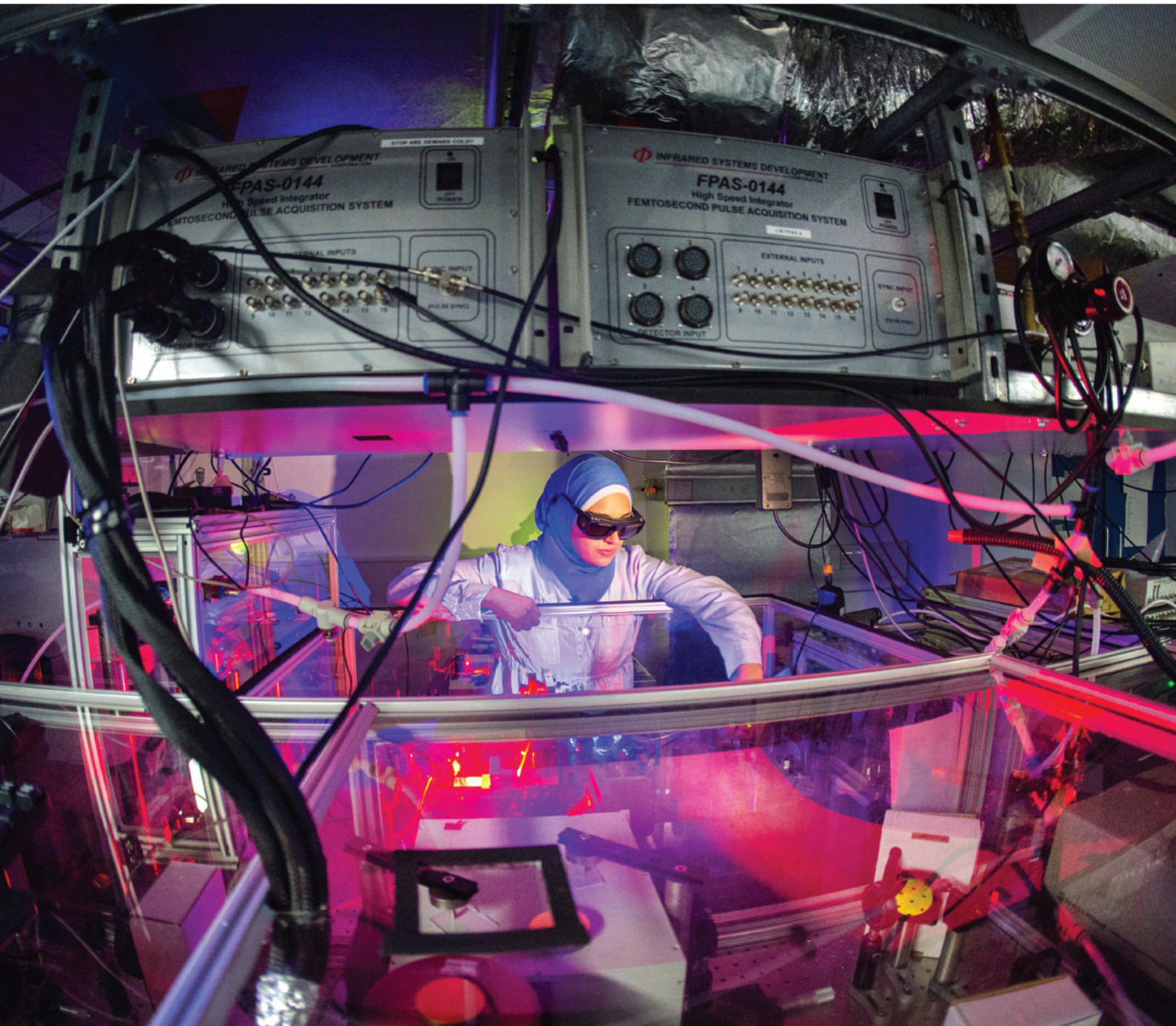
RUSSELL GROUP

Realising Our Potential

Backing Talent and Strengthening UK Research Culture and Environment



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Foreword

The UK is a world leader in research and innovation, but we cannot take our global success for granted. At the heart of our research system are the amazing people who dedicate their careers to advancing new knowledge that will deliver transformative impacts for our health, environment, culture and economy. Russell Group universities are committed to taking a lead in ensuring we have a research culture and environment which truly supports every member of staff to reach their potential and pursue a fulfilling career.

