

6 February 2015

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Dear Treasurer

The 2015-16 federal budget provides a critical opportunity to make real headway on the platform policies introduced in the Coalition Government's first year to address the fiscal pressures of escalating health costs, cut red tape, and stimulate innovative industries.

Central to the Government's ability to secure Australia's future health and prosperity will be improving the health outcomes of an ageing population to sustain labour participation and productivity rates while keeping health expenditure in check.

No Government initiative is more critical in this respect than the establishment of the \$20 billion Medical Research Future Fund (MRFF). We urge the Government to remain firm on its commitment to deliver the MRFF in full by 2023-24.

The MRFF is robust, long-term policy, and one of the best investments the Government could make to reduce the burden of disease on the health system and the economy. Research recently undertaken by Deloitte Access Economics estimates that the MRFF will provide an average return of \$3.40 for every dollar expended on health and medical research.¹ These returns come in the form of health savings resulting from more effective healthcare and a healthier community, a reduction in the burden of premature mortality and morbidity on productivity, the commercial returns from medical innovations, and other health and productivity gains resulting from improved health outcomes.

With an injection of funds through the MRFF, it is essential to ensure the Government is achieving the best possible return on its investment in health and medical research. There are a number of Government reviews underway that have an impact on health and medical research, including the Review to Strengthen Independent Medical Research Institutes, the Boosting the Commercial Returns from Research Review, the Higher Education Infrastructure Working Group, the review of national research infrastructure, and the Reform of the Federation White Paper (Roles and Responsibilities in Health). We urge the Government to use these reviews to free Australia's health and medical research sector of red tape, allowing it to deliver the best outcomes possible for the future health of the nation.

¹ Deloitte Access Economics (2014) *Extrapolated returns from investment in medical research future fund (MRFF)*, prepared for the Australian Society of Medical Research, Sydney. Available at: http://aamri.org.au/wp-content/uploads/2014/11/ASMR-Deloitte-Report_MRFF.pdf

In AAMRI's pre-budget submission, we focus on the intersection of the MRFF and these reviews, suggesting the following initiatives as priorities:

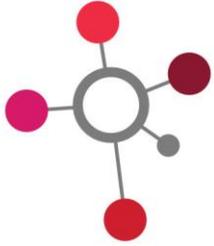
- Invest the first \$20 million of MRFF disbursements in 2015-16 in a way that supports young researchers and promotes research translation.
- Reform the National Health and Medical Research Council (NHMRC) and resource the NHMRC secretariat so it is in a position to deliver the MRFF and the Medical Research Endowment Account (MREA) in a manner that is highly efficient.
- Strengthen Australia's highly successful medical research institutes (MRIs) by fully funding the indirect costs of research and making access to research funding open and transparent.
- Consider initiatives to boost the commercial translation of medical research findings into the clinic.
- Develop a coordinated, secure and forward-looking research infrastructure investment strategy to support cutting-edge research.

We hope that you will consider these proposals in ensuring the Government's investment in health and medical research continues to deliver to the people of Australia.

Yours sincerely



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Association of Australian
Medical Research Institutes

2015-16 PRE-BUDGET SUBMISSION

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ABOUT AAMRI

AAMRI is the peak body representing medical research institutes (MRIs) across Australia. Our 45 member institutes are leaders in health and medical research, and collectively represent over 10,000 staff and students and an annual turnover of more than \$1 billion. The vast majority of our members are independent MRIs, that is, mission-driven charities legally independent of a university or hospital, and co-located with a hospital or healthcare provider. The remainder are university- or hospital-based medical research institutes or an alliance of medical research partners with a demonstrable level of independence.

Australia's MRIs work on an extensive range of human health issues, from preventative health and chronic disease, to mental health, Indigenous health and improved health services. Their research ranges from fundamental biomedical discovery through to clinical research and the translation of research findings from bench to bedside. Together, they aim to drive innovation in healthcare to improve the lives and livelihoods of people in Australia and world-wide.

