



**aamri**

Association of Australian  
Medical Research Institutes

## SUBMISSION

# SENATE INQUIRY INTO THE AUSTRALIAN GOVERNMENT'S RESPONSE TO COVID-19

5 June 2020

**Contact:**

Professor Jonathan Carapetis AM  
President  
Association of Australian  
Medical Research Institutes

PO Box 2097  
Royal Melbourne Hospital VIC 3050  
[president@aamri.org.au](mailto:president@aamri.org.au)  
[www.aamri.org.au](http://www.aamri.org.au)

ABN 12 144 783 728

# Senate inquiry into the Australian Government's response to COVID-19

## A submission from the Association of Australian Medical Research Institutes

### 1 Executive summary and recommendations

Research has driven Australia's successful response to COVID-19 pandemic	
<b>Summary:</b> Australia's past investment in high quality medical research and its underpinning infrastructure has allowed governments to draw on the expertise and research needed to respond to this global pandemic.	<b>Recommendation 1:</b> Continue to make use of Australia's high-quality medical research expertise in responding to the health threats of the COVID-19 pandemic, as well as other emerging health threats.
COVID-19 will be an ongoing threat that requires an ongoing research response	
<b>Summary:</b> Without an effective vaccine or treatment COVID-19 will continue to present an ongoing health and economic threat that will need to be managed, including through continued investment in, and use of, medical research.	<b>Recommendation 2:</b> The Australian Government should invest \$200 million in a Pandemic Preparedness Research Program. This Program would fund: <ul style="list-style-type: none"> <li>a. COVID-19 related research into all aspects of the pandemic and recovery, including discovery and translational research.</li> <li>b. Research to prepare Australia for the next epidemic/pandemic</li> <li>c. Initiatives that build research capacity for pandemic preparedness and response, including research infrastructure.</li> </ul>
The economic downturn is causing financial stress for the medical research sector	
<b>Summary:</b> The economic downturn is causing financial stress for the medical research sector and is causing the medical research funding system to come under immense strain. This is expected to worsen during 2021 and 2022.	<b>Recommendation 3:</b> The Australian Government should urgently reform the medical research funding system to provide ongoing financial stability for the medical research sector, and fully fund the cost of undertaking Australian Government funded medical research.
Medical research has been interrupted and delayed	
<b>Summary:</b> The COVID-19 pandemic has caused significant disruption to vitally important medical research across most disciplines and diseases.	<b>Recommendation 4:</b> The Australian Government should provide an additional \$120 million over the next three years to medical research projects impacted by COVID-19.
Australia's future medical research workforce capability is at risk	
<b>Summary:</b> Falling non-government revenue within the sector is leading to reduced opportunities for early- and mid-career researchers, and women researchers, with Australia at risk of losing a generation of talent.	<b>Recommendation 5:</b> The Australian Government should fund an additional 100 early- and mid-career Investigator Grants (maximum of 15 years post-PhD) each year for the next three years, with at least half of these Fellowships awarded to women researchers. This should comprise 50 Emerging Leadership Level 2 and 50 Leadership Level 1 grants.  Some of this funding can be drawn from each of the existing Medical Research Future Fund (MRFF) mission areas and funding streams and allocated to Investigator Grants in those areas. Some of this funding should come through new additional investment in the National Health and Medical Research Council (NHMRC).

## 2 About AAMRI and the Medical Research Institute sector response to COVID 19

The Association of Australian Medical Research Institutes (AAMRI) is the peak body for medical research institutes (MRIs) across Australia. Our 56 member organisations work on a broad spectrum of human health issues such as preventive health, chronic disease, mental health, immunology, and Indigenous health. Their research ranges from fundamental biomedical discovery through to clinical research and the translation of research findings from bench to bedside. Collectively our members undertake around \$2 billion of medical research each year, receive about half of competitive government medical research funding grants, and are supported by their 19,000 staff and research students.