A positive working environment and culture are essential for researchers and, in turn, for research to thrive. The Government's Research and Development (R&D) Roadmap rightly recognises that "to achieve our ambitions for UK science, research and innovation, we must be world-leading in the way that we inspire and enable talented people."[1]

As the country's leading research-intensive universities, home to half of all academics carrying out research at UK higher education institutions, Russell Group universities have a central role to play in driving a positive research culture and environment.[2] Making this a priority will not only benefit researchers' wellbeing, career development and research productivity, but will also help give the UK a global competitive advantage. This should enable us to recruit and retain the very best researchers, not just from our own shores, but from around the world.

Through conversations and interviews with close to 100 representatives from universities (including researchers at all career stages), funders and publishers, we have examined the current UK academic research culture and environment, including the system drivers and incentives which can create challenges and unintended consequences for researchers.

Based on this engagement and building on examples of good practice from our universities and others across the sector, we have developed a Research Culture and Environment Toolkit to accompany this report, which offers pragmatic steps that universities, funders and publishers can take collaboratively to achieve our shared goal of ensuring the UK is one of the best places in the world to do research.

It is important to recognise we are not starting from scratch, but the more we work together across the sector to improve the culture and environment of research, the more of an impact we can have. Change will take time, but we are committed to making meaningful progress for the benefit of all researchers – and research – across the UK.

Dr Tim Bradshaw
Chief Executive, the Russell Group

Methodology

This report is based on research conducted by the Russell Group using a range of methods including:

- In-depth interviews and conversations with 96 individuals from universities, including PhD students, postdoctoral researchers, senior academics, university leaders, and representatives from funders and publishers.
- Meetings and workshops with Russell Group members.
- An examination of existing external research and data on higher education, research culture and wider workplace practices.

In addition, Russell Group members were asked to contribute case studies which demonstrate examples of the work they are doing to support a vibrant, diverse and productive research culture in the UK. Full details of the case studies can be found in a separate short report.

> “a career in research should be rewarding, purposeful and stable”

1. Executive summary

Research makes a significant contribution to our economy, society and culture and a career in research can be enormously fulfilling. Many researchers are proud to work in the research community and the majority of PhD students are satisfied with their research degree experience.[3, 4] **However, postgraduate researchers (PGRs) also report significantly higher levels of anxiety than the general population**[5] **and concerns have been raised by researchers at all levels about job security, incidents of bullying and harassment and mental health issues, amongst others.**[6]

All stakeholders in the research ecosystem – including employers, funders, publishers, government, researchers, and technical, professional and support staff – have a responsibility to take these issues extremely seriously. As the UK's leading research-intensive universities, Russell Group universities are committed to promoting the best environment for research and researchers to thrive.

There is no such thing as a single culture or environment. Those working in different disciplines, at different stages of their careers, in different roles and in different institutions will all have a variety of experiences of working in UK research. This report focuses on common themes that emerged from consultation with nearly 100 representatives from across the UK academic research system. There is a strong focus on the challenges faced by PhD students and postdoctoral researchers, which were most frequently cited, although we recognise the culture and environment affects all those who work in research.[7]

Cultures, values and behaviours can be notoriously difficult to change and there is no one-size-fits-all solution. We need coordinated, sustained and well-designed policies and procedures across all stakeholders in the research ecosystem to effect meaningful change. Drawing on our stakeholder engagement and examples of ongoing work across the sector, we have collated practical suggestions in our **Research Culture and Environment Toolkit**. By sharing and adopting good practice more widely, trialling innovations and investing in the research sector, we can take meaningful and effective steps to deliver a research culture that will ensure the UK is, and remains, one of the best places in the world to do research.

The following key themes have emerged from our work:

Research careers

- A career in research should be rewarding, purposeful and stable. However, there is a particular challenge around the lack of long-term contractual job security, which is often linked to external funding. Boosting quality-related 'QR' block grant funding for universities (and its equivalents in the devolved nations), considering opportunities to lengthen research grant funding periods, and reducing the use of academic contracts that last one year or less can all help address this.

- Staff should have good opportunities for progression and be prepared and supported for a range of career options, with sufficient time for professional development and constructive feedback provided by managers, funders and publishers.