OVERVIEW

The Medical Research Future Fund (MRFF), together with concurrent Government reviews impacting the health and medical research sector – including the Review to Strengthen Independent Medical Research Institutes, the Boosting the Commercial Returns from Research Review, the Higher Education Infrastructure Working Group, the review of national research infrastructure, and the Reform of the Federation White Paper (Roles and Responsibilities in Health) – provide an unprecedented opportunity to boost the capacity of the sector to deliver better health outcomes, and improve the return on the Government's investment in health and medical research:

1 **MRFF: priority initiatives for 2015-16**

- Proof-of-Concept Fund: *translating research discoveries into healthcare*
- Early-Mid Career Researcher Scheme: *keeping young researchers on Australian shores*
- Health Professional Research Fellowships: *embedding research in the health system*

2 **A National Health and Medical Research Council (NHMRC) that can deliver on the long-term priorities of the MRFF**

- Reform of the NHMRC governance and organisational structure
- Overhaul of NHMRC schemes to improve efficiency and enhance career pathways

3 **Strengthening Australia's highly successful medical research institutes (MRIs)**

- Full and equitable funding for the indirect costs of research for all research organisations
- Access to Australian Research Council (ARC) schemes to all publicly-funded research organisations, including MRIs

4 **Boosting the commercial returns from medical research**

- Proof-of-concept and venture capital funding: *addressing the valleys of death*
- Upskilling the research workforce in technology transfer and commercialisation
- Appropriate metrics of commercialisation success in peer review and Excellence in Research for Australia (ERA) processes
- Bringing together sub-critical groups of commercialisation expertise

5 **Research infrastructure that underpins a cutting-edge research sector**

- A 10-year Government strategy for Australian research infrastructure that coordinates investment across agencies and programs.

1. MRFF: PRIORITY INITIATIVES FOR 2015-16

BACKGROUND

In 2015, the Australian Government will establish the Medical Research Future Fund (MRFF) to drive cutting edge innovation and clinical breakthroughs that will underpin advances in healthcare, from preventative health and general practice through to Australia's hospital network.

The MRFF endowment will progressively build over the next decade, eventually reaching \$20 billion by 2022-23. Disbursements from the endowment fund will go towards health and medical research in Australia's health clinics, hospitals, medical research institutes (MRIs) and universities, commencing with an annual disbursement of \$20 million in 2015-16, and progressively building to \$1 billion by 2022-23, once the fund reaches its full capitalisation of \$20 billion (Table 1). This funding for health and medical research will supplement the \$859 million currently spent by the Government on health and medical research through the National Health and Medical Research Council's (NHMRC's) Medical Research Endowment Account (MREA).

The progressive increase in MRFF disbursements over time is a sensible means to grow Australia's medical research sector. It also provides ample time to prepare an investment and governance strategy in consultation with the sector to ensure the best outcomes from this injection of new funding.

However, with skepticism about the implementation of the MRFF, and with NHMRC grant success rates at an historic low, it is essential that MRFF disbursements for health and medical research commence in 2015-16 (as forecasted in the 2014-15 federal budget) if we are to prevent a brain-drain of Australian medical researchers and research-active health professionals to foreign shores.

Table 1. Treasury projections of MRFF and NHMRC funding of medical research

	MRFF Disbursements (\$M)	NHMRC (MREA) Appropriations (\$M)	Total (\$M)
2014-15		\$859	\$859
2015-16	\$20	\$799	\$819
2016-17	\$77	\$813	\$890
2017-18	\$179	\$828	\$1,007
2018-19	\$330	\$849	\$1,179
2019-20	\$500	\$870	\$1,370
2020-21	\$800	\$892	\$1,692
2021-22	\$900	\$914	\$1,814
2022-23	\$1,000	\$937	\$1,937
2023-24	\$1,000	\$960	\$1,960

Source: http://www.budget.gov.au/2014-15/content/overview/html/overview_12.htm

RECOMMENDATIONS

The 2015-16 budget provides the opportunity to kick start the MRFF, with the first \$20 million of disbursements funding a high impact initiative that matches the boldness of the MRFF itself, while addressing priority issue/s for the health and medical research sector.

We recommend that the first tranche of MRFF disbursements in 2015-16 funds one or more of the following initiatives:

i. Proof-of-Concept Fund: *translating research discoveries into healthcare*

If Australian health and medical research is to improve health outcomes, research discoveries in the laboratory and the clinic must be translated into new medicines, devices, policies and practices that have a direct impact on health outcomes. While Australia has an international competitive strength in health and medical research, it is widely acknowledged that Australia lags behind in translating research discoveries into health innovations.² A key reason for this is a bottleneck in Government funding for the translation and implementation of research.

