Griffith University response to: "How might health and medical research be best managed and funded in Australia?"

The two main sources of Australian health and medical research funding are the National Health and Medical Research Council, with competitive granting schemes totalling $541m in the 2010-11 year, and the Australian Research Council which awarded $215m in support of the Health research priority area in the same period. However there is currently a great deal of uncertainty about the particular roles of these two agencies in supporting health and medical research in Australia, the result of which may be that important fields of health and medical research are unable to secure funding from either organisation.

Risk of funding gaps for important areas of health and medical research due to unclear boundaries in funding eligibility between the NHMRC and ARC

While a central role of the NHMRC is funding of health and medical research, funding practice in recent years appears to have focussed on clinical and "hard" biomedical science with direct application to human health outcomes. The ARC's research priorities also include Promoting and Maintaining Good Health, with objectives including:

- *A healthy start to life*
- *Ageing well, ageing productively*
- *Preventive healthcare*
- *Strengthening Australia's social and economic fabric*

Despite the ARC explicitly reporting on research in this priority area, the Council recently amended its funding rules to exclude projects which are "primarily and substantially aimed at understanding or treating a human disease or human health condition", including:

a. *late pre-clinical or early human trials of a human therapeutic agent, material or diagnostic test or device; or other interventional research involving humans;*
b. *using material collected from human subjects for the primary purpose of studying the underlying causes, prevalence, epidemiology or mode of inheritance of a disease or human condition; or*
c. *using established animal models or established cell lines for the purpose of studying the underlying causes, prevalence, epidemiology or mode of inheritance of a human disease or human health condition.*

Taken together, these statements suggest research which falls considerably short of being "primarily and substantially" aimed at understanding or treating health conditions may be ineligible for funding, and create uncertainty about the scope of health and medical research that the ARC supports. This is particularly concerning in areas such as psychological or nursing research where virtually all research relates, whether directly or indirectly, to a "human health condition" but which are not traditionally seen as the focus of NHMRC funding.

Applicants who were unsure which funding was the most appropriate were previously able to seek a ruling on which body they should submit to prior to closing dates for major funding rounds. This is no longer the case and applicants who are unsure now run the risk of being ruled ineligible. On this matter, the NHMRC Project Grant guidelines say:

> ***4.3 Advice on whether to apply to the NHMRC or the Australian Research Council***
> *In some instances, applicants may not be clear about whether their application is more appropriately considered by the NHMRC or the Australian Research Council (ARC). Applicants should note that:*
>
> - *The ARC has revised its definition of medical and dental research, which is available from the ARC website at http://www.arc.gov.au/ . At the time of certifying an ARC Discovery Project submission, Administering Institutions are to ensure that the submission is not medical and dental research according to ARC's definition.*
> - *NHMRC will assess all applications submitted for support of health and medical research.*

The ARC's current definition of health and medical research is being applied for the first time in the current 2013 Discovery funding round but there has been little advice available on the interpreting eligibility rules in relation to particular projects. There is a significant amount of uncertainty, for example, about the application of the definition to

- psychology and nursing research
- biomedical research projects which the researchers themselves consider to be "basic" biological research into (eg) cellular or physiological function or malfunctioning but which are prompted by and arguably addressed towards appropriate interventions in the long term into medical conditions
- early stage research into drug discovery, stem cell applications and other potential tools and techniques with broadscale application to human medical conditions.

This creates a concerning risk that a subset of very important biomedical research, or research with biomedical application, will fail to secure funding from either ARC or NHMRC, to the detriment of Australian science and society generally.

Some research scenarios currently under development at Griffith University which would be eliminated from ARC funding by its definition of health and medical research but which would be unlikely to be supported by the NHMRC include:

1) *In silico* modelling of a human disease to gain understanding of the basic function, and dysfunction, of the immune system (using mathematical models but no human or animal tissues).

2) Developing novel chemical compounds which can be used as building blocks for new classes of drugs (ie not initially directed at a specific disease, but clearly aimed towards future development of new compounds to treat disease)

3) Developing GPS devices to monitor human activity, where possible applications include the treatment or management of obesity and disability

4) Using animal models to understand basic cellular function, with potential long term downstream application to the treatment of (eg) drug addiction .

5) An interventional study of how education in children from low socio-economic backgrounds can improve happiness and wellbeing, and lead to better development outcomes.

