“Does the Australian Association of Medical Research Institutes (AAMRI) need to bother with research translation and commercialisation?”

Bill Ferris AC, Chair, Innovation and Science Australia, November 9, 2016

***Check against delivery***

**Introduction**

In the session which follows, Ian Frazer will be outlining his thoughts about the future for the HMR sector and some ideas for the role which the MRFF might play in securing that future. My hope is that our Medical Research Institutes (MRIs) will continue to be famous for their basic discovery work, but also greatly admired for their successful translation and market place successes at home and abroad. When I consider some of the AAMRI member mission statements - Mastery of disease through discovery, Better health through medical research, Unraveling the mysteries of nature to cure disease, and to Improve the health and wellbeing of children through excellence in research – there is in all of these a clear translational component required for any ultimate benefit for better, cheaper and more effective health interventions.

Those of you who know me will not be surprised that I hold this view; that we need to see more translational research and commercialisation. Encouraging more of Australia’s world-class researchers to seek out and exploit commercial opportunities is an important part of my job as chair of Innovation and Science Australia (ISA).

ISA’s remit is to provide whole-of-government advice on all innovation, science and research matters. The ISA board is an independent statutory board comprised of a mix of private sector members with extensive experience in innovation and entrepreneurship. Dr Alan Finkel, Australia’s chief scientist, is deputy chair.
ISA also has a role in helping to implement the government’s package of twenty-four measures that were outlined in the National Innovation and Science Agenda (NISA) launched last December. Significant progress has been made with the majority of these measures already implemented or well advanced. I will refer to some of these later.

One of ISA’s overarching goals is to assist Australia transition from a resources-led economy to a more diversified and knowledge-based one. One of the keys to this will be unlocking the potential of our world leading research sectors by coupling them with world leading translation and commercialisation practices. For this to work there has to be enough publicly funded research organisations (PFROs) and individual researchers who are driven by this purpose. I understand it is not for everybody.

However, my appeal for translation and commercialisation by MRIs does not end at an exhortation to national service nor rest solely on the charms of potential personal enrichment. There are a number of compelling reasons why MRIs should themselves embrace translation and commercialisation.

**Ok, so, why bother?**

Let me offer three reasons:

**First**, the positive impacts of translated and commercialised medical innovations – on people’s health and quality of life - are the greatest advocates for increased public funding in HMR.

You could, and some of you probably will, say that it is for others to turn the significant knowledge you generate into outcomes and impact. And I know there are many in this room who can point to examples of research discoveries which years later assisted outcomes elsewhere... in other words, there are indirect translations happening over time as one research breakthrough leads to another and another.
In addition to the tangible products such as diagnostic tools, drugs and devices, there are also the important improvements in health service delivery and procedures that can have a huge impact on quality of life. I noted that The Florey scientist Prof Julie Bernhardt was recently named in the Australian Financial Review and Westpac 100 women of influence – her pivotal finding, which will influence stroke rehabilitation practices around the globe, was that too much activity too soon can impede recovery. So there are multiple ways to live up to the social contracts entered in to via the MRI mission statements.

Second, I also believe that now, more than ever, there is a need to strengthen and broaden sources of funding for fundamental research, and reduce reliance on NHMRC and other public agencies. The NHMRC is currently funding one in every six competitive grants. Most of these grants, as they should be, are for fundamental research with less than seven per cent of the 2016 yearly expenditure allocated to development grants. On average, less than half of an MRI’s income now comes from government whereas five years ago I believe it was substantially higher. This points to an ever increasing need to attract philanthropic and industry funding, and to generate commercialisation income

While Australia does not yet have a culture of philanthropic contribution as intense as that found in the USA, Australian philanthropists have made extraordinary contributions to health and medical research, including funding state-of-the-art research infrastructure. This includes Clive Berghofer AM, OAM, in funding the QIMR Berghofer Medical Research Institute in Brisbane; the more than $30 million from the Kinghorn Foundation for the Kinghorn Cancer Centre in partnership with the Garvan Institute and St Vincent’s Hospital in Sydney; and Star Track Express founder Greg Poche’s support for the Melanoma Cancer Centre at the Mater Hospital to the tune of $40 million. And I should acknowledge the significant support of medical research in Australia from international philanthropists in particular Chuck Feeney of Atlantic
Philanthropies who, over the last two decades, has contributed well over $300m. What we now need is the means to support more blue-sky research, probably not NHMRC peer reviewed, but in a way that does not tie up the time of principal investigators (PIs) and researchers in a continuing cycle of grants applications. My sense is that more and more of you believe that sort of funding is essential for generating fresh innovative ideas.

Industry funding can of course come in the form of contract research and licensing. But, often overlooked, is that research translation also opens up opportunities for venture capital (VC) and project spin-offs. In addition to new tax-based incentive for angel investors introduced in July, NISA has delivered new and less restrictive arrangements for venture capital limited partnerships and early stage venture capital limited partnerships.

VC can also come from the larger global pharmaceutical companies such as Johnson and Johnson (J&J). At AusBiotech’s national conference a few week’s ago, I heard about J&J’s corporate venture capital arm. They invest directly off the company’s balance sheet in a syndicated manner to spread the risks. The estimated book value of the 100+ early stage spinouts they have invested in is well above $1bn. I hope we start to see some of that money coming into Australia in the near future.

