BioMelbourne Network
Progressing BioIndustry

Strategic Review of Australian Health and Medical Research

30 April 2012

The BioMelbourne Network welcomes the opportunity to contribute to this important review that will help inform the future of Australian health and medical research.

The Network was established in 2001 as an independent Victorian biotechnology industry association and represents some 160 organisations. The Victorian biotechnology sector is the largest in Australia.

This submission is made on behalf of the Network's membership which comprises predominately private and publicly listed biotechnology companies and service providers to the sector. Medical research institutes, public sector research organisations and universities also contribute to the Network's membership profile.

The translation of our health and medical research efforts has resulted in better treatments, improved health service delivery and improved quality of life for all Australians. Continued investment in health and medical research will also drive the development of new innovative industries and lift our productivity through improved health outcomes and more efficient use of health care resources.

As noted by the McKeon Review, the landscape within which our health and medical research sector operates has changed significantly over the last twenty years. Specifically, the burden of disease has changed; the ICT revolution has profoundly influenced research investigations and accelerated the generation of new knowledge; and there is a widely recognised need to fast track the translation of basic research into clinical applications that will improve the health outcomes for all Australians.

***1. Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?* (Terms of Reference 1 and 6)**

- Health challenges impinge on Australia's future prosperity. Commonwealth Treasury (2010) estimates that the proportion of Australians aged 65 and over will increase from 1 in 7 to 1 in 4 over the next 40 years[1]. This will strain our limited health resources and contribute to a projected 5-fold increase in health expenditure over the same period,

[1] Commonwealth Government 92010) Australia to 2050: future challenges, Commonwealth of Australia, Canberra.
http://www.innovation.gov.au/Innovation/Policy/AustralianInnovationSystemReport/AISR2011/introduction/why-should-we-innovate/index.html accessed on 20 March 2012.

reducing labour participation rates and placing negative pressure on Australia's economic growth[2].

- Australia's ability to create an environment that stimulates innovation and encourages further health and medical research and the growth of innovative industries such as biotechnology will be important determinants of future productivity growth.

- Ongoing investment in the health and medical research sector including improved investment in translational research contributes significantly towards building a sustainable knowledge economy in Australia.

- The OECD[3] notes that a stable economic environment provides the overall basis for growth, however government policy to foster innovation and enhance human capital are requisites for growth to occur. High quality human capital is critical to innovation, for the generation and application of new knowledge but also to use and adapt the knowledge elsewhere.[4]

- Australia's health and medical research capabilities and the translation of these capabilities into better population health outcomes, efficient use of health resources and growth of innovative industries are important determinants of future innovation and productivity growth.

- Australia has significant competitive advantages in health and medical research including a large and diverse population cohort, high quality health systems, outstanding researchers and clinicians, cutting edge infrastructure, a world class education system and supportive innovative industries such as biotechnology.

- Australia also has a highly respected record of achievement in health and medical research. To date Australia has achieved outstanding success and our discoveries have benefitted many Australians and others around the world. Prominent examples include the cervical cancer vaccine, the bionic ear and the *Helicobacter pylori* bacterium.

- Five Australians have received the Nobel Prize for medicine and physiology and our research sector continues to deliver high publication and citation rates. Our research institutes, supported by a world class education system, also contribute significantly to Australia's skilled and talented workforce.

- The health and medical research sector is the engine that provides the critical discovery pipeline and fuels the growth of industry sectors such as biotechnology. The biotechnology sector converts these great discoveries into commercial realities with important health, industrial and environmental outcomes.

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[2] Commonwealth Government 92010) Australia to 2050: future challenges, Commonwealth of Australia, Canberra.
http://www.innovation.gov.au/Innovation/Policy/AustralianInnovationSystemReport/AISR2011/introduction/why-should-we-innovate/index.html accessed on 20 March 2012.

[3] Innovation and Growth, Rationale for and Innovation Strategy
http://www.oecd.org/dataoecd/2/31/39374789.pdf accessed on 19 March 2012.