An early step in the translation of research is building the compelling 'proof-of-concept' data necessary to prove (or otherwise) that a discovery or concept is commercially viable so that it can then attract industry interest and early-stage private investment.

While the NHMRC provides funding for research, it does not allow any of that funding to be expended on the early protection of valuable intellectual property (IP) arising from this research. Further, less than 1 per cent of the NHMRC grant budget goes towards the Discovery Grants scheme, the only Government scheme that provides funding to medical researchers for 'proof-of-concept' research, enabling researchers to demonstrate concepts to a point where there is potential for private investor interest. This bottleneck in funding is stifling the ability of medical innovations to make it out of the lab and into the clinic where they can improve health outcomes.

We recommend the establishment of a Proof-of-Concept Fund, commencing at \$10 million per annum and growing over time, to provide grants to enable medical researchers to undertake the necessary research to prove (or otherwise) the commercial potential of a promising concept. This would replace the current inadequate NHMRC Discovery Grants scheme, building in important new features such as the ability to use funds for IP protection, and a rolling year-round application process (rather than the current ineffectual annual application process).

ii. Early-Mid Career Researcher Scheme: *keeping young researchers on Australian shores*

Australia's ability to provide a sustainable pipeline of talent to support the long-term goals of the MRFF relies on maintaining a vibrant early-mid career research workforce. However, confidence of early-mid career researchers is at an all-time low, with historically low NHMRC grant success rates and other deleterious changes such as the exclusion of medical researchers from the Australian Research Council's (ARC's) Future Fellowship scheme. There is a real threat that Australia's high achieving early-mid career researchers will go overseas where conditions are better.

² McKeon, S, et al. (2013) *Strategic Review of Health and Medical Research in Australia – Better Health Through Research*, Australian Government, Canberra.

We propose funding for a fellowship scheme for high achieving early-mid career researchers. This could be modelled on the highly regarded Future Fellowship scheme (for which medical researchers are no longer eligible), or could augment funding for the existing NHMRC Career Development Fellowships and Translating Research Into Practice (TRIP) Fellowships.

We recommend that a portion of the scheme's budget be earmarked for health practitioner researchers (including clinicians and allied health professionals) and for researchers that straddle other sectors or disciplines (e.g. industry, policy, interdisciplinary research) to encourage the embedding of research in the health system, policy and industry.

iii. Health Professional Research Fellowships: *embedding research in the health system*

One of the key issues of Australian health and medical research, highlighted by the McKeon Review,³ is the divide between medical research and the health system. A key recommendation of this review was to better embed research in the health system to ensure the uptake of research findings and health innovations into clinical practice, underpinning the best possible delivery of primary, secondary and tertiary healthcare. One of the identified barriers to this is a lack of funding and time for health practitioners to undertake research.

We recommend that the Government increase funding for Practitioner Fellowships to provide support for active clinicians, health practitioners and public health professionals to undertake research linked to health practice and policy.

COST

The \$20 million already allocated in the 2014-15 federal budget for MRFF disbursements in 2015-16 would be used to fund one or more of these initiatives. Funding of the scheme/s at ≥\$20 million per annum should continue over the forward estimates.

³ McKeon, S, et al. (2013) *Strategic Review of Health and Medical Research in Australia – Better Health Through Research*, Australian Government, Canberra.

2. AN NHMRC THAT CAN DELIVER ON THE LONG-TERM PRIORITIES OF THE MRFF

BACKGROUND

The MRFF provides an extraordinary opportunity to augment Australia's current excellence in discovery research to drive better translation and application of research discoveries into new medicines, devices, policies and practices that have a direct impact on health outcomes, drive health behaviour change and create a more effective, productive health system.

Should the NHMRC be responsible for MRFF disbursements, as proposed, it will be essential that its governance and organisational structure is fit for this purpose. Currently, the *NHMRC Act* limits the capacity of the NHMRC to provide funding for the translation of health and medical research, so would clearly require reform. A doubling of the NHMRC budget over 10 years is also likely to require organisational reform if these funds are to be distributed efficiently and effectively.

