

SECURING THE FUTURE OF AUSTRALIA'S WORLD-CLASS HEALTH AND MEDICAL RESEARCH

2021-22 AAMRI Budget Submission



“OUR EARLY TO MID-CAREER RESEARCHERS ARE TOMORROW'S SCIENTIFIC LEADERS, AND WITHOUT ACTION TO SUPPORT THEM WE WILL LOSE THEM...”

Prof Jonathan Carapetis AM, AAMRI President

Early to mid-career researchers are our brightest minds ready to lead our future health challenges

Early to mid-career researchers also struggle to secure funding, with not enough fellowships they often rely on philanthropy

The Australian Government should fund 300 additional fellowships to ensure the future of our next generation of research leaders

The economic downturn resulting from COVID-19 will mean even fewer funding opportunities for early to mid-career researchers

Read about all these early to mid-career researchers on www.aamri.org.au/2021budgetsubmission

EXECUTIVE SUMMARY

Cover photo: Dr Larissa Dirr, Institute for Glycomics, virologist and structural biologist with expertise in antiviral drug discovery.

- Australia's past investment in medical research has enabled an evidence-based approach to COVID-19 and guided the national response.
- The 2021 Budget will determine whether Australia seizes the opportunity to become a global leader in medical research, attracting new investment, technology and clinical trials.
- But without action, billions of dollars of past investment and thousands of years of research experience will be lost as new economic challenges push out a generation of medical researchers.

THE PROPOSAL

STRATEGIC NEW INVESTMENTS SHOULD SUPPORT EARLY- AND MID-CAREER RESEARCHERS. THIS WILL SECURE THE NEXT GENERATION OF RESEARCH LEADERS NEEDED TO FACE THE NATION'S FUTURE HEALTH CHALLENGES.

The Australian Government should fund:

**300 ADDITIONAL INVESTIGATOR GRANTS
(100 EACH YEAR FOR THREE YEARS)**

150 GRANTS

funded through existing allocations to MRFF Missions (\$271.5M)

150 GRANTS

funded through increased funding through NHMRC (\$271.5M)

These grants will provide both salary and project support, targeted to the next generation of research leaders through Emerging Leadership Level 2 and Leadership Level 1 grants.

MEDICAL RESEARCH AVERTED A PUBLIC HEALTH CATASTROPHE

The remarkable contrast between Australia's response to the COVID-19 pandemic and most other comparable nations is due to both the speed at which Australia acted, and embedding medical research advice in the decision making processes.

This response was made possible by the strong foundation in Australian health and medical research that for decades has been invested in by government, philanthropy and the commercial sector.

Until there has been a global roll-out of an effective vaccine the threat will continue to remain.

Australia must build, sustain and nurture medical research capacity and workforce so that the nation is ready to respond to health challenges, including the future pandemics.

TACKLING COVID-19 THROUGH RESEARCH

Within weeks of identifying the new infectious disease threat, the sector stepped up and began working on over 100 new medical research projects in:

- Vaccine development
- Drug trials
- Diagnostics
- Screening tests
- Mental health
- Indigenous health
- Virus transmission & impact

GOLDEN OPPORTUNITY FOR AUSTRALIA TO BE THE WORLD'S NUMBER ONE DESTINATION FOR HEALTH AND MEDICAL RESEARCH

The strong response to COVID-19 and the stable operational environment for medical research present a golden opportunity for Australia to attract significant inward investment in medical research.

The Minister for Health highlighted this opportunity, and we must do what is necessary to seize it and build a world-leading medical research sector.

Achieving this requires action and mitigating the economic risks COVID-19 has brought to the sector.

"..WE HAVE A GOLDEN OPPORTUNITY TO BE A GLOBAL LEADER IN ATTRACTING NEW MEDICAL RESEARCH, TECHNOLOGY AND CLINICAL TRIALS TO AUSTRALIA"

The Hon Greg Hunt MP,
Minister for Health
(ABC Insiders 14/6/20)

THE ISSUES

1

ECONOMIC DOWNTURN FROM COVID-19 HAS LED TO FALLING RESEARCH REVENUE

The economic downturn is wreaking havoc across the medical research sector.

