

To the attention of:

Mr Simon McKeon, Chair of the Strategic Review of Health and Medical Research

Dear Mr McKeon,

On behalf of researchers at The University of Western Australia, please accept this submission to the Strategic Review of Health and Medical Research.

**Why is it in Australia's best interest to have a viable, internationally competitive health and medical research sector?**

Upon asking my eight-year old son why the Australian Government should support health and medical research, he replied very simply and without hesitation, "because it helps people and it stops people dying". In a world where we are forever compelled to make complex, often economic-based arguments to justify everything, it takes the innocence of an eight-year old to bring clarity to this most important question.

***The economic argument stacks up***

Unfortunately, the above sentiment, however powerful, will only get so far. The social and economic argument must be made as governments are charged with the responsibility of spending taxpayers' money in the best manner possible, with so many important competing requirements. It is therefore reassuring to those in the sector that investment in health and medical research has consistently been shown to provide outstanding social and economic benefits to our local, national and international communities.

***We must avoid complacency***

Australia's health currently compares favourably with other OECD countries [1], and this is because of the close relationship between high quality healthcare and high quality research. However, we must not be complacent. Healthcare requirements are increasing dramatically, particularly with the twin challenges of an ageing population and the obesity epidemic.

***Our ageing population***

The 2010 intergenerational report articulates the challenge that will result from our ageing population. For example, the number of people aged 65 to 84 years is expected to double, and the number of people 85 years and over is expected to rise from 0.4 million in 2010 to 1.8 million in 2050 [2]. Spending on health is projected to increase from 4% of GDP in 2009-10 to 7% of GDP in 2049-50 [2]. It is also important to remember that the enormous cost of disease burden is not only in terms of healthcare expenditure, but also 'lost years' in terms of contribution to the economy.

***Obesity***

Describing the increase in obesity as an epidemic is not an overstatement. The Australian Institute of Health and Welfare 2010 report identified the frightening statistics of 3 in 5 adults, and 1 in 4 children aged 5-17, being overweight or obese in 2007/8 [1]. Largely as a consequence of this, Type 2 diabetes is expected to become the leading cause of disease burden by 2023 [1].

### ***A good investment***

Money allocated to health and medical research is an investment that will pay dividends in terms of reducing the cost of future disease burden. There is no alternative. Spending on healthcare without funding the underlying research can be compared to painting over cracks while foundations collapse. It is clear that effective and economically efficient healthcare provision must be based upon evidence. That evidence can only be derived by research. Without research, Australians will miss out on the latest advances in treatment and the escalating cost of disease burden will have serious ramifications for the economic prosperity of the nation.

### **How might health and medical research be best managed and funded in Australia?**

#### ***We need to address the big questions***

Taking the sector as a whole, every dollar spent on health and medical research will save taxpayers' money. The problem with research by its very nature is that the outcomes cannot be predicted. If they could, the research would not be needed. This means that not every project will be successful, but it is not always easy to predict success. Indeed, because of this, research funded by government is risk-averse. Many of the great breakthroughs have come out of research projects that failed to receive Federal Government funding. They were considered to be too risky and were funded indirectly by 'soft' money, which in the current economic climate is rapidly drying up. This is not the way. Far too many great ideas that could bring enormous social and economic benefits to Australia, and are judged by experts to be worthy of receiving funding, are left on the cutting room floor.

#### ***NHMRC***

The National Health and Medical Research Council (NHMRC) must be the major funder of health and medical research in Australia. Although no system is perfect, governments and researchers alike must work with the NHMRC to achieve the aims of providing the best possible health and medical research environment and therefore the best possible research outcomes.

#### ***Philanthropy***

Philanthropy is also an important aspect of funding health and medical research, although this should always be seen as additional to, not a substitute for, government support. Many non-governmental organizations have considerable budgets devoted to research. Some (e.g. the Cancer Councils) use the NHMRC system to peer review and rate some of their grants. The advantages are: decreases double reviewing; avoids double dipping; reduces researcher workload in applying to multiple organizations (allowing more time to be spent on research); ensures high standards of peer review for more grants; and allows more grants to be funded and seen to be funded. The NHMRC system should be used by more granting organizations, and should be expanded to include fellowships at all levels (senior researchers, early career researchers, and postdoctoral fellows). In addition, there could be systems recording the success of grants and fellowships in these other organizations and these statistics could be used to boost morale and the public image of research.

