been successfully implemented. The School and hospital provide matching funding for hospital-based staff to conduct research at Curtin.

Another strategy implemented is the inclusion of staff from a neurological rehabilitation clinic as investigators in a large randomised clinical trial (RCT). The clients from the clinic are the research participants, thereby allowing the staff to conduct research within their own workplace. The RCT is facilitated by the Principal Investigators who provide support to the staff to achieve excellence in research.

Source: Curtin University of Technology

#### **Box 7 – Flexible training programs for health professionals**

The University of Queensland offers clinical research projects specifically during postgraduate coursework programs (Masters or professional Doctorates) and has had some success in attracting health professionals either into PhD programs after their professional coursework Masters or back into academia or research positions after professional Doctorates. However, this is difficult with the health workforce shortage and the relatively lower salaries in academia and research.

Charles Stuart University (CSU) offers part-time and distance or mixed delivery modes for HDRs, and offers Honours programs in allied health that are completed in parallel with the last two years of undergraduate training. While the latter is challenging for students, it allows completion of Honours while avoiding delays in entering clinical practice. CSU also offers professional doctorates and underpinning Masters of Health Science that are coursework-based approaches to entering the research arena, specially designed to cater for health professionals seeking to be involved in practice-related research.

Source: University of Queensland, Charles Sturt University

### **3. Training quality**

The quality of research training is impacted by the ability of the training institution to provide adequate support, infrastructure and research opportunities. Current infrastructure funding through block grants does not reflect the true cost of research<sup>12</sup>. As a result, strong performance in obtaining competitive grants can strain infrastructure and ultimately reduce the quality and viability of research and research training. Universities can supplement funding through partnerships,

<sup>12</sup> Group of Eight. 2008. *Adding to Australia's Capacity: The Role of Research Universities in Innovation*, submission to the Commonwealth Review of the National Innovation System, <http://www.go8.edu.au/policy/papers/2008/Go8%20Innovation%20Submission%2008%20-%20concise.pdf>

commercial research funding and consultancy income. However, this is generally used to cover the shortfall from existing research projects, rather than supporting and enhancing research training and new research.

The availability of supervision is a major influence on training quality. Reductions in overall funding of universities in the past decade have increased student/staff ratios generally. This is particularly problematic in research training when the ability of the supervisor to be actively involved in students' work is reduced by too many responsibilities. The rise of "teaching-only" staff has also reduced the overall pool of supervisors for research training.

In many cases, it is the national and international reputation of supervisors that attracts students to undertake research training. However, supervision opportunities with senior staff are limited and many students are being trained by junior or early-career researchers. The declining depth of experience of supervisors will reduce the quality of the training experience, with consequences for the next generation of researchers.

### **Box 8 – Improving supervision quality**

Training for all HDR supervisors is mandatory at the University of Melbourne as the supervisor is the key to a successful outcome. Training is targeted to the specific faculty or discipline. Other initiatives include the requirement for multiple supervisors, supervisory panels that monitor a student's progress on a regular basis and a rigorous confirmation process within the first 6 to 9 months of candidature.

Where possible, Curtin University tries to guide potential students into an area of research which is close to what the supervisor is already working on, either with other students or an NHMRC project. This improves efficiency for the supervisor, but also for the student who then has ready access to a substantial literature and examples of analysis approaches that are useful for the student's topic.

Source: University of Melbourne, Curtin University of Technology

Research opportunities can also be limited by inadequate funding. Projects where the costs of conducting the research are high (e.g. high equipment operating, consumable and data costs) may not be able to be supported by the institution. Opportunities to attend international conferences and participate in international projects will also be reduced by insufficient funding.

### **Box 9 – Providing research career skills**

Universities need to produce graduates with research depth but with broad knowledge and generic research skills that will fit them for a variety of careers in academia, government and industry. The University of Melbourne provides a series of training modules both on-line and face to face that prepare the graduate for employment. This training extends as a continuum to our early career researchers.

Source: University of Melbourne

The quality of students entering research training has also been diminished by changes to undergraduate training. Vocational training in undergraduate courses has been at the expense of development of research methods. Thus many students are unprepared for Honours programs and therefore unable to progress to PhD.

#### **4. Recommendations**

As is outlined in the boxes throughout the previous sections, several universities are seeking to address quality and pipeline issues. However, these institution-level initiatives are still impaired by the poor condition of funding for research and training and systemic issues within universities.

To address these outstanding issues, Research Australia proposes that the following recommendations be adopted:

##### ***Recommendation 1***

Increase the size and duration of NHMRC/ARC grants to provide greater certainty to training institutions and to make research careers more attractive.

##### ***Recommendation 2***

Develop a co-ordinated program to fund research and research training infrastructure across the health and medical research sector, recognising the real cost of research and training the next generation of health and medical researchers.

##### ***Recommendation 3***

Introduce specific scholarships for students undertaking an Honours program of research.

##### ***Recommendation 4***

Provide more opportunities for part-time, distance-education, multi-institution or industry-based PhDs, particularly for health professionals.

##### ***Recommendation 5***

Increase the value of APAs to reflect the cost of living and competition from graduate opportunities. A stipend of at least \$25,000 should be considered, as well as provision for international conferences and travel.

##### ***Recommendation 6***

Support a number of short-term 'Transition Fellowships', either through the NHMRC or universities, to tide the best candidates over for 6 months. These would support the preliminary activities leading up to post-doctoral research.

##### ***Recommendation 7***

Provide funding for a \$4-5 million student career development program, to be conducted by Research Australia. This program would foster the next generation of Australian science leaders, ensure students are attracted to careers in science, technology and mathematics and help attract internationally-based researchers back home to Australia. It would incorporate training, conferences, exchanges and communications programs.