Article

Pressures and Pathways: Early Career Experiences in Aotearoa New Zealand's Public Research Organisations

Hanareia Ehau-Taumaunu[1*†], Natalie Forsdick[1*†], Emma E. Gobes[1], Louise Hennessy[1], Michelle Cook[2], Nina Butowski[1], Jolin Morel[3], Courtney Lynch[4], Grace Feltham[4], Stephanie Mangan[2], Mahuru Wilcox[1], Amali Thrimawithana[1], Ki-Taurangi Bradford[1]

[1]Bioeconomy Science Institute, Tuhiraki, Lincoln
[2]Earth Sciences New Zealand, Kilbirnie, Wellington
[3]Biotechnologies Group, Callaghan Innovation, Gracefield, Lower Hutt
[4]New Zealand Institute for Public Health and Forensic Science, Kenepuru Science Centre, Kenepuru, Porirua

Public Research Organisations (PROs) are integral to the Science, Innovation and Technology (SI&T) sector in Aotearoa New Zealand, as mission-led organisations tied to research areas of significant national importance. Early career staff and students (ECS) make substantial contributions to delivering science impact within PROs, but face unique challenges, particularly amid prolonged sector-wide change. This manuscript is authored by the members of the Science New Zealand Early Career Member Group (ECMG), a cross-organisational body representing ECS from each of the PROs. As such, we are well-positioned to provide insight into the impacts of ongoing uncertainty for the PRO early career workforce. Drawing on data from a survey of early career staff and students across PROs conducted in December 2024, we highlight the impacts of the evolving SI&T landscape. Three key challenges emerged: ECS retention and career development, underrepresentation of Māori and Kaupapa Māori, and inequities in the current SI&T funding system. We discuss these challenges and offer solutions aimed at strengthening career pathways, supporting the growth and leadership of Māori ECS, and improving funding equity, which combined can enhance ECS success. Our ultimate goal is to help retain, develop, and empower the current and future early career cohort to thrive in their fields, delivering meaningful science impact for Aotearoa New Zealand.

Introduction

Public Research Organisations (PROs) are positioned at the crossroads of public-good science and commercial imperatives. Following a process of consultation by the Government underway since 2021, first through Te Ara Paerangi – Future Pathways, and then by the Science System Advisory Group (SSAG), 2025 saw the first outcomes of a significant overhaul of the Science, Innovation and Technology (SI&T) sector. The seven Crown Research Institutes (CRIs) were consolidated to form three PROs: the New Zealand Institute for Bioeconomy Science (BSI), New Zealand Institute for Earth Science (ESNZ), New Zealand Institute for Public Health and Forensic Science (PHF; Reti, 2025). Callaghan Innovation is in the process of being dissolved, and a fourth PRO, the New Zealand Institute for Advanced Technology, is in development (MBIE, 2025a; MBIE, 2025b). For consistency, we use the term 'PRO' throughout, including when referring to CRIs prior to 2025.

Early career staff and students (ECS) within PROs are critical to the strength and sustainability of a successful SI&T sector in Aotearoa New Zealand. To deliver impactful research responsive to environmental and social needs, the sector requires a highly skilled, well-resourced, agile, collaborative, and diverse workforce, that prioritises equitable treatment and well-being of both its members and the communities it serves (Wierenga et al., 2025). Additionally, ECS are a more diverse cohort relative to that of the broader SI&T workforce (Royal Society Te Apārangi Early Career Researcher Forum Committee, 2020), and in an equitable and inclusive SI&T system, diversity translates to creativity and innovation (Hofstra et al., 2020; Kenny et al., 2024) to ultimately enhance productivity and economic growth. Investing in ECS development creates opportunities to craft novel solutions based on multiple perspectives and knowledge systems, including mātauranga Māori. As a dynamic part of the workforce ECS are well-positioned to respond to emerging opportunities, building networks with organisations, commercial, industrial or research partners,

*Correspondence: hanareia.ehau-taumaunu@plantandfood.co.nz, ForsdickN@landcareresearch.co.nz
†Co-first authors

Box 1. The role and voice of the Science NZ Early Career Member Group
The SNZ ECMG formed in 2022 as a self-organised, Te Tiriti-led collective of thirteen representatives from across the PROs. With members including students, staff in research and research-support roles, and Māori, we provide diverse representation for the approximately 700 ECS embedded in PROs. Our goals are to empower and amplify the ECS voice, promote ECS connections and cross-organisational initiatives, and act as a reference group for consultation. As such, we have a unique perspective from which to provide commentary on the impacts emerging from recent SI&T sector changes. In this perspective piece, we draw on our personal experiences and the voices and experiences of our ECS communities, including across research, technical, and support roles. The views expressed may not reflect the positions of our organisations.

both locally and internationally. Therefore, stability within the sector is critical as uncertainty can undermine the career trajectories of highly trained, talented ECS, and risk the loss of vital skills offshore (Christian et al., 2021; Craig, 2025).