<u>Need for a "whole of life" approach to the research funding cycle</u>

Notwithstanding its decision to limit funding for a defined subset of health and medical research, the ARC's Future Fellowships, Linkage Projects and Special Research Initiatives schemes may support projects defined as health and medical research. In the case of the Future Fellowship scheme, this is due to the Federal government specifying that the scheme must support research areas in all disciplinary areas. In the case of the Linkage Projects scheme and Special Research Initiatives funding of health and medical research appears to be allowed due to a focus on commercialisation. This may be considered necessary because NHMRC does not have an industry collaborative scheme comparable to Linkage (except for projects at the proof-of-principle stage where the NHMRC Development Grants scheme may be appropriate). This highlights the fact that neither agency takes a whole of life approach to supporting health and medical research from pure basic research to commercial application. This creates further constraints, difficulties and uncertainties for biomedical researchers, as well as some practical administrative problems for both agencies. For example, the ARC, which ostensibly does not support health and medical research, must still maintain its health and medical knowledge capability for industry collaborative projects. NHMRC does not support industry collaborative research unless there is intellectual property that is very close to commercialisation which may mean that earlier-stage research projects with vital industry engagement (eg in health service delivery) are not supported. Neither agency, therefore, is ensuring that health and medical research funding is available for the full life cycle of research projects with potential commercial outcomes or avenues for practitioner adoption so that research outcomes are effectively translated into products and services that will improve human health.

Continuity of health and medical fellowships and research training

The cost to the community resulting from issues associated with health and ageing has been identified in many reports, and expenditure in the health system is estimated to rise from $113B in 2012 to $3.3T by 2062. The ongoing effectiveness of health and medical research relies on the continuing development of young researchers. In Australia, the lack of career structure and funding for early and mid career researchers hampers research and innovation in this key sector and raises questions about its long term viability as many younger researchers are unable to sustain a career in the longer term. It has been estimated that more than 6,000 researchers will leave the sector between 2009 and 2019 as a result of funding shortages, lack of career development and poor financial rewards. It is imperative that Australia develops more sustainable career structures and dedicated funding to enable pathways from early career post doctoral scientist to mid career researcher to senior medical scientists. Only if Australia retains it high performing younger researchers will it be able to maintain and enhance the development and translation of medical research in Australia.

The NHMRC currently offers a series of fellowships which provide sequential support for researchers at the different stages of their research careers (Attachment 1). ARC Future Fellowships are available to mid-career health and medical researchers. As shown in Attachment 1 there is a significant difference between the salaries provided by the NHMRC and the equivalent university salary scales, which govern the actual salary paid to fellows. Universities are therefore subsidising the salaries of NHMRC research fellowships to a significant extent. Although the ARC's Future Fellowship salaries are also lower than university salary scales, the gap is much smaller.

The Future Fellowships scheme is scheduled to end with its 2013 round after which there will be a significant gap in the number of mid–career fellowships available to health and medical researchers. In the 2011 Future Fellowships round some 28% of the Fellowships were awarded in the Promoting and Maintaining Good Health research priority area (a total of 56 Fellowships).

In order to encourage health and medical researchers to stay in or return to Australia, NHMRC fellowship salaries need to be maintained at competitive levels so that fellows do not need to individually negotiate their institutional salaries. Australia also needs to guarantee a stable number of fellowships to provide a clear career path for health and medical researchers.

Recommendations

1. The major research funding bodies should collaborate to ensure that no significant areas of biomedical research fail to qualify for competitive grant funding.

2. In the context of item 1 above, definitions of funding eligibility for different kinds of research projects in the broad areas of psychology, nursing and biomedical research need considerable clarification; it would be highly desirable for the ARC and NHMRC to reintroduce mechanisms to enable eligibility on the basis of discipline to be resolved prior to formal submission to major funding rounds
3. The key driver in making such decisions should be the importance of ensuring that valuable research is appropriately funded, not the elimination of projects from funding consideration due to technical ineligibilities.
4. The NHMRC should introduce an industry collaborative scheme to bridge the gap between fundamental health and medical research and projects which are close to commercialisation and to encourage industry partner engagement in clinical translation to public health and health services research.
5. The NHMRC should increase the salaries for their research fellowships to be consistent with comparative university salary scales.
6. The Commonwealth should commit to maintaining the annual number of Future Fellowships.

Attachment 1

Fellowship Type	Purpose	Years since PhD	NHMRC Award	Griffith University Salary (range)	Salary Difference
NHMRC Early Career Fellowships		Within 2 years	$69,891	$82,621	$12,730
NHMRC Career Development Fellowships	Develop Australian health and medical early to mid-career researchers so they establish themselves as independent, self-directed researchers ▪ published 15 or more peer reviewed journal articles, with the peer review panel also taking into account first authorship (usually the majority of articles), and quality of the published work, and one or more review articles or book chapters; ▪ presented at international meetings at least twice; ▪ obtained research funding as a first named Chief Investigator in a competitive granting scheme; ▪ international postdoctoral experience; ▪ led their own (small) research group.	**CDF 1** 2 – 7 years post doctoral experience **CDF2** 7 – 12 years post doctoral experience	$99,431 $109,980	$105,923 - $125,787	$6,500 +
NHMRC Research Fellowships	Support for outstanding health and medical researchers undertaking research of major importance and of significant benefit to Australian health and medical research	n/a	$118,157 - $161,675	$129,756 – 172,177	$11,599 +
ARC Future Fellowships	Attract and retain outstanding mid-career researchers	5 – 15 years	$128,632 - $182,792	$129,756 – 172,177	$1,000 +