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Food for Thought

Guidelines for ensuring meaningful engagement of early career researchers in scientific collaborations: recommendations from and for marine and polar scientists

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Abstract

There is an increasing recognition of the importance of involving early career researchers (ECRs) in scientific positions of trust within national and international organizations, collaborative research projects, networks, and working groups. While the inclusion of ECRs in positions traditionally dominated by more established scientists is a welcome development to increase diversity, equity and inclusion in science, ECRs are often brought into different processes without consideration of the differences in career stages and unfamiliarity of newcomers to projects and processes. These challenges are particularly felt by ECRs with multiple disadvantaged statuses or identities (e.g. ECRs from ethnic minorities, the Global South, and those with caring responsibilities). This paper presents ten guidelines prepared as a participatory process of 12 marine and polar science early career networks, aiming to provide a comprehensive framework for various stakeholders involved in the academic and research ecosystem to improve ECR engagement in collaborations and institutional processes. These guidelines are intended to be adaptable to various contexts, ensuring that all those engaging with ECRs can effectively support their development and well-being. By following these guidelines, members of the scientific community and associated organizations can contribute to a nurturing and productive working environment that benefits the entire research community. This, in turn, will contribute to the long-term success of individual researchers, their institutions, and ultimately science itself.

Keywords: early career researchers; intergenerational collaboration; scientific life; scientific collaboration

Introduction

The importance of involving early career researchers (ECRs) in scientific collaborations and positions of trust within national and international organizations, projects, and working groups, is increasingly recognized. However, what this involvement looks like, and how ECRs are integrated, valued, and compensated for their participation is often contentious and limited (Gustafsson and Berg 2020, Chisholm and Finelli 2023, Kenny et al. 2024, Wróblewska et al. 2024). This calls for greater recognition and practice of meaningful engagement of ECRs in scientific collaborations. In this paper, we embrace a broad definition of what it means to be an ECR, drawing on the United Nations Ocean Decade-endorsed Early Career Ocean Professionals (ECOP) Programme characterization, which emphasizes an ECR as anyone who identifies themselves as being in the early stages of their career, with 10 years or less of professional experience. This definition includes post-secondary students and those in non-paid roles, not limited to individuals in formal employment (Roman et al. 2024).

While the inclusion of ECRs in positions traditionally dominated by more established scientists (i.e. steering groups, committees, selection panels) is a welcome development to increase diversity, equity, and inclusion (DEI) in science, we have encountered several instances where ECRs are brought into different processes without consideration of the differences in career stages and often unfamiliarity of newcomers to projects and processes. These include, for example, lack of consideration of the time demand of voluntary commitments for ECRs, insufficient mentoring for ECRs taking up positions of trust or responsibility, either unawareness of or neglecting power dynamics within groups, and using ECRs as an unpaid labour force for tasks that should be compensated. These challenges are particularly faced by ECRs with multiple disadvantaged statuses or identities (e.g. ECRs from historically underrepresented groups, the Global South, and those with parental duties).

We acknowledge that, in most cases, such situations occur despite people's best intentions and neglecting the importance of changing the work culture when bringing in ECRs is often a result of a lack of awareness of the appropriate procedure for ECR engagement. Therefore, we, as a collective of marine and polar early career network representatives, present a set of guidelines to improve and support ECR engagement in projects and institutional processes. We aim to open the discussion within the scientific community, and to offer these guidelines as a resource for institutions, ECRs, and established researchers alike. Although the authors of this paper are primarily engaged in marine and polar science, these recommendations are applicable to the broader scientific community.

Here, we define 'engagement' as the involvement of ECRs in activities that go beyond their defined role and contractual responsibilities as researchers or students within a specific institution or organization, as well as activities related to their research (such as participating in international working groups). We refer to 'meaningful engagement' as a shared commitment to reach common goals and objectives that have been collaboratively agreed upon. This process involves the open exchange of ideas, information, and resources through transparent and effective communication, built on mutual respect and dedication. Through this approach, a collaborative environment is fostered, one in which trust and confidence among participants can grow and be sustained. Additionally, meaningful engagement requires consideration of power dynamics and equitably distributing the workload based on an individual's skills, availability and commitment. Everyone involved in a scientific collaboration should be made to feel welcome, included, and valued, with ECRs recognized as an integral part of scientific collaborations. ECRs should experience a sense of ownership, feeling actively engaged, respected and responsible for their roles and contributions. Importantly, their participation should not be merely symbolic (i.e. tokenistic). Instead, ECRs ought to be genuinely included and involved in every aspect of the scientific collaborative processes, from ideation and planning through implementation, communication, stakeholder engagement, and networking with collaborators.

