The Australian Society for Medical Research

Submission to:

South Australian Productivity Commission

Inquiry into Health and Medical in South Australia

May, 2020

Declaration of interests

The Australian Society for Medical Research (ASMR) represents members from the health and medical research sector including researchers from universities, hospitals, research institutes, medical colleges and patient groups.

Some members are recipients of funding from the Australian and/or State Government bodies, including the National Health and Medical Research Council (NHMRC), and the Australian Research Council (ARC).

ASMR receives direct funding from the NHMRC for ASMR Medical Research Week®, a public outreach program that raises public awareness of medical research in Australia.

About the ASMR

The Australian Society for Medical Research (ASMR) is the peak professional body and the unifying voice representing Australian health and medical researchers. In addition to the more than 1600 direct members, ASMR represents the sector through 58 affiliated professional societies, medical Colleges and patient groups, representing an additional 18,000 people actively involved in health and medical research. Our corporate and disease related foundation memberships bring a further 100,000 Australians with an interest in health and medical research into association with ASMR.

Our mission is to foster excellence in Australian health and medical research and to promote community understanding and support through public, political and scientific advocacy. The ASMR is comprised of research active health and medical researchers from across the sector. This group is best placed to identify new trends and expectations for the next generation of research leaders. The ASMR has an unparalleled record of investigating and quantifying the engagement and benefits of research to the Australian community and economy. In 2003, the ASMR broke new ground, commissioning the first report of its kind to quantify the health and economic benefits of medical research. Since that time, the ASMR has commissioned a further five reports from Access Economics and Deloitte Access Economics that support the need for greater investment into a sector that forms one of Australia's economic pillars. Fundamental to that is a highly skilled and innovative health and medical research workforce.

Executive Summary

South Australians are world leaders in health and medical research, transforming global health outcomes. Over the last 100 years there have been four South Australian recipients of the Nobel Prize for their work and contributions into better understanding human health and disease. Recent notable discoveries and contributions by South Australian researchers include enzyme replacement therapies, the Rotavirus vaccine, and new therapies for childhood cancer. New South Australian research has the potential to change the lives of millions. But it is only with a well-supported and secure workforce that these transformative discoveries can continue.

South Australia has established health and medical research capacity across the State ranging from fundamental biomedical science through to biomedical incubators and clinical trial capacity. These nodes can be summarised as:

1. Flinders University
2. The University of Adelaide
3. University of South Australia
4. The South Australian Health and Medical Research Institute (SAHMRI)
5. The Basil Hetzel Institute
6. Flinders Medical Centre
7. The Royal Adelaide Hospital
8. The Queen Elizabeth Hospital
9. Lot 14

Over many decades, South Australia has developed a highly skilled health and medical research workforce, establishing a global reputation for discovery and innovation. In a climate of economic uncertainty and significant health challenges the health industry is poised to fill the economic gap.

The ASMR welcomes the Inquiry into Health and Medical in South Australia as a forum to determine current and future health challenges, and to provide a platform for identifying strategies for mitigating the unsustainable projected health and economic burden that is forecast for our nation. The ASMR has addressed the inquiry's Terms of Reference under the broad headings of:

1. Funding health and medical research in South Australia
2. The South Australian health and medical research workforce
3. Creating a new investment opportunity for funding medical research

Through ASMRs experience, data collection and previous consultation with the research community and key stakeholders, we propose the following recommendations to the inquiry

1. Review and restructure how current health and medical research investment is distributed in South Australia, from fundamental discovery research to translation and implementation
2. Develop a funding strategy to locally support all branches of health and medical research and 'seed' research activity to be competitive for larger, National funding opportunities
3. Create an Office for Medical Research to prioritise health and medical research as one of the State's economic pillars
4. Create a dedicated, competitive, investment fund to support local health and medical research activity, with applications assessed on merit via a transparent expert-review process
5. Create an online South Australian register of health and medical researchers to support future workforce modelling
6. Foster a trans-disciplinary research culture, with greater connectivity and collaboration between Adelaide research organisations
7. Support the next generation of researchers, keep our best and brightest, sustain our advantage

1. Funding Health and Medical Research in South Australia

Investing in Australian health and medical research has delivered significant economic and health benefit

- The NHMRC is an independent statutory body that oversees an annual distribution of almost $850 million in research funding via a process of expert peer review to researchers around the country[1].
- Conservative analysis by Deloitte Access Economics in 2016 indicated that for every $1 invested into the National Health and Medical Research Council (NHMRC) there was an average net return of $3.20 in health and economic benefit[1].
- NHMRC supported research is estimated to have returned almost $23.4 billion between 2000-15 in net health and economic benefits[1].