- It is important to ensure evaluation, recognition and reward systems consider the wide range of activities that contribute to an internationally excellent research environment, including effective teamwork, good people management and support for equality, diversity and inclusion (EDI). Stakeholders can build on existing good practice to promote research integrity and encourage open research practices.

> “cultural change will require stakeholders to work collaboratively”

The experience of working in research

- Researchers view the culture in the UK to be generally positive for the quality of research but see the impact for individuals more negatively.[8] Increasing pressures to juggle multiple responsibilities and expectations alongside core research work can lead to long working hours, reduced time for high-quality management and negative impacts on staff wellbeing.

- Building on existing good practice, management and leadership skills could be more consistently recognised and rewarded by funders and employers across the sector. Efforts to reduce bureaucracy for researchers and ensure they can access support networks beyond their immediate line manager or research group are important. There are also real benefits in involving early career researchers more actively in decision-making, allowing them positive opportunities to engage, gain visibility and take on leadership roles.

Inclusive and respectful environments

- Further efforts can be made to ensure we have a diverse and inclusive workforce where every member of staff can reach their full potential. There are some good examples of dedicated schemes and programmes for those from underrepresented backgrounds. Appropriate EDI-related training for those making decisions about grant proposals and researchers' careers is also important, and the composition of funding panels and other committees could include a more diverse mix of people.

- Regrettably, incidents of bullying and harassment occur in every sector of our economy and society. But rigid hierarchies and concerns around whether reporting incidents could halt a project and risk researchers' jobs can be particular issues for researchers. Employers and funders must work together to prevent perverse incentives in their policies and ensure reporting and investigation processes are transparent. Alternative models of research groups with flatter structures could also be trialled, with funders exploring support for group grants to help break down rigid hierarchies.

Looking ahead

Cultural change does not happen overnight and will require stakeholders to work collaboratively across the sector to drive positive changes in a practical and effective way. This report and our accompanying Research Culture and Environment Toolkit are part of a bigger conversation that is happening across the UK research sector.

Over the course of the next year, our members are committed to using the toolkit to test and share ideas to enhance supportive and positive research cultures. At the end of this 12-month period, we will work with Russell Group members – alongside ongoing dialogue with key stakeholders – to reflect on their experiences of using the toolkit and consider how we can continue to take this work forward in the most effective way.

2. What does a positive research culture and environment look like?

What do we mean by 'research culture and environment'?

Drawing on definitions provided in the *Concordat to Support the Career Development of Researchers*[9], research culture encompasses the behaviours, values, expectations, incentives, attitudes and norms of a research community. It determines the way that research is conducted and communicated and can influence researchers' career paths and mental wellbeing.

The research environment typically refers to tangible aspects of the environment, including legal requirements, physical settings, availability of facilities and other resources, and opportunities to interact with a wide range of researchers, but it can also be used to include the cultural aspects outlined above.

The research environment at national, institutional and group level is responsible for creating the drivers, resources and incentives that influence research culture. So, to change culture, we need to change the incentives created by the environment.

What are we trying to achieve?

To foster ambitious, creative and innovative research we need a well-resourced and supportive research culture and environment which:

- Provides stable and appealing career paths, with equality of opportunity for all
- Values rigorous and open research, delivered through high-quality methods and high standards of research integrity
- Recognises and rewards the wide range of activities that contribute to an internationally excellent research environment
- Provides an inclusive, respectful and collegial environment in which researchers feel supported through their relationships with colleagues
- Prevents and addresses negative and unacceptable behaviours fairly and efficiently where they occur, including bullying and harassment.

Key drivers of research culture

One of the most powerful drivers shaping our research environment is the way funding decisions are made, which incentivise researchers and organisations to value the behaviours and outputs that funders reward. But strong incentives also arise from organisational structures and hiring and promotion practices within universities, as well as from publishing processes, formats and decisions.[10]

A positive culture and environment is created by some of the following key policies and infrastructure:

- Good employment conditions
- A safe and healthy working environment
- Opportunities for career development[11]
- A commitment to EDI and zero tolerance of discrimination, bullying and harassment
- A commitment to research integrity
- Effective and transparent leadership
- Clear and transparent research expectations for individuals and teams
- Collegial behaviour and an ethos of team working
- Adequate resources so that it is feasible to complete the research.

Positive leadership, positive culture

Ensuring senior leaders are accountable for maintaining a positive research culture and environment is crucial, so that issues relating to a healthy research environment are taken into account during institutional decision-making processes in order to deliver change.