Philanthropy, gift-giving, investment returns and revenue from commercial deals have all fallen in recent months. Revenue from international education, a significant funder of medical research is also down.

Using the global financial crisis as a guide to the financial impact, it is expected this will lead to a 20% reduction in revenue.

This is potentially \$500 million lost from the medical research sector.

2

ECONOMIC IMPACTS OF COVID-19 ON MEDICAL RESEARCH RISKS THE FUTURE HEALTH OF AUSTRALIANS

The health challenges facing Australia are substantial. Without intervention and new discoveries, millions more Australians will suffer from debilitating chronic illnesses in the coming years. The risk of a further COVID-19 like pandemic is very real and could strike at any moment.

We cannot afford to allow this economic downturn to damage a sector so critical to the future health of the nation.

EARLY TO MID-CAREER SPOTLIGHT: DR MARTIN DAVEY EMERGING INTERNATIONAL EXPERT IN IMMUNOLOGY

Monash Biomedicine Discovery Institute

Dr Martin Davey is head of the Immune Surveillance Laboratory at Monash University's Biomedicine Discovery Institute (BDI).

He has received world-class training in immunology, microbiology and molecular biology through his PhD at Cardiff University in 2013 and post-doctoral training at the University of Birmingham in the UK. He is recognised internationally as an emerging expert on the role of human unconventional T lymphocytes that provide protection of the human body throughout life. His research team studies these cells in major infectious diseases such as malaria, tuberculosis and COVID-19. Unconventional T cells mount major protective immune responses when other arms of the immune system shut down and basic discovery research in this area will lead to the development of important new immunotherapeutics.



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THE IMPACT

LOSS OF 6000 YEARS INVESTMENT IN MEDICAL RESEARCH EXPERTISE ALONG WITH TOMORROW'S GAME-CHANGING VACCINES AND CURES

The negative impacts of this reduced revenue will disproportionately harm the career development of the next generation of medical research leaders.

These researchers are at a critical development stage of their careers where they are about to establish new research teams, but also face the greatest funding challenges to continue with their work.

Every time one of these highly skilled medical researchers is unable to secure funding and are unable to continue with their research about 20 years of past training expertise is lost.

Losing 300 early- and mid-career researchers would see Australia lose the equivalent of 6,000 years of past investment in medical research training.

Each year, the NHMRC only funds 9% of applications received by this critical cohort of researchers.

The loss of these researchers would set back Australian medical research decades, delaying the development of new therapies for cancer, diabetes and cardiovascular disease to name just a few.

A diminished medical research workforce would leave Australia unable to respond effectively to future health threats.

EARLY TO MID-CAREER SPOTLIGHT: MULTIPLE AWARD WINNER A/PROF TATE STELLAR'S CONTRIBUTION TO AUSTRALIAN SCIENCE

Associate Professor Michelle Tate, Hudson Institute of Medical Research

An NHMRC Career Development Fellow at Hudson Institute of Medical Research, Associate Professor Michelle Tate has made a number of key contributions to understanding how innate immune defences modulate disease during influenza virus infection, as well as other infectious diseases. She collaborates with commercial partners to facilitate the development of anti-inflammatory drugs for severe influenza virus infections and in 2020 is using her knowledge to tackle COVID-19.

A/Prof Tate has received numerous national and international awards, including a Young Tall Poppy Science Award (2018), the Christina Fleischmann Memorial Award (International Cytokine and Interferon Society 2016) and Victorian Infection and Immunity Network Career Development Award (2016).

After receiving her PhD in influenza virus pathogenesis from the University of Melbourne in 2010, A/Prof Tate joined the inflammation research group at Hudson Institute. In 2017 she established her own research group, and in recognition her extensive contribution to science, she was promoted to Associate Professor in July this year.