ECRs represent the future of scientific and scholarly advancement. To maximize their potential and foster innovation, it is crucial to create an environment that supports their professional and personal growth (Kaikkonen et al. 2024). Recent years have seen increasing recognition of the role ECRs play in shaping research culture and practice (Kent et al. 2022). Much of the current literature highlights the challenges ECRs face within research, particularly in interdisciplinary and transdisciplinary contexts, including high workloads, job insecurity, and limited structural support (Andrews et al. 2020, Rölfer et al. 2022). Haider et al. (2018) call for more reflexive, care-oriented academic systems that better support the diverse roles ECRs navigate. While these contributions are valuable, there has been comparatively less emphasis on the broader, often voluntary, forms of engagement that many ECRs undertake, such as participation in panels, working groups, science-policy interfaces, and professional networks. As Wierenga et al. (2024) point out, ECRs are increasingly expected to demonstrate impact beyond their research, often without clear guidance or support. This paper contributes to these on-

going discussions by offering co-developed, practical guidelines that focus specifically on enabling meaningful ECR engagement across a wider range of academic and professional contexts.

Development of the guidelines

These guidelines have been developed through a participatory process. The idea and the need for such guidelines were initially conceptualized and discussed within the Interdisciplinary Marine Early Career Network (IMECaN, https://imber.info/imecan-interdisciplinary-marine-early-career-network/), which recognized the value of exploring the topic further with a broader group of ECRs. Representatives of IMECaN subsequently identified ECR networks within the field of marine and polar research and contacted their organizing committees and chairs. An open invitation to participate was also shared via social media in October-December 2023. In total, representatives from 12 ECR networks participated in the development of these guidelines, allowing a diversity of perspectives. Networks included were IMECaN, OYSTER (Orienting Young ScienTists of EuromaRine), SIIECS (ICES Strategic Initiative on the Integration of Early Career Scientists), PICES Advisory Panel on Early Career Ocean Professionals, early career representatives of the Deep Sea Biological Society, the Challenger Society for Marine Science ECR Network, Surface Ocean Lower Atmosphere Study (SOLAS) Early Career Scientists Committee, ECOP Programme (UN Ocean Decade endorsed Programme for Early Career Ocean Professionals), Sustainable Ocean Alliance, Access polar, BIOPOLE ECR Network, and One Ocean Hub.

To better understand the perspectives of the participating ECRs on meaningful engagement, a survey was first designed and distributed to capture their views on the challenges they face, how they define meaningful engagement, and their recommendations for addressing those challenges. The survey included questions regarding the affiliation and career stage of the participants and sought to understand (1) how would they define meaningful engagement in scientific collaborations?; (2) how do they describe their previous experience contributing to the work of scientific organizations/projects as an ECR?; (3) what are the challenges they identify with being an early career professional in scientific collaborations, if any?; (4) what opportunities do they identify with being an early career professional in scientific collaborations, if any? and (5) what recommendations they would give to scientific organizations, projects and institutions that wish to bring more ECRs into their work?

The survey findings informed the design of two workshops with the same content, which were held online in January and February 2024 to accommodate different time zones. During these workshops, the group of ECRs discussed potential guidelines. The recordings and notes from these workshops were then used to draft the initial guidelines. The main categories for the guidelines were first identified independently by two people based on the workshop results using thematic coding (Bryman 2016) and then reviewed for overlap. The draft guidelines were then shared with the broader ECR author team, who were asked to review the draft with the following in mind: (i) In your view, do the guidelines represent the key priorities and what was discussed at the workshop? (ii) Is anything missing? (iii) Should anything be removed? (iv) Would you phrase something differently? Finally, a core writing team developed a first draft of this paper, which was then reviewed and co-written by all authors.

