

Submission to the Productivity Commission study on public support for science and innovation in Australia

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I wish to provide the following comments from my personal perspective gained through experience in a range of roles, including

- many years in public and private sector R&D
- my current role as CEO of an innovative Australian SME; and
- service to various government policy, implementation and advisory boards including the IR&D Board, PMSEIC, NCRIS Committee and ARC Board

The economic impact of public support for science and innovation in Australia;

The extensive economic benefits of public sector support for science and innovation has been highlighted and confirmed by various OECD and other studies to which the Commission should refer.

These studies have shown a strong correlation between the intensity of innovation and the economic strength and living standards of various countries. As Alan Greenspan has remarked - over 70% of US growth in GDP in the second half of 20th Century was due to the exploitation of new technologies. Whole industries exist now that were not even dreamed of a generation ago - internet, biotechnology, mobile communications – and would not have developed without a strong focus on science and innovation in both the public and private sectors.

I would like to use my company, TGR Biosciences Pty Ltd - an Australian SME biotechnology company that discovers and develops novel healthcare products - as a case study of the importance of public sector research to Australian industry and therefore the economy. In particular, I would like to address firstly the role of basic scientific research in underpinning Australia's economic potential, and secondly, why it is important that Australia undertakes its own public sector R&D.

1. The role of basic scientific research

In Australia and internationally, most basic scientific research is carried out in the public sector. Although much of this published research does not lead directly to commercial outcomes, it forms the essential building blocks of industry's intellectual property and innovation.

For example, TGR BioSciences has developed innovative drug discovery technology that relies on knowledge of cellular processes that has been gleaned from the public scientific literature.

We are now applying that technology to discover new health products and we also market it through sale of assay kits to the global pharmaceutical drug discovery industry. None of this would be possible without strong public sector research.

2. Why it is important that Australia undertakes its own public sector R&D

Australia can and does gain considerable benefit from R&D that is carried out overseas. For example the knowledge of cellular processes that TGR BioSciences used to develop its drug discovery technology was derived in substantial part from international research efforts. We can readily access much of this type of information through the literature – it does not all need to be generated locally.

On the other hand, this would not be sufficient for TGR BioSciences to be internationally competitive. As a spin-out from a successful Australian Cooperative Research Centre, TGR would simply not exist if Australia did not maintain a strong public sector research effort.

Moreover, patents in-licensed from the Australian public sector underpin our lead commercial products. We are typical of most SMEs in that we could not afford the cost and time to source such intellectual property overseas.

A related point is that our interactions with top quality local R&D groups actually helps us keep abreast of international developments.

Innovative companies such as TGR also depend on the public sector for a source of qualified staff. TGR currently has 22 staff, of whom nearly all have science-related degrees and 12 have PhDs. We rely on the Australian public sector for the training of these staff – all but one was trained in Australia. Without strong public support for science and innovation, TGR would have a second-rate skill base.

TGR's experience and needs are typical of most innovative Australian SMEs.

Given that the Australian economy is dominated by SMEs, I would put to the Commission that Australia's ability to innovate is highly dependent on a high level of public support for research and innovation.

identification of impediments to the effective functioning of Australia's innovation system

Australia's underperformance in private sector R&D is a significant impediment to the effective functioning of our innovation system. A number of government programs, such as Commercial Ready grants, have been introduced to address this problem, with significant impact.

However, the unique characteristics of Australia – in which R&D is concentrated in the public sector – mean that it is crucial that we maximize technology transfer between the public and private sectors. This is an area in which we still under-perform.

Several funding programs have been established to provide incentives for better R&D linkage between the two sectors, such as the Pre-seed venture capital fund, ARC linkage grants etc. However, these all suffer from significant design failures, particularly in supporting the non-R&D components (such as market research, IP protection).

I recommend that the Federal Government undertake an analysis of the impediments to effective technology transfer of public sector R&D and introduce new programs to enhance the linkages

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