The South Australian health and medical research sector is comprised of outstanding scientific talent and has the potential to become a major economic contributor for the State; however, the workforce must be supported.

South Australia is falling behind in competitiveness for NHMRC funding support

- South Australia only attracted 5.8% of total NHMRC funding in 2019. This figure is down from 7.4% in 2009

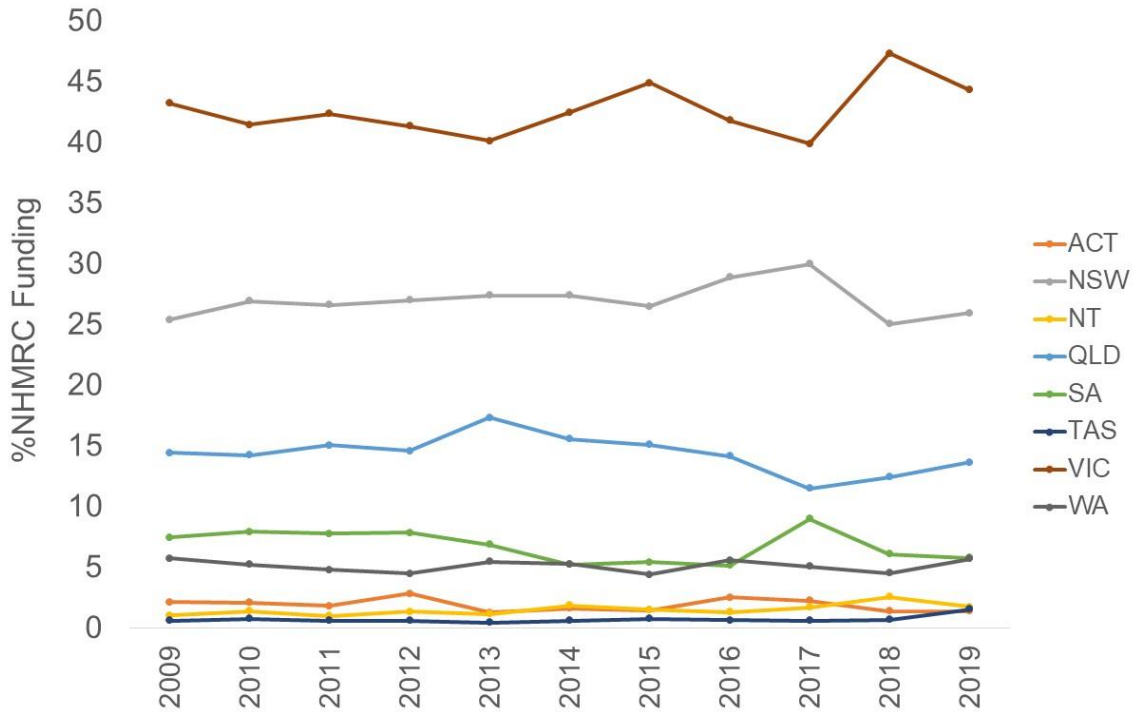
South Australia has not been competitive in attracting MRFF funding support

The Medical Research Future Fund (MRFF) was established by the Federal Government in 2014 as a $20 billion capital investment fund that would return an estimated $1 billion for Australian health and medical research

- Disbursements from the MRFF began in 2016, and since then there has been almost $600 million in commitments to research projects and organisations around the country[2]
- It is difficult to determine the exact distribution of this funding as not all data is made publicly available

ASMR analysis suggests that less than 3% of current MRFF commitments have flowed to South Australia since 2015[3]

Figure 1: *Share of NHMRC funding support received by all Australian States and Territories since 2009*



If South Australia is to elevate its position as a National leader in health and medical research, it must increase and restructure research investment to position it researchers to be competitive for large, National funding opportunities

In recent years, South Australia has largely focussed on supporting commercialisation of research outcomes. This is highlighted on page 15 of the SAPC issues paper, describing the $28 million research commercialisation fund and the South Australian Venture Capital Fund to support South Australian R&D commercialisation. This contrasts to other major Australian States that have established dedicated government funding support for their health and medical research sectors. Most recently, the West Australian Government established a $1.3 billion Future Fund with annual disbursements to support and seed local researchers and enhance their competitiveness for National funding[4].