Box 1. These guidelines were developed by a collaborative group of 25 authors representing 19 nationalities, including individuals from South Africa, Finland, France, Scotland, England, Spain, the Fiji Islands, Uruguay, China, Argentina, Norway, El Salvador, Russia, Italy, the United States, Brazil, Switzerland, Portugal, and Ghana. The group reflects a strong global and interdisciplinary presence, with contributors drawing on diverse academic, cultural, and geographic contexts.

The author team is predominantly composed of ECRs, including eight PhD students, six postdoctoral researchers, six researchers, two lecturers, and one consultant. In terms of gender identity, the group consisted of 18 women, six men, and one person identifying as non-binary or other. The strong female representation and the limited inclusion of gender-diverse individuals may have influenced the range of perspectives and lived experiences reflected in this work. As with any collaborative process, the values, beliefs, and priorities that shaped the guidelines were inevitably informed by the authors' identities and professional positions.

The development of these guidelines was intentionally participatory, grounded in the lived experiences of ECRs, including the authors and members of the networks they represent. The authors' collective identities (predominantly early career, mostly female, globally distributed, yet with limited representation from certain geographic and gender-diverse communities) influenced the priorities and framing of the work. While efforts were made to include a broad range of perspectives, the guidelines reflect a situated viewpoint shaped by those involved. They should be seen as a valuable, though not exhaustive, contribution to ongoing discussions on equity, inclusion, and engagement in global research contexts.

Guidelines

We target these guidelines to universities and research institutes, networks, intergovernmental and nongovernmental organizations, principal investigators (PIs), supervisors, ECRs (both students and professionals), funders, publishers/journals, and conference/event organizers. By following these guidelines, members of the scientific community and associated organizations can contribute to a nurturing and productive working environment that benefits the entire marine science research community. These guidelines are designed to be adaptable to various contexts and to ensure that all those engaging with ECRs can effectively support their development and well-being.

While many of these challenges are shared by ECRs across disciplines, we have chosen to focus on those working in marine and polar sciences, as they often face additional, field-specific barriers. Marine and polar sciences often involve extensive fieldwork, international collaborations, and expeditions in remote areas, which can disproportionately impact ECRs. These activities tend to require significant time commitments in addition to standard academic responsibilities, creating challenges in maintaining work-life balance. Moreover, the high logistical and financial costs associated with marine research are not always fully covered by institutional funding,