The McKeon Review also highlighted the need to streamline NHMRC peer review and grant application processes, and to overhaul current funding schemes, including providing larger, longer grants, to reduce the administrative burden on researchers, and to provide better career pathways.

RECOMMENDATIONS

i. Reform the NHMRC governance and organisational structure

We recommend that reform of the NHMRC governance structure be an important first step in the full implementation of the MRFF. This should include updating of the *NHMRC Act* to reflect a broader remit for the NHMRC, and an independent review of the NHMRC governance and organisational structure to ensure it is able to oversee robust and independent distribution of the NHMRC's MREA and the MRFF.

ii. Overhaul NHMRC funding schemes to improve efficiency and enhance career pathways

We recommend that as part of the MRFF investment strategy, the NHMRC review and overhaul the range of pre-existing schemes funded through the MREA to ensure a holistic, coordinated funding approach for the MREA and MRFF. This reform should include the objective of streamlining current funding mechanisms and reducing the administrative burden of grant applications on medical researchers, while better supporting the career pathway.

COST

Assign a portion of the \$9.9 million over 5 years allocated in the 2014-15 federal budget to streamline and simplify NHMRC processes and develop a nationally consistent approach to clinical trials to this initiative.

3. STRENGTHENING AUSTRALIA'S HIGHLY SUCCESSFUL MEDICAL RESEARCH INSTITUTES

BACKGROUND

Independent medical research institutes (MRIs) are a crucial part of a coherent, multi-faceted national approach to health and medical research needed for the advances in health outcomes the Commonwealth Government seeks to achieve. The approximately 50 MRIs in Australia have a collective annual turnover of more than \$1 billion, employ more than 10,000 staff and students (including approx. 1,600 Higher Degree Research students), and represent around a third of NHMRC funding.

The MRI model originally grew out of the need to increase the capacity, efficiency and quality of medical research taking place in tertiary hospitals. Many MRIs 'spun out' of hospitals themselves, and remain embedded in a hospital campus to provide the facilities and supportive environment necessary for clinically-relevant research. Through this, the hospital or health service provider benefits from the resources of the MRI, while the MRI is aided in its mission to improve health outcomes via access to healthcare or health policy professionals, patients and health data.

By all available measures of impact and success, Australia's MRIs are the jewel in the crown of Australia's health and medical research sector.⁴ Through their unique model that combines a clear mission-based focus around improved community health outcomes, and strong links with health service providers and policy makers, MRIs provide an interface between research excellence, healthcare and community need that other research organisation models are not able to achieve. Nimble organisational structures overseen by highly experienced voluntary boards, including some of Australia's most experienced business and community leaders ensure MRIs continue to surpass other research organisations in outcomes and efficiency.

MRIs achieve this despite operating in an environment where they are not supported by the Commonwealth Government in an equitable manner compared to other parts of the research sector, causing underlying structural issues and the weakening of the sector's sustainability.

Inequitable and insufficient funding for the indirect costs of research

Recurrent Commonwealth Government support for health and medical research falls into two categories: funding for 'direct' research costs (e.g. salaries of scientists, reagents for specific research projects, etc.), and funding for 'indirect' research costs, which include all other services that cannot be attributed to an individual research project but are nonetheless essential to keep the research enterprise running (e.g. electricity, human resources and finance, laboratory equipment, administration, IT, etc.). While direct research costs are covered by Commonwealth Government competitive grants, indirect costs are not. Instead these are partially met by a complicated mix of Commonwealth Government schemes that fund indirect research costs at different rates and based on different formulae, for which eligibility depends on the type of research organisation.