It is important to recognise that health and medical research is a *reciprocus* and collaborative endeavour, and research support must extend across the continuum of research activity.

Exclusively funding research commercialisation and translation is analogous to building a house without a solid foundation. Investment into fundamental research underpins knowledge gain and development of commercial opportunities. One cannot happen without the other.

If South Australia is to become more competitive in attracting research support from larger funding agencies such as the NHMRC and Australian Research Council (ARC) or from funds such as the Medical Research Future Fund (MRFF) and Biomedical Translation Fund, the State must develop a comprehensive investment strategy that stretches across academia, hospitals, government, the SAHMRI, and business.

The Queensland Smart State initiative saw $2.4 billion invested into local R&D from 1998 to 2012. During this time Queensland increased its proportion of NHMRC funding from below 13% to a peak of 17.3% in 2013, after which, this figure has steadily decreased, dropping to 13.6% in 2019.

A strategy that is underpinned by increased and consolidated State Government investment would deliver significant economic benefit to the State.

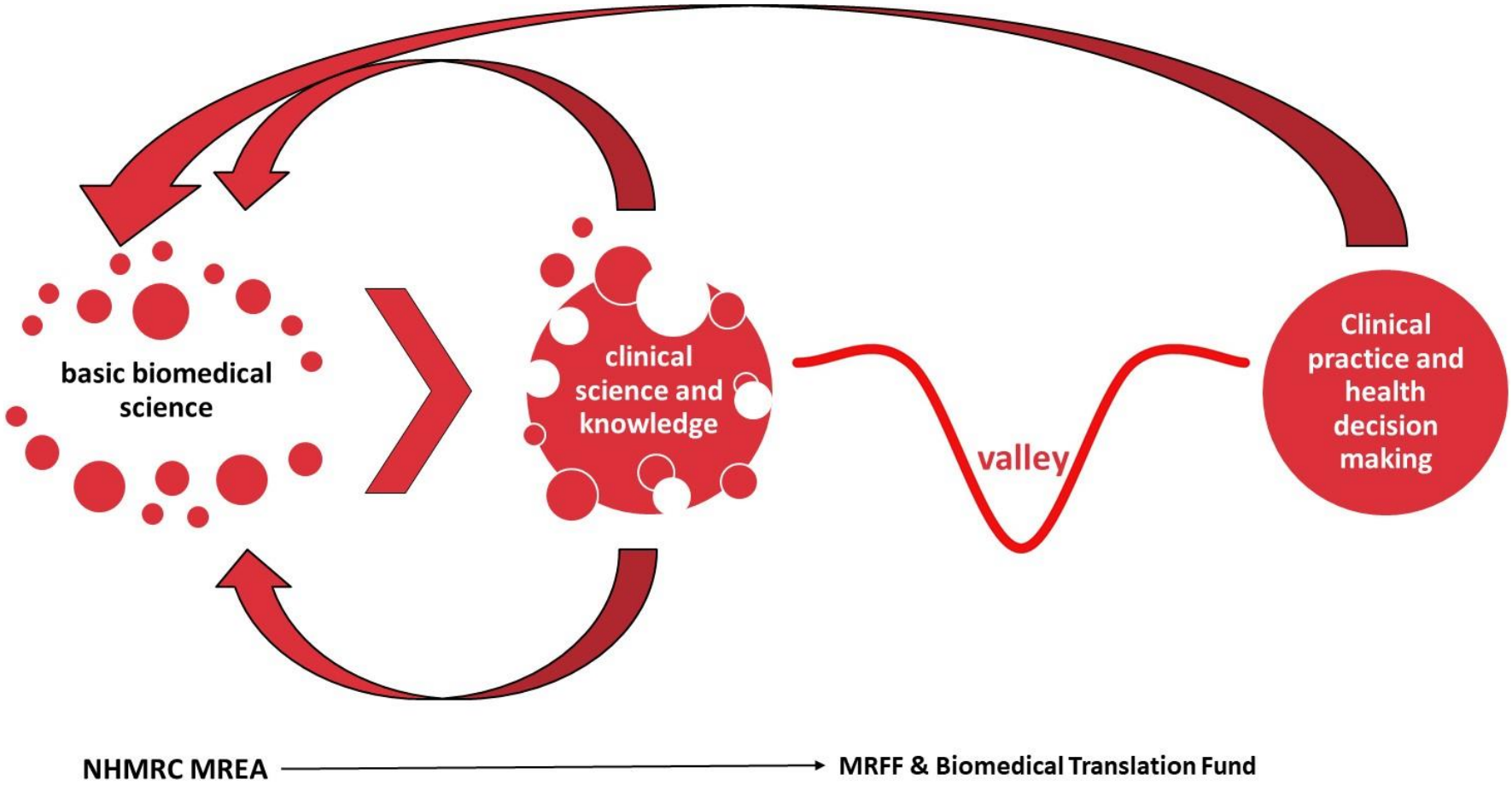
Directly investing in local South Australian medical research would see:

