The Australian Society for Medical Research

Submission to: Review of Australia's Research Training System

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Declaration of Interests

The Australian Society for Medical Research (ASMR) represents members from the health and medical research sector including researchers from universities, hospitals, research institutes, medical colleges, and patient groups.

Some members are recipients of funding from the Australian and/or State Governments bodies, including the National Health and Medical Research Council (NHMRC), and the Australian Research Council (ARC).

ASMR receives direct funding from the NHMRC for ASMR Medical Research Week®, a public outreach program that raises public awareness of medical research in Australia.

Executive Summary:

The Australian Society for Medical Research (ASMR) provides practical actions and outlines 8 recommendations, to this timely review, to create a 'fit for purpose' research workforce that can mitigate Australia's current and future societal and economic challenges. A fit for purpose research workforce needs to be well planned with quality and quantity being two critical aspects. Right now the greatest risk the research sector faces is the dissemination of our highly skilled workforce as a result of inadequate investment into Australia's peak funding bodies [Australian Research Council (ARC) and National Health and Medical Research Council (NHMRC)]. ASMR supports an immediate injection of investment into ARC and NHMRC to prevent any further erosion of our research sector and momentum of discovery. In addition in terms of quality, ASMR recommends 3 elements to strengthen our research workforce:cultural awareness, convergence research and innovation. We provide some practical suggestions on how this may be achieved. Innovation comes from collaboration and intersection between different ideas and different disciplines in the research sector and across sectors and ASMR believes that improved collaboration is needed at the highest level of government between Cabinet Minister portfolios including Health, Industry and Science, Employment, and Education and Training. Only then will Australia be truly capable of developing a national approach to a fully integrated 'whole of research training system'.

The Australian Society for Medical Research (ASMR):

The Australian Society for Medical Research (ASMR) is the peak body representing members from the health and medical research (HMR) sector including researchers from universities, hospitals, research institutes, medical colleges, and patient groups. Since 1961, ASMR has provided advice to government on behalf of the HMR Sector. The ASMR proudly represents more than 1800 direct members and more than 120,000 additional Australians through our affiliated professional societies, medical colleges and corporate/disease related foundation members. Importantly, our advice is **always evidence based**, and our goal is to aid government in developing policy that allows our country's highly skilled and adequately sized HMR workforce to maintain, and expand their contribution to the health and economic wellbeing of all Australians and thus build upon our nation's prosperity.

Australia faces unprecedented health and economic challenges over the next 50 years, with expected unsustainable escalation of health care costs and an ageing population. Australian HMR is the foundation for the Nation's health care system. There is compelling evidence that a viable and competitive health and medical research sector can mitigate Australia's current and future health and economic challenges[1,2].

Overall Opinion of the Review of the Australia's Research Training System:

ASMR supports this timely Review of Australia's Research Training System, especially since investment in recent years into the broader science and education sectors has significantly decreased, which has negatively impacted job security and career opportunities for Australia's highly skilled and trained research workforce [3]. The advice ASMR provides within pertains largely to the broader research community, unless otherwise stated, with evidence and examples drawn from the health and medical research sector, to substantiate our case. It is important Australia adopts a nation-wide strategic approach to research training, an essential ingredient to cultivate and capture opportunities in and outside Australia for our nation to prosper. Engagement across and within sectors (e.g. education, health, industry) and organisations (e.g. Universities, hospitals, institutes, government and non-government bodies) that train and educate researchers is vital. In order to maximise the societal and economic benefits from trained researchers, cross talk and convergence at the highest level of government and policy development are critical. For example, *Cabinet Ministers require transformative discussions and innovative processes that incentivise and enable*

synergies and synthesis between the portfolios of health, education and training, industry and science and employment to produce a world class fully integrated and innovative research training system.

Two important aspects need addressing in **planning a world class research training system**: (1) to improve the *quality* of the training to ensure a deeper research workforce that is agile and flexible; and (2) to determine the *quantity* of researchers required to respond to the ever changing societal and economic landscape. A well-planned research workforce is essential[4].

Before ASMR can provide informed strategies and answers to the specific questions raised in this consultation paper **evidence is required on the current size and make-up of the workforce**. Australia's key strengths in research training need to be defined to determine how best we channel (effectively and efficiently) our valued commodity (human capital) to best fit the nation's needs in a constantly growing and changing environment. A **whole of research training system** is needed for Australia, where education, research, health care, industry, policy makers, consumers and health economists to name but a few, work together to create a **world class fully integrated system that supports all sectors** - to keep pace.

ASMR believes questions 1-10 of the consultation paper are important and interrelated and thus to avoid repetition in our answers, below we detail a number of the research training-related actions, that cut across the questions we consider critical to strengthening the research sector by creating a more fit for purpose workforce.