The NHMRC, through the Independent Research Institute Infrastructure Support Scheme (IRIISS), provides MRIs with 20 cents per dollar of NHMRC grants awarded to help cover the indirect costs of research associated with these grants. This is far less than the average 60 cents of indirect costs

⁴ See AAMRI's submission to the Review to Strengthen Independent Medical Research Institutes, available at http://aamri.org.au/wp-content/uploads/2014/12/141207_MRI-Review_AAMRI-submission.pdf.

incurred by MRIs per NHMRC grant dollar.⁵ It is also less than the funding for the indirect costs of research received by universities through the Department of Education and Training's Research Block Grant schemes (including Research Infrastructure Block Grants (RIBG), Sustainable Research Excellence (SRE) Scheme, Joint Research Engagement (JRE) Scheme, and Research Training Scheme (RTS)), for which MRIs are not eligible. While these schemes for universities do not meet the full indirect costs of research, they do (through a complicated mix of formulae) provide funding for the indirect costs of research associated with *all* Australian Competitive Grants at a rate greater than the IRIISS scheme for MRIs. They also reward research excellence and provide funding for the indirect costs of research funded from non-Commonwealth Government sources (e.g. industry, competitive grants from Foundations, etc.). To complicate things further, several state governments provide some level of funding to MRIs (and in some cases to universities) to assist with the indirect costs of research and/or to reward excellence and innovation.

Along with a lack of grant funding, the lack of equitable and sufficient funding for the indirect costs of research is *the* biggest threat to the efficiency, sustainability and outcomes of MRIs.

The discrepant treatment of MRIs by the Commonwealth Government puts the most productive part of the medical research sector at a competitive disadvantage, undermining MRIs' ability to compete with other parts of the sector to retain the best researchers, provide best-practice support services, and translate research into new drugs, devices and healthcare practices. The absence of competitive neutrality also leads to mistrust within the sector, and impedes collaboration between different parts of the sector. The lack of indirect cost funding to MRIs for funding from sources other than NHMRC grants unfairly penalises these organisations for diversifying their funding base, at odds with the Government's goal of increasing private investment in research.

The insufficient funding of the indirect costs of research of MRIs and universities also means that researchers spend a substantial amount of time piecing together funding from other sources to meet even the most basic of needs such as paying electricity bills, while universities are forced to subsidise research costs with student fees. It also compromises access to philanthropic and commercial funders, which do not find subsidising the indirect costs of Government grants an attractive investment proposition.

This flawed system continues despite consistent recommendations of reform from seven separate Commonwealth Government-commissioned reviews over the past 16 years, including most recently the National Commission of Audit and the McKeon Review of health and medical research.⁶

Best practice countries such as the UK and USA provide close to full economic costing in relation to grants. In the USA, each organisation individually negotiates a fixed indirect funding rate with the Department of Health and Human Services. In the UK, the Transparent Approach to Costing (TRaC) process measures the full cost of research for government grants. In Singapore, there has been a huge investment by the government in health and medical research – including in long-term funding of core facilities and overheads – which has given them an important competitive advantage in health and medical research in the Asia-Pacific region.

⁵ LEK Consulting (2010) *Costing Medical Research to Reform Health outcomes*, prepared for AAMRI, Sydney.

⁶ National Commission of Audit (2014), *Towards Responsible Government (Phase One)*, Australian Government, Canberra; McKeon, S, et al. (2013) *Strategic Review of Health and Medical Research - Better Health Through Research*, Australian Government, Canberra; Bradley, D, Noonan, P, Nugen, H and Scales, B (2008) *Review of Australian Higher Education*, Australian Government, Canberra; Cutler, T (2008) *Venturous Australia, Building Strength in Innovation*, Australian Government, Canberra; Zerhouni, E, Davies, SC and Holmes, EW (2008) *An International Perspective on the NHMRC's Research Strategies*, NHMRC, Canberra; Grant, J, et al. (2004) *Sustaining the Virtuous Cycle for a Healthy, Competitive Australia*, Australian Government, Canberra; Wills, PJ, et al. (1998) *The Virtuous Cycle: Working Together for Health and Medical Research*, Australian Government, Canberra.

Exclusion of MRIs from relevant Government funding programs

A further inequality imposed on MRIs is their exclusion from ARC funding. Enabling sciences such as mathematics, bioinformatics, engineering and genetics are increasingly underpinning new frontiers in health and medical research. Commonwealth Government funding for these research areas falls under the purview of the ARC. However, MRIs are not eligible administering organisations for ARC schemes. This clear lack of competitive neutrality compromises the international competitiveness and outcomes of MRIs.