1. More time spent by researchers doing science and delivering outcomes to become competitive for larger funding opportunities, instead of spending large amounts of time writing non-competitive funding applications
2. Increased money to flow into the State as South Australian researchers win a greater proportion of funding from the NHMRC and MRFF
3. Increased business and commercial opportunities through leveraging funds and building partnerships
4. Job creation, with successful NHMRC funding applications typically employing at least one post-doctoral researcher and two research associates over a four to five-year period
5. New training opportunities, as researchers have the confidence to recruit and mentor students and train the next generation of researcher
6. South Australia become a destination State for medical research, attracting researchers from interstate and overseas to establish themselves in a location that actively supports its health and medical research workforce
7. ‘Medical research tourism’, with international scientific conferences having the potential to attract thousands of researchers to State annually, as well as scientists and students visiting and collaborating with local laboratories
8. ‘Medical research spin-offs’, such as laboratory supply companies, maintenance and engineering, local cafes and restaurants etc.

Recommendations

1. Review and restructure how current health and medical research investment is distributed in South Australia, from fundamental discovery research to translation and implementation
2. Develop a funding strategy to locally support all branches of health and medical research and 'seed' research activity to be competitive for larger, National funding opportunities
3. Create an Office for Medical Research to prioritise health and medical research as one of the State's economic pillars
4. Create a dedicated competitive fund to support local health and medical research activity, with applications assessed on merit via a transparent expert-review process

Figure 2: The *reciprocus* nature of health and medical research. Critical, fundamental science and translational research supported by statutory bodies like the NHMRC and ARC are essential to drive transformative health discoveries and commercial activity. Basic biomedical science is continuously working to fill gaps in clinical knowledge. There is constant feedback between these two platforms, as knowledge grows, technology improves, and discoveries are refined. Even if a discovery crosses the so called 'valley of death' into a clinically implementable therapeutic, device or policy, there is still engagement through a continuous feedback loop to drive improvement and efficiency



2. The South Australian health and medical research workforce

South Australia has one of the world's most well trained and highly skilled health and medical research workforce. This is the foundation for building and supporting innovation.

South Australia risks losing the knowledge, innovative capacity and intellectual property it has developed over many years. The 2019 ASMR Workforce Survey found that 75% of South Australian respondents viewed a career in medical research as negative with a weak and uncertain future (unpublished). It is crucial to improve job security in health and medical research to secure the current workforce and create a realistic career option for future South Australian researchers[5,6].

Immediate steps must be taken to support defined and long-term secured career structures for South Australian health and medical researchers. This could be achieved, in part, by creating a South Australian investment fund for health and medical research (section 3).

Create an online South Australian register of health and medical researchers to support future workforce modelling

The definition of a health and medical researcher is broad, with researchers often spanning diverse disciplines. Whilst organisations like the ASMR have surveyed the Australian health and medical research workforce, there is no reliable data on the number of health and medical research in South Australia, their career stage and their area of expertise. An online register, managed initially through the Office of the Chief Scientist of South Australia, would provide crucial information about South Australia's Health and Medical Research workforce capacity, and support the development of research support strategy that capitalises on South Australia's workforce strengths.