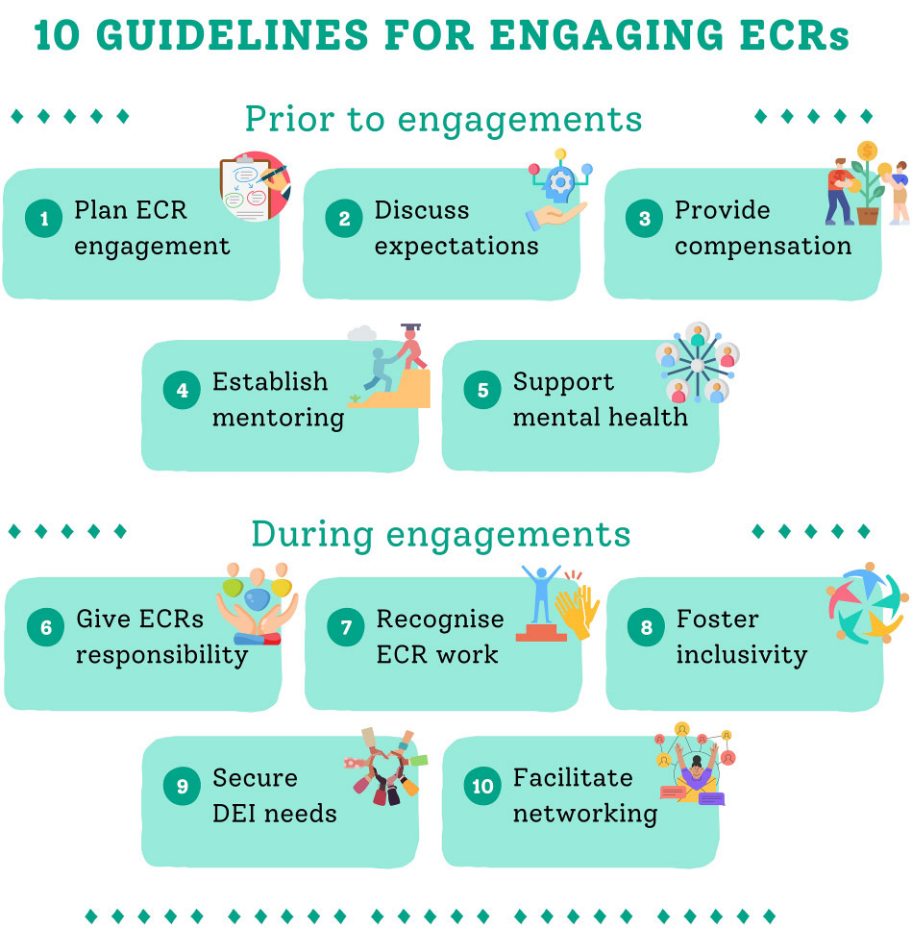

Figure 1. Ten guidelines for improving meaningful engagement with marine and polar early career researchers (ECRs) in scientific collaborations. Figure created with Canva.

placing additional burdens on ECRs with limited personal resources. Practical barriers such as extended periods at sea or travel requirements can also exclude researchers with caregiving responsibilities, disabilities, or restricted mobility due to visa limitations.

We present the guidelines in two parts: the first section (guidelines 1–5) focuses on aspects that need to be addressed before ECR engagement, and the second section (guidelines 6–10) discusses how to support ECRs during the engagement (Fig. 1). While we present these guidelines in the context of ECR engagement, we appreciate many of the recommendations apply also to scientific collaborations at all career stages.

Plan for ECR engagement

To foster genuine engagement of ECRs, it is essential to involve individuals from diverse contexts in an impactful way, avoiding tokenism and exploitative practices. Planning and following up on ECR engagement in projects and proposals ensures that their involvement is not just a formality or a tick-box exercise. Recognizing the unique needs of ECRs, it is crucial to formally consider and integrate their inclusion and engagement at the very beginning, employing tailored approaches distinct from those used with established scientists. Planning ECR engagement early allows for thorough preparation and meaningful participation (Moreno-Ibáñez et al. 2024). Qualitative assessments, such as pre- and post-project surveys and PI feedback, help to gauge the support and development ECRs experience throughout the project. Additionally, co-designing the project proposal and ECR engagement from the outset ensures that ECR perspectives are integrated into the project's framework. These approaches not only enhance the quality of marine-related research but also support the professional growth of ECRs, fostering a collaborative and innovative research environment.

Discuss expectations and create engagement agreements between established professionals and ECRs

To ensure that both ECRs and established professionals have clear expectations and a shared understanding of the nature of the engagement, it is important to outline the terms and details of the collaboration upfront. Too often, there is limited information available to the ECRs about the expected contributions, time commitment and responsibilities, particularly for voluntary commitments, such as serving on a panel, a committee, or participating in a working group. In the absence of this, ECRs often end up overloaded with work.

First, we recommend that any engagement with ECRs should involve setting expectations that have been co-designed. This two-way conversation allows ECRs to outline their availability, fostering a collaborative agreement. It is important to note that as newcomers in the field, many ECRs will not have previous experience of such roles, and outlining what is expected in a given position will be essential to

help ECRs navigate their interest and capacity in undertaking a specific role. ECRs may often lack the confidence or awareness to establish their own boundaries, leading them to assume they must simply accept the expectations or directives set by established scientists or other more senior professionals. Creating space and actively encouraging ECRs to take an active role in defining these boundaries is essential. However, this level of participation can only thrive in environments where such a culture is the norm. Therefore, it falls on those in positions of power to take responsibility for fostering and maintaining a culture that empowers and supports ECRs.

Second, we propose that established marine and polar science professionals and ECRs learn from or replicate existing engagement agreements, which are already standard procedure in some countries and institutions [e.g. Universities Australia (Universities Australia, 2025), Melbourne University in Australia (University of Melbourne, 2025), Northwest University in South Africa (Northwest University, 2025), and the University of Helsinki in Finland (University of Helsinki, 2025)]. In these agreements, both parties clearly outline their expectations in terms of time commitment, deliverables, time for feedback loops and frequency of meetings and informal engagements. These agreements should also consider preferred communication channels, regulations pertaining to intellectual property, university ethics, authorship arrangements, facilities and funding, all of which are relevant to ECR engagement.