RECOMMENDATIONS

i. Full and equitable funding for the indirect costs of research for all research organisations

In line with the recommendations of seven Commonwealth Government-commissioned reports over the past 16 years, including the National Commission of Audit, we recommend consistent, transparent, equitable and sufficient Government funding for the indirect costs of research for all research organisations as an absolute priority to improve the efficiency and outcomes of Australian medical research, and allow research organisations to be more entrepreneurial, including through interactions with global industry. This should cover full funding for the indirect costs of research associated with all Commonwealth Government grants, as well as additional funding that rewards (and thus encourages) a more diverse funding base, and research excellence and translation.

The ideal solution would be for funding for the indirect costs of research to be included with funding for direct research costs in the awarding of Commonwealth Government grants, to reflect the true cost of the contract into which the Government and the research organisation have entered (as is best practice internationally, how in-house Government research operates, and the norm for any other form of tender process into which the Government enters). Additional funding to encourage diversification of funding and excellence/translation of research could be provided through a modified 'block grant' scheme for all research organisations. A compromise that would require less cross-government reform, but which would be inherently unstable, is a more equitable system of indirect costs funding across the medical research sector through a modification of the present schemes.

ii. Access to ARC schemes to all publicly-funded research organisations

We recommend that ARC schemes be open to all research organisations, including MRIs, to enable them to build areas of expertise in the enabling sciences, which are increasingly driving new frontiers in health and medical research.

COST

- The shortfall between the funding received for the indirect costs of research compared with the indirect costs incurred by the MRI sector is approx. \$170 million per annum.⁷
- The opening up of ARC schemes to MRIs would be cost neutral.

⁷ Based on financial data provided to AAMRI by MRIs for the financial period of 2011-12 or 2012. Includes indirect costs incurred for all research, not just that research associated with competitive grants. The shortfall in funding for the indirect costs of research specifically associated with competitive grants (i.e. not including indirect research costs incurred for research funded by other sources) is approx. \$90 million per annum. AAMRI does not have data available for the university or hospital sector.

4. BOOSTING THE COMMERCIAL RETURNS FROM MEDICAL RESEARCH

BACKGROUND

While Australia has a strong research record by OECD standards, we are well below many other OECD countries in translating research into commercially viable products and services.⁸ This represents thousands of wasted opportunities each year, reducing the potential economic, financial, health and community benefits of the Commonwealth Government's investment in research.

AAMRI sees the Commonwealth Government having a clear role in facilitating the commercial translation of research by:

1. using funding and policy levers to motivate, support and upskill publicly-funded research organisations to drive research commercialisation;
2. providing targeted financial support to de-risk areas of market failure in the commercialisation pipeline, closing the gap (or the 'valley of death') between research discovery and investor interest in commercially-relevant IP ;
3. delivering facilities and programs that facilitate engagement between industry and research organisations; and
4. providing a regulatory and policy framework where industry flourishes and commercial investment in research is encouraged.

Recent initiatives in the Commonwealth Government's *Industry Innovation and Competitiveness Agenda*, such as the proposed regulatory changes for Employee Share Schemes and for the approval of medical devices by the Therapeutic Goods Administration, are positive developments in a regulatory framework that encourages innovation and commercial investment in research.

However, a key enduring barrier to the commercial translation of research is limited access to finance to get potentially valuable research discoveries or intellectual property to a point where there is commercial interest in investing in them. As outlined in section 1, there is a lack of Government investment in proof-of-concept research and early-stage protection of ensuing IP, often referred to as the first 'valley of death' in the commercialisation pipeline. A second valley of death (or market failure) is a lack of access to early-stage venture capital to progress a potentially viable product past the proof-of-concept stage (including the testing of products in animal and human trials). The Commonwealth Government's Entrepreneurs Infrastructure Programme, R&D Tax Incentive, NHMRC Development Grants, ARC Linkage Grants and the Cooperative Research Centre (CRC) programme have all contributed to industry innovation, but have not sufficiently addressed these valleys of death.

The lack of stable, long-term initiatives to support the commercialisation of research has also significantly hampered private sector investment in Australian research and commercialisation outcomes. The recent termination of Commercialisation Australia and the Innovation Investment Fund (IIF) without notice are cases in point.