From 24 November until 20 December 2024, the Science NZ Early Career Member Group (SNZ ECMG) conducted a survey of ECS across Science NZ organisations to gain ECS perspectives on their experience of the SI&T sector ahead of predicted structural changes. At that time, Phase I of the SSAG review was completed, and speculation abounded as to the nature of the predicted change. The announcement in January 2025 on the formation of the PROs came shortly after the conclusion of the survey. From the data, alongside the SNZ ECMG collective understanding of ECS experiences, we identified three focus areas underpinning the current and anticipated challenges for ECS, which we highlight in this perspectives piece. Specifically, we focus on PRO ECS retention and career development, Māori and Kaupapa Māori underrepresentation, and inequities arising from the current funding system. Guided by our solutions-focussed ethos, we signal opportunities to support ECS through these pressures and help shape a path towards a future SI&T sector that fosters a thriving community of confident, innovative future leaders.

Improving ECS retention and career development pathways

Structural change and organisational dynamics within the SI&T sector are contributing to a persistent sense of career uncertainty among ECS. Although the majority (75%) of ECS survey respondents were employed on permanent contracts, open-text responses revealed that employment precarity remains a key concern (Figure 1). Of the ECS survey respondents, 16% were in fixed term roles and 8.5% were postgraduate students. Due to the structure of work within PROs, chargeable research activities are prioritised over non-chargeables, such as survey completion, especially for fixed-term ECS, which may see these staff underrepresented in the survey.

Despite demonstrated long-term investment (in terms of both time and money spent in training) in the SI&T sector by ECS, 41% of respondents reported they did not feel confident that they would continue to work in the SI&T system over the next 5 years. The potential for 'brain drain' is real—if ECS were not employed in their current role, one-fifth of respondents reported they would seek employment overseas.

The uncertainty and concern have undoubtedly been exacerbated by ongoing organisation- and sector-level restructuring. Only 10% of ECS respondents reported feeling 'somewhat positive' about potential impacts of this reform. Limited opportunities for progression and a culture of short-term funding cycles have further ingrained the perception of precarity, even among those with seemingly secure roles. This demonstrates a need for transparent career pathways and mentorship targeted at career development. Embedding ECS representation in relevant decision-making processes can provide ECS with certainty and ownership over their futures.

Providing clarity and stability for ECS signals a sector-wide commitment to developing, valuing and retaining the next generation of researchers. The PROs have many fixed-term ECS (including students, postdoctoral fellows and other temporary staff) that contribute significantly to the success of the organisations. In addition, we are supportive of initiatives such as Joint Graduate Schools, internships and cadetships as they create a pipeline of new researchers trained in the PROs, who are uniquely positioned to transition into permanent roles. Permanent roles provide greater security and well-being, allowing ECS to focus on their work without the added stress of seeking the next contract. However, such roles are limited compared to the number of newly trained postgraduate students. Bridging programmes and active succession planning by PROs could facilitate this transition, ensuring their valuable expertise is retained (Atkinson, 2025). Clearer career pathways and flexible movement across academia, industry, research, and policy would support ECS retention and confidence.

For many ECS, the journey toward research leadership is ongoing, and involves building core skills such as effective leadership, securing funding, and fostering collaboration. However, the impact focus of PROs places pressure on ECS to deliver rapid, measurable outcomes for community, government, and commercial partners, which may come at the expense of skill-building, long-term career planning and professional advancement. The diverse outputs produced through PRO activities may not be recognised by traditional performance metrics, even within PROs. For instance, the OECD (2021) highlights that common PRO research outputs such as reports, software, and policy advice are often undervalued compared to scientific publications. Structural support is key: recognising both diverse outputs and community engagement alongside traditional research publications would better reflect PRO ECS contributions.

