

Monash Institute of Medical Research

Acknowledgements

Professor Bryan Williams

Ladies and gentlemen

Thank you for inviting me to speak to you today.

I do have a particular attachment to this institution - and to this Institute since it emerged from my first point of association with Monash, although it was born well after my first departure from Monash.

Some of you here will know that I was probably the most junior employee in the very new Medical School in the very early days of the wind-swept, red-clay cloaked, probably 'red', wet and wind-swept Monash. Indeed, I remember getting trucked off to the Alfred from a distant oval using a four wheel drive not (or not only) because even then I was too heavy to carry, but because only a four wheel drive could get through the mud.

24 years or so later I was the second most senior employee when I was appointed to be what was interestingly termed the 'Senior' Deputy Vice-Chancellor – something close to a Provost. Between the two I kept in

contact with many of the people here who served as friends and as mentors.

My first important mentor was Lawrie Austin in Biochemistry. His interest in me and his commitment to me is something that I have never forgotten; just as I have never under-estimated his impact.

I therefore owe this institution and some of its people a great deal. I have learnt an enormous amount here – both how to do things and how not to do things.

So it is a pleasure for me to be here today to participate in this celebration of achievement and of commitment to a great cause – the 20th anniversary of an Institute that contributes so substantially to the health of human-kind.

I congratulate the past and present staff of the MIMR on its success over the past 20 years. And I congratulate Monash University for the foresight shown 20 years ago when it established an Institute that has made its mark on our world so well. I wasn't here at the time so I don't know. But I'll bet it wasn't easy.

In a reasonably short time, this Institute has been responsible for some of the most significant scientific achievements in our country's history. From a scan of international headlines, you can see the MIMR name

attached to groundbreaking (don't journalists love that word) stories on the birth of the world's first cloned cow 'Brandy', to the creation of the human prostate tissue from embryonic stem cells for the first time – allowing researchers to monitor the tissue as it progresses from a healthy to a diseased state; a finding that will continue to provide a solid foundation for prostate research globally¹.

On reading the history of the MIMR, it is impressive to see the rapid rate of progress that has been achieved – from focusing primarily on fertility and infant health in its first years, to where it now describes itself as having '*scientific expertise in cancer research, maternal, fetal, neonatal and paediatric research, gene function and disease, inflammation, reproductive technologies, male reproductive health, stem cells, women's health and pain medicine.*'

And it doesn't stop with *scientific expertise*; the Institute has the charter to translate its *scientific expertise* to the clinic. Basic research translated into better health care is critical to a world that will face unprecedented challenges from unpredictable sources in the future.

¹ MIMR newsletter, Issue #51 – 20th Anniversary special.

The translation of research into health care has an important spin-off for medical research because it is a factor in the high public regard for medical research and medical researchers. There are of course, some instances where it is under attack. Inoculations, stem cell research and therapeutic cloning for example, invoke strong emotions and opinions in the community and parliament in Australia, and in other countries.

But overall, medical research is widely supported. As evidence, you can look to public opinion polls or perhaps even to the lack of concerted threats and intimidation presently reported by medical researchers.

This hasn't always been the case. One only needs to look back to WWII and some of the so-called medical experiments done then, the nuclear tests in or on bikini atoll, or the Tuskegee syphilis study to see that trust in, and respect for medical research depends on what is done, how - and the ethical standards applied to the work.

But right now, in this culture of scepticism even cynicism, medical research flies high.

Perhaps this is because medical research offers better health; it has the most obvious potential to improve lives in a very personal way – and we all have an interest in that.

But a study conducted by the Australian Society for Medical Research found that more than a third of Australian families have been affected by medical conditions that could not be adequately treated². This number may not be substantially different from, say, a decade ago, but the difference is in the attitude - people no longer accept serious illness as 'a part of life'. Eighty per cent of people agreed with the statement that "*it is unacceptable that Australians are suffering from conditions that would be curable with more investment in medical and health research.*"³

To Australians then, medical research is important. And if we are to deliver on the expectations that follow, we must recognise that it can't all be done here; we are part of a global system, a global effort.

We contribute to, and draw from, the global stock of knowledge. And we certainly play our part as a global contributor. We are a world leader in health and medical research. On a *per capita* basis, our research output is

² Research Australia. 2010. Health and Medical Research Opinion Poll 2010. Available: <http://researchaustralia.org/Publications%20Public%20Opinion%20Polls/Research%20Australia%20Public%20Opinion%20Poll%202010%20low%20res.pdf>

³ *ibid*

twice the OECD average, even though we spend much less *per capita* than say the US or the UK⁴.

Australian expenditure on medical research is estimated to be 1.1% of the global expenditure but the proportion of world health returns attributable to Australian research is 3.0%⁵. I've said it before of Australian science, but in medical research in particular, we are proudly punching well above our weight.