Another major issue for research commercialisation is the lack of commercialisation skills among researchers. Involvement in the commercialisation of research is neither encouraged nor supported in the professional recognition and advancement processes within which academic researchers work. The peer review system for Commonwealth grants and fellowships also has no agreed metrics with

⁸ McKeon, S, et al. (2013) *Strategic Review of Health and Medical Research in Australia – Better Health Through Research*, Australian Government, Canberra.

which to weigh up and evaluate one scientist's publication success with another's commercial success (e.g. patents granted, commercial revenue raised, etc.). Academic promotion and the award of grant and fellowship funding are almost exclusively based on publication record and related traditional academic metrics. Consequently, spending time away from competitive grant-funded research in a commercial organisation can be fatal to a researcher's career if she/he returns to an academic institution.

There is also a limited opportunity for professional linkages between the academic and industry sectors, so the cultures remain separate. In 2013, the NHMRC awarded just two Industry Career Development Fellowships (allowing researchers to spend one to two years in an industry placement), and no equivalent schemes exist for early career researchers or PhD students. This is in stark contrast to several other countries, where all PhD candidates spend time in a commercial laboratory.

Finally, it is widely recognised that commercialisation skills in Australia are thinly spread across the 39 universities, around 50 MRIs and over 100 hospitals where research with commercial potential is performed. Many of those employed in the field lack the necessary specialist capabilities, experience and resources needed to identify projects, capture and manage IP, help bring products through development, develop investment proposals and present them to potential investors, and manage engagement with commercial sponsors. Some MRIs, and importantly many hospitals, do not have a single full-time person dedicated to the many-faceted task of commercialisation.

RECOMMENDATIONS

i. Proof-of-concept and venture capital funding: *addressing the valleys of death*

As outlined in section 1, the paucity of funding for proof-of-concept experiments and early protection of IP is a priority for the 2015-16 disbursements from the MRFF.

Any future Commonwealth Government investment strategy for medical research should also address gaps in venture capital funding. The 'Translational Biotech Fund' recommended in the McKeon Review is one model by which the Government could increase the availability of seed funding and venture capital into medical research.⁹ Alternatively, the Commonwealth Government could help support organisations similar to the Medical Research Commercialisation Fund and Uniseed, which have a proven track record in attracting national and international third party investments by aggregating research with commercial potential into large enough 'catchments' of research organisations to become noticeable to external venture capital. For example, by subsidising administration costs, the Government could enhance the attractiveness of these organisations as an investment, including for the superannuation industry. There is also an opportunity to support research organisations to access existing expertise and venture capital funds, for example, by providing funding to purchase membership in venture capital funds (such as the Medical Research Commercialisation Fund), or to purchase other consultation advice and representation.

⁹ McKeon, S, et al. (2013) *Strategic Review of Health and Medical Research in Australia – Better Health Through Research*, Australian Government, Canberra.

ii. Upskilling the research workforce in technology transfer/commercialisation

AAMRI also recommends changes in research training and professional development arrangements, requiring a mandatory technology transfer/business development component in PhD programs, and providing financial support for more intensive professional development programs aimed at skilling up early-mid career researchers to ensure a broad industry/commercialisation understanding and skills across the research workforce. Such skills and experience are extremely valuable in bringing about bottom-up cultural change and developing future leaders in industry-research links.

iii. Appropriate metrics of commercialisation success in peer review and Excellence in Research for Australia (ERA) processes

AAMRI recommends that appropriate metrics of commercialisation success be included in all NHMRC and ARC grant and fellowship schemes, as well as in the ERA initiative, and that these be weighted in congruence with traditional academic metrics and be acted on by including commercial experience in all grant and fellowship panels.

iv. Bringing together sub-critical groups of commercialisation expertise

There is an opportunity to bring together sub-critical groups of commercialisation expertise in MRIs, hospitals and universities into larger, more viable commercialisation arms at the health research precinct/hospital campus level. These would provide critical mass in IP management, product development expertise, etc., and would have a clear mandate to coordinate, integrate and look for synergies, while respecting organisation sovereignty. They would have the necessary local knowledge and could help instil a commercialisation culture through localised personnel.