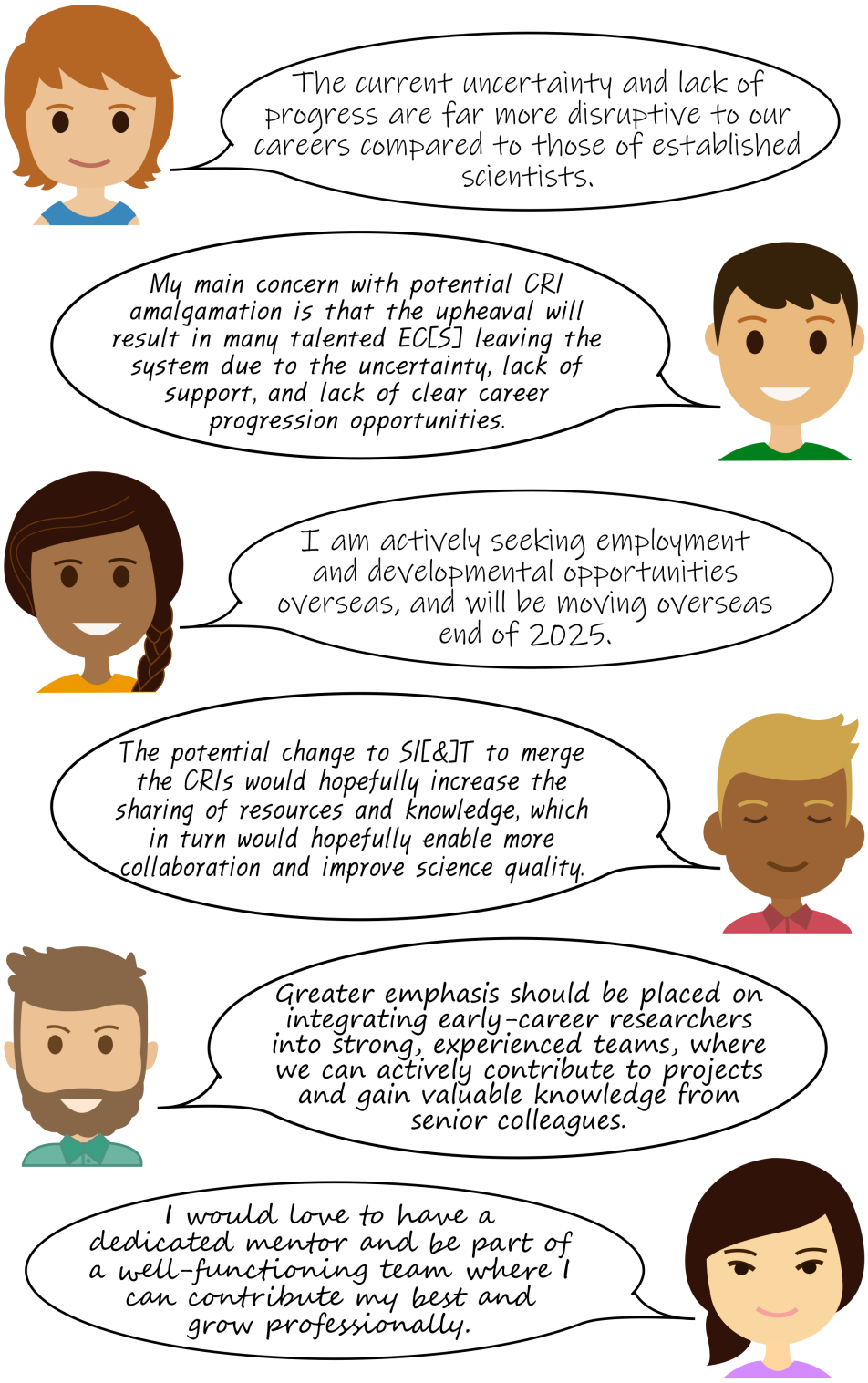

Figure 1: A representative selection of quotes drawn from more than 300 open text responses across the Science New Zealand Early Career Member Group December 2024 survey, with early career characters addressing both current pressures and potential pathways. CRIs: Crown Research Institutes; ECS: Early career staff and students; SIT: Science, Innovation and Technology sector.

Recent moves by funders to accept narrative CVs are a positive step, enabling ECS to showcase the breadth of their impact. Targeted mentoring and development programmes could play a key role in helping ECS build essential skills, including grant writing, managing intellectual property, and responding to national research priorities. Over 60% of surveyed ECS expressed greatest interest in receiving mentoring for career progression, followed closely by mentoring in research proposal development. Hence, mentorship, whether internal or external, provides immense benefit.