**The agile and innovative nature of the MRI sector has allowed it to respond rapidly to the COVID-19 pandemic.** Once the pandemic broke, MRIs up and down the country immediately established new research projects. Within just two months around 100 new COVID-19 research projects were underway.<sup>i</sup> There are research projects for new drugs and treatments, vaccines, mental health, Indigenous health, diagnostics, and data modelling. Examples of five projects are provided in Table 1 (with a complete list is available on the AAMRI's website<sup>5</sup>).

Table 1 Examples of COVID-19 research underway at medical research institutes

<p><b><u>Vaccines and prevention</u></b></p> <p><b>Walter and Eliza Hall Institute of Medical Research - COVID SHIELD – clinical trial of hydroxychloroquine to prevent COVID-19 in health care workers at high risk of infection</b></p> <p>In collaboration with major hospitals across several states, the Walter and Eliza Hall Institute is leading COVID SHIELD, Australia's first clinical trial to assess whether the drug hydroxychloroquine is effective in preventing COVID-19. The trial is focused on frontline and allied healthcare workers. The goal is to reduce the incidence of COVID-19 in the Australian healthcare workforce so our frontline professionals can stay safe, well and continue to care for sick patients.</p>
<p><b><u>Drug developments and treatments</u></b></p> <p><b>Garvan Institute and Kirby Institute - Engineering antibodies for protection and therapy</b></p> <p>A research team led by the Garvan Institute, in collaboration with UNSW Sydney's Kirby Institute, is developing antibodies designed to target surface proteins of SARS-CoV-2 (the virus that causes COVID-19), which the virus needs to infect human cells. The potential antiviral therapy could be particularly suited to at-risk individuals, including the elderly and chronically ill patients, and could be administered as a preventative therapy to health workers on the frontline</p>
<p><b><u>Testing and diagnostics</u></b></p> <p><b>QIMR Berghofer - Working out who has immunity and why some patients get sicker than others</b></p> <p>The QIMR Berghofer are developing a test to detect who has immunity to the virus and understanding why some patients become severely sick while others develop only mild symptoms. They will also develop a repository of samples from patients with COVID-19 that can be used in a range of research projects.</p> <p><b>Telethon Kids Institute – DETECT:Schools; a partnership with the WA Government to monitor the presence and impact of SARS-CoV-2 in schools</b></p> <p>To give confidence to parents, teachers and the community about the safety of schools re-opening, and to set in place sentinel surveillance to monitor for new infections, the WA Government enlisted the support of Telethon Kids in a project with three components: monthly swabbing of 150 randomly selected students and teachers in 40 schools; intensive swabbing of contacts when school-based cases occur; and a survey of students, teachers and parents in 80 schools to assess the psychosocial impact of the pandemic.</p>
<p><b><u>Data modelling</u></b></p> <p><b>Doherty Institute - Modelling utilised by Commonwealth Government</b></p> <p>Doherty Institute researchers have released their work on COVID-19 modelling to the general public. These models have been utilised by the Commonwealth Government in the public health response to COVID-19<sup>ii,iii</sup>.</p>

### 3 Research has driven Australia's successful response to COVID-19 pandemic

By any measure, Australia's response to the COVID-19 pandemic has been world-leading. Countries with comparable health systems have suffered tens of thousands of deaths, while hundreds of thousands of people have contracted the virus. Among developed countries Australia has the lowest per capita death rate with relatively few cases and number of deaths. The remarkable contrast between Australia and most other comparable nations has occurred because of the speed at which Australia acted, as well as integrating medical research and advice within decision making processes.

**It has been Australia's past investment in high quality medical research and its underpinning infrastructure that has allowed the Australian and State governments to draw on the expertise and research needed to respond to this global pandemic.** This has enabled the Chief Medical Officer, Professor Brendan Murphy, a highly accomplished medical researcher in his earlier career, to draw on Australia's world class medical research sector to find effective responses to the epidemic. This has included epidemiological modelling undertaken by the Doherty Institute has been at the heart of Australia's response<sup>iv</sup>. It was also the Doherty Institute where institute scientists were first outside of China that were able to grow and share SARS-CoV-2 virus<sup>v</sup>. This has helped improve our understanding of the virus and our response to it, as well as allowing us to identify more effective diagnostic tools.