But nothing is certain. Earlier this year, there was talk of proposed cuts of \$400m to the NHMRC; thankfully this never came about. Partly, some believe, because the public display by medical researchers led to a response from the public that persuaded those who might have been thinking of cutting to think again.

Maybe we can understand that public response using a survey conducted by Research Australia. It showed that 91% of Australians support the federal government spending more money on medical research. Maybe in Australia there might be as much danger for the cutter as for the 'cuttee'!

⁴ Australian Society for Medical Research. 2008. The value of Investing in Health R&D in Australia. Available: <http://www.asmr.org.au/ExceptII08.pdf>

⁵ Australian Society for Medical Research. 2008. The value of Investing in Health R&D in Australia. Available: <http://www.asmr.org.au/ExceptII08.pdf>

As an interesting comparison of Australian's interests, only 6% supported more money to sport programs to help champion athletes win Olympic medals⁶. But mind you, if we don't perform at the Olympics, there might be another story.

It is also encouraging to note that in the same study 89% of Australians would be willing to pay \$1 more for each prescription medicine if they knew that all the money would be spent on additional health and medical research.⁷

There are doubtless many reasons. One may be that it is understood and accepted that many contemporary medical researchers not only work to the 'higher' purpose of improving health outcomes, but also because the researchers submit to, and overwhelmingly comply with, ethical standards of a high order. They seem to be admired and trusted. This is not something universally experienced by scientists in other areas or disciplines. Those who sow doubt have managed to change public attitudes towards scientists quite substantially. As I said, nothing is certain; a position has to be earned. And all

⁶ Research Australia. 2010. Health and Medical Research Opinion Poll 2010. Available: <http://researchaustralia.org/Publications%20Public%20Opinion%20Polls/Research%20Australia%20Public%20Opinion%20Poll%202010%20low%20res.pdf>

⁷ Ib id

scientists need to be familiar with the types of campaign presently getting traction.

But I think, broadly, the public accepts (even if there are always likely to be exceptions) that medical researchers are motivated not just by a search to understand the very nature of things but also seek to improve the human lot. The public is aware because medical researchers do not shy from the public debate, whether it be about the ethics or the outcome.

In a society where some science and some scientists are being dragged through the mud – we must be grateful that at least medical research and institutions like this one, have the public on-side.

Medical research is fortunate to have the respect and support of the majority of the public right now, but it is still just as vulnerable as other areas of science currently under attack. And we do have some scientists facing criminal charges right now for not predicting an earthquake. And there are some people taken seriously by some people who have commented that we should lock up climate scientists for “fraud” and “racketeering.”

The present respect, the esteem, for medical research cannot be taken for granted. Medical research depends

on the same process of peer review, the same basics of chemistry, physics and biology that, say, climate science does. And yet, one discipline is heralded as vital, life-saving, a miracle even, and another is plagued by accusations of fabrication, political interest, corruption, economic interests and plain ordinary greed.

We should remember that not too long ago, health research was struggling as the tobacco industry rallied against scientists, sowing seeds of doubt about the legitimacy of research into the effects of tobacco smoke on our lungs, heart, throat and children: we will all have seen the very, very old person wheeled out from somewhere who smoked heavily and drank wine everyday for, what 80 years (?); living proof that, really, it wasn't so risky.

As I have said before, **all** science is bruised somewhere by the attacks on **some** science. The tactic is simple: sow doubt, often. Evidence is unimportant in this game: just be dismissive, relentless, and loud; and get personal because normal people will back away from a public fight.

No area of science is immune from attacks like these. It means that nothing is certain and little will endure if we don't set the scene, explain the process and engage

seriously with the public. It is their judgement and their open support that will ultimately deter the 'cutters.'

Raising the profile of science, garnering respect for ethically conducted science of a high standard, and its communication, is the duty of care of everyone who works and studies in science.

This message needs to be instilled at the very beginning, in our schools.

Unfortunately recent studies indicate that a very large fraction of Australian primary school teachers feel unqualified to teach science⁸, and that a large fraction of Australian teachers of Year 7-10 General Science had not completed the generally-accepted standard of tertiary education in science⁹. It is hard to encourage people to defend science or not to be afraid of it when from a young age they have not been taught about it.

⁸ International Association for the Evaluation of Educational Achievement, TIMSS 2007 International Mathematics Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades (2009).

⁹ McKenzie, P., Kos, J., Walker, M. & Hong, J., 2008. *Staff in Australia's schools 2007*. Department of Education, Employment and Workplace Relations, Canberra.

And the effects can be seen in workforces across Australia. In chemistry, maths, engineering... we face huge challenges for our future industries¹⁰.