Renewed call for investment to cultivate Māori ECS success in PROs

ECS also see embedding Te Tiriti o Waitangi within PROs as fundamental, highlighting the value of meaningful collaboration with Māori and Kaupapa Māori research. At the same time, there is a critical need to strengthen support for Māori research and researchers. A Te Tiriti-led science system promotes mātauranga Māori and Kaupapa Māori research to deliver outcomes for Aotearoa NZ. This requires the leadership of Māori researchers, including Māori ECS. However, Māori are underrepresented in the SI&T sector, including within PROs (NIWA, 2024), which creates a self-perpetuating cycle of limited entry opportunities and few visible role models for Māori ECS. Those who do enter PROs often experience a "cultural double shift" (Haar and Martin, 2022; McAllister et al., 2022), contributing to burnout and the departure of Māori ECS from the science system (e.g., McAllister et al., 2019). This leads to an absence of senior Māori researchers and leaders who can in turn provide support and career development for Māori ECS.

Creating a Māori network across PROs would expand opportunities for mentorship, collaboration, and peer support for Māori ECS. We envision this to develop stronger research relationships between Māori, supporting Kaupapa Māori research projects and creating wrap-around cultural support. The current changes in the SI&T sector creates significant opportunities to embed support for Māori in Aotearoa NZ science.

Building on existing Māori-led pathways, such as internship programmes and targeted development initiatives, can provide clearer, more structured, and culturally responsive routes into careers within PROs. Current internship and graduate programmes are highly commended (Plant & Food Research, 2023) demonstrating proven success in supporting Māori talent. Entities such as Pūhoro STEMM Academy (www.puhoro.org.nz) are a key conduit in the system, supporting rangatahi Māori through high school, university and into internship opportunities. Retaining these ECS through permanent roles and further postgraduate studies should be a priority in PRO career pathways. Once recruited as staff, it is important research organisations support opportunities for Māori ECS to lead and participate in projects with their hapū or iwi, ensuring research directly benefits communities and strengthens the Māori economy. Opportunities exists to empower and support Māori ECS to engage authentically with Māori to step into research leadership roles. Empowering Māori

Box 2. December 2024 ECS Survey approach and the ECS cohort

The recommendations offered in this perspective were inspired by the results of the December 2024 survey of ECS by the SNZ ECMG (Manaaki Whenua - Landcare Research Social Ethics #2425/15). This was the second such survey, following a previous one in January 2024. We found results useful in communicating broad scale opportunities and challenges through the SSAG consultation phase, and to our respective leadership teams, SNZ, and the Ministry of Business, Innovation and Employment (MBIE), and recognised the importance in tracking change over time (e.g., Stewart, 2024). The second, revised survey in December 2024 was run *via* Qualtrics, and distributed through specific internal ECS communication channels, as well as 'all staff' mailing lists. Survey respondents self-defined as 'early career', a term typically used in Aotearoa New Zealand to refer to those having completed their highest qualification within the past 10 years.

The survey comprised an initial set of demographic-type questions to characterise our ECS cohort, followed by a range of multi-choice, Likert-style, and open text questions pertaining to aspects of the SI&T sector, and specifically working in PROs. Raw data were securely stored in a private repository, and when disseminating results, we took care to retain anonymity of respondents by avoiding cross-tabulations of identifying questions with other results that would highlight small percentages of the respondents ($< 5\%$ of respondents or < 5 individuals).

Who are our PRO ECS survey cohort?

Although over 300 responses were collected in the December survey, following filtering to exclude non-ECS respondents (84), incomplete responses (65), and responses from individuals employed outside of PROs (1), 189 PRO ECS responses were retained—27% of the estimated Science NZ ECS cohort in 2024. The number of survey responses by organisation varied in line with the size of the institute. Responses from institutes that later formed the BSI comprised 67% of all ECS responses, with 20% from ESNZ, 12% from PHF, and the remainder from Callaghan Innovation or 'Other' (respondents working across multiple institutes). Demographic-type data revealed the majority of ECS survey respondents were women (63%), highly trained (with a PhD or equivalent qualification; 46%), and received all their qualifications in NZ (62%).

leadership and knowledge systems (including mātauranga Māori) is vital to address national challenges and foster a truly inclusive research system.

Deliberate restructuring of funding mechanisms to support PRO ECS-led research

The current SI&T funding structure was of critical concern for ECS survey respondents, with 73% signalling that increasing funding and resources would be a key factor to make the SI&T sector more attractive to work in. We recognise that recent trajectories indicate a funding increase for the SI&T sector is unlikely, so here we focus on opportunities to revise existing funding mechanisms to better meet the needs of the sector, which may yet be realised.