A growing number of universities ensure explicit senior leadership responsibility for research culture and environment. Several Russell Group universities have created specific roles, for example a Head of Researcher Development and Research Culture at the **University of Exeter**, a Dean of Research Environment and Culture at **Cardiff University** and a Dean of Research Culture and Strategy at **Newcastle University**. These kinds of roles also exist in other organisations across the research system, for example UKRI has a Deputy Director for Research Culture and Environment.

Other institutions ensure responsibility for research culture and environment is held within existing roles in their senior leadership team. At the **University of Manchester** for example, responsibility for research culture and environment falls with the Vice-President for Research and research culture objectives form part of the university's research strategy.

3. Research careers

A diversity of research career pathways provides options for individuals and enriches the research ecosystem in and beyond universities. A positive research environment should enable the movement of people between industry, academia, the public sector and elsewhere. This provides a wider variety of career options, facilitates knowledge exchange, networks and collaborations, and thus strengthens our research base.

The route into postdoctoral research and academic positions in universities is very competitive.[12] We need to ensure that our PhD students and early career researchers (ECRs) are aware of the different career pathways open to them and that they are prepared accordingly for a range of possible career transitions through training and development opportunities. It is also important to combat any narrative that moving to employment outside of academia is an inferior career pathway.

Whilst a certain level of competition for funding and research roles can be healthy and productive, Sir Jeremy Farrar, Director of Wellcome, has noted that "the relentless drive for research excellence has created a culture in modern science that cares exclusively about what is achieved and not about how it is achieved."[13] This kind of "destructive hyper-competition", as described by Farrar, is unacceptable. Not only are such environments unhealthy, unattractive and unproductive, they can encourage poor research practices, which runs counter to the standards and values of our research community and undermines the quality of research and the beneficial impact we want to have on the world.

This chapter discusses challenges and ideas for improvement around the following themes:

- Career stability
- Career progression
- Recognition and reward

Career stability: what are the challenges?

Career moves between roles and organisations is the norm in many professions. In academia, however, contract length is often tied to external grant funding for early career research staff. Short fixed-term contracts can provide a valuable route to gain professional experience in a variety of settings, especially early on in a research career. However, the lack of long-term contractual job security can be a significant concern for many researchers[14] and indeed, is a more common problem for those whose primary job in a university is to carry out research.

In 2019/20, 68% of academic staff undertaking research only (i.e. not also teaching) in UK universities were on fixed-term employment contracts (including rolling fixed-term contracts). This compares to only 7% of those undertaking both research and teaching and 44% of those teaching only.[15]

The pressure of fixed-term contracts and job insecurity means we are losing people from the global academic talent pipeline. A survey by Vitae found that three quarters of respondents who had left European universities or research institutes did so because they wanted better long-term employment prospects, more job security and did not want to be employed on fixed-term contracts.[16]

Researchers we interviewed for this project highlighted the negative impact that precarity within research careers could have on researcher wellbeing, with short-term contracts sometimes making it harder for researchers to gain access to mortgages or plan a career around family life.

> “Boosting QR would be a powerful way for the Government to help universities support research careers”

They also told us that people can find themselves on a succession of short contracts where too much of their time is spent seeking out their next grant or job. This risks undermining research quality. In a study commissioned by UKRI, publishers, funders and other stakeholders suggested current research grant funding models may provide insufficient time for rigorous research integrity practices, such as data checking, curation and management, with some researchers having to rush to complete projects before the end of their contract.[17]

Russell Group universities are committed to upholding the highest standards of research integrity and they fully support the principles of the *Concordat to Support Research Integrity*.[18] However, we need to recognise that stressful, pressured work environments, with demanding deadlines for staff on insecure contracts can be detrimental to researchers' wellbeing and research quality.

A string of short-term project grants and contracts can also undermine efforts to advance EDI in the workplace as it is often more difficult for those with caring responsibilities – disproportionately women – to regularly move between jobs and job locations. Short, unpredictable grants and contracts also create financial insecurity and make it harder to forge a research career, which is at odds with EDI efforts to attract and retain researchers from a diverse range of backgrounds.

Ideas for how to support greater career stability

Increasing QR funding and full economic cost rates

In the UK, a researcher's salary is paid either by a project grant or contract won from an external source, such as a charity, industry or Research Council; or from the internal funds of the institution hiring them.

