

**Submission to the McKeon Strategic Review of Health and Medical
Research - Institute for Molecular Bioscience, The University of
Queensland, Brisbane - March 2012**

BACKGROUND

“A health research system **comprises** the people, institutions, and activities whose primary purpose is to generate and apply high-quality knowledge that can be used to promote, restore and/or maintain the health status of populations.

It **should also include** mechanisms to ensure that the products of health and medical research shape how medicine is practiced on a day-to-day basis in Australia, as well as how patients/health care consumers act on medial advice.

Thus, the main **goals** of a health research system are the production of scientifically validated research and the promotion of the use of research results, with the ultimate aim of improving the health status of a country’s population.” *2010 Research Australia document – analysis from Lateral Economics*

2011 Australian of the Year Simon McKeon will chair an independent review of health and medical research in Australia and recommend a 10-year strategic health and medical research plan for the nation.

The review will focus on optimising Australia’s capacity to produce world-class health and medical research from discovery through to translation.

KEY POINTS OF THIS SUBMISSION

- ◆ **Health and medical research provides clear and well-documented benefits for all Australians. It keeps us healthier, increases our productivity, generates jobs, enhances our international reputation and improves the nation's 'bottom line'.**
- ◆ **Commitment to ongoing and substantive investment in research and development across the health and medical spectrum must underpin these benefits into the future.**
- ◆ **Australian researchers are internationally competitive in health and medical research across all sectors from discovery-driven science through to clinical and commercial translation.**
- ◆ **Funding medical research must be premised on the importance of basic discovery as the cornerstone of research success. Discovery is the foundation and starting point for all translation.**
- ◆ **Research fellowship schemes must continue to be supported and funded as a key priority for Government and non-government agencies. A long-term strategy should be to support an expanded network of research fellows at all levels.**
- ◆ **The proportion of project grants receiving five-year funding should be increased. This will help attract and keep quality researchers, keep up with the latest equipment and technologies, and grow our future workforce of medical researchers.**
- ◆ **The 10-year review must incorporate increased strategic funding and new schemes to allow priority areas to be supported without sacrificing basic research.**
- ◆ **Supporting discovery to translation research pipelines with sufficient funding and workforce capacity, and within a long-term vision, must happen immediately.**
- ◆ **We emphasise the importance of collaboration, both national and international, in health and medical research. Strong long-term mechanisms and incentives are needed to harness the advantages of research collaboration.**
- ◆ **The priorities of health and medical research in Australia must centre on supporting both existing scientists at all levels and excellence in science education, including increased funding of PhD scholarships – over the long term, these are crucial factors in maintaining and growing our science-based workforce.**

INTRODUCTION

It is widely acknowledged that Australia produces some of the best health and medical researchers and innovators in the world. Over many years, their work has translated directly and indirectly into benefits for all Australians. Underpinning this record is the Commonwealth Government's past and ongoing support of health and medical research in this country. It is also acknowledged that the development of innovation-based industries and a knowledge-based economy depends on a strong research base and culture.

In this context, it is indeed timely to examine how best to support and foster such activities in a changing landscape of health, technological, social and economic challenges. Governments are under increasing pressure to run and fund an ever-growing and diversifying health and medical sector, and crucial to this effort is their continued and substantive investment in research and development, from discovery aspects through to commercial and clinical outcomes.

The Institute for Molecular Bioscience of The University of Queensland welcomes this strategic review of Australia's Health and Medical Research landscape and the opportunity to participate in the consultation process.

We support the proposed terms of reference of the McKeon Review and provide the following comments on the Review Panel's proposed questions.

RESPONSE

QUESTION 1: *Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?*

- ◆ **The benefits to Australian society from** supporting and building health and medical research in Australia and remaining competitive on the world stage in this field have been well documented over many years. These include:
 - reduced morbidity (illness or disability) and premature mortality
 - early access to new diagnostics and treatments
 - a healthier workforce leading to better overall productivity
 - Australian research-related goods and services contribute to the Australian 'bottom line' in terms of the gross domestic product
 - reinforcing Australia's reputation in health and medical research among the Australian public and internationally
 - generating and supporting a highly skilled and competitive workforce, whose numbers in Australia rival those in other, more high-profile industries such as manufacturing

- fostering and maintaining economic activity and growth
- providing hope to sufferers of disease and their families.

