

BOOSTING THE COMMERCIAL RETURNS FROM RESEARCH

Submission in response to the Discussion
Paper

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**RESEARCH
AUSTRALIA**

AN ALLIANCE FOR DISCOVERIES IN HEALTH



ABOUT RESEARCH AUSTRALIA

Research Australia is an alliance of 160 members and supporters advocating for health and medical research in Australia. Research Australia's activities are funded by its members, donors and supporters from leading research organisations, academic institutions, philanthropy, community special interest groups, peak industry bodies, biotechnology and pharmaceutical companies, small businesses and corporate Australia. It reflects the views of its diverse membership and represents the interests of the broader community.

Research Australia's mission is to make health and medical research a higher priority for the nation. We have four goals that support this mission:

- A society that is well informed and values the benefits of health and medical research.
- Greater investment in health and medical research from all sources.
- Ensure Australia captures the benefits of health and medical research.
- Promote Australia's global position in health and medical research.

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BOOSTING THE COMMERCIAL RETURNS FROM RESEARCH

SUBMISSION IN RESPONSE TO THE DISCUSSION PAPER

INTRODUCTION

The need to boost the commercial returns from research is well articulated by the discussion paper, and Research Australia agrees there is a need to improve the pathways to commercialisation for health and medical research (H&MR) as a means of securing better health outcomes and greater economic benefits.

Australia already innovates. There are many scientists and other researchers who make new discoveries, and there are many companies in Australia that are innovative in their approach to the provision of existing products and services, and which utilise new discoveries to take new products and services to market.

It is equally true that Australia could be more innovative, and that there is more that we can do to increase the commercialisation of Australia's publicly funded research. There are changes that can be made in our publicly funded research organisations to drive this change, just as there are changes required in the private sector if we are to create a greater culture of research innovation throughout Australia. The Government's Industry Innovation and Competitiveness Agenda draws many of these elements together.

In this submission Research Australia makes a number of proposals to increase the commercial returns from publicly funded research. While commercialisation of research is the clear focus of the discussion paper and our response, Research Australia recognises that commercialisation is not the sole purpose of publicly funded research, and that the focus must be on achieving the right balance between:

- basic and applied research;
- investigator led and strategic priority driven research; and
- commercialisation and other paths to translation.

AUSTRALIA'S HEALTH SECTOR AND HEALTH AND MEDICAL RESEARCH

Research Australia welcomes the discussion paper's recognition that *'In the health and medical research sector, both universities and the network of non-government medical research institutes (MRIs) have a good record of conducting research in collaboration with hospitals with positive results'* and that the health sector is *'among the most innovative Australian research sectors'*.¹

One of the keys to this success is the recognition that the:

- universities and MRIs;
- the healthcare providers; and
- the biotechnology, pharmaceutical and medical technology companies bring complementary expertise, capacities and resources to innovation.

While research underpins innovation, the relationship between the creation of knowledge and innovation is not always linear, immediate or foreseeable. The primary role of research is to increase knowledge and the creation of knowledge needs to be the primary focus of research funding programs, with research excellence as the primary criterion of assessment for funding.

This is not to suggest that publicly funded research institutions should not participate in the commercialisation of research; clearly they should, but research and commercialisation activities should not be conflated. While there is no clear delineation in practice between when the creation of knowledge ends and the application of knowledge begins, it is both possible and necessary to make a distinction between research funding programs (with the objective of creating knowledge) and innovation funding (with the objective of applying knowledge to the creation of new products and services.)

Making this distinction can assist the transition from knowledge creation to its application and help ensure that efforts to boost commercialisation are directed appropriately. To this end, we need to be clearer at the outset about when publicly funded research is supported in expectation of commercial and/or practical outcomes and when this is not the case. Where there is an expectation that there will be an outcome beyond the publication of research findings, appropriate mechanisms need to be in place to support the achievement of this outcome (whether these be funded publicly, privately or in combination). Programs to support research on the one hand and innovation on the other need to complement each other better than they currently do.

For example, research is funded to test the hypothesis that a particular compound will prevent the production of an enzyme that is critical to the progression of a particular disease. The research is successful in demonstrating the hypothesis under laboratory conditions, and the results are published.

Under current arrangements, the funding now ceases even though further experiments and tests will be required to demonstrate 'proof of principle' as a therapeutic approach, and it is typically only after this stage that commercial partners can be engaged in the development of a new therapy. Progression of the body of research will be dependent on securing further funding from public funding programs or other sources, and this will require further grant applications and most likely the suspension of any further work until the funding is secured.