Whilst research grants and contracts fund a finite, specific piece of research, quality-related 'QR' funding (and equivalent streams in the devolved nations – e.g. the Research Excellence Grant or REG in Scotland) is a recurrent annual grant to universities, informed by their performance in the Research Excellence Framework (REF).

This makes QR and its equivalents a source of stable, predictable income which can be used to make long-term strategic investments in the research base. QR is used for investment in research infrastructure and equipment, staff training and supporting projects which are deemed too experimental or risky to receive external funding from elsewhere. QR funding also has to be used to cover the cost-price gap for externally funded research given that the UK's public funding model means Research Councils only cover around 74% of the full economic costs of the projects they support, and charities cover just under 60%.[19]

In addition to the activities above, UKRI estimates around 20% of QR funding is used to support research careers.[20] This might include hiring staff on permanent contracts, investment in fellowships, bridging funding to maintain research teams between grants or building up new research teams or departments which need to be established and supported before they win external funding.

QR funding is thus pulled in multiple directions, yet we have seen a 14% fall in its real-terms value between 2010/11 and 2020/21.[21] Boosting QR would therefore be a powerful way for the Government to help universities support research careers. Given the important real-world impacts QR delivers for the economy and society, it would also help to enhance the UK's overall research competitiveness.[22]

Increasing the proportion of full economic costs covered on external grants would also help ensure progress in this area by freeing up other funding sources – particularly QR – to ensure universities can provide competitive benefits and support to researchers.

> “move towards more stable, open-ended contracts as the norm”

We need to recognise that taking steps to improve our research culture and environment will have cost implications for all actors and may require trade-offs in terms of what we fund in future. It is important that we are able to discuss these issues and offer ideas as a starting point for conversations between funders and universities, recognising that a one-size-fits all approach will not work across the diverse landscape of institutions and funders.

Lengthening research funding periods

Some funders are already moving towards longer funding periods as the norm[23] and there may be benefits from doing this more extensively across the UK funding landscape. Moving to a three-to-five-year (or even five-to-seven-year) norm would potentially give researchers more space to focus on their research, rather than on applying for new grants, and would reduce the pressure to return results that may be sub-optimal in a relatively tight timescale. For some researchers, the prospect of longer grants could also give them the space to build more ambitious proposals, with a potential for greater impact.

However, we need to recognise there would be trade-offs in doing this within the context of fixed budgets: if funders lengthen grants, they may not be able to fund as many. This needs to be weighed against the way that shorter grants and posts can act as a useful stepping stone for some postdoctoral researchers and other staff looking to build a portfolio of experience. Fewer, longer awards might also have unintended EDI consequences. Further discussion with UKRI and other research funders would be useful to understand the full implications of this scenario.

To provide accountability for longer grants, funders could consider greater use of a two-stage funding system, involving a lighter touch review process partway through a project to ensure these are fulfilling expectations, before confirming further funding. For example, UKRI Future Leaders Fellowships provide funding for four years, with the option to extend for a further three years “to support long-term focus on a particular area of research or innovation and continued career development”.[24]

Moving towards longer employment contracts

We recognise that universities need to play their part here too, by as far as possible reducing the use of academic contracts that last one year or less and providing an explanation where these short contracts are used, for example for those on bridging funds. Where possible, universities should look to ensure all those in academic posts supported primarily by institutional funding, rather than external funding, are employed on open-ended contracts. In the longer term, it is important that universities explore how to move towards more stable, open-ended contracts as the norm, including for those predominantly funded by external grant sources.

In 2019, **King’s College London** changed policies around the use of short and fixed-term contracts for academic staff, which has helped provide additional career stability and reduced university bureaucracy. All non-externally funded staff on fixed-term contracts who had been employed at King’s for longer than four years continuously were offered the opportunity to transfer to an open-ended, permanent contract. The use of fixed-term contracts of 12 months has also been reduced significantly, with a new presumption that fixed-term education-focused or internally funded research appointments should be for a minimum of two years.

As part of wider efforts to promote research career stability and progression, the **University of Manchester** has also introduced automatic transition onto an open-ended contract after four years’ continuous service.

Universities can also help in this area by underwriting senior research roles with their own institutional funding, including QR, and other sources to support bridging funding schemes.