Structural differences in the business models of tertiary education organisations and PROs create significant inequities in the research funding landscape. As a result, overheads—and consequently charge-out rates—for PRO ECS are often substantially higher than those of our counterparts at the same career stage (Truax et al., 2025). This creates a systemic disadvantage for PRO ECS, where non-PRO researchers can deliver more with the same funding, making PRO ECS proposals less competitive. For example, Aotearoa NZ ECS-targeted funds, such as Tāwhia Te Mana Research Fellowships and Marsden Fund Fast-Start Grants, can provide a crucial stepping stone for career development, and are designed specifically to support ECS. Despite this, these grants are often out of reach for PRO ECS due to the mismatch between fixed budgets and high institutional overheads. In many cases, meeting the minimum FTE requirement for a Fast-Start grant consumes over 90% of the total funding, leaving little for essential research expenses. These funding constraints discourage PRO ECS from applying, and discourage PROs from supporting ECS applications, contributing to relatively lower rates of participation and success. Between 2017-2024, PRO-led applications represented only 7.7% of all applications for national ECS-focused funds (including Rutherford Fellowships alongside those previously mentioned) and accounted for just 5.9% of successful applications.

Many such funds emphasise capability development in proposals which is a productive way for upskilling ECS. In practice, however, this often focuses on recruiting PhD and MSc students—often exempt from overheads—rather than creating opportunities for existing PRO ECS who may be struggling to secure hours to fulfil FTE. Additionally, as stipends remain lower than the living wage (Soar et al., 2022), postgraduate students are often unfortunately considered "cheap labour" (Chen and Huang, 2025; Gould, 2015). This undervaluation reinforces systemic issues with the postgraduate pipeline, which continues to produce more highly skilled graduates than permanent roles available (Patel et al., 2022; Royal Society Te Apārangi, 2020).

Practical solutions may include restructuring cost-recovery models of PROs so grants can cover actual research costs. Further, better alignment of these models with those of the tertiary sector will enhance the competitiveness of PRO ECS, bringing them on a par with their tertiary sector counterparts. Another option could be the use of flexible budgets that provide extra funding for grants to PRO ECS to counteract the impacts of unequal overheads. These changes may not require additional funding, as demonstrated by the MBIE Horizon Europe top-up scheme.

Current cost-recovery models and constrained research funding can significantly limit the ability of PRO ECS to build meaningful impact through community, commercial and industry partnerships. Similarly, for PRO ECS still building their track records, collaboration and research scope are often seen by external partners as added costs rather than contributions, curtailing opportunities for research impact. Yet, feedback from open text survey responses indicated a desire for enhanced collaborative opportunities through SI&T reform, with 24% of responses speaking to these predicted benefits. This included collaboration across organisations and disciplines (including mātauranga Māori), with complementary benefits and potential for reduced competition for limited funding. The shifting landscape resulting from the PRO consolidation process has intensified pressure to seek commercial funding, making it essential for ECS to develop skills in this area, while still bidding for shrinking competitive internal and external funding.

Surveyed ECS reported a need for targeted workshops covering aspects of research proposal development, commercialisation opportunities, and contract development to upskill as independent project leaders (Figure 2). To further support ECS in actively building critical skills such as proposal-writing, research design, and collaboration, we recommend deliberately embedding ECS in proposal and contract development through directed minimum requirements for ECS inclusion and/or leadership. International models show that embedded involvement accelerates innovation and better prepares ECS for independent research careers (Kent et al., 2022). Meaningful investment in long-term career pathways and professional development will help retain talent, encouraging ECS to remain in Aotearoa NZ and build their futures within the sector.

Recommendations for shaping our research system together

Drawing on the survey findings and experiences of our ECS community, we identified pathways to build an equitable, inclusive, and supportive research environment for ECS in PROs. Here, we propose twelve practical actions aligned with the three focus areas that PRO and sector leaders can implement to mitigate uncertainty and enhance ECS retention, development, and success.

Boosting ECS retention and career development pathways

1. Formalise a structured, well-resourced, and equitable mentorship programme to support career progression and research proposal development.

2. Improve transparency of career pathways in PROs, including clear criteria for advancement that acknowledges diverse skills, knowledge, and leadership.
3. Recognise and reward diverse research contributions including community engagement, technical expertise, contract delivery, and commercial partnerships, alongside traditional outputs.
4. Embed ECS representation in decision-making processes, especially those around structural change, long-term strategy, and research priorities.
5. Enable flexible movement across academia, industry, research, and policy through secondments, internships, or similar mechanisms.
6. Deliver on the promise of enhanced collaboration within and across PROs arising from SI&T sector reform, ensuring new structures reduce silos and enable ECS participation.

