GETTING RUBBER TO HIT THE ROAD:

funding research for impact

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Opportunities for the community to benefit from biomedical innovations arise through complex translational and commercialisation pathways. While Australian researchers rank highly on international measures of research quality, their ability to translate research into medical innovations and form collaborations ranks far below its potential.

The majority of accessible community benefits from biomedical research come from innovations such as new vaccines, devices, diagnostics and medicines. Realising these benefits requires both collaboration and investment.

The 2016 *Scientific American Worldview* again ranked Australia's biotechnology sector highly, and we continue to rate well in academic peer review and citation indexes. The longer-term issue, however, can be found in the Global Innovation Index, where our innovation efficiency rating continues to rank well below expectations, and is mediocre at best.

The challenge for biomedical researchers to translate through the 'valley of death' and attract industry and/or venture capital support requires not only strategic funding, but also access to experience, networks and expertise.

Funders of medical research have great responsibility. It is not only the money they provide, but also the culture, activities and policies they drive that are significant. Institutions and individual researchers focus on what is measured and rewarded. Funders of research should take a systems approach to facilitate research and translational efficiencies. They should consider how they can influence the system more broadly and contribute to getting the balance right.

The 2015 National Health and Medical Research Council (NHMRC) Grant Application Round committed almost $900 million to fund health and medical research. Almost $420 million (approximately 47 per cent) of this was for competitive project grants, including approximately $360 million (approximately 40 per cent) that was categorised as basic science. A further $14 million (approximately 1.5 per cent) was committed to development grants.

Noel Chambers

Understanding philanthropic funding is difficult. The data collected lacks categorisation within the health and medical research sector. Differentiating between health services and biomedical research, various diseases and even whether a research PhD scholarship is classified as research or education, for example, is not yet consistent or possible.

Most philanthropic organisations focus on what (disease) and who (institution or researcher) they are supporting, but don't consider how the application of funds facilitates translation/commercialisation within the wider funding system.

To put philanthropy into perspective, Philanthropy Australia estimates that public and private ancillary funds (PuAFs and PAFs) have distributed approximately $1.7 billion since 2014. In 2012–13, tax-deductible donations were $2.29 billion, and donations from businesses in Australia were more than $850 million.

Of course, not all donations go towards health and medical research. JBWere's Cause reports show that approximately seven per cent of public donations went towards medical research, with religious and welfare groups accounting for more than 50 per cent. More recent data investigating distributions from PAFs show gains for health and research, with each receiving distributions of around 13 per cent.

Growth in funding from the NHMRC has currently stagnated, while Australian philanthropic donations

continue to rise. If annual philanthropic distributions reach $3 billion and 13 per cent is applied towards medical research, then $390 million dollars will be available. This is similar to the amounts provided by the NHMRC for project grants in 2015, and almost 30 times more than that directed towards development grants.

One of the drivers for my transition into philanthropy was that while research from Australian institutions was of high quality on academic measures, it was not investor (or in-licensing) ready. Understandably, researchers were focused on keeping their jobs, feeding their kids and putting petrol in the car. The funding they received was directed towards high-ranking, peer-reviewed publications. This meant that the questions they asked often omitted the more mundane scientific questions that would not underpin a scientific publication, but that were vital to attracting industry collaborators.

Philanthropic support has rules. Funding is provided to eligible organisations such as universities, medical research institutes and hospitals.

The National Foundation for Medical Research and Innovation (NFMRI) has developed and implemented a philanthropic strategy to support researchers and their institutions to bridge the current gaps and facilitate cultural change beyond a state of 'publish or perish'.

Our strategy is to fund early innovations within eligible organisations to help them attract collaborators (industry, government and investors)—collaborators that have the capability and capacity to value-add and help deliver the new devices, diagnostics, vaccines or medicines. While we recognise that publications can assist, we are looking for outcomes and impact, not outputs.

Our support considers and respects the funding system. We don't duplicate what the NHMRC does; we fund access to external capability and capacity. This removes virtual and real borders. It helps researchers to consider what their innovation needs are, and not what they themselves can do.

In some cases, industry and investors have identified research of potential interest that is not yet ready, and encouraged researchers to apply for funding.

Examples of projects we have funded include professor Michael Good's research into a strep A vaccine, where our funding has supported research into the scalable manufacture of the vaccine under good manufacturing practice (GMP) and some of the formal preclinical toxicology. Associate professor Dr Janet Davies (a recent finalist in the Queensland Government and Johnson & Johnson Innovation Quick Fire Challenge) was also provided funding to access the antibody facility at Monash to assist with her grass allergy vaccine.

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Our review processes consider the likelihood of translation, including commercialisation, and our research advisory committee includes experts from academic, translational, commercial and clinical science backgrounds. We also recognise the need for access to non-research support, and have assisted researchers through mentoring, networks and access to pro bono support from organisations such as Griffith Hack and IP Australia, which have assisted with patent analytics support.

While many foundations are restricted to funding research, considering other factors, such as quality systems and industry engagement support in the review process, can have a large impact upon researchers' ability to achieve their missions. It can also influence policy.

We encourage industry, government, philanthropy and academia to work together and explore how they can assist with funding efficiencies to achieve their mission. We are currently partnering with Biosecurity NSW to provide funding in zoonotic emerging infectious diseases, and with the Queensland Government's Advance Queensland initiative to expand the conversation.

There is more that can be done. Industry and investors have the opportunity to engage with the philanthropic sector to provide not only financial support, but also access to knowledge and networks. There are also a number of reviews and recent strategy documents released by governments. Philanthropy, however, is a bit like *Where's Wally*: you know it's there, but it's hard to find.

Let's not let our biomedical discoveries wither on the vine.

Noel Chambers will be speaking at the 17th International Biotechnology Symposium (IBS 2016).