## ***Coordination***

There needs to be coordination between the different Government agencies and departments at both Federal and State level. There should be incentives for states to invest in health and medical research. The Australian Research Council (ARC) does not fund health and medical research, however, it does fund the study of basic fundamental physiology, an understanding of which underpins health and medical research. The recent change in the ARC's definition of medical and dental research may appear to be subtle, but it has had an enormous impact on basic medical researchers whose critically important work is so fundamental that it falls in the gap between NHMRC and ARC. For example, prior to this current funding round, ARC Discovery Projects would consider funding projects that use animal models to undertake medical/dental research, to investigate disease (e.g., pathologies, genetics) to provide the evidence to lead to the human trials which will be funded by NHMRC and not ARC. Now, ARC Discovery Projects specifically exclude using established animal models or even 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. The consequence of this change has meant researchers that would have applied to ARC before are now applying to NHMRC. The result will be a shift in funding burden from ARC to NHMRC to the detriment of health and medical research overall. Funding to NHMRC needs to be increased to compensate for this shift.

## **What are the health and medical research strategic directions and priorities and how might we meet them?**

### ***We need to invest in people***

Our priority for health and medical research going forward has to be investment in people. This is absolutely critical to the future of health and medical research in this country, regardless of the disease areas to be studied.

### ***It takes a generation to train health and medical researchers***

The critical difference between health and medical research and other sectors is the amount of training required by its workforce. In many areas of the economy, when a skills shortage is identified, this can be addressed relatively rapidly. With health and medical research, it takes a generation to train its workforce appropriately. Therefore, it takes great vision to foresee the enormous challenges faced in the next forty years and say, "we need to address this now". A skills shortage in health and medical research does not mean economic stagnation, it means serious economic decline. If the cost of disease burden gets out of control, it cannot be fixed overnight. We must plan well in advance. We must provide clear career paths and stop the loss of a generation of health and medical researchers. Regardless of how dedicated you are to helping humanity and reducing suffering associated with disease, the lack of financial security is simply not an option for many researchers who have families to support.

### ***We need to reward successful outcomes***

We therefore need to invest in people. If you fund good people, they will do good work. If a researcher achieved exceptional outcomes from the last 5 years of their

research, they are likely to do the same again in the next 5 years. Success breeds success. Researchers should be judged on their outcomes, and it is critical that this is genuinely assessed relative to opportunity. Once researchers have their salaries, it is far easier for them to find project funding. However, funding a project when a person does not have a job is nonsensical.

### *We need to invest in researchers of all levels*

We need to nurture early career researchers and mid career researchers alike. At the moment, early career researchers tend to be supported up to about 5 years post-PhD, but after that there is an enormous chasm to overcome before researchers can start to consider themselves even vaguely 'established'. This chasm can require surviving for ten or fifteen years without proper funding in some instances, and even 'established' researchers still do not have financial security in many cases. Too many exceptionally talented researchers are not crossing this gap. Those that do tend to have very poor work-life balance at a time when they are, or would like to be, bringing up children. Too often health and medical researchers feel that they are not adequately rewarded and/or recognised for their work, and indeed feel that their commitment to helping others is taken for granted by government.

It is important to maximise the efficiency of the fellowship system. Researchers spend many months writing multiple similar applications to different organizations, other researchers spend time writing references and reviewing the fellowship applications (sometimes multiple times), and there are financial and time costs for everyone in the interview processes. To minimise this, the NHMRC peer-review system could be used by more granting organizations for fellowships at all levels (senior researchers, early career researchers, and postdoctoral fellows).