Provide appropriate compensation, funding, or other benefits

Meaningful engagements with ECRs should involve adequate funding and compensation. First, lead scientists should make it clear whether the work will be compensated, and if not, should elaborate on what other benefits the ECRs can expect from their efforts, such as networking, paper co-authorship, training, and funded conference, workshop or training course participation. Funding for postgraduate research should be consistent and sufficient for the tasks to be carried out and be in line with the living wage required to help sustain the postgraduate candidate.

Second, there needs to be a greater effort to ensure ECRs are financially compensated for their work in scientific collaborations and/or receive equal benefits similar to other employees, such as annual leave and insurance. Many ECRs in marine and polar science are underpaid, particularly in the Global South, which should be considered by project and working group leads (Nobes et al. 2023). Funding organizations should increase funding availability for ECR-led projects, training and travel, ensuring specific priority to underrepresented, and underprivileged ECRs, particularly in Global South institutions and organizations.

Third, fostering more meaningful engagement with ECRs should go hand-in-hand with addressing the continuity of their positions, such as avoiding postdoctoral contracts shorter than 2 years. Delivering outputs and participating in scientific collaborations while searching for the next position is extremely challenging. The short-term nature of postdocs often results in excessive workloads as individuals strive to publish, build networks, collaborate, apply for funding, and secure future roles—compounded by the expectation that postdocs frequently relocate. While sustained funding for postdocs can be difficult to secure due to the short-term nature of these grants, PIs should carefully consider what they expect postdocs to achieve during their contract and how a short-term contract might affect an ECR's career.

Provide resources to support mentoring of ECRs, including support and recognition for mentors

Mentoring is a critical element for supporting ECRs (Johnson and Gandhi 2015, Andrews et al. 2020) and is particularly beneficial for ECRs from underrepresented groups (e.g. women, ethnic minorities, and ECRs from the Global South) (Amon 2017, Shellock et al. 2022, Shellock et al. 2023b). Mentoring can have significant co-benefits for both the organization and ECRs involved, including enabling smooth institutional and scientific knowledge transfer, essential for succession planning. Mentoring can be formal and informal and exists in various forms, including peer-to-peer, career development, and/or personal mentoring (Davies et al. 2021). Mentoring is also important for moral support and encouragement, increasing ECR resilience and agency and alleviating their uncertainties about academic life (Settles et al. 2007, Vassallo et al. 2021).

We recommend that ECRs are directed to existing initiatives where available (e.g. through organizations, universities, societies, NGOs, journals, or network programmes, such as UN Ocean Decade ECOP Programme). Where unavailable, we recommend the establishment of organizational, local and international mentoring programmes, with strong regulation and sharing of best practices. However, these programmes require sufficient resourcing, endorsement from senior leadership, and must be underpinned by good-practice guidelines, the best available evidence, and be community-reviewed. Mentors must attend training before mentoring, for example, for guidance on what good mentorship looks like, professional conduct, strategies for handling difficult situations, and reporting concerns and sensitivities arising from neurodiversity, cultural differences and differences of opinion (Moran et al. 2020, Davies et al. 2021). It is also vital that the work of mentors is recognized by academic institutions, as part of plans to expand scientific impact beyond citation metrics (Davies et al. 2021). Mentoring responsibilities need to be shared fairly across groups, to avoid overburdening women, minoritized groups and those with caring responsibilities (Fisher et al. 2021).

Ensure institutions have effective processes for ECRs to raise issues and gain mental health support

Mental health issues are prevalent in academia but still too often remain an invisible crisis (Bira et al. 2019, Müller 2020). Studies have found ECRs to be more susceptible to compounding pressures of academic life, leading to higher rates of stress, anxiety, depression and burnout, in addition to other mental health disabilities (Woolston 2022, Jones 2023). Some disciplines, such as climate science, face additional challenges, including widespread mental exhaustion due to climate grief and political pressures such as climate denial and harassment on social media (Rodrigues 2024). Pressures during research, such as imposter syndrome, may result in negative experiences for those who encounter mental health difficulties (John and Khan 2018, Tucker and Horton 2019, Giles et al. 2020). Secondary issues, such as mental health stigma, may affect the career progression of ECRs.