Other MRIs including the Burnet Institute, Telethon Kids Institute, Harry Perkins Institute, the South Australian Health and Medical Research Institute and Murdoch Children's Research Institute have all provided direct epidemiological, modelling and public health advice to Governments, partnered with Governments in strategic research projects, and instigated research into new diagnostics, treatments and preventive measures. All AAMRI member institutes have to different degrees re-purposed themselves to help in the COVID-19 response and have been able to do so with remarkable speed and efficiency.

### 4 Research must continue to inform the next steps

**Without the rapid emergence of an effective vaccine or treatment it is likely that COVID-19 will continue to present an ongoing health and economic threat that will need to be managed.**

While Australia's comparatively very low number of cases places it in a good position to manage the impacts of this pandemic, it must always be remembered that this pandemic originated from one case that was able to spread unchecked. Without continuous intervention and public health measures the SARS-CoV-2 virus could grow exponentially and result in the level of illnesses and deaths that have been seen overseas. Furthermore, history shows that zoonotic pandemics will continue to occur and that we need to make careful preparations now. **Therefore, it is essential the continued good use of an evidenced based approach, backed up by the latest high-quality medical research, is taken to managing the pandemic's ongoing impacts.**

**Recommendation 1: Continue to make use of Australia's high-quality medical research expertise in responding to the health threats of the COVID-19 pandemic, as well as other emerging health threats.**

## 5 Additional ongoing investment in infectious diseases

Significant additional investments to combat current and future infectious disease threats need to be made and at a level commensurate with the risk they pose to Australia. The risk of new novel Coronaviruses and other infectious diseases causing similar impacts to COVID-19 will always be present. It cannot be assumed that such a pandemic will not occur for another hundred years, and it is in Australia's best interests to ensure it has a strong medical research sector to prevent and respond to future pandemic threats.

There have been welcome rapid positive responses by the Australian Government through the additional investment it has announced for COVID-19 related medical research<sup>vi</sup>. This has been made possible by utilising the Medical Research Future Fund's capability to rapidly fund research in areas of emerging need. State governments have also responded by providing additional investment for research into COVID-19<sup>vii</sup>. Such investments will need to be increased over a sustained period, and will include investments relating to vaccine development, drug development, infection prevention, and mental health research.

The Australian Government has invested in a range of initiatives both before and during the COVID-19 pandemic which will help with Australia's resilience to both this and future pandemics and infectious disease health threats. This includes investment in the international consortium, the Coalition for Emerging Preparedness (CEPI)<sup>viii</sup>, investment in the CSIRO Australian Centre for Disease preparedness<sup>ix</sup>, and the Australian Partnership for Preparedness Research on Infectious Disease Emergencies (APPRISE).<sup>x</sup> There are a range of other world-class centres and researchers around the country that have been supported by the Australian Government over recent years. A summary of new investment initiatives announced during the pandemic to date can be found in Appendix A.

Each of these investment initiatives will assist in building capacity and capability to respond to future infectious disease threats. Further sustained and joined-up investment commensurate with the level of risk is needed. This should come through a new funding program, a *Pandemic Preparedness Research Program*.

**Recommendation 2: The Australian Government should invest \$200 million in a Pandemic Preparedness Research Program. This Program would fund:**

- COVID-19 related research into all aspects of the pandemic and recovery, including discovery and translational research.
- Research to prepare Australia for the next epidemic/pandemic
- Initiatives that build research capacity for pandemic preparedness and response, including research infrastructure.