Closer to home is another NISA initiative that many of you have heard me speak about: The Biomedical Translation Fund (BTF). The BTF is a bold, for profit initiative that has been set up with $250 million committed government capital matched by at least $250 million from private and institutional investors. This $500 million-plus VC pool is designed to assist biotechs and medtechs with the multiple ‘valley of death’ funding problems – experienced by projects around the advanced preclinical stage through to phase 2 – and problems that hold back the commercialisation effort in the health and medical research sector. Competitively selected life sciences fund managers will manage this money and make the investment decisions – not
politicians or bureaucrats. The caliber of applicants is extremely high – in fact, their applications are being reviewed today and are expected to be finalised in December so that the money can then start to flow. I anticipate investments will require in the range of $5 million to $20 million per project.

This will complement other initiatives in the research translation space, including the MRFF, which no doubt lan Frazer will speak more about today. In addition there is the MRCF, which is supported by five state governments and run by Brandon Capital. It has been successfully operating since 2007. Of the 54 MCRF member organisations today, 22 are AAMRI members. I can mention four successful companies that have received MCRF seed money and are linked to MRIs: Fibrotech, Spinifex, Osprey, Global Kinetics.

Another quintessential example of how commercialisation directly helps fund research is the story of Gardasil. Since FDA approval in 2006, Gardasil has generated significant royalty streams to benefit its inventors, CSL, and UQ. Under UQ’s commercialisation policy, 1/3 of the university’s share has gone into the Diamantina Institute to support new research; much of which has already fed into the translation pipeline.

Let me add a third reason why MRI’s should bother, and that is to attract and keep the best quality and diversity in students and staff.

While translation and commercialisation is not for everyone, many of our young researchers do want to have the opportunity to see their work enter world markets. Many do want the experience of entrepreneurship, of start-ups and spin-offs and commercial development. Holding on to our best and brightest is a worthy endeavour and, to continue attracting these individuals into STEM careers, there must be opportunities to proceed along both basic and applied research pathways. I would like to know what initiatives are in place at your individual institutes to encourage
researchers – particularly early to mid-career researchers (EMCRs) – to get out and network with industry. Do your KPIs reflect more than research excellence? Which institutes have end of year bonuses that are based on more than the number of publications and impact factors? Harking back to the AusBiotech national conference in Melbourne—of the over 1 000 delegates, I counted approximately 50 PhD students, many of whom were attending as student volunteers. One PhD student remarked that his NSW university had supported his application to attend despite it not being research-field relevant. Is his story an anomaly, I wonder? How many of you have a promotions process that rewards not penalises entrepreneurial behaviour among young scientists?

Fortunately, there are exemplars among you.

a. The Walter Eliza Hall Institute (WEHI) files a new patent application every three weeks, their intellectual property is the subject of more than 200 clinical trials currently being conducted worldwide including up to phase 3. They sign 200 collaboration and license agreements per year, and have six startups – one of which is publicly listed. Their close industry partnerships with Genentech, Abbvie and Roche have resulted in the recent FDA approval of Venetoclax, a ‘first in class’ drug for the treatment of people with chronic lymphocytic leukaemia.

b. At the Murdoch Children’s Research Institute (MCRI), one of their commercial arrangements is unique in that they have entered into a global development and license agreement with US-based Jupiter Orphan Therapeutics (JOT) to jointly develop a delivery system and conduct clinical trials with a product for which they don’t have registered IP. The lead compound is a novel proprietary formulation developed by JOT using resveratrol - a natural compound present in grapes and red wine. The agreement focuses on developing a treatment of Friedreich’s Ataxia – a rare disorder of the nervous system. In return for the intellectual input provided by
MCRI, the scientists and MCRI will receive a commercial return commensurate with their intellectual input including design of the clinical trials.

c. Another example I was pleased to note when I was visiting Westmead MRI is that just two weeks ago GSK filed for FDA approval for the new and improved shingles vaccine where Tony Cunningham’s immunologic expertise and advice was crucial. When approved, this will be the most effective older adult vaccine on the market. Tony’s research in this area was recently published in the New England Journal of Medicine in two articles just a few months apart. Again, this shows that industry interaction is not always incompatible with scientific publications.

d. A collaboration between QIMR Berghofer Medical Research Institute and MedImmune, the global biologics research and development arm of AstraZeneca, has led to the finding that a new combination therapy approach could significantly reduce the spread of breast cancer and melanoma.

e. One more example … Having spent 12 years as chair of the Garvan Institute, it would be remiss of me not to mention Genome One, a wholly-owned Garvan Institute subsidiary. It’s a commercially focussed approach towards generating a revenue stream through dual use of their Illumina sequencing machines that primarily serve the academic researchers. Some of you may have heard of the seven year-old Sydney boy whose rare autoimmune disease was only diagnosed after whole genome sequencing. Identification of his rogue gene also pointed at a potential therapy in a drug called Abatacept that is licensed for patients with rheumatoid arthritis. Within weeks of taking it, this little boy was out of the hospital’s ICU and his disease is in remission.

All of these are examples of where MRIs have shown that great research and smart innovation are not mutually exclusive pursuits.

Conclusion:
In conclusion, and for all these reasons I have mentioned today, not bothering with research translation and commercialisation is not an option. The real question is how to match our research excellence with commercialisation excellence. I see it as the greatest opportunity and the greatest challenge facing Australia in our time.

Twelve months from now, ISA will be delivering its 2030 strategic plan for the Australian innovation, science and research system. This work is already under way with an audit of our existing innovation systems that will be provided to government in December 2016. We intend this to be a public document and its mapping will provide the base line from which our 2030 strategic plan will be developed, with recommendations to government by around this time next year.

There is no doubt that our plan must deal with how we can dramatically improve commercialisation of our excellent research across multiple sectors. In your sector, in the HMR sector, I firmly believe AARMI members need to accelerate their research translation and commercialisation for all the reasons I have outlined today.

It is important that your voices are heard and your views captured throughout the process and I look forward to continuing this discussion over coming months.

Thank you.