To ensure institutions and projects have effective processes for ECRs to report issues and to gain mental health support, we recommend creating a positive culture of mental health management, including preventative measures, investment in mental health first aid training, and placing genuine, robust support structures to deal with issues that manifest in academia. One solution is to set up councils for ECRs that provide a safe environment to discuss conflicts with supervisors or power imbalances, with the chairs of such councils having unbiased and safe mechanisms and avenues to report these issues to the human resources department.

Give ECRs responsibility

ECRs are the future leaders of science. Therefore, it is important to acknowledge this by giving ECRs access to genuine leadership opportunities. These opportunities need to come early in their careers with a supportive learning environment and appropriate mentoring. They can include opportunities to manage, lead, and plan research (e.g. leading proposals, projects, book chapters, strategically important articles, and policy contributions; Shellock et al. 2023a). Such opportunities can increase the confidence of ECRs, provide them with a richer skillset, broaden their understanding and perspectives (van Putten et al. 2021) and better prepare them for future job applications, promotion, leadership and management (e.g. supervision of students and management of staff).

ECR leadership needs to be facilitated and considered at all stages of a research initiative's life cycle. ECRs need to be engaged in and ideally lead initiatives from the beginning. Only engaging ECRs during later stages of initiatives—when there is high pressure, impending deadlines, and a lack of opportunities for them to shape the work—reduces the value of the engagement provided to ECRs. ECRs offer diverse skills, knowledge, and perspectives that should come in early in collaborations. Ideally, they should be involved in the co-design of research (Rölfer et al. 2022) and funding of research initiatives. Strategic planning and proposal writing meetings and processes can be used to provide a space for ECRs to suggest, experiment and decide on methodological approaches and outputs of research initiatives. Formally acknowledging ECR participation in the co-development of both successful and unsuccessful proposals is another important way to recognize their contributions—a practice that remains uncommon in many settings.

Value and recognize the contributions of ECRs

Recognizing the diverse contributions of ECRs, of both formal and voluntary commitments, is essential for fostering a collaborative research culture. Many ECRs face challenges in gaining appropriate recognition for their contributions to projects, papers, and working groups (Gustafsson and Berg 2020, Chisholm and Finelli 2023). While ECRs should be included as co-authors when they meet the co-authorship requirements, it is equally important to recognize and value other forms of contributions that may currently be underappreciated but are essential for achieving societal impact and bringing both professional and personal satisfaction. These include science communication, event planning and facilitation, policy advocacy, public engagement, involvement with scientific networks and working groups, planning and writing funding proposals, engaging in DEI activities, knowledge brokering (Karcher et al. 2024), and demonstrated leadership.

Research life is often stressful and demanding, particularly for ECRs who may struggle with uncertainty about expectations. This, combined with the competitive nature of modern (academic) careers, can lead to feelings of incompetence and lower rates of retention (Ross et al. 2001, Muradoglu et al. 2022). To help ECRs overcome these challenges, it is important to celebrate their achievements and encourage them to take on new challenges, which will build their confidence and professional growth. Institutions should strive to cultivate an environment that is both encouraging and rewarding, even in ways that go beyond formal recognition. There is a need to challenge the culture that focuses solely on the quantity of academic publications and instead give more merit and respect to other skills and activities integral to the professional growth of ECRs. Simple acts like public acknowledgements, letters of appreciation, nominating ECRs for awards, or offering opportunities for professional development from supervisors and other colleagues can have a significant impact on ECRs' sense of belonging and importance. By providing regular praise, offering growth opportunities, and fostering an encouraging environment, institutions can empower ECRs to reach their full potential. This, in turn, will contribute to the long-term success of both individual researchers, their institutions, and ultimately science itself.

Foster an inclusive culture that supports work-life balance

Many ECRs are afraid to say no to opportunities for scientific collaboration because it could significantly advance their career, provide a chance to learn from more established researchers, or make them worry they will not be invited again. People are experiencing a culture of 'volunteer burnout' (Moreno-Jiménez and Villodres 2010, Allen 2025), where the same ECRs often take on many responsibilities and tasks, resulting in mental overload and ultimately burnout. This can put excessive pressure on ECRs, particularly when the work is not related to the research for which they receive funding, such as their PhDs or postdocs, and it does not facilitate their career progression in a highly competitive merit-based system.