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THE RESPONSE

STRATEGIC INVESTMENT TO PREPARE AUSTRALIA FOR THE GREATEST HEALTH CHALLENGES ON THE HORIZON

Australia has the opportunity to use the COVID-19 crisis to pivot towards being the best place in the world for medical research, but without intervention it risks seeing its past investment decay and being ill-equipped to deliver the health and economic benefits the nation expects.

Urgent intervention is needed to prevent both this wasteful loss of talent, and to make sure Australia is equipped to deal with the acute health challenges that threaten our future wellbeing.

The Australian Government should fund 300 additional Investigator Grants for early- and mid-career researchers. This would be 100 new grants each year for three years.

These five-year competitive grants should be specifically targeted at the Emerging Leadership Level 2 and Leadership Level 1 where the workforce continuity is most fragile. A gender equity commitment should be made to ensure their fair allocation.

Funding for 150 Investigator Grants should be made available through the existing funding allocations for Medical Research Future Fund (MRFF) Research Missions. Each mission should be directed to support a set number of new EMCR Investigator Grants.

Funding for the other 150 Investigator Grants should be additional new investment allocated through the NHMRC. Each of these grants supports a chief investigator and a research team.

EARLY TO MID-CAREER SPOTLIGHT: CANCER RESEARCHER DR CHENG, A LECTURER, EDITOR AND WORLD-CLASS RESEARCHER

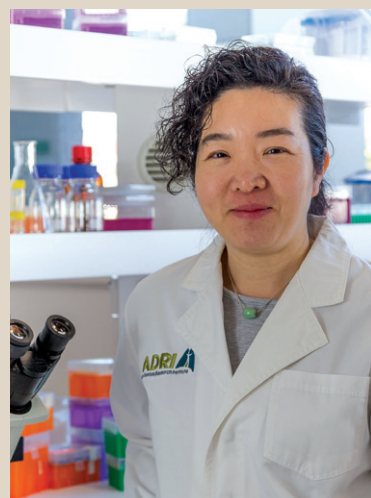
Dr Yuen Yee Cheng, Asbestos Diseases Research Foundation

Dr Cheng is a molecular and cellular biologist leading the scientific research at the Asbestos Diseases Research Institute (ADRI).

Since completing her PhD in 2007, her research has focused on biomarker development, disease mechanism and preclinical models. She established cell and molecular biology techniques to study cancer cell in response to anti-cancer drugs using cell proliferation, cell cycle analysis and gene expression alterations.

She has recently submitted a grant application utilising her expertise to develop a rapid test for COVID-19. Dr Cheng's research in epigenetic regulation and anti-cancer drug discovery via *in vitro* and *in vivo* models have made significant contributions in the field of cancer research. Dr Cheng is an editor of prestigious peer-review journals such as *Disease Markers*, *Journal of Nucleic Acids*, *Frontier in Oncology* and *Epigenomes*. She is an editorial board member of *Epigenomes*.

Dr Cheng's research in epigenetic regulation and anti-cancer drug discovery via in vitro and in vivo models have made significant contributions in the field of cancer research.



PROPOSAL COSTINGS

\$543 MILLION – HALF FROM EXISTING MRFF ALLOCATIONS

The total cost of this Budget proposal is \$543 million, of which half the funding would be a new allocation to the NHMRC and the other half would be a redirection of funding within the MRFF.