Medical research however, has a slightly more optimistic outlook, though still with much more to be done.

By 2019, it is estimated that almost six and a half thousand members of the health and medical research workforce will have retired, 4000 of whom have PhDs¹¹.

We currently have sufficient rates of medical research PhD completions to maintain our current workforce over the next ten years¹². But if Australia is to have the most highly educated, best skilled and highly trained health and medical research sector in the world, which surely we should strive to achieve, the number of PhD qualified researchers would need to expand 2.5 fold to be on par with the European workforce¹³.

¹⁰ Department of Innovation, Industry, Science and Research, Research Workforce Strategy 2011

¹¹ Australia Society for Medical Research, 2010. People make research happen: Planning the Health and Medical Research Workforce 2010-2019. Available: <http://www.asmr.org.au/workforce09.pdf>

¹² Department of Innovation, Industry, Science and Research, Research Workforce Strategy 2011

¹³ Australia Society for Medical Research, 2010. People make research happen: Planning the Health and Medical Research Workforce 2010-2019. Available: <http://www.asmr.org.au/workforce09.pdf>

In order to achieve this, or at least help it along, we need to look at how we support medical research and the jobs in medical research.

From 2000-2010, funding from the NHMRC quadrupled in size. However, funding is now on a plateau with no expected increases on the horizon¹⁴.

At the same time though, the size of grants has been increasing and is set to continue to increase. As a result of greater collaborations, more expensive equipment and more staff, the average size grant today is valued at \$550,000 over three years. In 2000 the average grant size was around \$260, 000¹⁵.

But we have seen a huge increase in the number of applications. They have grown from around 1500 in 2000 to 3226 in 2010. In 2000 the success rate was around 30%; today it is about 23%¹⁶.

¹⁴ National Health and Medical Research Council, Annual Report 2009-10, p.32

¹⁵ National Health and Medical Research Council, 2011. CEO presentation 2011, slide 16. Available:
http://www.nhmrc.gov.au/files_nhmrc/file/about/senior_staff/articles/nhmrc_ceo_presentation_newcastle_uni_june_2011.pdf)

¹⁶ National Health and Medical Research Council, 2010, Working to build a healthy Australia presentation, CEO Warwick Anderson
http://www.nhmrc.gov.au/files_nhmrc/file/about/senior_staff/articles/nhmrc_ceo_presentation_oct2010.pdf)

It would be easy to blame the falling success rate on falling quality, but this is not the case. The number of grant applications that received scores high enough to be 'worthy of funding' but do not receive funding has been steadily increasing. In year 2000 it was 37% of applications; in 2009, it was 58%¹⁷.

So we have the number of applications rising; the quality of applications improving, funding which has flat lined and grants that are getting bigger. A tough combination.

And then there is the need to replace or grow the medical research workforce; the place of young people: the researchers we will need to carry the torch when some of the present flame carriers decide to do something else.

Let me ask: does our present system of scholarships, post-docs, grants, grants and more grants lead to jobs that are satisfying and secure? Jobs like the ones we once got. If the answer is yes, fine.

If the answer is no, then we need to think deeply about whether a system, the core of which was invented long ago, can still meet the need. While ensuring that excellent research and excellent researchers can be supported, can we find a way to ensure that appropriate numbers of new

¹⁷ National Health and Medical Research Council, 2010. Research Funding Fact Book.

entrants can get a foothold, and a career, that is more than a succession of post-docs on somebody else's grants. I should add that this question does not assume that the universities have no role to play. The relationship between universities, granting agencies and the allocation of research support may need to be re-worked.

Whether or not we change is not for me to decide. But I do know that different times and a different context mean that we should be at least willing to examine the utility of present practice and examine how well it prepares us, and Australia, for the future.

Change is after all an inevitable part of life.

In the laboratory we don't simply do now what we did when I was young. And we don't do it the same way even if the scientific method itself stands well the test of time.

Outside the laboratory, however, attitudes to science also need to change. We need to change the number of students excited about science. We need to change the number pursuing science at school and then at university. We need to change the trajectory and skill base of and increase the science-trained numbers in the Australian workforce. And that last point means that we need to ensure that we can tell highly talented young people that

there are careers in science – careers that will mean that they won't have to wait too long (a time that appears to be forever to some of them) to get their house or start their family. Because we care; because we should – and because we need them.

I appreciate the leadership that medical research has shown in setting this standard for science and communication in Australia and abroad.

As I said at the beginning, I am truly pleased to be here today to participate in this celebration. I wish MIMR well and a sustained and productive future.

If somebody there can find out how to stop cells ageing and eliminate all the deficiencies that flow when they do, I'll come back in 20 years to celebrate the next two decades.

I thank you now for your invitation to be here; and I'll be happy to come back then and express my gratitude even more strongly.

End.