

The MWC response to the Future Pathways Green paper

The Maurice Wilkins Centre (MWC) is a New Zealand Centre of Research Excellence (CoRE) that targets serious human diseases focussed on cancer, diabetes and metabolic disease and infectious diseases. The MWC works as a highly collaborative, multidisciplinary national network of 600 biomedical researchers that has strong international linkages. The MWC has had continuous funding from 2002 – 2028 and this has enabled us to build an enduring and flexible core capability to respond to the NZ health community, particularly Maori and Pacific communities.

We welcome the opportunity to contribute a submission on the Future pathways green paper through a MWC lens and the views expressed in this document are those captured by consultation with our senior leadership group (<https://www.mauricewilkinscentre.org/about-us/our-people/research-leadership-forum/>). Our MWC Early-Mid Career steering group (<https://www.mauricewilkinscentre.org/about-us/our-people/early-career-steering-committee/>) have sent in their own submission. We have attempted to highlight what aspects of MWC works well in the NZ research landscape and propose ways in which it could be integrated into a new RSI framework for NZ.

In general terms, we are firmly of the view that investment in research priorities needs to increase to 2 % of GDP at a minimum to fund basic, applied, and commercial research in NZ. We need a system that supports all types of research (investigator and mission-led) right across the research spectrum. We need a RSI system that attracts, recruits and retains world-class researchers and maintains our international reputation as a place of producing world leading research and researchers. In the current funding climate we are falling further behind our international competitors as evidenced by our decreasing world rankings of all our leading Universities. This is already impacting on our ability to attract high calibre overseas students and researchers. The flow on effect will be less investment from international funding agencies and students may struggle to get scholarships from their home countries to study with us.

The research priorities of the MWC have focused exclusively on cancer, diabetes and metabolic disease and infectious diseases and stable long term funding has given us the opportunity to support a project's scope and growth along the biomedical research continuum – bench to bedside. The strong engagement of MWC with clinicians and our partnerships with healthcare facilities (GP/PHO/DHB levels), has ensured a smooth transition from laboratory to healthcare and the development, growth and commercialisation of precision medicine efforts within diabetes/Infectious diseases/cancer, and vice versa. There are many challenges that are visible to healthcare workers that benefit from seeking laboratory based investigations.

We employ two types of funding models within MWC. The first is a negotiated theme funding model involving multiple investigators across the Centre that is ambitious and tackles a difficult problem with a long term view. Many of the projects involve international collaborators helping to lift the reputation of NZ scientists among overseas academics driving our international standing.

MWC has worked on the principle that mission-led research priorities must be addressed using multi-institutional teams and multidisciplinary approaches that capture research expertise across the science system in New Zealand. We would like

to see this built into the RSI framework to avoid the unnecessary competition and repetition and instead turn the focus on building capability and durability. It also ensures ongoing collaboration and a free exchange of ideas and knowledge as we work together under the MWC umbrella. Such a model is being developed for the new Infectious Disease (ID) platform jointly hosted by ESR and the University of Otago, which will ultimately involve all ID researchers in NZ working towards common goals with the best teams. A key driver must be strong potential for scientific excellence and impact that maximises the use of the skillsets available across NZ. These priority-led initiatives should be accompanied by streamlined processes between organisations across NZ so that multi-institutional research can be managed efficiently without undue administration burden.

A key feature of long-term stable funding is the building and retention of world-class technical capabilities. For example, MWC through this model has established medicinal chemistry expertise that have become a magnet for contract research on behalf of international partners (e.g., TB global Alliance). This internationally recognised capability has also enabled growth in other sectors. For example, expanding clinical trial activity within NZ. Establishment of the first CAR-T cell clinical trials in NZ, through a partnership between the Malaghan Institute and prominent Chinese researchers associated with the Chinese Academy of Sciences was also a direct result of the MWC's engagement in China.

The second funding mechanism used by the MWC is a competitive pool of flexible funding for short term goals and is primarily investigator-driven. The idea behind this pool of funding is to initiate collaborations and small projects within the MWC with the vision of growing these into new strategic areas. This sort of small investment funding is currently lacking in the RSI system, but would be of huge benefit to many of our early career researchers who are looking to work with some of our more established scientists and teams across institutions.