An inclusive culture that supports the work-life balance of ECRs makes it acceptable for ECRs to decline engagements without pressure or expectation to continue engaging if they do not have the capacity. There should not be solicitations from established researchers to meet during weekends, holidays, and after hours. This is often difficult with international collaborations and working across time zones, and in these instances project leadership should be equitable about after-hour meetings and alternate when the meeting occurs. There should be ethical time commitments expected from ECRs, and when possible, ECRs should be allowed to participate in collaborations without having to overly commit time and effort. Circumstances and availability change over time, and it should be acceptable for ECRs to remove themselves from an engagement or collaboration.

To ensure that collaborations foster caring and supportive networks, leaders and more established researchers can actively address work-life balance, mental health, and diversity in these collaborations. Building on guidelines and charters for well-being in conversations and collaborations (Cross 2021), these tools can be transformed into practical stepping stones instead of mere formalities.

Support ECRs in overcoming barriers and meeting their needs relating to diversity, equity, and inclusion

A diverse team brings together a variety of cultural, personal and professional backgrounds, each individual bringing in their own unique circumstances. When integrating an ECR into a role, it is essential to recognize, respect and value these differences, and provide additional support for them (Osiecka et al. 2022). DEI needs cover a range of protected characteristics an individual may possess, including but not limited to age, disability, gender identity, pregnancy and parenthood, race, religion, sex and sexual orientation. Members of certain groups within these characteristics have historically been excluded from the scientific community (Graves et al. 2022) and continue to be disproportionately affected by a lack of access, funding, and other barriers instilled and ignored by the majority. For instance, an ECR's personal circumstances (e.g. physical ability level, financial resources, geographical location, professional network) may limit their access to technology, licensing and training facilities, hindering their ability to progress within their career. Organizations working with ECRs within these marginalized communities will need to consider how and if they can provide access to required support, for example, through the loan of equipment, software and literature access, or training programmes. It is further crucial to ensure the safety of the ECR if they are in a dangerous location, including creating a protocol in advance on how to respond to different situations, especially for female ECRs conducting fieldwork alone (Wadds et al. 2020).

In order to take opportunities available to them, ECRs often face an international relocation, sometimes bringing the barrier of developing and reviewing materials that are written in their second or third language (Amano et al. 2023). This should be recognized when considering workloads for research tasks and ideally support should be provided by others with the relevant first language to aid with proofing and understanding content. ECRs are often expected to move abroad to pursue career opportunities, facing challenges, such as high costs of relocation, emotional strain, and leaving their personal support network. Adjusting to a new country involves overcoming language barriers, navigating financial systems, settling into a new culture, and building a community. Organizations can support ECRs by offering local insights on topics like setting up bank accounts, living expenses, accommodation, and local regulations (Lubośny et al. 2025). In addition, visa challenges can significantly hinder ECRs from attending conferences and international events vital for networking and career development (Fisher et al. 2021, Fox 2022). Mindfully chosen conference locations and clear guidance on navigating visa processes, including support letters, transparency and support with costs and timelines, are essential to reducing these barriers. Delays or errors in visa applications can disrupt work, postpone compensation, and affect family relocation, especially for postdocs on short-term contracts. This is especially true for researchers from the Global South, who often face greater bureaucratic hurdles in visa applications, which can impact their mental health and overall career trajectories and success (Gaye et al. 2024). Establishing a protocol to properly support ECRs through these challenges is vital to alleviating this additional burden (Lubośny et al. 2025).

Organizations should aim to set up an (ideally anonymized) reporting mechanism for incidences of bias, harassment, and discrimination that is freely available to all members and monitored by an external member of the team, to ensure discrimination and bias are dealt with swiftly and fairly and allow the individuals and organization to learn from experience. These will often be shaped by existing in-country legislation, e.g. Title IX in the USA, the Equality Act 2010 in the UK. This can be supported by evaluations of organizational demographics and employee satisfaction, the collection and review of data on protected characteristics (i.e. specific traits, attributes, or aspects of a person's identity that are legally safeguarded against discrimination, harassment, or unfair treatment), and experience surveys of team members.