In addition to developing the next generation of research leaders, we must also recognise and support those researchers that play an invaluable role in health and medical research, but do not wish to lead. As research becomes based more and more on cutting edge technologies to answer the major questions, we need highly skilled technical staff to utilise these technologies, and data managers and statisticians to manage and analyse the data appropriately. A research environment where such people are considered to be dispensable is incredibly destructive. Too often, high end, expensive infrastructure is bought with great fanfare, but the skilled personnel to operate the instrumentation and deal with the huge quantities of data are not supported. This disconnect is incredibly wasteful and must be addressed. Establishing critical masses of researchers around core infrastructure operated by properly funded core technical staff is a major way to address this issue, which is the model used by the European Molecular Biology Laboratory (EMBL).

### **How can we optimise translation of health and medical research into better health and wellbeing?**

#### *Optimisation of translation requires investment throughout the pipeline*

Optimisation of translation of health and medical research into better health and wellbeing requires a particular mindset, a way of thinking whereby research is targeted towards outcomes. Indeed, a way to influence behaviour in this regard is to

reward outcomes as mentioned above. The critical point to make, however, is that these outcomes can be short, medium or long-term. Funding basic fundamental biomedical research is just as important to optimising translation as funding clinical research. The entire continuum is required and a continuous pipeline of research endeavour is needed. Most examples of successful translation started from basic research and moved through all of the stages of the process. Furthermore, as a general rule, commercial investment comes towards the end of the pipeline and so without government funding, there would be nothing to build upon. Without basic scientists working out how our bodies work, to clinicians working on the interface between science and patient, the process would either not begin, or would falter before the finishing line.

### ***We need to reward those working on boundaries***

We need to recognise and reward people who work on multidisciplinary boundaries. People in different fields and sectors speak different languages, have different skill sets and have different networks. However, if we are to achieve the best outcomes, we must work in these multidisciplinary teams and bring these skills together. This includes those working on the boundaries between medical fields, like inflammation and cancer, or those working across broader scientific fields, like biology and chemistry or biology and physics. This also means people at the interface between science and the clinic and science and industry, both of which are particularly critical for translation.

### ***We need to expand the schemes to fill the gaps***

Schemes such as NHMRC Development Grants, Commercialisation Australia and ARC Linkage Grants need to be complementary and support the translation of research without leaving gaps, particularly at the early stages of translation where there is often a gap between ‘discovery’ and ‘development’. These schemes need to be expanded to fill the void left by the critical shortage of venture capital in this country. Coordination between government agencies and departments is critical. Clinical trials should be considered separately as these are expensive by their nature and need to be judged according to different criteria compared to other development proposals.

### ***We need to facilitate private investment***

The other major source of funding for research translation is from private venture capital, however, this has all but dried up in recent years with the current financial climate. One mechanism for increasing private investment in health and medical research translation is via tax law reform (such as tax credits for early stage investments) or a small compulsory allocation from superannuation funds. At the moment the gap between philanthropy and business investment is too wide. The biotechnology sector for example is a high-risk area, but has the potential for large social and economic impact. A more favourable taxation regime that rewards investment risk in this area, or a small change in the superannuation allocation, is likely to have significant social and economic benefits because it will substantially increase health and medical research translation.

## **Summary**

Beyond the compelling altruistic argument, funding health and medical research makes good economic sense. Australia should be very proud of its health and medical research sector. We have many successes to celebrate, but we must not be complacent. As a nation, we face serious challenges in the years ahead, however, with vision and coordination from Government, backed by the strong support of the community clearly evident during the Discoveries Need Dollars campaign, we can meet these challenges head on. The key is investment in talented and dedicated researchers at all levels and with the required breadth of skills. By supporting the entire continuum of the health and medical research pipeline and facilitating greater private investment in translation, we can reap the benefits for this and future generations. All we ask is that health and medical researchers are given the opportunity to make Australians' lives better, and save the economy money in the process.

A/Prof Kevin Pflieger

President of The University of Western Australia Researchers' Association

## ***References***

- [1] Australian Institute of Health and Welfare 2010. Australia's health 2010. Australia's health series no. 12. Cat. no. AUS 122. Canberra: AIHW.
- [2] Australia to 2050: future challenges. Intergenerational Report 2010 circulated by The Hon. Wayne Swan MP, Treasurer of the Commonwealth of Australia, January 2010.