



Australian Academy of Health and Medical Sciences

Response to the Australian Academy of Science/Australian Academy of Technology and Engineering consultation on the *Women in STEM decadal plan*

October 2018

Introduction

The Australian Academy of Health and Medical Sciences' (AAHMS) mission is to promote health and medical research and its translation to enable a healthier community in Australia and the world. The Academy was established to provide an impartial and authoritative voice for health, informed by the best available evidence and expert advice from the best and brightest in health and medical research. Established in 2014, the Academy today has 320 fellows of which 26% are women. We represent the spectrum of health and medical sciences in Australia, with 75% of our Fellows clinical and 25% non-clinical researchers. Our elected Council is a key component of our governance, and at the time of submission, 10 of the Academy's 19 Council members are women. Recognising that women are often underrepresented in the STEM disciplines, the Academy actively monitors and considers how we can raise the female representation within our Fellowship and throughout our activities.

The Academy welcomes the opportunity to contribute to this consultation and the efforts of the Australian Academy of Science and the Australian Academy of Technology and Engineering in creating a decadal plan to help reduce gender-associated barriers and raise female representation across all areas of STEM. This response has been informed by input from Fellows and from participants in the Academy's mentoring scheme, who represent Australia's current and most promising future health and medical research leaders.

Our response primarily focuses on health and medical research careers; however, we would stress that we do not view these disciplines in isolation – success in this area is dependent on effective measures throughout all STEM disciplines and throughout all stages of education. The Academy would like to highlight the following key points:

- **There is a clear opportunity for Australia to gain a competitive edge by ambitiously addressing the issues faced by women in STEM and fully harnessing the potential of a fully diverse and inclusive research and innovation workforce.**
- **The sector must also advocate for meaningful policy changes and improved messaging in society more broadly.**
- **Initiatives that encourage a data-driven approach to understanding and addressing gender inequities are welcome and must be accompanied by action.**
- **Mentors and role models represent a crucial source of inspiration and guidance for women in health and medical science, and across STEM disciplines.**
- **Gender-equitable career pathways are crucial to attract and retain women in STEM professions, particularly health and medical research careers. General employment issues, such as greater job security are important here, as well as more targeted measures to address challenges that disproportionately affect women.**



- **Women still take considerably more parental and carer's leave than men and it is important that the sector continues to take targeted measures to address the disproportionate impact this has on women's careers. Efforts to broaden out the use of parental leave are welcome and should be more universal, but the impacts beyond that period of leave must also be acknowledged and recognised when considering the achievements of researchers with carer responsibilities.**
- **Regarding career recognition, more emphasis should be put on impact and translation of research, rather than traditional output metrics such as publications. Careful thought is needed to identify, and address criteria used that disadvantage women, such as conference attendance. There is also an opportunity to create more gender-specific fellowship schemes.**
- **Clinician scientists face particular challenges due to the dual demands of managing research and clinical careers, which can exacerbate the existing challenges faced by women in STEM.**

Gender-equitable career pathways

Women are an indispensable part of the Australian health and medical science landscape, and throughout Australia's rich history of research and innovation, have led and contributed to countless ground-breaking discoveries. Unfortunately, women continue to face barriers in progressing through the career stages. According to a report by Australia's Chief Scientist from 2016, women comprise just 16% of the total 2.3 million STEM-qualified Australians and data over the long-term show that they are under-represented at the more senior levels, despite the steady increase in numbers at earlier career stages.^{1,2} This trend is seen globally, with few exceptions, and there is a clear opportunity for Australia to gain a competitive edge by ambitiously addressing the issues and fully harnessing the potential of a fully diverse and inclusive research and innovation workforce.

A study in Europe found that compared to women, men usually produced more publications during the first decade of their career although there was no difference in the quality of outputs.³ Over time, studies have tried to examine the underlying reasons for this, such as the challenge women face in balancing productivity in their work with other responsibilities such as childcare (the so-called 'productivity puzzle' – a phrase coined in the 1980s and yet still an issue today), or other factors such as workplace culture, lack of professional support and undervaluing of research.^{4,5,6} In a research-funding environment that to a large degree evaluates scientific performance by the volume of published scientific outputs, many women, especially those with carer responsibilities, can be put at a disadvantage and may fall behind when directly compared to the productivity of men. The concept of 'relative to opportunity' is used increasingly to try and account for this, but frequently does not go far enough. For example, researchers taking parental leave (the majority of whom are still women) are not only impacted by the specific period of leave (e.g. they must wind down and then re-establish research) – the total impact extends beyond the period of leave, but in

¹ Australian Government, Office of the Chief Scientist (2016). Australia's STEM Workforce. Available from: <https://www.chiefscientist.gov.au/2016/03/report-australias-stem-workforce/>

² Data from SAGE and Higher Education Research shows that in 2014 only 13.9% of 1430 senior professors in STEM field in medical sciences and health, were women. Available from: <http://www.sciencegenderequity.org.au/gender-equity-in-stem/>

³ Gannon, F. (2007). The women issue, *EMBO Rep.*: 8(11):975.