## 6 Falling non-government revenue is placing pressure on the medical research sector

**The economic downturn is causing financial stress for the medical research sector.** The medical research sector is reliant on philanthropy, donations, commercial income, endowment returns, and for those in the university sector, income from international education. All these income sources are in decline. We know from past economic downturns that philanthropic and gift giving revenue usually declines by 20%<sup>xi</sup>, and experience to date is pointing to an even sharper and deeper fall of anywhere between \$200 million to \$400 million in the MRI sector alone. It is also anticipated that industry will find it more difficult to raise capital to participate in medical research commercialisation collaborations with research organisations. The medical research institute sector is particularly reliant on these non-government revenue sources, with them accounting for approximately 60% of the sector's income.<sup>xii</sup> It is expected that the impact on medical research will be greatest in 2021 and 2022 and possibly beyond, given the anticipated long-term economic downturn.

The falls in non-government revenue will inevitably mean:

- less support for medical research projects,
- less commercialisation of research,
- medical research careers will be put at risk (see Section 10), and ultimately reduce Australia's capacity to respond to future health challenges.

## 7 The financial pressures caused by COVID-19 are being exacerbated by the fractured medical research funding system.

**While COVID-19 has highlighted the extraordinary capacity within Australia's medical research sector, it has also exposed its fragility because of our fundamentally flawed research funding system.** The impact of COVID-19 is causing the medical research funding structure to come under immense strain. Unlike many other government programs, and in contrast to most other leading research nations, Australian Government grants for medical research only cover around 70% of the direct research costs incurred and provide no support for operational costs incurred (such as equipment, IT, HR, library, commercialisation costs). These costs are partially supported through various block grant schemes, but these grants fall well short and fund only around 40% of these costs. The funding gap that MRIs must meet each year is at least \$250 million<sup>14</sup> and is mainly incurred by undertaking government funded medical research.

In the past MRIs were able to bridge this funding gap using untied revenue raised from philanthropy, commercial income and endowment returns. For universities, revenue raised through international education services also helps support these costs, but this income is under severe threat. It has always been a challenge to meet this \$250 million gap, but the current economic downturn is putting severe pressure on medical research funding system.

It is unfortunate that at a time when the Australian Government is expanding its investment in medical research to a level that is more commensurate with the future health needs of the nation, that external economic pressures threaten to derail these efforts. Not only is the challenge to bridge the funding gap greatly increased, the capacity to support non-government funded medical research is also severely diminished. These challenges can be overcome through a combination of reform of how medical research is funded by the Australian Government, and through some additional investment.

**Recommendation 3: The Australian Government should urgently reform the medical research funding system to provide ongoing financial stability for the medical research sector, and fully fund the cost of undertaking Australian Government funded medical research.**

## 8 Medical research has been interrupted and delayed

**The introduction of level three restrictions in response to the COVID-19 pandemic has caused significant interruption to vitally important medical research across most disciplines and diseases.** Most medical research institutes had to curtail all on-site activity for around ten weeks, with exceptions limited to COVID-19 related research. While some research activity is now starting to resume on-site, social distancing requirements will inevitably affect efficiency and will delay research further.

The disruption caused by COVID-19 has been particularly problematic for clinical trials, cohort studies and Aboriginal health research. In many cases these have had to be paused as it has been impossible to recruit and safely work with participants. Many clinical trial participants are also at greater risk of serious illness from COVID-19 due to underlying health conditions and must minimise risk of exposure from others. Research involving international partners has also been badly affected as shutdowns and the impact on the health system has been affected differently in other nations and for most it has been more severe.



Despite the research projects effectively being paused or running at reduced capacity during the shutdown period most of the ongoing costs are still being incurred. While many research projects will be able to make up time or at least still provide some useful findings, some are at risk of being unable to be completed due to a shortage of funds. Where this occurs, it would represent a severe waste of existing government investment. This could mean important research into antimicrobial resistance, cancer, cardiovascular disease, diabetes, and infectious diseases in Aboriginal communities to name just a few areas could end up being lost. At present there is no funding scheme available through the NHMRC or MRFF to assist to these projects.

