



Australian Government

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******* CHECK AGAINST DELIVERY *******

- It is my view that science is at its most effective when it operates with what we might call a 'social licence'.
- In effect that means that there is a form of 'compact' with the community that makes clear the responsibilities of each side to the other.
- On the side of the practitioner, it means that science will be conducted in a manner that is consistent with community needs hopes and aspirations.
- So science will be conducted ethically, but will be seen as a mechanism through which our society is made better.
- We are presently drafting a STEM Strategy in my Office.
- In that Strategy, we seek to define the ends – what do we do all this for - and we opt for betterment of our community and its place in the world.
- We then argue that between the practices of STEM and betterment, we have that societal compact.
- In order to develop the compact, the community has to be informed.
- We will make the point that part of that process of 'informing' is embedded within our education systems and their practices.

- And part of it flows from the work in the humanities and the social sciences – the disciplines through which we learn so much about ourselves, our history, our cultures and our relationships within our society.
- And part of it will flow from the work of STEM practitioners – pitting their ideas, their knowledge, their talents and skills against the serious challenges that confront us.
- But, at the end of the day, we have to decide as a community what to do.
- As Tony Blair once said to the Royal Society: *Science doesn't replace moral judgement. It just extends the context of knowledge within which moral judgements are made. It allows us to do more, but it doesn't tell us whether doing more is right or wrong.*
- He also said in the same speech, *...the benefits of science will only be exploited through a renewed compact between science and society, based on a proper understanding of what science is trying to achieve.*
- So today I would like to talk to you about public engagement – a means by which we can communicate to the public a *proper understanding of what we are trying to achieve.*

- One means might be to try harder to talk about science or STEM.
- And not just talking at forums where we are comfortable doing it (where we might be accused of singing to the choir) but in our community
- People outside of science often labour under incorrect assumptions about it.
- For example, gene technology has been featured in popular culture in such a way that it is difficult for the public to separate reality from fiction.
- They might not necessarily imagine or understand how gene technology might, for example, improve human and animal health, create a safer and more secure food supply, generate prosperity or attain a more sustainable environment. We do, they don't.
- I hasten to add that it is not always easy. People are sometimes afraid to talk, often with good reason.
- They need encouragement and support in order to do it, something that we should all work towards.

- But we must do this work. We must build public understanding of the risks and potential benefits around things like gene technology that is consistent and evenly understood and applied.
- This is preferable to a situation where people's level of knowledge or lack of it leads them to cherry pick what bits of genetic modification they feel comfortable with.
- Some people might have a negative view of GM food, but accept the advances GM makes possible in healthcare without really being able to articulate why.
- This is despite the World Health Organisation saying gene technology and GM foods have not been shown to cause any adverse human health impacts and Food Standards Australian and New Zealand stating that: "to date gene technology has not been shown to introduce any new or altered hazards into the food supply..."¹
- So it is important that we make every effort to have this dialogue with people outside our circle, to hear their concerns, to engage them.

¹ Pg 4 — Allen Consulting Group 2011, Review of the Gene Technology Act 2000, undertaken for the Australian Department of Health and Ageing, Canberra, August 2011.

- A public awareness and community engagement program within the Department of Innovation conducted a survey which showed support for GM and other biotechnologies was moderate (mean 6.1 out of ten on average).²
- The survey also showed high levels of agreement that ‘commercial use of genetic modification and its products should only be allowed after regulatory approval’ (average of 7.3 out of 10); and ‘the Australian government should enable the community to participate more in decisions on biotechnology issues including regulation’ (an average of 7.2)
- Interestingly, roughly half of people who feel that the risks of GM foods outweigh the benefits (17%), would change their minds if long-term tests of at least 10 years had shown no risks to human health or the environment (56%) or the labelling on the food described what component had been genetically modified, and why (47%).
- These types of views are not to be unexpected in an area of research that is moving rapidly.

² Pg 7 - NETS survey - Community Attitudes towards Emerging Technologies - Biotechnology 2012

- And I suspect we might raise comfort levels further, if we could embed in the community a broader understanding of how the scientific process works – that ideas are contestable, views are challenged and changed when better evidence is brought forward. And they are not changed if it is not.
- That message is essential and we need to work so it is heard. For example, the community should be assured that gene technology is transparent and it is guided.
- Regulation is essential. This is a place for government. There is a need to be seen to be leading the way in developing regulatory frameworks that will give the broader community the assurance it needs that the science is safe.
- It is equally essential that the public is actively engaged in that guidance (and regulatory framework) as the survey I just mentioned indicates.
- If Australia's Gene Technology Act is reviewed every five years or so³ to ensure it is working and taking account of developments in this rapidly changing area of research,

³ Pg 1 – Allen Consulting Group 2011, Review of the Gene Technology Act 2000, undertaken for the Australian Department of Health and Ageing, Canberra, August 2011.

both here and overseas, that should be well understood by the public.