A Fit for Purpose Research Training System:

(1) Planning the Workforce - Quality

Four key elements are needed to strengthen our research workforce: cultural diversity, convergence research, innovation and workforce database.

Cultural diversity: The Discussion paper reports that non-traditional doctoral higher degree research backgrounds have remained stable over the past decade. Building a deeper workforce through cultural diversity would capitalise on Australia's asset of being a multicultural society. In regards to health, diversity and cultural awareness are essential in order to assist in answering the 'big' health problems. It will be crucial to create societal, political and organisational structures that support gender equity and ethnicity and foster indigenous Australians to become a part of the research sector.

Convergence research (trans-disciplinary): In the 21-century it is considered that the Life Science sector will be key to answering the 'big' problems our society faces including health and economic issues. Australia's health sector relies on world class health and medical research, however it is becoming clear that trans-disciplinary research, big teams of scientists from different disciplines (e.g. physicists, biologists mathematicians, architects, engineers and policy design experts) need to come together to tackle the challenges Australia faces (e.g. the escalating and unsustainable economic burden of disease due to an ageing population). Despite the fact Australia has some highly successful examples of trans-disciplinary outcomes (e.g. Cochlear & the Bionic eye), trans-disciplinary research and approaches are not embedded into Australia's research culture; skills are rudimentary at best. New policy and funding mechanisms need to be established to incentivise convergence research followed by professional training to support researchers working across disciplines. The flow on effect is 'win win'. Innovation occurs at the intersections of different ideas and different research disciplines and collaborative gain not only takes place between different scientific disciplines but also across sector (e.g. academia and industry).

Innovation: Australia lacks innovation with low rankings for technological readiness (19th) and innovation (25th) by the World Economic Forum[5]. This problem requires the engagement of all

stakeholders. It requires an entirely new conversation around the question – what is innovation and what does it mean? What is clear is the word 'innovation' means different things to different people. Is the meaning; "better solutions that meet new requirements" or 'creating more effective processes' or "translating an idea or invention into a good or service that creates value or for which customers will pay". Without progressive leadership, engagement and a framework, Australia will continue to struggle in educating and training the type of research workforce needed to mitigate the future challenges. It is important to realise that innovation is a process that must be fostered from early education through to tertiary studies and beyond. By securing the future of the research training workforce, consolidating research infrastructure, ensuring sustainable funding, and integrating research activity within Australia and outside its borders (e.g. into the geographically logical region of the Asia-Pacific) - Australian innovation will thrive and drive the future prosperity of Australia.

Workforce database: The ASMR recommends the creation of a central reference database that can be accessed by industry and researchers. This database would promote the skills and expertise of individual research groups, and also provide a forum for industry to advertise for solutions to their research problems. A cooperative approach between government, universities and industry is required to create such a database; however, this resource could facilitate the initial approaches between industry and researchers. Such a system would also facilitate knowledge between the sectors.

Attracting industry partnerships will help build innovation and discovery, and draw investment and growth into the Australian economy. Encouraging industry to collaborate with researchers, using tax incentives, is an immediate strategy that could facilitate development of partnerships between industry and research groups.

Australia needs to develop a 'knowledge and innovation economy', where Australia actively endorses and 'sells' the skills and capabilities of its health and medical research workforce.

(2) Planning the Workforce - Quantity

Optimising Funding Systems & Sources: The 2 peak funding agents that support research and researchers in Australia are the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC). However in recent years significant cuts have been made to the ARC funding and NHMRC funding has been static since 2011. This has placed Australia's research sector at great risk and without further funding into NHMRC and ARC, undoubtedly Australia will not maintain its international competitiveness and not be ready to meet Australia's current and future social, economic and environmental challenges.

In regards to health and medical research, leadership within Australia is indisputably strong, with the majority of funding (supports a substantial number of researchers annually; approx 8000) coming from NHMRC**.** As a Nation we face *an immediate and long term crisis in health and the research sector due to inadequate investment into the NHMRC*. Funding for HMR comes predominantly from the commonwealth's investment into the NHMRC and specifically it's Medical Research Endowment Account (MREA); it is difficult to see how, at least in the short term, the health and medical research sector will sustain itself without significant and immediate injection of funding. It is of critical importance that strategies to improve the effectiveness of the sector take a 'whole-of-sector' approach. Currently, government invests 0.6% of total health expenditure into the NHMRC. The investment in NHMRC has not kept pace with the CPI, or with the rapidly rising health expenditure. *Investment into NHMRC has been static since 2011*. **We face an immediate depletion of our highly skilled workforce.** This loss of intellectual capital poses a serious threat to the viability of a sector which brings exceptional health and economic returns to Australia[1]. NHMRC project grants funded rates this year are predicted to be less again (around 12%) and in 2014 NHMRC funded rates were the lowest on record of 14.9%. This will significantly inhibit our capacity to train future health and

