

Online submission
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Australian Academy of Science EMCR Forum submission on *Australia's draft National Science and Research Priorities*

The Australian Academy of Science's Early- and Mid-Career Researcher (EMCR¹) Forum welcomes the opportunity to comment on Australia's draft National Science and Research Priorities. The EMCR Forum represents over 6,000 of Australia's early- to mid-career researchers across science, technology, engineering, mathematics and medicine (STEM), and thus offers a unique perspective from the future leaders of STEM research.

The EMCR Forum:

- Agrees with the currently stipulated high-level priorities and objectives, however we suggest that these be more aspirational towards global success.
- Stresses the importance of supporting the scientific and research workforce to enable implementation of the priorities and objectives outlined in the consultation document. This requires the development of sustainable and equitable career structures, workload models and funding systems. Redesigning the research performance assessment model to promote cross-sector career agility and growth in a diverse range of skills and knowledges will further these aims.
- Highlights that prioritising the support of researchers at all levels, but particularly early- and mid-career, as well as the pipeline of STEM education from early primary school upwards, is imperative to achieving the outlined priorities. Australia's investment in the next generation of STEM researchers will strengthen our foundation for global leadership.

Recommended changes:

The Australia's National Science and Research Priorities would benefit from the following inclusions and modifications:

- We emphasise the importance of developing practical recommendations on achieving these priorities.
- Addressing the challenges outlined in the draft National Science and Research Priorities requires Australia to attract, retain, and foster the development of current and future generations of EMCRs. Therefore, an additional challenge is making Australia *the best* place in the world to have a career in these domains. This also requires the strengthening of Australia's STEM education pipeline. We believe that empowering researchers will drive the success of all identified national priorities and should be incorporated into Priority 4: "Building a stronger, more resilient nation". This support should implement changes to enable long-term STEM careers, fostering transitions between industry and applied research sectors, government, and academic institutions, and broaden research funding opportunities. Australia must incentivise research that is inclusive, collaborative, integrative and transdisciplinary to meet global challenges. This type of work is currently not incentivized by Australia's research performance assessment models.
- Any summary of science and research priorities must recognise the importance of both translational research and the fundamental research that drives the initiation of new, world-changing discoveries. Neither

¹ An EMCR is an individual between 0 and 15 years (0-5 for early career, 5-15 for mid-career) of graduating from a PhD or equivalent (discounting career interruptions) who actively engages in research, either as a researcher or in a role that substantially supports the delivery of research and that requires substantial research training and experience. This includes researchers in academia, industry, government, public, commercial or not-for-profit sectors. Researchers without a higher degree but with equivalent professional experience can identify as EMCR, typically in circumstances of non traditional career pathways and/or of belonging to underrepresented intersectionalities.

fundamental nor translational research can exist alone, and both should play a part within each identified priority area.

- Discussions about science and research priorities should consider the significance of diversity and inclusion in accessing scientific research. The lens through which we view innovation must embrace the vast array of talents, backgrounds, and perspectives that populate the STEM fields (science, technology, engineering, mathematics, and medicine). This includes Indigenous Knowledges and First Nations' perspectives. Australia needs to work with First Nations communities in ways that will benefit these communities. The Priorities make no mention of building the capacity of Indigenous researchers and leaders, or of education for their communities. To truly achieve national excellence, we must actively seek and empower a diversity of thinkers and researchers.
- Migration to Australia forms an indelible chapter in the narrative of numerous communities and plays a pivotal role in shaping our scientific research landscape. Embracing an inclusive approach towards migration that welcomes culturally and linguistically diverse individuals is not merely an act of inclusion; it is a strategic imperative to prioritize excellence and pave the way for a brighter, more innovative future.
- Regarding Priority 2 "Supporting healthy and thriving communities": With an aim to drive global leadership from a medical perspective, our National Science and Research Priorities should include a focus on combining healthcare tools and systems as well as the development of new biomedical technologies and fundamental science advancements. Multiple challenges outlined in this section of the draft, including data collection, disease prevention, and reducing rates of chronic conditions, are best enabled by augmenting digital health and healthcare innovation in Australia. With the rapid uptake of artificial intelligence (AI), it is critically important to address the pros and cons of AI in healthcare so that we can leverage it for personalised care to benefit the ageing population and to enable equitable healthcare access. Digital technologies can connect our large country to overcome the barriers of distance and paucity of trained healthcare professionals for Australians living outside metropolitan areas. Laws, regulation, governance and ethical guidelines should be rapidly developed and instated so that Australia can lead the world in digital health technologies.

Prepared on behalf of the EMCR Forum by the Executive team. To discuss or clarify any aspect of this submission, please contact Dr Mari Kondo, EMCR Program Manager at emcr@science.org.au