- As science continues to push us further into the frontier of gene technology, the humanities and social sciences can continue to provide us with that guidance.
- People outside science must understand it, because the public interest is important to what we do; and important in what we do.
- And it is that interest that captures the need for ethically-conducted research that is indeed based on the disinterested pursuit of knowledge.
- We need to provide the public with the opportunity to understand the issues: the message scientists and researchers are attempting to get across – to explain who, how, what, where, when and why.
- The public has to trust science. But that trust should not be taken as a given; and winning it, earning it, should not be taken as an easy ride.
- And, in particular, we need to work at it now; as we push the frontier of genetic modification, some of which at least

will have serious effects on people's lives, they will want reassurance that it can be trusted; that we can be trusted.

- Nobody would accept that a treatment based on a new genetic modification could be introduced untested in humans because scientists somewhere say it was designed to have only one targeted effect. They expect, even require, that it pass through a process that gives them confidence that side effects are restricted to a few, are small in number and controllable if they arise.
- We should talk about the negatives and the positives, but CAUTIOUSLY
- Genetic modification has broad application. In the environment, in food production and in healthcare.
- It is not without risk and we should talk about that openly.
- In relation to the environment, potentially, some GMOs could reproduce, spread and multiply in the environment after they are released.

- In controlling biological pests, for instance, gene technology has to ensure that it targets only the intended species.
- Risks are assessed and managed before releasing any biological agents into the environment.
- Currently, the World Health Organisation is investigating potential adverse GMO impacts on beneficial insects, new plant pathogens, plant biodiversity, crop rotation, and movement of herbicide resistant genes to other plants.⁴
- While talking about the risks of GM, we should also talk about potential benefits.
- For example, gene therapy clinical trials are offering us cause for at least some cautious optimism about the role of GM in fighting disease.
- The Journal of Gene Medicine presented analysis of 1843 trials undertaken in 31 countries up to June 2012.

⁴ Pg 5 — Allen Consulting Group 2011, Review of the Gene Technology Act 2000, undertaken for the Australian Department of Health and Ageing, Canberra, August 2011.

- Sixty-four per cent of those gene therapy trials related to cancers, nine per cent were related to monogenic diseases, eight per cent were in the area of cardiovascular disease and eight per cent in infectious diseases.⁵
- The same report put Australia in the top 10 (we are seventh) nations conducting gene therapy clinical trials.
- The majority of clinical trials using GM are targeting cancers, we should talk about that appropriately and cautiously. It is an area that is likely to be of immense interest to the public.
- Can I ask that you join me and that you work at all levels to talk more about what you do?
- Engage with the community and start an open discussion about genetic modification, the risks, the benefits, the checks, the balances and the regulation.
- I also ask you to be vocal in your communities in your support for science.

⁵ The Journal of Gene Medicine Volume 15, Issue 2, pages 65-77, 27 FEB 2013 DOI: 10.1002/jgm.2698

- The reality is that if we don't tell people about the importance of science and what it means to them, how will they ever really know?
- It is too important to leave to others even if we work with others to get the message across.
- And while you work harder to engage the public, let me remind you that myself and others are working to support you.
- The best way to build science literacy in the broader community is The Strategy my office is currently drafting.
- We need to strengthen community trust around science broadly, and for you, GM in particular.
- That means changing the culture and creating an environment where ideas get fed into a community that is ready to accept and analyse them.
- I ask you to imagine a community like that, living in the future we want for it.

- Then ask how we might earn it?
- Allow me to outline my vision. The year is 2025.
Australians expect to have a national science, technology, engineering and mathematics (STEM) strategy and it works.
- Australians value and use science in their everyday life. Australians believe that we need to be innovative. They understand that STEM gives us options. They are fearless and engaged in discussions about STEM issues like genetic modification.
- They make informed choices on complex matters where STEM offers options that have ethical, economic or environmental dimensions.
- These are some of the desired outcomes from the National Science, Technology, Engineering and Mathematics (STEM) Strategy.

- It will be part of building a culture that values and supports STEM, improving our education system, strengthening our research sector and its links with industry, producing a highly-skilled workforce, and connecting us to other nations that do well in science.
- It will bring alignment, focus and scale to guide Australia's scientific enterprise over the decade to come and beyond.
- We need this strategic whole-of-government vision for our national science system, astute investment of limited resources that link to the challenges facing our society and the research priorities to meet them.
- The strategy will, map out where we want to be and how we want to get there.
- We need to aim to do better and we need to bring our community along with us.
- There is still much work to be done.
- Thank you.