medical researchers. In ASMR's view, to maintain the NHMRC investment, injection of $300M annually is required to avert decimation of the HMR sector and all of its detrimental flow on effects. In the long term it has been established that the level of funding to maintain a dynamic and fully functional HMR sector is to set the investment into NHMRC at 3% of the total health spend[1]. Importantly, a lack of investment or cuts to one component of the sector negatively impacts the other e.g. cuts to science or education directly affect health and medical research.

Planned Workforce: A well-planned workforce requires an understanding of the size and make-up of our current research workforce. In 2009-10, The ASMR commissioned a study to determine the size and make-up of the health and medical research workforce[4]. It was estimated that the workforce was comprised of 40,000 health and medical researchers with 30% (15,000) being PhD qualified. However attrition over a 10 year period would see 4000 PhD qualified researchers leave the sector. Replacing 4000 PhD qualified researchers was estimated to cost $570M in 2009 dollars. The finding also showed that in order to maintain the number of PhD qualified personnel per population in 2019 an additional 1700 staff would be required with an estimated cost of $240M. Creating a wider and deeper research sector relies on a co-ordinated and strategic approach to workforce planning that is supported by industry, government and non-government and charitable bodies.

Research Pipeline: ASMR agrees that a targeted action to help secure the research workforce pipeline needs continued investment into school science education initiatives, providing additional Australian Postgraduate Awards, and career point specific research programs (notably mid-career).

In the context of health and scientific research, where the majority of researchers work on projects funded by competitive granting schemes (often field specific), a researcher must also be proficient in science communication (presentation and writing skills including grantsmanship), critical thought (reviewing & assessing grant), leadership (driving teams) and management (human relations and budgeting) to be competitive. Furthermore, given the ever-changing landscape of health and scientific research, an effective researcher should also be capable of responding and adapting to the changing conditions.

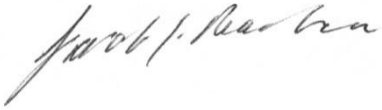
While these skills should develop throughout higher degree training, the seeds should be planted much earlier in the educational pipeline. In order to ensure Australia has an internationally competitive research sector into the future, it is critical to initiate and encourage basic training in research concepts and skills at a young age. In the sciences, it is alarming that the number of high school students studying senior science has dropped from 94% twenty years ago to around 50% today[6]– these numbers are disturbing and continued reform is required across the board.

Transferable Skills: There is considerable anxiety at least amongst the health and medical research sector[3] of wide spread perception of job insecurity and lack of career opportunity with more recent job losses. A major limitation for researchers is they have little to no skills in how to 'sell' themselves outside their current field. Graduates develop a broad range of transferable skills and expertise during their candidature, most of which are desirable for a variety of career pathways. Given that most students graduate from academic institutions, being engrained in this environment for several years and mentored by others who have built careers in academia leads to the assumption that a higher degree research is the only viable pathway into academia. This could be resolved by structured training, during a higher degree research candidature, in skills and experiences required for non-academic pathways, for example science/research communication, technology transfer and commercialisation, intellectual property and patents, interaction with business, policy development and implementation, and regulatory structures. Such training could take various forms, from mandatory coursework through to optional seminar series. As suggested in the Discussion Paper, internships or placements in non-academic work environments would likely fast-track aspects of this learning and provide new realised potential and opportunities for exiting productively.

ASMR's Key Recommendations:

- Australia's research training sector is at risk since investment in ARC and NHMRC has declined. The Federal government needs to adequately invest into these funding mechanisms to support our highly trained research workforce.
- Australia needs to up-skill its research workforce by incentivising and supporting cultural diversity, convergence research and innovation.
- Australia needs to plan for our research training future needs and to do that the size and make-up of the research sector needs evaluating and projecting.
- Australia's research training strengths and emerging assets needs to be determined based on a fully substantiated and evidenced based approach.
- Australia needs to create a central reference database that can be accessed by industry and researchers.
- Australia has an internationally competitive research sector, but it is critical to initiate and encourage basic training in research concepts and skills at a young age.
- Australia needs to better equip researchers to enable them to exit the sector productively so that their valuable skills are utilised in other related sectors.
- Creating a wider and deeper research sector relies on a co-ordinated and strategic approach to workforce planning that is supported by industry, government and non-government and charitable bodies.

Yours sincerely,



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