Cultivating Māori ECS success

7. Establish a cross-PRO Māori network to enhance mentorship, collaboration, and peer support.
8. Strengthen and expand existing Māori-led projects and pathways, ensuring they are sustainably resourced.
9. Support Māori ECS to lead and contribute to Kaupapa Māori research, including projects with their hapū or iwi, ensuring research delivers meaningful community benefits.

Restructuring existing research funding mechanisms

10. Restructure PRO cost-recovery models and national funding mechanisms to improve equity and enable ECS researchers to deliver diverse and impactful science.
11. Provide targeted workshops for ECS upskilling in research proposals, commercialisation pipelines, and contract development.
12. Encourage inclusion of ECS in research proposals led by senior researchers, through directed minimum requirements for ECS inclusion and/or leadership.

In these changing and challenging times, we remain committed to championing our ECS community. We

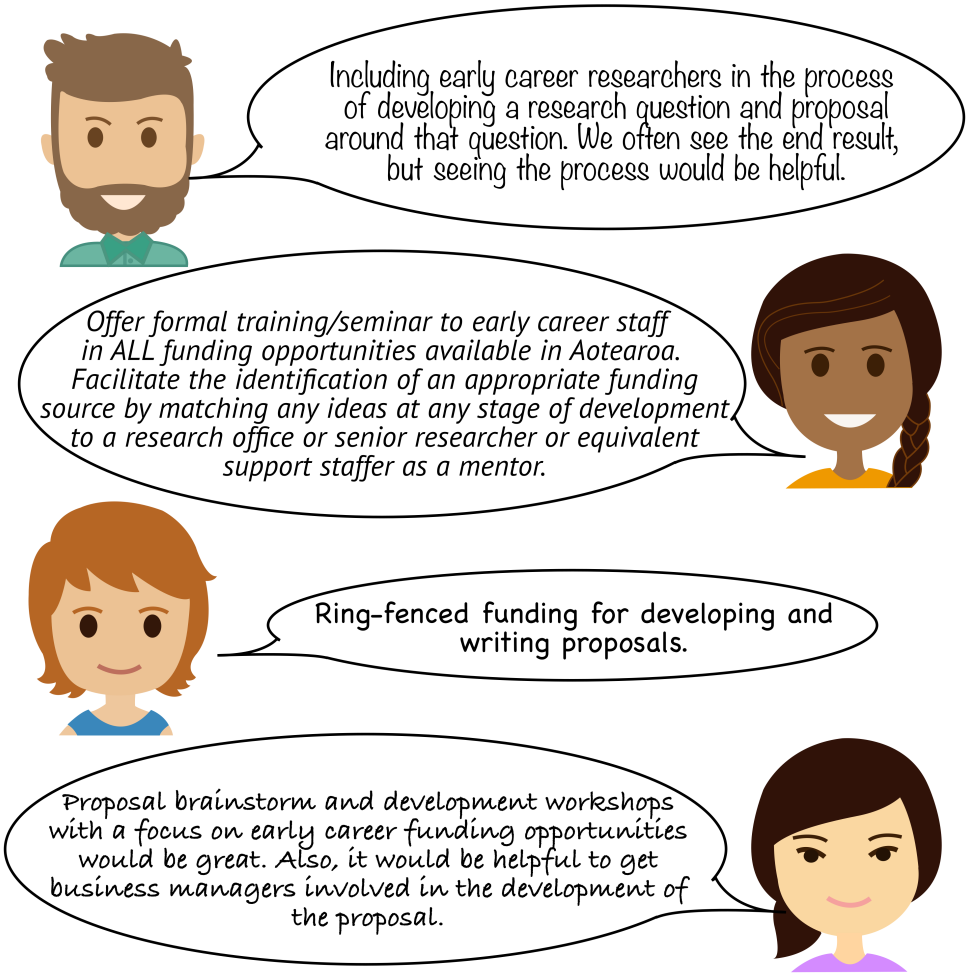

Figure 2: A representative selection of constructive suggestions drawn from open text responses to the survey question 'What could your organisation do to best support you in developing competitive research proposals and/or applied science contracts?'.

will continue to engage in solutions-focused, positive, and productive conversations with our ECS communities, PRO leadership, MBIE, and other stakeholders. Our vision is for every PRO to embed a well-resourced early career group, delivering initiatives to upskill and support ECS as they become established in their careers. Such initiatives will support ECS culture, enhancing retention, development, and long-term success. As the Science NZ ECMG, we will continue to elicit and promote ECS perspectives during SI&T sector change, including through a follow-up survey in December 2025, to help transform pressures into pathways. By acting collectively and intentionally, we can build a thriving and resilient ECS workforce, ready to embrace new challenges and deliver research and innovation that benefits Aotearoa NZ.

