




OPINION

# Breaking hierarchical barriers in science: An early career researcher's call to action

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## The ECR experience

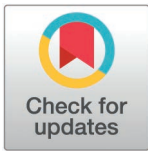
Despite their vital role in driving scientific progress, early-career researchers (ECRs) often face systemic challenges caused by rigid hierarchies within academia and research institutions [1]. These barriers are especially evident in polar science, where access to field sites, infrastructure, and funding is often limited and influenced by institutional structures and senior researchers [2,3]. Research environments have long prioritised seniority, restricting ECRs' opportunities for recognition, leadership, meaningful participation and preventing them from transitioning to independent researchers. For ECRs, this can translate into fewer project opportunities, unequal access to funding, unrecognised volunteer work, and exclusion from meaningful participation in international collaborations and field campaigns.

These barriers aren't just professional obstacles, they can also limit the quality and inclusiveness of science [1]. As climate crises increase, polar research needs diverse voices and innovative solutions. Yet when ECRs, especially those from marginalised institutions or nations, are excluded from decision-making, the field perpetuates colonial legacies and misses critical perspectives [4].

To create a more inclusive and dynamic research environment, institutional systems must be thoughtfully restructured, providing ECRs with meaningful roles and support, while also ensuring they receive the mentorship and guidance necessary to develop their expertise and contribute effectively to collaborative projects [2].

At the Polar Early Career World Summit (PECWS) 2025, ECRs gather together in a session titled "Breaking Hierarchical Barriers in Science" to collectively reflect on and confront the structural challenges they face within the scientific community. Insights and perspectives emerging from this discussion will serve as valuable input to inform the broader polar science community, especially in the lead-up to the International Polar Year (IPY) 2032–33, when today's ECRs will be leading the way.

This Opinion article presents a collective vision and eight key priorities developed during these discussions. Together, these priorities aim to empower ECRs towards transitioning to independent researchers to foster a more equitable, inclusive, and fair polar research community.



## OPEN ACCESS

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## A vision for flattened, functional hierarchies

At PECWS 2025, participants articulated a shared vision: “We aim to work towards achieving a flattened hierarchy free from any forms of discrimination, exploitation, or harassment and create equal access to polar regions, polar infrastructure, academic resources, and career development. Creating an appropriately structured hierarchy, as flat as possible yet as structured as needed for the necessary functioning of activities, will give ECRs the opportunity to equitably develop their career and achieve success while promoting work-life balance, personal well-being, and contributions to science and society.” (Fig 1).

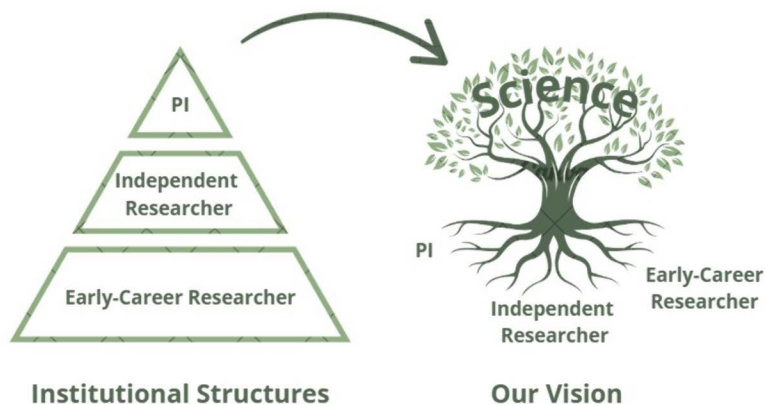
Building on this vision, ECRs identified eight priorities for institutional and community action, grouped here into three thematic areas:

### 1. Empowering ECRs through recognition and resources

- **Recognition of volunteer work as a part of ECR’s work:** ECR contributions are often undervalued or unpaid. Volunteer work conducted for the institution employing the ECRs should be formally recognized and compensated, preferably with financial remuneration or alternatively through credits, awards, or reduced duties, to acknowledge ECRs’ time and reduce exploitative practices.
- **Establishing standards for funding:** Create a country-by-country resource on typical ECRs’ salaries (like postdocs or research assistants) to prevent exploitation and encourage fair pay. Grant funding should be more accessible to ECRs through dedicated funding calls, allowing them to manage resources according to their needs.
- **Involving ECRs in decision-making roles, positions, and committees at all levels:** ECRs must have meaningful roles on committees and leadership, with influence over final decisions, not just token participation in early meetings.

### 2. Training, mentorship, and accountability

- **Develop training programs for both mentors and mentees to navigate power dynamics and build an internal/external support system:** ECR work plans should integrate professional development training focused on navigating graduate school, professional relationships building, conflict resolution, project management and leadership. Training and workshops supporting interdisciplinary dialogue between scientists, policymakers, communities, and Indigenous representatives are strongly encouraged. Both mentors and mentees should be trained and international organisations (e.g., IASC, SCAR, APECS) are advised to formally recognise and promote excellent mentorship.
- **Encourage institutions to establish an office to mediate conflict between various hierarchical positions and have the authority to intervene where necessary:** This office should ensure confidentiality of the involved parties, so they don’t feel discouraged or afraid of repercussions.



**Fig 1. Visual representation of the present institutional hierarchy and our vision for the future.**

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- **Adoption of a framework convention establishing the rights of ECRs between international polar organisations (e.g., IASC, SCAR, APECS) and universities, as signatories, that is endorsed by them and can be used worldwide:** Establish a Special Rapporteur on the rights of ECRs issuing regular and *ad hoc* reports on the systemic violations of the rights of ECRs.

### 3. Increasing access and inclusion in polar research

- **Facilitate international collaboration and access to polar research stations and infrastructure:** Enable ECR participation in polar fieldwork without relying only on hierarchical approval. Support the establishment and continuation of programs that connect researchers with Indigenous communities. Create an international researcher certification to reduce travel and visa barriers, especially for those from countries with “weaker passports.”
- **Increase accessibility to polar activities and meetings:** Avoid requiring personal information (e.g., country of origin or career stage) that could bias participation. Provide hybrid meetings and captioned content to ensure accessibility for those unable to travel.

### Looking forward

The PECWS 2025 discussions reflect a strong, collective willingness for change in polar science, empowering ECRs, promoting fair treatment and representation, and ensuring that future scientific leadership is inclusive, collaborative, and equitable. The eight priorities identified by ECRs offer a concrete roadmap for building that future. Institutions, funders, and policymakers must commit to implementing these actionable steps. As we approach the IPY 2032–33, these actions are especially timely. The ECRs of today will be the research leaders of that future. Ensuring their voices are heard and their needs addressed is essential for the advancement of polar science itself, making it more ethical, inclusive, and forward-looking.

### Author contributions

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**Writing – original draft:** Cláudia Ribeiro, Silvia Simonetti.

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