While it is necessary to adequately respond to the COVID-19 pandemic with substantial new research resources, vital medical research in other areas must continue – indeed it must be stimulated to “re-boot” after the COVID-19 pause. The health threats facing the nation from other diseases remain and investment in research and the implementation of research findings must continue. Other nations such as Canada<sup>xiii</sup> <sup>xiv</sup> and Germany<sup>xv</sup> have all found ways to support their interrupted medical research programs, as has the UK Wellcome Trust<sup>xvi</sup>, and Australia should act in a similar fashion.

**Recommendation 4: The Australian Government should provide an additional \$120 million over the next three years to medical research projects impacted by COVID-19.**

## 9 Impacts on the medical research workforce

### 9.1 Falling revenue will lead to the loss of jobs and vital medical research talent

**The falls in revenue have the potential to disrupt vital medical research projects as well as having severe negative impacts on Australia’s medical research workforce, and additional support to secure the medical research workforce is needed.** The falls in income will lead to fewer medical research projects proceeding and less discretionary funding being made available to assist researchers. This is particularly problematic as the very competitive nature of medical research means that researchers are sometimes between grants and need additional support from their institution for a period to continue in their career.

The JobKeeper program<sup>xvii</sup> has provided some welcome interim relief to some institutes, with around 70% of independent MRIs eligible for the scheme, but unfortunately university institutes are ineligible. There is concern for funding positions beyond on the expiry of the scheme in September and into next year. A 20% reduction in revenue, which could easily occur given the falls in non-government income to date, could lead to around 3,000 positions being lost in MRIs over the next 12-24 months.

### 9.2 Early- and Mid-career researchers are most at risk

There is considerable concern the impact of COVID-19 will have on career opportunities for early- and mid-career researchers. There is already a dearth of opportunities for those at the mid-career level with this being the most perilous time in a medical research career. These researchers are expected to become self-sufficient and compete for enough research funding to cover their position, their team, and their research projects. This is made particularly difficult as they are competing against senior researchers who have more extensive track records. Mid-career level grants (Leadership level 1) in the NHMRC’s Investigator Grant scheme have the lowest success rate of all five grant levels at around 7% and 9% in 2019 and 2020, respectively<sup>xviii</sup>.

The philanthropic sector has been an important funder of medical researchers at the mid-career level, providing scholarships and fellowships. These opportunities are drying up, along with the ability of research organisations to provide bridge or co-funding to help mid-career researchers establish themselves. **Falling non-government revenue within the sector will lead to reduced opportunities for this critical cohort, with Australia at risk of losing a generation of talent.**



### 9.3 The careers of women researchers are being particularly impacted by COVID-19

**The disruption on the medical research workforce caused by the impacts of COVID-19 are being felt disproportionately by women.** Gender inequity is already a significant problem within medical research, with women more likely to exit the medical research workforce as careers progress, and less likely to hold senior positions within research organisations. Medical research organisations are systematically addressing this issue through initiatives such as Athena SWAN, but the current situation threatens to undermine that progress. Without action there is a very real risk that the promising careers of many talented women medical researchers will be affected to the point where they are forced to leave the medical research workforce.

The early evidence is showing that submissions to scientific journals by women is already down compared to men.<sup>xix</sup> Over time this will make women less competitive for competitive medical research grants, which are essential for supporting research careers.

There are multiple reasons why COVID-19 is disproportionately affecting women in the medical research workforce. The evidence shows that women undertake a greater share of caring responsibilities for children and other family members, as well as pastoral care for students and junior colleagues. The closure of schools and the necessity to isolate at home over recent weeks has restricted the amount of available time for many women researchers to undertake their work. Likewise, the increasing time spent supporting students and junior colleagues will also be taking a disproportionate amount of women researcher's time. Such work activities are rarely valued highly within many performance metrics which are essential for ongoing career success.