Acknowledgements

The authors are grateful to David Worden for advising on survey design, Pam Booth (MWLR Social Ethics Committee) for providing useful feedback on early versions of the survey, and to all the respondents to Science NZ ECMG surveys since 2024. We thank Mallory Ross, Waka Paul and anonymous reviewers for providing independent feedback on early versions of this manuscript. The authors used ChatGPT (GPT5) developed by OpenAI to outline the structure and subtitles in an early draft of the manuscript, which has subsequently been iteratively revised and rewritten by all authors.

References

Atkinson, V. (2025), 'Bridging the gap after submitting a PhD thesis'.
https://www.chemistryworld.com/careers/bridging-the-gap-after-submitting-a-phd-thesis/4021189.article

Chen, X. and Huang, J. (2025), 'Accelerated life in academic capitalism: PhD student's time experience in project work', *Higher Education* **90**(5), 1347–1363.
https://doi.org/10.1007/s10734-024-01380-1

Christian, K., Johnstone, C., Larkins, J.-a., Wright, W. and Doran, M. R. (2021), 'A survey of early-career researchers in Australia', *eLife* **10**, e60613.
https://doi.org/10.7554/eLife.60613

Craig, B. (2025), 'Shrinking job market forces scientists to pursue careers offshore'.
https://www.rnz.co.nz/news/national/575580/shrinking-job-market-forces-scientists-to-pursue-careers-offshore

Gould, J. (2015), 'How to build a better PhD', *Nature* **528**(7580), 22–25.
https://doi.org/10.1038/528022a

Haar, J. and Martin, W. J. (2022), '*He aronga takirua*: Cultural double-shift of Māori scientists', *Human Relations* **75**(6), 1001–1027.
https://doi.org/10.1177/00187267211003955

Hofstra, B., Kulkarni, V. V., Munoz-Najar Galvez, S., He, B., Jurafsky, D. and McFarland, D. A. (2020), 'The Diversity–Innovation Paradox in Science', *Proceedings of the National Academy of Sciences* **117**(17), 9284–9291.
https://doi.org/10.1073/pnas.1915378117

Kenny, E., Griffiths, H., Seager, A., Lucini, B., Nithiarasu, P., Kelleher, R. and Morgans, C. (2024), 'Supporting Early-Career Researchers: Value and recognition as a catalyst for success', *Exchanges: The Interdisciplinary Research Journal* **11**(3), 266–283.
https://doi.org/10.31273/eirj.v11i3.1564

Kent, B. A., Holman, C., Amoako, E., Antonietti, A., Azam, J. M., Ballhausen, H., Bediako, Y., Belasen, A. M., Carneiro, C. F. D., Chen, Y.-C., Compeer, E. B., Connor, C. A. C., Crüwell, S., Debat, H., Dorris, E., Ebrahimi, H., Erlich, J. C., Fernández-Chiappe, F., Fischer, F., Gazda, M. A., Glatz, T., Grabitz, P., Heise, V., Kent, D. G., Lo, H., McDowell, G., Mehta, D., Neumann, W.-J., Neves, K., Patterson, M., Penfold, N. C., Piper, S. K., Puebla, I., Quashie, P. K., Quezada, C. P., Riley, J. L., Rohmann, J. L., Saladi, S., Schwessinger, B., Siegerink, B., Stehlik, P., Tzilivaki, A., Umbers, K. D. L., Varma, A., Walavalkar, K., De Winde, C. M., Zaza, C. and Weissgerber, T. L. (2022), 'Recommendations for empowering early career researchers to improve research culture and practice', *PLOS Biology* **20**(7), e3001680.
https://doi.org/10.1371/journal.pbio.3001680

McAllister, T., Kidman, J., Rowley, O. and Theodore, R. (2019), 'Why isn't my professor Māori? A snapshot of the academic workforce in New Zealand universities', *MAI Journal: A New Zealand Journal of Indigenous Scholarship* **8**(2).
https://doi.org/10.20507/MAIJournal.2019.8.2.10