The **University of Bristol's** medical school is piloting a bridging scheme which it hopes to roll out across the university to provide greater career stability for its researchers. The scheme offers funding to bridge the gap between grants to cover researchers' salaries. This typically involves topping up researchers' salaries to 100% when they are funded by multiple grants and there is a gap that results in a salary shortfall. The pilot scheme was established late 2019, with bridging payments solving issues of salary continuity for multiple individuals within months of being launched. Feedback from applicants who were able to secure external funding before bridging support was required showed the scheme provided substantial reassurance that a safety net was available.

New career pathways

Some universities have created new, structured career paths to improve support for researchers within their institutions.

In 2015, the **London School of Economics and Political Science (LSE)** established the New Research Staff Career (NRSC) track, with new titles, higher minimum salaries and new role profiles to provide a more stable and sustainable career track for research staff. Support available through the NRSC includes funded personal research time and bridging support to facilitate progression.

Career progression: what are the challenges?

We are fortunate as a sector to have a large talent pool of researchers who want to pursue a career in academia. However, there are significantly fewer academic positions available in universities compared to the number of PhD graduates.[25] As a sector we need to ensure there is effective support for researchers' career mobility into successful roles in other sectors. The high-level skills of our postgraduate and postdoctoral researchers are incredibly valuable for the economy and society, and encouraging two-way mobility between academia and industry is key if we are to support the adoption of research and innovation into the wider economy, the public sector and elsewhere.

As part of helping researchers to forge careers across different sectors, we need to communicate a more positive narrative about the range of career opportunities open to researchers, ensuring career development includes training in research, innovation and leadership skills applicable to other sectors.

> “recognise the value of experience in other sectors”

Ideas for how to support career progression

Encouraging and supporting mobility with other sectors

Universities can help develop and manage researchers’ and research students’ career expectations from the outset. This should include transparency at induction around career progression opportunities within academia, promoting the benefits of wider mobility and providing dedicated support to help early career researchers in particular prepare themselves for a range of different career paths.

Newcastle University is helping early career researchers gain skills that will support career progression inside or outside of academia through its Action for Impact scheme. Open to researchers at Newcastle, Durham, Sunderland and Northumbria universities, participants receive training which helps them articulate novel ideas, plan research proposals and develop commercial awareness and skills for translating a technology idea into an innovative product or service.[26]

Investment in mechanisms to encourage mobility between academia and other sectors is important and could include providing mentors, training in broader skills and forging partnerships with employers including via shadowing, secondments and internships.

The **University of Liverpool** is leading the Prosper project to boost the success of postdoctoral researchers outside of academia. The project is supported with £3.6m funding from Research England and £0.8m from industry and local leadership partners. Following extensive consultation, the university has launched an online portal of development resources for staff and is engaging with employers from the public, private and third sectors to understand exactly what they need from their workforce, applying these insights to equip postdocs with the relevant skills, mindsets and attributes to meet these needs.[27]

The **University of Oxford** holds an annual Careers Conference for Researchers, which offers research staff and PhD students the opportunity to explore a range of rewarding career pathways, including through interactive workshops and networking with employers who are actively seeking research-trained applicants.[28]

Where they are not already doing so, universities can also develop promotion criteria that recognise the value of experience in other sectors, including industry, government and the third sector, setting out routes for progression into senior leadership roles for research and knowledge exchange professionals.

By signing the Technician Commitment, many universities have committed to ensuring there are career progression opportunities for technicians through the provision of clear, documented career pathways.[29] Signing and implementing the commitment can be a useful way of ensuring these opportunities are in place for these key staff members.

Funders can also help support cross-sectoral mobility. UKRI funds CASE studentships, for example, which are a valuable way of exposing PhD students to industry collaboration from the very beginning of their career. The UKRI Impact Accelerator Accounts also provide funding to support collaboration and engagement, for example through secondments, and Knowledge Transfer Partnerships (KTPs) are a valuable resource for industry collaboration and experience. Other funders may wish to consider supporting similar university–industry partnerships where appropriate.

Funders could also consider providing transition funding opportunities for researchers to use to pursue either an academic position or other career pathways in order to support mobility.

Time for professional development

Implementation of the principles in the *Concordat to Support the Career Development of Researchers* provides a foundation for a supportive research environment.[30] The Concordat recommends institutions should provide opportunities, structured support, encouragement and time for researchers to engage in a minimum of 10 days' professional development pro rata per year, and that funders should incorporate this into relevant funding calls, terms and conditions, grant reporting, and policies.

