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Australian Academy of Science submission on the *National Health and Medical Research Strategy*

A National Health and Medical Research Strategy is timely to address Australia's currently fragmented research system. The Strategy must seek to create the conditions for research that will equip the healthcare system to provide state of the art healthcare to the greatest number of Australians.

This submission articulates the key strategic questions the National Health and Medical Research Strategy should address to deliver better health outcomes from a productive, accessible and efficient research system.

The Academy recommends that the Strategy focus on:

- Promoting an optimal funding mix for impactful research, which would include strategic government investment in basic research and incentivising greater private investment in research translation.
- Re-focus federal government investment towards basic research and establish mechanisms to translate research into better treatment options.
- Building a health and medical research system prepared for the changing nature of science and demands of policy and healthcare.
- Strengthening the health and medical research workforce by establishing clear career pathways, ensuring the workforce has the necessary skills to participate, and expanding opportunities for researchers at all career stages, including through mentorship and continuous training.
- Planning for investment in health and medical research infrastructure and skills needed to strengthen our research capability and boost research productivity, including next-generation high-performance computing and data (HPCD).
- How to enhance Australia's international leadership in health and medical research through participation in global initiatives such as Horizon Europe and the Global Health Security Agenda.

The Strategy has no choice but to be closely aligned with the Australian Government's Strategic Examination of Research and Development (R&D), a once-in-a-generation opportunity to transform Australia's R&D system.

Research and development are not the same activities, rather they are an overlapping sequence. We need basic and applied research to generate the knowledge that is then developed into the products, services and practices that lead to improved healthcare and state of the art treatments for patients.

The vital role of government investment is to provide the 'patient capital' that funds discovery and higher-risk research. The knowledge generated from this investment establishes the foundation that private investment can build upon for translation and development.

How can the Strategy promote an optimal funding mix for impactful research?

The Academy of Science and other research sector organisations have previously highlighted structural issues with the health and medical research funding system common to the broader Australia R&D enterprise, which incentivises competition over collaboration, involves burdensome application processes with low grant success rates, and funding that doesn't cover the full costs of research or reflect inflation.

These issues are symptoms of broader problems—a health and medical research system that lacks coordination in investment, is overly reliant on government and universities to make up for low private investment in health and medical research, and an over-emphasis on commercialisation which has focused energy and resources at translation at the expense of pure basic and strategic basic research.

The Strategy must deeply consider the optimal funding mix to support health and medical research that benefits Australians and how to create the conditions to promote it. This includes incentivising greater private investment in translation and a shift to refocus federal government investment towards discovery (basic) research. It also involves considering a balance of mechanisms that support investigator-led research and priority or mission-driven research.

How can the Strategy build a health and medical research system prepared for the changing nature of science and demands of policy and healthcare?

The nature of science is changing.

Traditional discipline siloes are breaking down as teams of researchers with diverse expertise work together to tackle complex challenges and develop new ideas. The rise of big data and artificial intelligence is leading to more computationally intensive research approaches and influencing the skills needed in the health and medical research workforce.

The demands of policy and healthcare on science and technology are changing.

There is increasing demand for rapid and responsive translation of observations and scientific findings into data and advice that can be used to make decisions and improve healthcare. Replicability, robust models of peer review, effective communication, and open science are increasingly vital to maintaining trust in publicly funded research and its outcomes. New technologies are transforming healthcare delivery, and scientific advances in areas such as genetic engineering and artificial intelligence are revolutionising the speed of discovery while also raising increasingly complex ethical questions.

The Strategy must ensure that the health and medical research system can evolve to meet these new challenges.

How can the strategy strengthen the health and medical research workforce?

A well-supported and resilient workforce is the foundation of a productive and globally competitive health and medical research system. The Strategy must support a sustainable and skilled workforce that will meet future needs, ensuring the workforce has the necessary skills to participate by establishing accessible mechanisms to train and upskill.

Clear career pathways and expanding opportunities for researchers at all career stages is critical. Targeted support for early- and mid-career researchers is essential to maintaining a strong pipeline of talent. Structured mentorship programs and continuous skills training opportunities will be critical in equipping researchers with the skills needed to adapt to the evolving demands of science, policy, and healthcare.

How can the strategy plan for and meet health and medical infrastructure needs?

Health and medical research infrastructure is not mentioned as one of the focus areas in the consultation survey but must be considered as part of a forward-looking Strategy.

Advanced, well-resourced research infrastructure is vital to strengthen Australia's health and medical research capability and boost research productivity. It underpins our ability to maximise the benefits of developments in areas such as AI technology, personalised medicine and synthetic biology.

Next-generation high-performance computing is a key opportunity to support advanced health and medical research and health outcomes. High-performance computing and data (HPCD) requirements are changing across all sciences as datasets grow larger and simulations become more complex.¹ Australia's existing HPCD infrastructure is of moderate capacity, oversubscribed and ageing, with no plan for the next generation of

¹ Australian Academy of Science. (2025) *Bringing Australia's supercomputing up to speed*. <https://www.science.org.au/files/userfiles/support/documents/bringing-australias-supercomputing-up-to-speed-fact-sheet.pdf>

supercomputing that will enable applications such as AI-driven diagnostics, epidemiological modelling and precision healthcare.

How can the Strategy support global Australian leadership in health and medical research?

The Strategy should reflect Australia's opportunity to strengthen its leadership in health and medical research across the Asia-Pacific by fostering collaboration and addressing critical capability gaps.

Expanding Australia's participation in global initiatives such as Horizon Europe and the Global Health Security Agenda would position Australian researchers to co-lead major international projects, shape global health policies, represent regional priorities, and reduce risks that arise from limitations placed on international research collaboration.

To discuss or clarify any aspect of this submission, please contact Mr Chris Anderson, Director Science Policy and International at Chris.Anderson@science.org.au.