New investments in the medical research workforce and medical research projects should be prioritised. Such investments represent excellent value for money, with every dollar invested in medical research returning \$3.90 in economic benefits.<sup>1</sup>

**Recommendation 5: The Medical Research Future Fund should fund an additional 100 early- and mid-career Investigator Grants<sup>xx</sup> (maximum of 15 years post-PhD) each year for the next three years, with at least half of these Fellowships awarded to women researchers. This should comprise 50 Emerging Leadership Level 2 and 50 Leadership Level 1 grants.**

**Some of this funding can be drawn from each of the existing Medical Research Future Fund (MRFF) mission areas and funding streams and allocated to Investigator Grants in those areas. Some of this funding should come through new additional investment in the National Health and Medical Research Council (NHMRC).**

---

<sup>1</sup> KPMG (2018) *Economic Impact of Medical Research*. Available at <http://www.aamri.org.au/kpmgreport>

## 10 Appendix A Australian Government Funding for COVID-19 research

Funding	Purpose of funding	Scheme type	Source	Funding Details
<b>1. Investing in a vaccine for COVID-19</b>				
\$5M	<b>For Australian led vaccine development projects coordinated through the international Coalition for Epidemic Preparedness Innovations (CEPI)<sup>xxi</sup></b>	Direct award to University of Queensland - \$3M; Competitive round \$2M	\$3M – Aus Gov \$2M – MRFF <sup>xxii</sup>	This funding is for the COVID-19 vaccine development project underway at the University of Queensland (Australian CEPI Partner)
\$13.6M	<b>To support promising COVID-19 vaccine development projects</b>	Open competitive	MRFF	Funding commitment to vaccine development projects in 2020-21 <sup>xxiii</sup> as part of the \$66M pledge.
<b>2. Investing in antiviral therapies for COVID-19</b>				
\$7.3M	<b>Research into treatments for COVID-19 – antiviral therapies<sup>xxiv</sup></b>	Competitive – outcomes announced	MRFF	This Grant Opportunity aims to support rapid development of safe and effective treatment options for COVID-19. Awarded to <u>nine</u> projects <sup>xxv</sup> . The most successful of the projects will have an opportunity to seek additional funding of up to \$10 million to accelerate their therapy to clinical practice, including for human trials.
<b>3. Clinical trials of potential treatments for COVID-19</b>				
\$6.8M	<b>Research into treatments for COVID-19 - respiratory clinical trials to better treat and manage patients<sup>2</sup></b>	Competitive – outcomes announced	MRFF	to support <u>seven</u> clinical trials investigating treatments for the severe respiratory symptoms of COVID-19 <sup>xxvi</sup> .
<b>4. Improving the health system's response to COVID-19 and future pandemics</b>				
\$2.6M	<b>Develop a new, simpler Australian pathology test for coronavirus (COVID-19)<sup>xxvii</sup></b>	Direct Award to Doherty Institute	MRFF	The funding is for researchers at the Peter Doherty Institute for Infection and Immunity to develop faster, simpler tests for COVID-19.
\$1.5M	<b>To support clinical management of COVID-19 across primary, acute and critical care settings<sup>xxviii</sup></b>	Direct award to the National COVID-19 Clinical Evidence Taskforce	MRFF	The National COVID-19 Clinical Evidence Taskforce will be funded to deliver 'living guidelines' on the clinical management of patients with suspected or confirmed COVID-19 infection across primary, acute and critical care settings.
\$1M	<b>To boost the national coordinated coronavirus response – using AI to streamline COVID-10 diagnosis<sup>xxix</sup></b>	Direct award to a consortium led by DetectED-X (a University of Sydney start-up)	MRFF	To fund the CovED initiative, which involves using artificial intelligence to support frontline health workers using CT scans to quickly and more accurately diagnose the severity of coronavirus in patients who are having difficulty breathing.
\$3.3M	<b>For genomics research into the behaviour, spread and evolution of the SARS-CoV-2 virus<sup>xxx</sup></b>	Direct award to University of New South Wales	MRFF	The use of genomics to give robust insights into exposure and clusters, especially in low prevalence settings. This is critical to supporting public health responses to outbreaks as restrictions on gatherings are lifted.
\$4M	<b>Digital health research infrastructure to help health systems respond faster to high-need emerging challenges<sup>2</sup></b>	Competitive (June 2020)	MRFF	The Government is continuing to invest in research to support a national health system response to COVID-19
\$2M	<b>Research into the human immune response to COVID-19 infection, particularly in at risk people.<sup>3</sup></b>	Competitive (June 2020)	MRFF	The Government is continuing to invest in research to support a national health system response to COVID-19
\$0.6M	<b>Research into community information needs and behavioural drivers during outbreaks</b>	Competitive (June 2020)	MRFF	The Government is continuing to invest in research to support a national health system response to COVID-19
\$3M	<b>Rapid Research on the Mental Health Impacts of COVID-19<sup>xxxi</sup></b>	Competitive (June-July 2020)	MRFF	To fund rapid research to improve the national mental health system response to the impacts of the COVID-19 pandemic (from the MRFF - Million Minds Mission).