Seeking feedback from researchers and their managers about how any protected time is used would be useful for universities and funders to discuss if more time for researchers' professional development is needed and if this could be supported. Consideration could also be given to holding Principal Investigators (PIs) accountable for ensuring implementation and take-up of this commitment at group level.

An inclusive approach

It is important that career progression is open to all, including by ensuring appropriate part-time and flexible working options are available. To minimise the impact of family or sick leave on career progression, universities should take account of career breaks when assessing productivity, focusing on quality over quantity of research and impact in such assessments.

Some funders cover additional net costs relating to parental and other leave, and extend grants accordingly, but this is not the case across all funders.[31] Those funders who do not do so already should consider how they can support additional leave costs and grant extensions as necessary.

Professional development activities also need to be open for all, and it is likely substantial lessons on flexible provision will be taken from the challenges the Covid-19 pandemic has presented. A significant proportion of support for academic careers provided by Russell Group universities moved online successfully in 2020-21. Staff at the **University of Warwick**, for example, moved quickly to ensure their Accolade career training and events scheme could be delivered virtually, enabling postdoctoral and research fellows to access regular training events including research webinars and panel discussions from home.[32]

Feedback

Our interviews with early career researchers identified the need for better feedback to help them with their career development. This was echoed in a report by Wellcome, which highlighted that in the last 12 months, only half of those surveyed had received feedback on their performance (55%) or had a formal appraisal (49%).[33]

Institutions have a responsibility to address this by ensuring managers are equipped to support their teams. Those who have signed up to the *Concordat to Support the Career Development of Researchers* have committed to providing effective line and project management training opportunities for managers of researchers, heads of department and their equivalents. In addition, they will work to ensure that excellent people management is championed throughout the organisation and embedded in institutional culture, through annual appraisals, transparent promotion criteria, and workload allocation.[34]

Funders and publishers should also endeavour to provide more comprehensive feedback to researchers when grant applications or journal paper submissions are unsuccessful. Researchers have told us this information would be very valuable to help them understand how to improve their work. If this is not feasible at early application/submission stages, an alternative could be to provide more transparent and easily accessible data on success rates and information on the number of applicants to a grant.

Recognition and reward: what are the challenges?

A balance needs to be achieved to ensure that there are appropriate and not unhealthy levels of competition in the system. Work carried out by the Nuffield Council on Bioethics found that:

> "Competition appears to be a double-edged sword. Many believe that competition can bring out the best in people as they strive for ever better performance, and that science advances more rapidly as a result. It is also thought that high levels of competition go against the ethos of scientific discovery and can create incentives for practices that are damaging to the production of high quality research."[35]

Regrettably, Wellcome found that 78% of researchers think high levels of competition have created unkind and aggressive conditions.[36]

Some universities explicitly recognise and reward behaviours such as collegiality and team leadership in their probation and promotion criteria. But across a fragmented landscape of employers, funders and publishers, existing efforts are not consistent enough to counter the strong incentives in favour of more individualistic approaches. Universities, Research Councils and other funders, for example, do not regularly require applicants for funding or fellowships to be able to demonstrate their management or leadership experience. Learning from examples of good practice in this area will be key; stakeholders could usefully review current policies to ensure recognition of these kinds of positive behaviours to ensure these are embedded more consistently in hiring, promotion and funding processes. From our interviews, we also heard feedback that positive behaviours that support high-quality research and research integrity, such as open research practices, are not consistently promoted, recognised or rewarded across the research landscape.

Whilst evidence of quality research outputs is highly relevant and important in decision-making around the funding and hiring of researchers, there is a long-established critique of the research community's disproportionate focus on securing publication in specific journals or with particular monograph publishers and over-reliance on certain publication or citation metrics.[37] Since research is a global endeavour and researchers are highly internationally mobile it is important that the UK works with counterparts internationally to challenge issues around the 'publish or perish' mentality and the over-reliance on publication and citation metrics. A wide set of outputs and behaviours should be rewarded and celebrated, with a focus not only on *what* has been produced, but *how* that research has been carried out and the impact it has had.