¹ Australian Government, *Boosting the commercial returns from research*, October 2014, p.12,13

The need for this further experimentation should be anticipated at the time the initial research grant application is made, and funding for this purpose should be available subject to the initial research achieving predetermined milestones or thresholds identified at the time the funding for the research is approved.

Creation of funding mechanisms for this type of further experimentation requires a clear understanding of what is to be funded as research and what is to be funded as innovation, and the criteria that are required to be satisfied in each case. And where it can reasonably be foreseen that the research has the potential for innovation, this potential should be identified at the outset. (The NHMRC provides Development Grants, but these represent less than one percent of total NHMRC funding and fail to adequately cover the research gap between the publication of research findings and establishing likely commercial success.)

Research Australia recognises that this is only one type of innovation and only one pathway, but it illustrates how being clear about the different objectives of funding for research and innovation can facilitate a more streamlined approach to the application of new knowledge.

COMMERCIAL EXPERIENCE IN PUBLICLY FUNDED RESEARCH ORGANISATIONS

Employing more staff with commercial experience enables universities to broaden the teaching experience they provide to students. It also brings a greater understanding of innovation pathways to publicly funded research.

While some steps have been taken, more can be done within academic institutions to recognise the relevant commercial, clinical and other translational achievements of candidates for academic positions and to support the interchange of staff with the private sector. This includes changes in recruitment and promotion practices to place a greater emphasis on commercial experience, and using actual change in practice and policy as part of the 'track record' of a researcher's success. Improving pathways for re-entry to publicly funded research from industry/commercialisation activity is also important; measures that can be taken include interim funding to support a returning researcher until they are able to attract project grant funding. Programs and incentives to promote greater collaboration of the private sector with academic researchers are also valuable, including the secondment and placement of publicly funded researchers in private sector organisations.

Research Australia agrees with the discussion paper's statement that *'Getting the right incentives into place to encourage collaboration will set a long-term direction for the research sector that will deliver greater commercial returns.'* Changes to block grants to universities that *'retain a focus on research quality and excellence but emphasise research-industry collaboration'* as proposed in the paper could be an effective incentive. Any changes need to be undertaken in close collaboration with the university sector, and the measures of success need to be clearly articulated at the outset. Any reforms should be carefully evaluated after an agreed timeframe to assess both their success in achieving their aims and any unintended consequences.

Requiring competitive grant bodies to recognise industry experience as a complement to research excellence, as proposed in the discussion paper, has two potential benefits. It will make it easier for academic researchers with experience in industry to secure competitive grants, thus making them more employable by higher education institutions. It will also support the development of research collaborations between academic and industry based researchers by increasing the interchange between the respective workforces.

REFORM OF RESEARCH TRAINING

Research training in Australia's higher education sector is currently undergoing significant innovation, including changes to:

- the pathways to entry to higher degrees;
- the types of qualifications offered,
- combinations of coursework and individual research, and
- the means by which courses are delivered.

This change is driven by a number of factors including the creation of new scientific disciplines, changes in the nature of research (which require greater teamwork and more multidisciplinary approaches), and changes in career structures and the workforce. These changes include an increasing recognition of the importance of providing exposure to commercialisation and other translation pathways, intellectual property and entrepreneurship. Approaches to including these elements vary from course to course and from institution to institution.

Research Australia encourages the Department of Education to work with the universities and in particular with the Council of Deans and Directors of Graduate Research on ways to facilitate these reforms. This includes not only the way qualifications are structured and how participation in industry based learning and research can be recognised, but how research training is funded; there is increasing evidence that the existing funding mechanisms are restricting innovation in research training.

These changes to research training involve more than just changes within universities. For example, industry placements to enhance the work readiness of postgraduate research students are frequently proposed, and yet achieving these on any significant scale will require a coordinated approach and a greater level of engagement from business than has been achieved to date. The preponderance of small to medium sized businesses in Australia and the low uptake of researchers in business pose particular challenges for the development of such a program and it is likely that it will require some government intervention and/or the provision of incentives to companies to participate. This could include cash payments to encourage SMEs to provide placements, or specific scholarship programs that require a private sector 'sponsor'. This latter program could be particularly useful to individuals who are already working in industry and want to undertake a further research qualification at the postgraduate level. The onus would be on the individual to find and engage a sponsor as part of the scholarship application process.