<sup>2</sup> <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>  
<sup>3</sup> <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>

Funding	Purpose of funding	Scheme type	Source	Funding Details
\$2M	<b>To boost the national coordinated coronavirus response –</b> developing tools to limit transmission <sup>xxxii</sup>	Direct award to APPRISE	NHMRC	The Australian Partnership for Preparedness Research on Infectious Disease Emergencies (APPRISE) will conduct research to understand the prevalence, improve diagnostic tests and develop innovative tools that limit transmission of coronavirus.
\$1M	<b>For commercial development of medical devices, diagnostics, prophylactic or therapeutic approaches against COVID-19</b> <sup>xxxiii</sup> Biomedical Translation Bridge Program managed by MTPConnect	Competitive	MRFF	This grant opportunity will support eligible organisations develop medical devices, diagnostics, prophylactic or therapeutic approaches that will achieve an impact on the global response to the pandemic in less than 12-months. Applicants will need to secure one-to-one matching cash funding.

- 
- <sup>i</sup> AAMRI (2020) *COVID-19 Medical Research around Australia*. Available at: <https://aamri.org.au/health-medical-research/covid-19-medical-research/>
- <sup>ii</sup> Doherty Institute (2020) *COVID-19 modelling papers and press conference*. Available at: <https://www.doherty.edu.au/news-events/news/covid-19-modelling-papers>;
- <sup>iii</sup> Department of Health (2020) *Modelling how COVID-19 could affect Australia*. Available at: <https://www.health.gov.au/news/modelling-how-covid-19-could-affect-australia>
- <sup>iv</sup> <https://www.doherty.edu.au/news-events/news/covid-19-modelling-papers>;  
<https://www.health.gov.au/news/modelling-how-covid-19-could-affect-australia>
- <sup>v</sup> <https://www.doherty.edu.au/news-events/news/coronavirus>
- <sup>vi</sup> See Appendix A: A summary of Australian Government funding initiatives for COVID-19 medical research, p8.
- <sup>vii</sup> For example, 1) Government of Western Australia Department of Health (2020) *COVID-19 Research Grants Program Recipients (\$1.9M)*, [https://www2.health.wa.gov.au/en/Articles/A\\_E/COVID19-Research-Grants-Program/COVID19-Research-Grant-Program-Recipients](https://www2.health.wa.gov.au/en/Articles/A_E/COVID19-Research-Grants-Program/COVID19-Research-Grant-Program-Recipients); 2) Victorian Government Department of Health and Human Services (2020) *Victorian COVID-19 Research Fund*, <https://www2.health.vic.gov.au/about/clinical-trials-and-research/victorian-covid19-research-fund>.
- <sup>viii</sup> Coalition for Emerging Preparedness - <https://cepi.net/>
- <sup>ix</sup> CSIRO Australian Centre for Disease preparedness - <https://www.csiro.au/en/Research/Facilities/ACDP>
- <sup>x</sup> Australian Partnership for Preparedness Research on Infectious Disease Emergencies - <https://www.apprise.org.au/>
- <sup>xi</sup> Australian Government (2009) *Impact of the economic downturn on not-for-profit organisation management*. Available at: <https://www.dss.gov.au/our-responsibilities/communities-and-vulnerablepeople/publications-articles/impact-of-the-economic-downturn-on-not-for-profit-organisationmanagement?HTML>
- <sup>xii</sup> AAMRI (2018) AAMRI Members' Report: Australia's MRI Snapshot. Available at: <https://aamri.org.au/aamri-member-report/>