⁴ Van den Besselaar, P. & Sandström, U. (2016). Gender differences in research performance and its impact on careers: a longitudinal case study, *Scientometrics*: 106 (1): 143-162.

⁵ Cole, J. & Zuckerman, H. (1984). The Productivity Puzzle. *Advances in Motivation and Achievement*. 217-254.

⁶ Ledin A., *et al.*, (2007). A persistent problem. Traditional gender roles hold back female scientists, *EMBO Rep.*: 8(11): 982-987.



contexts such as grant and promotion decisions, this is often not included in such calculations.⁷ Furthermore, a number of the Fellows and mentees who contributed to this response reported that women can be disadvantaged in terms of career progression simply because there is a greater perception that they might take parental leave – compared to men of a similar age. Discrimination by gender stereotypes or based on an individual's choice to have a family is unacceptable behaviour from men and women. Organisations are increasingly making use of unconscious bias training, which can be helpful here.

In general, women are also disproportionately affected by the casualisation of the workforce. Women comprise 47% of the Australian workforce, however only 37% of all full-time employees are women compared to men who make up 63% of all full-time employees.⁸ An important driver for this is the gendered nature of caring responsibilities, which mean that more women than men seek flexible and/or part-time employment.

Overall, it is essential to support women's career paths through gender-equitable measures. All STEM disciplines in Australia, including health and medical sciences, will benefit if we can get this right. There is also an opportunity to create more gender-specific fellowship schemes, for example, to support women returning from a career break and to broaden out measures of career recognition and progression to place more emphasis on impact and translation, rather than traditional output metrics such as publications. Research funding for health and medical research in Australia should in the grant assessment process better accommodate for the unexpected childcare duties that lie beyond the regular parental leave period and recognise the impact this can have on the work of the scientists. Beyond this, the sector must do more to develop policies that allow families greater flexibility in managing parental leave and carer responsibilities – and this is also an area where the sector can advocate for meaningful policy changes and improved messaging more generally.

The Academy is committed to supporting and nurturing the future generations of leaders in health and medical research. We would particularly highlight the challenges faced by clinician-scientists, who play a crucial role in undertaking health and medical research and facilitating its translation to patient care. The Academy encourages medical students and junior doctors to consider research careers through our *Life as a Clinician Scientist* events, which took place in three States this year. These one-day symposia feature Fellows and researchers from across the career stages who are following a clinical research career – to inspire younger colleagues to consider this path or to help them work out how they might navigate its complexities.⁹ However, engaging in significant research in Australia (and globally) is frequently perceived as a challenging career path for clinicians due to funding uncertainties, lengthy pathways, the need to balance both clinical and research training – and the risk of falling behind peers in both career paths due to this dual commitment. A recent study found that some female medical students are reluctant to pursue a clinician scientist career pathway due to the added years of research training (which can be clinical or non-

⁷ According to the Australian Bureau of Statistics, 95% of primary parental leave is taken by women (2017), available from: [http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4125.0~Sep%202017~Media%20Release~One%20in%2020%20dads%20take%20primary%20parental%20leave%20\(Media%20Release\)~11](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4125.0~Sep%202017~Media%20Release~One%20in%2020%20dads%20take%20primary%20parental%20leave%20(Media%20Release)~11)

⁸ Australian Government Workplace Gender Equality Agency (2018). Gender workplace statistics at a glance. Available from: https://wgea.gov.au/sites/default/files/Stats_at_a_Glance.pdf

⁹ For example, information on our Victoria event in September 2018 is available from: <http://www.ahms.org/events/2018-victorian-clinical-science-symposium-life-as-a-clinician-scientist/>



clinical) on top of their medical degree.¹⁰ The additional training years represent a barrier to those who wish to start a family or who need to accommodate existing childcare responsibilities – and again, this impacts women more often than men. Findings such as these demonstrate the barriers women perceive from an early stage in their studies and career – and which the sector must actively continue to address (in all disciplines).

Gender equity on the institutional level

For the future of health and medical research, and all of STEM, in Australia, addressing systemic obstacles that disadvantage women is crucial. Within this context, action at the institutional level is critical. For instance, the Science in Australia Gender Equity (SAGE) Pilot of the Athena SWAN accreditation framework aims to progress gender equity within the academic sector. Originally introduced in the UK, the self-assessment tool of the SAGE project now helps institutions in Australia assess gaps to improve gender equity. 45 universities, medical research institutes (MRIs) and publicly funded research organisations are members of the SAGE initiative.