Competing demands placed on higher research degrees

While training in areas such as commercialisation and entrepreneurship are important, training that ensures the quality of research is paramount. While the discussion paper has highlighted the overall excellence of Australian research, there is growing concern internationally in some disciplines about a decline in the reproducibility of published research. Reproducibility is fundamental to scientific inquiry; it is also of paramount importance to companies that are seeking to commercialise research. This concern about reproducibility is leading to calls for the inclusion of more formal training in experimental design and research methods in higher research degrees to address this issue. Competing demands for the inclusion of additional formal training in a range of different areas is placing pressure on universities who receive funding for each research student for a fixed period of time. Any measure to increase the training requirements of higher degree students has to take account of the time commitment required of students and the implications of this for them in terms of lifestyle and financial pressures from more contact hours and longer degrees. It also needs to take account of the additional resource requirements it imposes on universities.

Publish or patent?

Whether to patent or publish is a dilemma faced by many researchers and by many research institutions. Publication of research is the accepted path to academic success but can compromise the ability to commercialise research findings. On the other hand, obtaining and maintaining patents comes at a financial cost, and is only worthwhile where there is a real prospect of commercial returns.

Improving decision making in this area has the potential to increase commercialisation of research and avoid unnecessary costs. While commercialisation training can alert researchers to the need to consider the question, in many cases it will not be enough to enable the question to be answered. There is clearly a role for research institutions to make resources available to researchers to help answer this question, through their commercialisation offices, for example. There is also a potential role here for the consulting and advice services to be provided by the Government's Entrepreneur's Infrastructure Program.

PUBLIC DATA AS A RESOURCE FOR INNOVATION

Information is critical to innovation. Australian governments at all levels are custodians of large volumes of information that have the potential to drive innovation in the delivery of a range of services and the development of new products. Making appropriately de-identified public data available to researchers and innovators in the public and private sectors should be a priority for all levels of government, and the development of common protocols for the use of and access to data would be a valuable initiative for the Commonwealth Government to pursue with its state and territory counterparts.

In the health sector, smarter use of existing and potential data sources has enormous potential to stimulate and support innovation. A key initiative in this regard would be linkage of the Pharmaceutical Benefits Scheme (PBS) and Medicare Benefits Schedule (MBS) with public and private hospital data and various state registries. Attention will need to be given not only to the resources required to achieve this but to the regulatory barriers that exist.

STREAMLINING CLINICAL TRIALS

Streamlining the processes for the approval and governance of clinical trials is another specific area with the potential to boost the commercial returns from research. Commercial (and non-commercial) clinical trials are conducted throughout Australia. Most clinical trials occur in the state regulated healthcare system and are subject to a range of state based requirements, protocols and agreements. There is significant scope for innovation in this area, and it is currently a target of a number of initiatives to streamline processes and improve efficiency. These include a project being undertaken by the National Health and Medical Research Council and action by COAG's Standing Committee on Health (SCoH).² Continued action in this area is needed to make Australia a globally competitive location for clinical trials.

CONCLUSION

² Standing Council on Health Communiqué - 11 April 2014

With a mission to make health and medical research a higher national priority, Research Australia's focus is necessarily on H&MR. We recognise that that the community quite reasonably expects better health outcomes from its investment in H&MR and that Australia needs to do more to derive the economic benefit of its public investment in research. Research Australia is supportive of measures to increase the commercialisation of Australian research, and H&MR provides significant scope for successful commercialisation. The Government's recent announcement of an Industry Growth Centre for medical technologies and pharmaceuticals is recognition both of Australia's existing expertise in these areas and the potential for future growth and success.

While commercialisation is an important path to the application of H&MR, it is only one of several, and these other paths are relevant to a greater extent to the health industry than may be the case in other industries like mining or manufacturing. It is also important to recognise that applied and strategic research builds on the foundation provided by the basic research which precedes it. This basic research is nearly always publicly funded, and while much of it will ultimately lead to new technologies and practical applications these eventual outcomes cannot be foreseen at the outset. As a nation we need to be clear about where and when research is undertaken in the pursuit of knowledge and when it is reasonable to expect a program of research to have practical application. Being clear about this this will enable us to set reasonable expectations of researchers and provide support for the commercialisation of research where such an outcome is feasible and appropriate.

Finally, we also need to do more to support industry to engage with our publicly funded researchers. The Government's Industry Innovation and Competitiveness Agenda provides a framework for bringing these elements together to achieve a more productive Australia, and Research Australia looks forward to its implementation.

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