- <sup>xiii</sup> CIHR (2020) *Extension of Tri-Agency Scholarships and Fellowships*. Available at: <https://cihr-irsc.gc.ca/e/51989.html>
- <sup>xiv</sup> Government of Canada (2020) *New temporary program announced to support research staff in Canada*. Available at: <https://www.canada.ca/en/research-coordinating-committee/news/2020/05/new-temporary-program-announced-to-support-research-staff-in-canada.html>
- <sup>xv</sup> GFG (2020) *Auswirkungen der Coronavirus-Pandemie auf Arbeit der DFG*. Available at: [https://www.dfg.de/service/presse/berichte/2020/200318\\_corona\\_news/index.html](https://www.dfg.de/service/presse/berichte/2020/200318_corona_news/index.html)
- <sup>xvi</sup> Wellcome Trust (2020) *Coronavirus (COVID-19): information for grant applicants and grantholders*. Available at: [https://wellcome.ac.uk/grant-funding/guidance/coronavirus-covid-19-information-grant-applicants-and-grantholders?utm\\_source=email&utm\\_medium=o-wellcome&utm\\_campaign=1726406\\_COVID-19%20Grantholder%20Support&dm\\_i=2PXJ,1103Q,46VMBK,3WSBR,1](https://wellcome.ac.uk/grant-funding/guidance/coronavirus-covid-19-information-grant-applicants-and-grantholders?utm_source=email&utm_medium=o-wellcome&utm_campaign=1726406_COVID-19%20Grantholder%20Support&dm_i=2PXJ,1103Q,46VMBK,3WSBR,1)
- <sup>xvii</sup> <https://www.ato.gov.au/General/JobKeeper-Payment/>
- <sup>xviii</sup> NHMRC (2020) *Outcomes of Funding Rounds*. Available at: <https://www.nhmrc.gov.au/funding/data-research/outcomes-funding-rounds>
- <sup>xix</sup> Flaherty, C. (2020) 'No Room of One's Own: Early journal submission data suggest COVID-19 is tanking women's research productivity'. Inside Higher Ed, April 21, available at: <https://www.insidehighered.com/news/2020/04/21/early-journal-submission-data-suggest-covid-19-tanking-womens-research-productivity>
- <sup>xx</sup> Investigator Grants provide salary support and a research package for up to five years. They are awarded to the most outstanding medical researchers through a highly competitive grant process.
- <sup>xxi</sup> <https://stories.uq.edu.au/news/2020/17m-shot-in-the-arm-for-uq-covid-19-vaccine-research/index.html>
- <sup>xxii</sup> <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/2-million-for-vital-coronavirus-research>
- <sup>xxiii</sup> <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>

- 
- xxiv <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/fast-tracking-research-into-treatments-for-covid-19>
- xxv <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>
- xxvi <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>
- xxvii <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/26-million-for-coronavirus-research-including-a-new-simpler-australian-pathology-test>
- xxviii <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/15-million-to-support-clinical-management-of-covid-19>
- xxix <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/3-million-to-boost-the-national-coordinated-covid-19-research-response>
- xxx <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/66-million-for-coronavirus-related-research>
- xxxi <https://www.greghunt.com.au/additional-20-million-for-mental-health-and-suicide-prevention-research/>
- xxxii <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/3-million-to-boost-the-national-coordinated-covid-19-research-response>
- xxxiii <https://www.mtpconnect.org.au/projects/biomedicaltranslationbridgeprogram>