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Australian Academy of Science EMCR Forum submission on
Australian University Accord - Interim Report

The Australian Academy of Science's Early- and Mid-Career Researcher (EMCR)[1] Forum thanks the Australian Universities Accord Review Panel for a comprehensive review to drive reform and system-wide change in Australia's higher education system. The EMCR Forum represents over 6,000 EMCRs across science, technology, engineering, mathematics, and medicine, and thus offers a unique perspective from the future leaders of Australian STEM research.

The EMCR Forum recommends:

- That fundamental research receives the same priority as translational research
- Support for sector mobility and opportunities outside the university sector for EMCRs
- The development of a holistic national policy for *researcher* training (not research training)
- That improving the quality of student cohorts and graduates is prioritised through the development of evidence-based STEM education indicators
- That universities become better employers, particularly in terms of sustainable and safe working conditions and workloads
- The focus on new developments in teaching is accompanied by a reduction in bureaucratic barriers and more flexible workload models

Increase research funding that acknowledges the long-term impact of fundamental research

The language in parts of the interim report suggests a biunivocal relationship between research impact and research translation. There is a concerning trend of favouring narrow, short-term investments to solve specific end-user problems at the expense of funding fundamental research. We emphasise that fundamental research builds an invaluable knowledge base that underpins future innovation and translational research. As there is a lag between the generation of fundamental knowledge and the uptake of technologies, it is imperative that fundamental research is supported and funded over the long term, particularly beyond election cycles. Additionally, prioritising translational research at the expense of fundamental research discourages EMCRs and HDR students from embarking on fundamental research projects. In the mid-term, this will lead to a loss of workforce skills in fundamental disciplines and slower generation of knowledge. The future funding of research needs to recognise that breakthrough discoveries require funding stability and investment that pays the true costs of research.

Support mobility and create opportunities for EMCRs outside the university sector

The interim report highlights the importance of mobility, i.e. socio-economic, tertiary scholarships, student and industry mobility, but fails to highlight the need to increase sector mobility and opportunities for EMCRs outside the university system. Traditional metrics used to rank universities and researchers are flawed and do not illuminate the transferability of research skills to different sectors and employers. We suggest integrating outcomes from the "Modernising Research Assessment" survey (ACOLA, ASSA, OCS) and the "STEM Career Pathways" survey (STA, NSTC). The EMCR forum advocates for the re-development of the research metric

[1] An EMCRs 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-linear career pathways and/or of belonging to underrepresented intersectionalities.

system to take into account recent guideline developments in Europe and America (DORA: Declaration of Research Assessment; CoARA: Coalition for Advancing Research Assessment).

Developing a national holistic policy for ***researcher*** training and development

Shifting the focus from research to researcher is important for workforce capacity building and mobility within advanced research sectors. This will enable future PhD students and junior researchers to become confident and successful leaders. However, the draft report fails to articulate the nuanced and specific researcher development needs for postdoctoral researchers that are different to HDR training. The draft suggests extra-training but does not suggest HDR program funding be extended to postdoctoral researchers. This should be clarified. Rather than providing extra training, we recommend that access to and quality of existing researcher training be improved. A diversity of programs should be offered, recognising that most HDR students and postdocs will not secure continuing research positions in universities. When considering the development of a national holistic policy for researcher training and career development, consider the Bratislava Declaration of Young Researchers and The Concordat to Support the Career Development of Researcher as case studies.

Ensuring quality of future STEM student cohorts & specific STEM education indicators

Greater emphasis should be placed on increasing the number of *highly competent, high-calibre* graduates. The present Accord appears to favour a single-minded approach to increase the number of graduates. However, careful thought is needed before further lowering entry requirements, reducing requirements to pass courses, and increasing entitlements to bypass or reduce course/program assessments. An increase in the quantity of graduates without regard for quality will not benefit Australia. A reduction in the quality of the student cohort will increase workloads for teaching and administrative staff. This burden will be concentrated on EMCRs, who are traditionally responsible for a larger portion of both formal and informal teaching load.

To ensure student cohorts and graduates are ready for the future STEM workforce, a systematic and evidence-based approach is needed to develop specific STEM tertiary education indicators. The interim report outlines the need for the adoption of new targets, system-level data collection, and for the triangulation of survey results (QILT). The future STEM education indicators will complement these existing recommendations and will advance the shared goals in the STEM sector with direct benefits across the Australian economy and society. A helpful case-study and framework can be found in the National Academies report on *Indicators for Monitoring Undergraduate STEM Education (2018).*

Universities as better employers

The EMCR Forum welcomes the Accord's recommendation to improve governance in universities to make them better employers. We see an urgent need to improve employment conditions by addressing underpayment, insecure employment, and bullying, which disproportionately affects EMCRs. Among academic staff, women are over-represented in casual roles, with significant gender equity impacts. There are limited initiatives to promote equity and diversity amongst PhD students and EMCRs. The high rate of attrition from the university sector (the 'leaky pipeline') disproportionately affects researchers from underrepresented backgrounds and perpetuates the shortage of highly skilled researchers.

We also encourage a review of the current workload of academics, which is well-known to be significantly and unsustainably higher than their contracted hours. Researchers and academics in our network report that they have to work close to double the standard full-time equivalent and forego annual leave entitlements to keep up with their minimum performance indicators in teaching, research and engagement. This exacerbates mental health issues within the research sector and further puts pressure on families. The latter issue is particularly relevant for EMCRs since, according to our 2020 survey, 44% of EMCRs have parental responsibilities.

New developments in pedagogy and teaching

Investing in education training will enable recent PhD graduates and junior research fellows to become good educators. Making teaching an appealing career through teacher development and stable employment would assist universities and other education institutions to expand their teaching. This solution would also ease the burden on EMCRs who have untenable teaching workloads and are still expected to perform cutting-edge

research. Since many EMCRs are at a stage of life with significant caring responsibilities, the high workloads are a major cause for talented EMCRs leaving the academic workforce.

The EMCR Forum acknowledges the need for dynamic teaching methods that are in line with the latest needs of industry and the community. We welcome the need for "educational development and experimentation" and agree that universities should be at the forefront of these developments. However, we are also cautious of the tone of the Accord, which does not appear to acknowledge that such changes require additional resources and will likely incur additional costs, particularly given the restrictive bureaucratic environment that researchers and teachers are facing. We encourage a review of the bureaucratic structures and workload models to reduce barriers to rapid changes to research and teaching. EMCRs with teaching roles are overworked and will require support to enact changes.

This submission was prepared on behalf of the EMCR Forum by the Executive team. As executive members of the EMCR Forum we celebrate the contribution of EMCRs, communicate the issues they face across hierarchical and sector silos, and advocate for improved working conditions for EMCRs across the country.

To discuss or clarify any aspect of this submission please contact Dr Mari Kondo, EMCR Program Manager, at emcr@science.org.au