McAllister, T., Naepi, S., Walker, L., Gillon, A., Clark, P., Lambert, E., Alana B. McCambridge, C. T., Housiaux, J., Ehau-Taumaunu, H., Connell, C. J. W., Keenan, R., Thomas, K.-L., Maslen-Miller, A., Tupaea, M., Mauriohooho, K., Christopher Puli'uvea, H. R., Nicholas, S. A., Pope, R.-N.-A.-R., Sangata A. F Kaufononga, K. R., Fleury, K., Camp, N., Carson, G. M. R., Kaulamatoa, J. L., Clark, Z. L., Collings, M., Bell, G. M., Henare, K., Reiri, K., Walker, P., Escott, K.-R., Jaye Moors, B.-J. W., Laita, O. S., Maxwell, K. H., Fong, S., Parata, R., Morgan Meertens, C. A., Taura, Y., Haerewa, N., Lawrence, H., and Alipia, T. (2022), 'Seen but unheard: navigating turbulent waters as Māori and Pacific postgraduate students in STEM', *Journal of the Royal Society of New Zealand* **52**(sup1), 116–134.
https://doi.org/10.1080/03036758.2022.2097710

Ministry of Business, Innovation & Employment (2025*a*), 'Callaghan Innovation'. Accessed 2 December 2025.
https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/funding-agencies/callahan-innovation

Ministry of Business, Innovation & Employment (2025*b*), 'Public Research Organisations'. Accessed 2 December

2025.
https://www.mbie.govt.nz/science-and-technology/science-and-innovation/refocusing-the-science-innovation-and-technology-system/public-research-organisations

NIWA (2024), 'Towards a collaborative pan-CRI approach to attract and retain Māori in the science sector'.
https://sciencenewzealand.org/assets/Uploads/Files/Ma-Te-Ara-Pataiao-ka-taea-Enabling-science-pathways-for-Maori-June-2024.pdf

OECD (2021), *OECD Science, Technology and Innovation Outlook 2020: Science and Innovation in Times of Crisis*, OECD Science, Technology and Innovation Outlook, OECD Publishing.
https://doi.org/10.1787/75f79015-en

Patel, S., Baisden, T. and Yee, G. (2022), 'Grim Realities of a Doctoral Student in Aotearoa', *New Zealand Science Review* **78**(1-4), 29–36.
https://doi.org/10.26686/nzsr.v78i1-4.8347

Plant & Food Research (2023), 'Rangahau Ahumāra Kai Plant & Food Research celebrates at 2023 Diversity Awards NZ'.
https://www.plantandfood.com/en-nz/article/rangahau-ahumara-kai-plant-and-food-research-celebrates-at-2023-diversity

Reti, S. (2025), 'New research organisations established on 1 July'. Accessed 2 July 2025.
https://www.beehive.govt.nz/release/new-research-organisations-established-1-july

Royal Society Te Apārangi (2020), 'Research workforce of Aotearoa NZ'.
https://www.royalsociety.org.nz/what-we-do/research-practice/research-workforce-issues/

Royal Society Te Apārangi Early Career Researcher Forum Committee (2020), 'ECRs in Aotearoa: Safeguarding and strengthening opportunity after COVID-19'. Royal Society Te Apārangi.
https://www.royalsociety.org.nz/assets/Aotearoa-ECRs-Post-COVID-August-2020.pdf

Soar, M., Stewart, L., Nissen, S., Naepi, S. and McAllister, T. (2022), 'Sweat Equity: Student Scholarships in Aotearoa New Zealand's Universities', *New Zealand Journal of Educational Studies* **57**(2), 505–523.
https://doi.org/10.1007/s40841-022-00244-5

Stewart, L. (2024), 'How do we know ourselves?: Recent surveys of the Aotearoa New Zealand science workforce', *New Zealand Science Review* **79**(1-4).
https://doi.org/10.26686/nzsr.v79.9491

Truax, O., Penney, C. and MacDonell, S. (2025), 'Indirect costs: the perverse consequences of New Zealand's Research Overheads System', *New Zealand Science Review* **80**(In Production).
https://doi.org/10.26686/nzsr.v80.9848

Wierenga, M., Heucher, K., Chen, S., Grewatsch, S. and Montgomery, A. W. (2025), 'Communities for impact: Empowering early-career researchers in the pursuit of impact', *Strategic Organization* **23**(1), 19–30.
https://doi.org/10.1177/14761270241274038