Enhance ECR engagement by providing networking and collaboration opportunities

To enhance ECR engagement, it is essential to expand their networks by facilitating collaborative events and introductions to potential collaborators, either in person or virtually. Extensive networks are considered a key indicator of research productivity and overall academic success (Fisher and James 2022). First, supporting activities where ECRs themselves take the initiative to engage with their peers to facilitate their own network and collaborations is essential. Allowing ECRs to do this requires that such activities are valued and recognized by organizations and supervisors as an important part of research work. Much of this networking often happens outside of working hours, and not acknowledging the value of networking and collaborations puts ECRs in inequitable positions. In a more traditional setting, networking opportunities can be supported by other researchers introducing ECRs to new contacts, inviting them to working groups and collaborations, and actively promoting the ECRs' work to other researchers. Mentorship programmes can further support ECRs in exploring new opportunities and building their own network under the guidance of established professionals.

Networking and collaboration opportunities can be further enhanced through exchange programmes, fellowships, and initiatives that connect ECRs with professionals from diverse disciplines, countries, sectors, and knowledge systems. Scientific collaborations should consider providing increased attention and opportunities to ECRs from regions that are geographically isolated (e.g. Pacific Island countries) of common conference and meeting locations, as they frequently encounter challenges related to their remoteness. Networking opportunities can also play a pivotal role in securing research funding, especially when potential funders are also invited to networking events and fora. Additionally, promoting interdisciplinary research with other universities, organizations, and departments can foster development and open new opportunities. We recommend that institutions actively support cross-disciplinary research groups that regularly meet to share ideas, enhance ongoing research, and collectively advance joint initiatives.

Implementation and ways forward

We trust that the more people engage with these guidelines, developed by ECRs themselves, the more relevance and weight they can carry in different contexts and institutions.

While implementing some of the guidelines will benefit from formal institutional support and funding (e.g. mentoring programmes, follow-up processes), several of the recommendations include actions that relate to the work culture

or practices of ECRs and individuals in leadership positions. This means that part of the successful implementation of the guidelines requires self-reflection and courage to critique the status quo and address power imbalances. We also recognize that this speaks to political, organizational, and personal will, and that there are already existing opportunities for established scientists, universities and organizations, research funders, and fellow ECRs to contribute to their implementation.

To mobilize a change in research culture that fosters more meaningful ECR engagement, we encourage everyone to broadly disseminate these among ECR networks, within research institutions, universities, and other relevant organizations and groups. As a starting point, all authors of the guidelines will disseminate them in their respective institutions. Another recommended step is for institutions, organizations, senior scientists and ECRs, to pledge to work towards implementing these guidelines.

There are several ways in which we, as ECRs, can play a critical role in ensuring scientific collaborations and engagements become more meaningful and ethical, and it is important to highlight that it is not just external actors who have a role to play in shaping these engagements. ECRs have a responsibility in knowing their own limits in terms of capacity and commitments. It is appropriate to say no, and the more ECRs set boundaries, the more this becomes the norm. ECRs can also support one another by speaking up against exploitative organizations or institutions, either anonymously or directly with other ECRs, to help prevent similar exploitation in the future. ECRs can also work together and form communities of practice where they are encouraged to share experiences, think about work-life balance, and support each other in the face of the triple planetary crisis (climate change, pollution, and biodiversity loss), ongoing global, regional, and local conflicts, and the continued marginalization of peoples based on race, ethnicity, and gender. We all have a responsibility to foster DEI in science (Kaikkonen et al. 2024), and in scientific collaborations more broadly.

All scientists have a responsibility to ensure ECRs are treated with respect, recognized for their contributions and supported through meaningful engagements. While we identify as ECRs today, we may identify as established researchers or lead a project in the near future, which means we have a responsibility and opportunity to do better. Nurturing the potential of ECRs and engaging them in scientific processes at different levels in a meaningful way is not only an investment in the personal and professional development of ECRs, but also supports their contributions towards the broader research community and their retention in research. This will benefit the long-term success of both individual researchers, their institutions, and science itself.

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Conflict of interest

None declared.

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No new data were generated or analysed in support of this research.

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