Commitment to ongoing and substantive investment in research and development capacity across the health and medical spectrum must underpin these benefits into the future.

- ◆ **Many improvements in health and medical practice and commercial successes** have arisen directly from Australian research discoveries such as the Gardasil vaccine against cervical cancer, Cochlear implant, spray-on skin and using antibiotics instead of inappropriate antacids to treat gastric ulcers.
- ◆ **Supporting fundamental biomedical research** in the overall portfolio of health and medical research in Australia is of crucial importance. Attesting to this are the numerous and ongoing examples from Australia's history of purely discovery-driven research of clinical and commercial outcomes (some provided above) that benefit the health and welfare of the entire population.
- ◆ **In any large organization** it is not uncommon to spend 10% on research and development. Indeed, corporate organisations in science- or technology-driven areas often spend much more than that on R&D (Amgen, IBM, Microsoft, Google etc.). In this context, Australia should considerably increase its resourcing of health and medical research into the 21st century.
- ◆ The products of Australian health and medical research make a **positive contribution to the Australian economy**. According to recent study by Lateral Economics, commissioned by Research Australia, expenditure on Australian research and development between 1992 and 2005 returned a net benefit of approximately \$29.5 billion. In the cancer field specifically, every dollar invested yields at least \$1.50 in benefit to the community. [
- ◆ **Australia's continued and active participation** in the international medical research effort favours Australia as a place to run clinical trials, ensuring Australian patients priority access to the latest medicines and health technologies.

QUESTION 2: *How might health and medical research be best managed and funded in Australia?*

- ◆ **Research Fellowship Schemes**
Research fellowship schemes funded by government and community-based organisations (eg. NHMRC, ARC, State Governments, charitable and philanthropic foundations) have been the foundation of Australia's medical research enterprise for

decades. Such funding mechanisms continue to be a major source of salaries for staff at independent and semi-independent research institutes like IMB, larger research consortia and in university departments and hospitals. These full-time dedicated researchers account for a significant proportion of Australia's medical research output and international reputation. In addition, fellowship schemes have enabled research to extend beyond what can be funded as an otherwise part-time endeavour for scientists and clinicians working in university departments and hospitals.

Fellowship schemes have also been instrumental in underpinning an enormous expansion of research infrastructure and capacity across every State of Australia over the past 10 years.

A current pressure on the Research Fellowship scheme derives from the end of 'one-off' fellowship schemes such as the ARC Federation and Future Fellowships and the NHMRC Australia Fellowships. Many researchers have been recruited from overseas or from industry and clinical sectors by virtue of these 'dedicated' and often strategically used schemes (in terms of leveraging other funding). The review must therefore consider how to cement in place an ongoing and 'permanent' range of salary-funding schemes to support all 'outstanding' ranked applicants, including established Fellows, early-career researchers and new cohorts of researchers from Australia and overseas. This is needed immediately, not only to continue attracting the best and brightest workforce, but also to support and build on this recently expanded network of fellowship-salaried medical researchers. Failure to do this may squander the cumulative advantages gained and to be gained from countless years of funded research programs.

Recommendation: Research fellowship schemes must continue to be supported and funded as a key priority for Government and non-government agencies. The schemes should operate with sufficient ongoing allocations to achieve a minimum goal of funding all 'outstanding' ranked applicants whilst supporting an expanded network of high-achieving, fellowship-funded researchers at all levels.

◆ **Extension of Funding Terms**

IMB would like to see provisions introduced across the major funding bodies for increased access to 5-year funding both of research and people; 5 years is often the standard term for medical research grants overseas. Five-year funding offers researchers a chance to undertake riskier, cutting-edge projects, to perform highly collaborative projects, to establish long-term animal or clinical studies, to introduce and establish new approaches and technologies for their research and to provide more stable jobs and better research support for staff and students. Five-year funding also obviously reduces the administrative load across the sector by reducing the number of grant applications. The benefits of five-year funding are already evident in the NHMRC fellowship and program schemes.