The Academy recognises that the SAGE initiative helps to facilitate gender equity at an institutional level. This kind of data-driven framework can encourage institutions to better understand their own contexts and will, therefore, underpin a deeper understanding across the research and innovation landscape. The higher-level awards within the Athena SWAN framework emphasise that data collection alone is not enough – it must be accompanied by action and the data must be used to monitor, evaluate and refine those actions. The impact of Athena SWAN is already showing in the UK, where additional incentives have been established by the National Institute for Health Research (NIHR), which now requires institutes to have at least a silver Athena SWAN award for many of its funding programs. Such incentives can be very powerful in driving engagement.

Employers have a significant role in promoting gender equity in the workplace. Several organisations in health and medical research have introduced gender equitable actions to support their workforce. There are many common features of such efforts, including flexible working hours, better access to longer paid parental leave, access to local childcare, lactation rooms for nursing mothers, family-friendly meeting times, and seminar recording for streaming. There are good examples of such initiatives being informed and driven by genuine consultation with staff, for example, this year The Walter and Eliza Hall Institute was the first independent medical research institute in Australia to open an on-site childcare centre – identified as a priority through a staff survey that asked what would make the most difference to women working at the institute.

However, as outlined in the consultation document, women continue to be lost at every stage of the career ladder, and efforts to shift this trend have had limited success. It is time to consider more ambitious options. Some institutions are starting to think in this way. For instance, the QIMR Berghofer introduced a financial assistance policy in late 2016 which offers female scientists, who have at least one child below

¹⁰ Diann S. Eley, *et al.* (2017). What will it take? Pathways, time and funding: Australian medical students' perspective on clinician-scientist training, *BMC Medical Education*: 17:1.



high-school age, an annual lump sum payment of \$10,000 in addition to their salary.¹¹ The funds can be used at the scientist's discretion and are intended to support the continued careers of working mothers.

The above-mentioned examples show the progress towards gender equity within the health and medical research sector, but more action and cultural change is needed. Greater transparency around salary scales will enable better response to salary gaps, and employment conditions should accommodate the complexities of childcare responsibilities beyond the regular parental leave period for women and men. Culturally, we must reconsider the aspects of career recognition that disadvantage employees with carer responsibilities (most often women), such as the number of speaker invitations and conference attendances.

In summary, employers within health and medical research (and beyond) should promote gender equity in the workplace by providing gender-equal salary policies, embedding equal opportunity, and allowing flexibility for all scientists, male and female, to accommodate carer responsibilities should they wish to. Similarly, it is in the interest of employers to provide their staff with training to help remove unconscious bias and encourage a balanced gender representation across all levels of the organisation.

Role models and equal visibility

Role models can have a crucial impact on girls and women, particularly in the years of school education, university studies and the early career stages. Improving the visibility of female scientists is essential to providing role models to girls and women. It is therefore vital to give female scientists empowering tools and platforms that help them share their research, knowledge and experiences. We know that male experts outnumber female experts in most media outlets, and programs such as the Superstars in STEM initiative run by Science and Technology Australia and the media training the UK Academy of Medical Sciences provides for women, promote and accelerate equal gender-representation among STEM experts in the media.^{12,13}

To promote equal visibility for female scientists, organisers of conferences and events within the health and medical research sector should to the best of their ability strive for an equal gender representation among speakers, presenters and panels discussion members. This is a practice we aim for at the Australian Academy of Health and Medical Sciences. In addition, at our Life as a Clinician Scientist events, speakers are asked to talk about their career, including highs and lows, and how they have managed their work-life balance – to encourage others to see the possibilities.

Mentors provide helpful guidance to scientists and can play a valuable role in retaining women in medical research. The Academy's mentoring program supports the career development and leadership skills among both male and female health and medical researchers at the Associate Professor/Junior Professor

¹¹ QIMR Berghofer statement (Oct 2016). Available from: <https://www.qimrberghofer.edu.au/2016/10/qimr-berghofer-helps-women-scientists-rise-top/>

¹² More information on this year's Superstars in STEM process: <https://scienceandtechnologyaustralia.org.au/searching-for-the-next-superstars-of-stem/>

¹³ More information on the initiatives by the UK Academy of Medical Sciences: https://acmedsci.ac.uk/grants-and-schemes/mentoring-and-other-schemes/sustain/media_women



level – they are given an Academy Fellow as a mentor for three years, from whom they can seek advice on any aspect of their career development, including the particular challenges women face. Currently, 17 of the 36 mentees in our program are women.

It is important to note in this context, however, that in all initiatives intended to address gender inequities, the issue must remain clearly seen as one for both men and women to solve together – led by both female and male champions of change.

Efforts should be continued and strengthened to offer mentorship to researchers and provide women with an early opportunity to communicate with mentors about career paths, research and potential barriers. Furthermore, offering forums that provide women with leadership skills, workplace advancement strategies and networking opportunities, help women equip themselves with tools to influence their career path and progression from an early stage.

We are grateful to the Fellows and mentees who contributed to this response.

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