The NHMRC Advanced Health Research and Translation Centre (AHRTC) scheme would be an ideal scheme to deliver funding to enable the aggregation of precinct-level commercialisation expertise of the various research organisations of the AHRTC, as well as potentially provide targeted, precinct-level funding for proof-of-concept experiments, IP protection or other activities that facilitate translation of AHRTC research findings into the clinical practice.

COST

- Recommendations (i) and (iv) could be met by future disbursements of the MRFF, with relative funding levels determined by a comprehensive MRFF investment strategy.
- Recommendation (ii) could be met by research organisations should the recommendation of full funding for indirect costs of research (section 3) be implemented.
- Recommendation (iii) is cost neutral.

4. LONG-TERM SUPPORT FOR RESEARCH INFRASTRUCTURE

BACKGROUND

The lack of a coordinated, long-term investment strategy for research infrastructure compromises the future of Australian health and medical research and other research disciplines.

Access to cutting-edge technology platforms increasingly underpins new frontiers in research. Despite this, Commonwealth Government funding for large-scale national research facilities through the National Collaborative Research Infrastructure Strategy (NCRIS) is only committed until mid-2016. Already, under-resourced national research facilities are not running at their full potential, are at risk of not keeping pace with technological advances, and are losing highly expert personnel (often attracted from overseas) whose job security is uncertain due to the lack of long-term funding. The inability of these facilities, which represent major Commonwealth Government investments, to run at their full potential is an enormous waste of taxpayer funds.

In addition to this issue with large-scale facilities, the paucity of long-term NHMRC funding for the establishment and maintenance of smaller-scale collaborative or institutional research facilities means that researchers do not have access to the equipment necessary to remain internationally competitive.

The lack of coordination between the various Government programs for research equipment and facilities (e.g. NCRIS, ARC and NHMRC equipment schemes, Higher Education infrastructure schemes, and one-off funding for research buildings and facilities) means that funding is not being allocated in a strategic manner, and the Government is not achieving the best returns from its investment.

RECOMMENDATIONS

A 10-year Government investment strategy for research infrastructure

We recommend a 10-year Government strategy for Australian research infrastructure that coordinates investment across agencies and programs (including NCRIS, ARC and NHMRC equipment grants, Higher Education funding for infrastructure, and one-off initiatives for research buildings), and encompasses the following:

- (i) **Unique Large-Scale National Facilities** – Used by Australian and international researchers from government, industry, hospitals and academia, these facilities are of a scale not achievable by individual research organisations, and successfully promote research collaboration and leverage investment from state and international counterparts (e.g. Australian Synchrotron);
- (ii) **Distributed National Networks** – These networks often have nodes in several major research centres (e.g. Australian Genome Research Facility), or are located at a single location, but source and/or distribute samples nationally or internationally (e.g. specialised tissue banks);
- (iii) **Local Collaborative Facilities** – These facilities are shared between campus partners or across institutions within a city (e.g. highly specialised imaging facilities, clinical trials facilities);
- (iv) **Single Institutional Facilities** – Some technologies are best run as an internal service for a single large institution or shared by several co-housed institutions (e.g. ‘standard’ imaging facilities, flow cytometry); and

- (v) **Buildings** – These include physical buildings that house research institutes or university research departments, and are often funded through one-off initiatives.

Principles for a successful research infrastructure investment strategy should include:

- funding for both the equipment and operational costs, including specialist technologists, for superior service delivery and research outcomes;
- some level of ongoing support for the maintenance and upgrade of existing research facilities to ensure they keep pace with advances in technology and continue to provide services free of charge (or at cost) for publicly-funded research organisations to avoid cost shifting and unnecessary red tape;
- funding for non-traditional research infrastructure such as e-Research/datasets, electronic medical records and unique patient identifiers linking major hospitals to primary healthcare providers;
- leveraging of investment from state and international counterparts, and possibly philanthropy and industry partners; and
- the use of a strategic, highly consultative roadmap approach to meet Australia's future national infrastructure needs.

COST

In addition to current commitments through the ARC, NHMRC and Department of Education to research infrastructure programs, an additional commitment equivalent to \$150-200 million per annum (indexed for inflation) would be required to replace NCRIS, whose funding terminates in mid-2016.

AAMRI MEMBERS