Foster a trans-disciplinary research culture, with greater connectivity and collaboration between Adelaide research organisations

South Australia has a unique advantage over research institutes and universities in other major Australian States, with South Australia's three main universities, hospitals and the SAHMRI all located within a 12km radius of each other. Despite this, barriers to engagement and collaboration still exist, with an embedded culture of competition between research organisations suppressing true co-operation, collaboration and progress.

True trans-disciplinary and cross-institutional collaboration and interaction needs to be actively encouraged to drive innovative discoveries. The ASMR recommends consultation with academic, clinical and industry partners to develop a more cohesive integration between South Australia's major research active organisations.

This could be achieved by financial or academic incentive. For example, in 2016, Victoria established the Victorian Medical Research Acceleration Fund[7] which aims to support early

stage research including discovery research, clinical research and health practice, and to develop collaborative partnerships between health services, industry, medical research institutes and universities.

The State Government could also play a facilitative role in providing cross-institutional networking opportunities such as professional development workshops or mixers at neutral venues. Additionally, the State Government could host regular round-table discussions between a diverse representation of researchers to identify and capitalise on opportunities and develop strategy for the future of South Australian health and medical research.

These initiatives would require input from all the overlapping disciplines and research active organisations to establish the foundation for future collaborative interaction and establish the framework for research innovation.

Support the next generation of researchers, keep our best and brightest, sustain our advantage

The health and medical research workforce can be divided into those who are trained in science, medicine, nursing or allied healthcare practices, and those in supporting disciplines such as biostatistics and bioinformatics. Each of these groups faces different challenges in the areas of training, career progression and job security.

Clinicians and other health professionals often face barriers to participating in research, while PhD students and scientists may be confronted by issues related to career progression, security and remuneration. The ASMR recommends the creation of safety nets to support and retain South Australia's research workforce. Concurrently, a strategy for skill development, particularly for early- to mid-career researchers, will equip individuals with the capacity to adapt to rapidly advancing technologies and priority areas of health research.

The ASMR also recommends introducing programs, in partnership with industry, that provide practical on-the-job training and mentoring for researchers in technology transfer, translation and the commercial development of biomedical discoveries.

3. A New Investment Opportunity

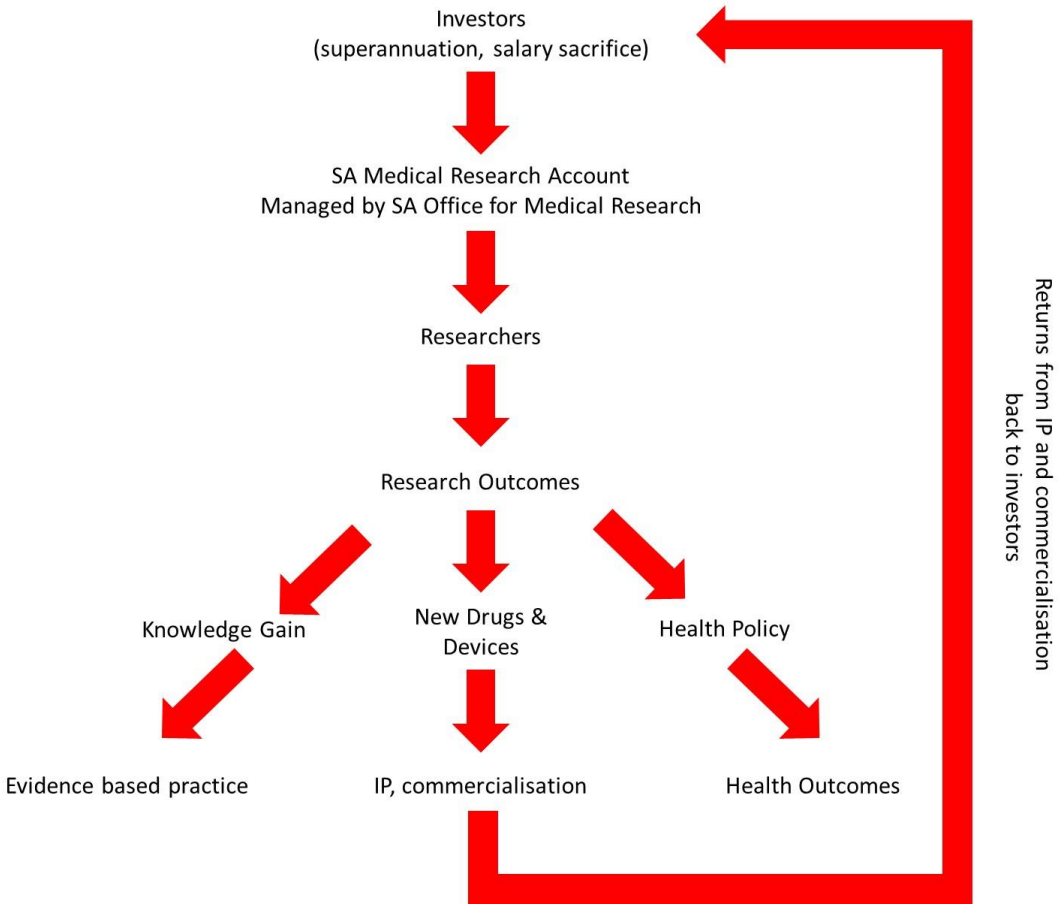
The ASMR recognises the current fiscal constraints of Government. However, investment in health and medical research can generate significant economic and commercial returns that could be exploited through a new funding model