Recommendation: That NHMRC and other funding agencies increase the proportion of project grants receiving five-year funding (e.g., a scaled increase with a target of ~ 25%). Review panels could increase the number of applications recommended for this longer

term funding based on criteria such as applicant quality, a suitable long-term visionary research plan and scoring in the top rank.

◆ **Funding Schemes**

Strategic funding and new schemes are essential and more money is needed to allow priority areas to be supported without being at the expense of basic research. This could be done by leveraging funds from other parts of Government and/or industry. For instance, this is already done within the NHMRC training fellowships and project grants by having 'named' awards. The US National Institutes of Health and similar organisations commit large amount of funding to new initiatives at regular intervals, to promote large-scale collaborative research targeted to address big questions or to leverage new technologies (e.g. genomics).

New schemes are often needed to build capacity in areas where skills/knowledge is currently lacking in Australian research programs. For instance, the NHMRC's current and recent support of clinical research excellence, translational research and priority research areas (e.g. H1N1 flu virus, mesothelioma, Hendra virus outbreak) allow researchers and research organisations to strategically investigate nationally relevant diseases and to build badly needed capacity. Such new schemes might be one-off, e.g. NHMRC's support of Australia's participation in the International Cancer Genome Consortium.

However, we emphasise again that such initiatives must not come at the expense of core research funding mechanisms, as applied and translational research depend critically on fundamental discoveries, and it is never possible to know where the next big breakthrough is going to come from.

◆ **Encourage and Support Multidisciplinary and Collaborative Research**

We emphasise the importance of collaboration, both national and international, in health and medical research, and hope that the review will maintain and build the mechanisms to harness the advantages of research collaboration.

A fundamental outcome of this review should be new and strengthened mechanisms to generate stronger international research relationships and leverage or attract investment in Australian research and innovation. Such mechanisms are pivotal in realising the objectives of health and medical research in Australia as outlined in this submission.

QUESTION 3: *What are the health and medical research strategic directions and priorities and how might we meet them?*

◆ **Strategic Directions**

Funding must be provided, from this point on, at a level that will build up science and medical research in Australia to a base point by 2020 that keeps us abreast of the latest technologies and ensures all Australians access to new drugs, health applications and cutting-edge biotechnologies.

Funding strategies must always be premised on the importance of basic discovery as the cornerstone of research success and its progression into practical outcomes.

Discovery is the foundation and starting point for all translation. While it is not possible to predict where the next breakthrough will come from, investigator-driven basic research has the best track record for doing just that. Finally, Australian scientists have proven expertise both in basic discovery research and in applying the outcomes of that research to help human health.

◆ **Priorities**

In the context of IMB and its activities, a major priority of health and medical research in Australia must be to support existing scientists sufficiently and continually so expertise is not lost from the system (see comments on fellowship schemes). At the same time, we must support science education, university places and PhD scholarships to grow and nurture our next generation of scientists. Funding both of these priorities over the long term is crucial to maintaining and growing our science-based workforce.

QUESTION 4: *How can we optimise translation of health and medical research into better health and wellbeing?*

◆ **Discovery underpins all translation of health and medical research**

The development pipelines for translating scientific discoveries into new procedures, drugs and appliances in Australia must be enhanced to provide benchmark levels of economic and in-kind return on investment to the investors, including Australian taxpayers. To this end, the following must be maintained or implemented:

- (i) Funding of basic research (i.e. discovery science)
- (ii) Proof-of-concept funding for new discoveries to ensure that the best proceed into a development pipeline
- (iii) Better funding at the interface of research and biotech industries
- (iv) Public investment in start-up companies and fledgling industries in the health and medical sector

In this space, IMB exemplifies the success of collocating basic research facilities and scientists alongside commercial expertise to generate an environment that directly supports the development of new discoveries, e.g. spider venoms into novel insecticides and new human drugs to fight pain, and plant peptides into anticancer compounds.