| | Total Grants | 2021–2022 <i>100 new 5yr awards – 50 from MRFF; 50 from NHMRC^a</i> | 2022–2023 <i>100 new 5yr awards – 50 from MRFF; 50 from NHMRC</i> | 2023–2024 <i>100 new 5yr awards – 50 from MRFF; 50 from NHMRC</i> | 2024–2025 | 2025–2026 | 2026–2027 | 2027–2028 | Total Funding (\$) ^b |
|------------------------------------|--------------|--|--|--|---------------------|---------------------|---------------------|---------------------|---------------------------------|
| Leadership Level 1 | 150 | \$66,403,245 | \$77,470,453 | \$88,537,660 | \$33,201,623 | \$33,201,623 | \$22,134,415 | \$11,067,208 | \$332,016,226 |
| NHMRC-funded (new funds) | 75 | \$55,336,038 | \$55,336,038 | \$55,336,038 | - | - | - | - | \$166,008,113 |
| MRFF-funded (existing funds) | 75 | \$11,067,208 | \$22,134,415 | \$33,201,623 | \$33,201,623 | \$33,201,623 | \$22,134,415 | \$11,067,208 | \$166,008,113 |
| Emerging Leadership Level 2 | 150 | \$42,189,142 | \$49,220,666 | \$56,252,190 | \$21,094,571 | \$21,094,571 | \$14,063,047 | \$7,031,524 | \$210,945,712 |
| NHMRC-funded (new funds) | 75 | \$35,157,619 | \$35,157,619 | \$35,157,619 | | | | | \$105,472,856 |
| MRFF-funded (existing funds) | 75 | \$7,031,524 | \$14,063,047 | \$21,094,571 | \$21,094,571 | \$21,094,571 | \$14,063,047 | \$7,031,524 | \$105,472,856 |
| TOTAL | 300 | \$108,592,388 | \$126,691,119 | \$144,789,850 | \$54,296,194 | \$54,296,194 | \$36,197,463 | \$18,098,731 | \$542,961,939 |
| New funds requested | 150 | \$90,493,656 | \$90,493,656 | \$90,493,656 | - | - | - | - | \$271,480,969 |
| From existing MRFF Missions | 150 | \$18,098,731 | \$36,197,463 | \$54,296,194 | \$54,296,194 | \$54,296,194 | \$36,197,463 | \$18,098,731 | \$271,480,969 |

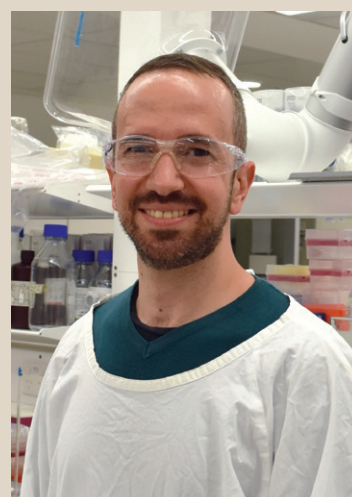
^a NHMRC grants are paid up front (5 yr funding in first year) while MRFF grants are paid per year from each year's allocation. The estimate for individual grant value is based on the average grant value for each level in 2019 and 2020. When awarded, grant budget sizes vary depending on the FTE of the investigator (0 to 1 FTE) and the size of the Research Support Package (RSP) for L1 grants. RSP size is fixed for EL2 grants.

EARLY TO MID-CAREER SPOTLIGHT: SPECIALISATION IN TUBERCULOSIS AND INFECTIOUS DISEASES HAS DR COUNOUPAS PIVOTING TO COVID-19 RESEARCH

Dr Claudio Counoupas, Centenary Institute

Dr Claudio Counoupas attended university in Italy before moving to Australia and completing a PhD at the University of Sydney in 2015. Joining the Centenary Institute in the same year as a Postdoctoral Research Officer he has been working to help develop a vaccine against tuberculosis; the world's top infectious disease killer. Passionate about the immunology of infectious diseases, his ultimate goal is to work on a successful tuberculosis vaccine that can help to save lives.

As the challenges of the coronavirus became apparent Claudio has pivoted quickly. He is now co-lead on a collaborative Centenary Institute and University of Sydney project, focused on repurposing an existing tuberculosis vaccine to see if it can be used against COVID-19.



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IMPLEMENTATION

READY TO ROLL-OUT WITH NO NEW ADMINISTRATIVE PROCESSES

There would be minimal administrative burden incurred in funding this proposal.

All that is required is for the existing NHMRC and MRFF Investigator Grant process to fund additional applications.

Each year the NHMRC only funds 9% of the EL2 and L1 applications received, despite more than 50% being of sufficient quality to be funded.

Funding further applications would mean no further award processes need be developed.

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