The ASMR proposes investigating an investment fund that is offered to public investors through State based superannuation and salary sacrifice incentives to support South Australian health and medical research (Figure 3). This sort of investment model has been previously described by Roger Stein, a senior lecturer in finance at MIT's Sloan School of Management[8]. The ASMR has extended this model beyond just the funding of drugs ready for clinical trial and proposes an investment strategy that begins at the very outset of the discovery to translation pathway. The ASMRs model recognises that fundamental research drives not only the creation of new drugs or devices, but also new technologies and research methodologies that also have commercial value.

Research translation extends beyond just new drugs and medical devices. ReZolve Scientific is a spin-out company from the University of South Australia and specialises in the development, manufacture and marketing of new compounds for cell imaging. These 'fluorescent probes' have been sold to laboratories around the world, assisting researchers in understanding the molecular mechanisms of human disease, and the development of new drugs and diagnostic tests.

Commercialisation of research discovery such as new drugs, devices or research technologies would return dividends back to investors and create a perpetual fund for South Australian health and medical research.

Figure 3: *Investment model to support South Australian health and medical research. Funds would be awarded by an SA Office for Health and Medical Research via a transparent expert review process, with commercial outcomes from research delivered back to investors*



Summary

Health and medical research has a proven track record in delivering exceptional health and economic returns to our nation. The 2020 Inquiry into Health and Medical Research in South Australia is a timely forum to identify the optimal structure, processes and governance of South Australian health and medical research.

The ASMR believes that the most important aspect of this health and medical research strategic plan is to be underpinned by a structured and sustainable investment in the health and medical research sector. This approach will deliver high quality health care to all Australians and people around the world, while simultaneously delivering economic benefits and opportunity to the State.

The ASMR looks forward to working with the SA Productivity Commission's review panel to facilitate the strategic review of South Australian health and medical research to deliver better health outcomes and opportunities for South Australians.

Dr Roger Yazbek
Immediate past-President
The Australian Society for Medical Research

References

1. Deloitte Access Economics. Australia's health and medical research workforce: expert people providing exceptional returns, 2016
2. Deloitte Access Economics. Extrapolated returns from investment in medical research future fund (MRFF), 2014
3. https://www.health.gov.au/resources/publications/medical-research-future-fund-mrff-grant-recipients
4. https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/05/Medical-research-and-innovation-receives-major-funding-boost.aspx
5. ASMR Health and Medical Research Workforce Survey. Building knowledge, supporting innovation, 2016, http://www.asmr.org.au/Workforce16.pdf
6. ASMR snap survey of the Australian health and medical research workforce, November 2016, unpublished
7. https://www2.health.vic.gov.au/about/health-strategies/health-and-medical-research-strategy
8. https://www.youtube.com/watch?v=9H38oQBw2HU