[4] Venturous Australia (2008) A Review of the National Innovation System
http://www.innovation.gov.au/Innovation/Policy/Pages/ReviewoftheNationalInnovationSystem.aspx
accessed 21 March 2012

- Deloitte Access Economics[5] (2011) note that the past decade of NHMRC funding has the potential to return considerable benefits including:
  - the aversion of 98,426 disability-adjusted life years (DALYs) valued at $6 billion
  - avoidance of $581 million in direct health systems expenditure
  - the aversion of $385 million in indirect costs, including productivity losses incurred through premature mortality and morbidity related reduction in workforce participation, and
  - estimated commercial benefits across various diseases to the value of $1.6 billion, and estimated commercialisation benefit to cost ratio of 0.72:1.

2. How might health and medical research be best managed and funded in Australia? **(Terms of Reference 2, 3 and 7)**

- Funding of health and medical research should focus on priority driven research in clearly identified areas of future health needs. A framework and consultation process that clearly articulates these priorities at regular intervals is paramount. Focussed funding will help deliver more immediate benefits through better health services &/or the translation of research funding into improved health outcomes for all Australians.

- The true cost of health and medical research is also best supported by accommodating the indirect costs associated with research funding and creating a level playing field in the health and medical research sector relating to the funding of indirect costs.

- Convergence of disciplines and technologies will profoundly influence our innovation efforts in the 21 century. For example, the skills of mathematicians and computational scientists are increasing fundamental to tackling health and medical research investigations. Future NHMRC funding principles must therefore accommodate for non-traditional biomedical research areas (e.g. bioinformatics, computer science).

- Australian Research Council (ARC) funding rules must also be flexible enough to enable researchers funded in these non-traditional research areas to move between universities to research institutes and/or hospitals. Current funding rules require researchers to give up their funding when making such transitions.

- In order to grow investment in health and medical research and ensure Australia's research efforts remain international competitive, initiatives are required to leverage funding from other sources. Specifically philanthropic and private sector funding are important sources that warrant further exploration together with relevant international partnerships between organisations such as NHMRC and international counterparts.

- Underpinning the success of our health and medical research sector is a diverse and suitably qualified and skilled workforce with defined career pathways. The development of a long term strategic plan to address the needs of the health and medical research workforce is an urgent and immediate task. The plan should give consideration to exposing students and teachers to science at every level of education in order to develop a diverse and large recruitment pool.

[5] Returns on NHMRC funded Research & Development (2011), Deloitte Access Economics http://www.asmr.org.au/NHMRCReturns.pdf accessed on 19 March 2012.

- There is scope to significantly strengthen and deepen collaborations between universities, the private sector and our health and medical research organisations. Effective collaborations can provide numerous benefits for both parties including:
  - skills and knowledge transfer & creation
  - access to technology & infrastructure
  - acceleration of R&D effort to market outcomes such as products and services that address health and environmental objectives, and
  - commercial returns for R&D investments.

  Organisations like the Network play a critical role in facilitating this activity.

- Mutually supportive and vibrant innovative industry sectors such as biotechnology are required in order to commercialise our research discoveries. Industry plays a critical role in translating research that will deliver benefits to the Australian community and create wealth for the nation. A vibrant industry sector also provides an important career path for our researchers. This also insures that public investment in health and medical research is repaid to the broader Australia community.

- Consideration should be given to schemes that develop the capabilities required to support technology transfer and business development activity across the research sector to business. Incentives to fast track the translation of promising health and medical research into successful companies.

- The lack of risk capital especially for early stage ventures continues to hinder innovation. The Review of the National Innovation System (2008) examined this issue and recommended numerous activities to improve access to capital markets. Commercialisation Australia, though a very welcome participant in the sector, cannot meet the market demand. Access to funds to protect IP, early stage funds for proof of concept studies and capital for later stage clinical trials, regulatory approvals and development of pre-product launch are all fundamental to delivering successful research outcomes. Consideration should also be given to the development of market facing programs that support collaborations between public research organisations and the private sector and riskier early stage commercialisation.