We would like to see the establishment of a new fellowship system that fully funds early-career, mid-career, late-career researchers to avoid competition of earlier-career researchers with established senior scientists. Australia has hundreds of fellowships that target scientists throughout their careers. This would require a major investment from the government. Many of the current major workforce issues are caused by insufficient funding and consequent career instability. Most of the early- and mid-career funding (e.g. Marsden fast start, Hercus and Rutherford fellowships) are not fully funded and in the current model come at a major expense to the host institution. This would allow more of our junior researchers to develop the reputation necessary to successfully pursue research relationships and research funding later in their careers. The MWC has produced a good cohort of young researchers that have gone on to get the fellowships listed above, but the concern is the next step and future of these researchers beyond traditional academic posts.

We would like to see new PhD studentships that are integrated into the RSI landscape. For example, MWC-funded PhD students have multiple supervisors across different institutions and enjoy the benefits of multidisciplinary training with access to additional resources and career development programmes (e.g. commercialisation workshops) not available to traditional University-funded PhD students. Moreover, interactions with industry is not only a useful mechanism for PhD students to develop career pathways, but can also accelerate co-funded research

initiatives. The MWC model of PhD funding should be available to all NZ PhD students who are looking for a broader and integrated PhD programme that sits alongside industry.

MWC strongly supports the establishment of Knowledge hubs to form a conduit between research institutions and Māori communities. Existing knowledge hubs such as Te Waharoa ki te Toi and the Moko Foundation can be a template for Māori leadership and a Māori-centric approach to connect cutting edge research with mātauranga Māori and Māori communities. These hubs could also be the interface between iwi and research groups, where they could pair interested Māori communities with research and commercialisation opportunities.

There needs to be more funding directed towards growing and mentoring the pool of Māori talent. Resources need to be directed towards non-traditional roles such as Kaiarahi positions to help facilitate and guide research with Māori communities. Support should also be directed towards cultural upskilling of researchers to ensure they are well equipped for interacting with Māori communities, explain opportunities for translational outcomes from the research to Māori communities, and advise on cultural issues relevant to research projects.

Virtual centres of research excellence present an opportunity to be strategically reinforced for agility, adaptiveness, resilience and responsiveness to the major diseases confronting a vulnerable, diverse and growing population group in Aotearoa, the region (e.g. 12m+), and around the world – Pacific Peoples. Strategic engagement will need to draw on cultural diversities in the community to examine these major issues comparatively with a view to making real progress on solutions. Such collaborative endeavours involving Pacific communities, as a priority, along with established researchers and early career researchers will help to create opportunities for the effective and efficient use of shared resources, ideas, new approaches, cohorts, data sets and stronger community collaboration and networking with other sectors such as industry. These endeavours will also help to advance the international knowledge economy to understand and provide precision prevention, treatment and sustainable management solutions to major diseases.

Biomedical science often relies on expensive equipment that cannot be supported by one organisation alone. We have used an 'Equipment, facilities and services register' in the MWC to allow researchers to find and access equipment and support training. That would not otherwise be available to them outside an MWC framework. MWC has provided the funds for these initiatives through competitive flex funding application as follows:

Category 3: Access to Specialised Facilities and Equipment

Purpose:

- To provide access to specialised facilities and equipment across New Zealand that are listed in the 'Equipment, facilities and services register' in the members section of the MWC website.
- To enable the purchase of services from international facilities in the areas of genomic technologies, transgenesis, drug/compound screening, digital spatial profiling and glycomic array screening where these services are either not currently available in New Zealand and/or where a compelling justification can be made for accessing the services from an international facility.

Category 4: Access to specialised international and national training and international facilities (under \$10,000)

Purpose:

- To provide funding to enable MWC investigators (principal, associate, and affiliate) to access specialised training and facilities internationally, either to work in leading laboratories overseas on collaborative projects involving advanced technology, or to attend specialised practical workshops not available in NZ.
- To enable MWC investigators to access specialised technical training in NZ laboratories and workshops outside their host institutions.

Such a funding scheme could be available for all New Zealand researchers, especially where access to facilities in NZ is not available. This would save funding for costly infrastructure and science parks, but still give our researchers the opportunity to perform cutting edge research.

We look forward to seeing the outcome of this green paper consultation in due course.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Greg Cook". The signature is fluid and cursive, with the first name "Greg" being more prominent than the last name "Cook".

Greg Cook on behalf of MWC Directorate and Leadership Group