3. How can we optimise translation of health and medical research into better health and wellbeing? **(Terms of Reference 4, 8, 9, 10 and 11)**

Our health and medical research directions and priorities must be cognisant of the significant changes in our health and medical research landscape. Specific attention should be given to:

- the changing burden of disease
- opportunities presented by advances in ICT and new and emerging technologies and the convergence of technologies and disciplinary boundaries
- personalised and preventative medicine, and
- the pressing need to translate our research efforts to clinical outcomes.

Serious consideration must also be given to identifying research funding gaps, creating better linkages within and between different grant programs and recognising the synergies for collaborative funding between researchers and industry.

Areas of research priority must be identified in a coordinated manner within a widely accepted framework by key stakeholder groups. Some of the broader principles to consider in shaping our future health priorities include:

- the burden of disease
- emerging health issues globally and in Australia
- the dimensions of cost and quality of health care, and
- health impacts on disadvantaged groups, particular our indigenous Australians.

4. How can we optimise translation of health and medical research into better health and wellbeing? (Terms of Reference 4, 8, 9, 10 and 11)

- The ACIL Tasman Report (2011)[6] notes Australia's poor performance in innovation compared to other key drivers of productivity and international competitiveness. Access to capital and collaborations are two fundamental drivers of innovation that Australia must address to remain competitive[7].

- The Network believes there is scope to significantly strengthen and deepen collaborations between universities, the private sector and other public sector research organisations. Effective collaborations can provide numerous benefits for both parties including:
  - skills and knowledge transfer & creation
  - access to technology & infrastructure
  - acceleration of R&D effort to market outcomes such as products and services that address health and environmental objectives
  - commercial returns for R&D investments, and
  - broader education & employment opportunities.

- Consideration should also be given to the development of market facing programs that support collaborations between public research organisations and the private sector and riskier early stage commercialisation. Such programs must create incentives within research organisations to collaborate with industry and metrics established around this objective in order to assess performance.

- Access to world-class scientific research infrastructure is fundamental to help boost the productivity of our researchers and ensure our global competitiveness. Research infrastructure is "an enabler which has a range of positive outcomes including development of skills and knowledge and the promotion of collaboration, which in turn generates benefits that exceed the sum of the individual research parts and enables faster resolution of intractable problems."[8]

- A collaborative approach between State and Commonwealth Governments and the research community in the identification and funding of strategic research infrastructure investments. A commitment is also required to supporting the Strategic Roadmap for

[6] ACIL Tasman (2011), *Victoria's productivity, competitiveness and participation*, prepared for the Victorian Competition and Efficiency Commission.

[7] Venturous Australia (2008) A Review of the National Innovation System http://www.innovation.gov.au/Innovation/Policy/Pages/ReviewoftheNationalInnovationSystem.aspx Accessed 1 July 2011

[8] Department of Innovation Industry, Science and Research (2011) Strategic Roadmap for Australian research Infrastructure, Exposure Draft

Australian Research Infrastructure which details our infrastructure priorities over the next 10 years.

- The lack of risk capital especially for early stage ventures continues to hinder innovation. The Review of the National Innovation System (2008) examined this issue and recommended numerous activities to improve access to capital markets, many of which are yet to be implemented.

- Improved support for major international medical and scientific conference to Australia is also required to continue to build our knowledge base, exchange ideas and findings and ensure we remain globally connected.

- The recommendations outlined in *Clinically Competitive: Boosting the Business of Clinical Trials in Australia* must continue to be implemented as a matter of priority. Clinical trial activity constitutes a major research activity in Australia and is a major source of national and international investment. The Clinical Trials Action Group (2011) note that there was substantial health gains to be had from improvements in clinical practice, these include screening, early treatment and new important therapeutics or improved clinical management and medical procedures. Clinical trial activity also brings together a diverse group of organisations that work collaboratively to translate our research outcomes for the benefit of the whole population.

I welcome the opportunity to discuss any of these issues with you further. The contact person for this submission is Ms Michelle Gallaher, Chief Executive Officer, BioMelbourne Network on t: 03 9667 8116 m: 0417 784 856 e: mgallaher@biomelbourne.org

Yours sincerely

Michelle Gallaher
Chief Executive Officer