A culture of hyper-competition, where it exists, also needs to be challenged if high standards of research integrity, reproducibility, quality and impact of research are to be maintained. The research sector is likely to be much more successful in maintaining a culture of good practice in this area if universities, funders, publishers and researchers all work together.

> "A wide set of outputs and behaviours should be rewarded and celebrated"

Ideas for how to support improved recognition and reward

Broader assessment criteria for research evaluation, hiring and promotion

Universities, funders and publishers all have a role to play in promoting the appropriate evaluation of research and in ensuring recognition and reward systems take into account the wide range of activities that contribute to an internationally excellent research environment. These activities include effectively managing and supporting colleagues and their career development, supporting research integrity, creating a respectful environment where all voices are listened to and promoting equality, diversity and inclusion. Fostering these values as a key component of healthy and productive research environments is essential if we want to continue to attract and retain a high-quality, high-performing workforce that feels valued and motivated.

All Russell Group universities are signed up to the San Francisco Declaration on Research Assessment (DORA), which advocates for more holistic and balanced ways to assess the outputs of scholarly research (and thus researchers themselves), including discouraging the inappropriate use of research metrics as proxies for quality.[38] Many funders and publishers in the UK are also signatories to DORA, including UKRI. Ensuring a commitment to DORA is translated into practical actions is crucial.

The **University of Birmingham** established a specific task and finish group to explore how best to integrate responsible and fair metrics principles and practices into their research environment. Progress has already been made in delivering a DORA action plan developed by the group, including an initial review and update of HR documentation, with further work planned.[39]

Universities can also build wider research culture and environment values into their hiring and promotion criteria, application processes for internal funding, and internal awards.

At the **University of Glasgow** all those applying for promotion to professor are required to demonstrate collegiality in their research as a condition of their promotion, with the university providing practical, but non-exhaustive, examples of what this might look like.

To embed these behaviours further, funders could build these same values into the assessment of their grant applications, thus creating a consistent set of incentives in favour of these behaviours. This could include asking grant applicants for evidence of collegiality, effective leadership and management, and the promotion of EDI and seeking information about how these values and behaviours will be embedded into the management and delivery of research projects. Funders could also incentivise PIs to carry out management training and help build a culture where evidence of good leadership and management is expected by assessment panels. To promote a culture of team science and research, funders could consider supporting group grants where appropriate.

Publishing practices and open research

To promote open research practices and support research integrity, if they are not doing so already, universities should provide training on publishing practices including pre-registration, sharing outputs openly (including via preprints and Open Access publishing) and making data findable, accessible, interoperable and reusable (FAIR). Complementing this, publishers could require authors to provide data availability statements (indicating whether research data has been shared and, if so, how to access it) and publish annual figures on the percentage of publications for which data has been made available.

To ensure researchers are recognised fairly for their varied contributions to research outputs, publishers and universities could work together to integrate the Contributor Roles Taxonomy (CRediT)[40] into journal submission processes and universities' institutional repositories, as the **University of Glasgow** has done, for example. CRediT includes 14 roles that represent the different responsibilities typically carried out by contributors to scientific scholarly output (such as analysis, data curation, funding acquisition and drafting). As this taxonomy predominately applies to the sciences, similar frameworks could be considered for other disciplines.

Clear authorship guidelines, as provided by some learned societies, will help avoid situations such as PGRs not being named on outputs to which they have contributed. Ensuring their inclusion means the valuable contribution of PGRs can be recognised and will also help to support their career progression.

Where they are not doing so already, journals could use the Registered Reports published format, which involves peer review of research plans *before* data collection, in order to focus on the research question and methods, rather than the results.[41] This can help prevent poor quality research practices and publication bias. Funders could consider trialling the Registered Reports funding model, as Cancer Research UK is doing, for example, in which the assessment of grant applications is combined with the first stage of peer review of the Registered Reports format.[42] In line with this, publishers could explore and invest in new formats for publishing 'negative' results, in collaboration with universities.

> "build wider research culture and environment values into hiring and promotion criteria"

4. The experience of working in research

Positive relationships with co-workers and managers are an essential component of workplace wellbeing and productivity.[43] Sustaining a healthy work-life balance is also key and the Mental Health Foundation has identified the pressure of increasingly demanding workplace cultures in the UK as "perhaps the biggest and most pressing challenge to the mental health of the general population".[44]

Wellcome reports that whilst researchers view the culture in the UK to be generally positive for the quality of research and for society, the impact for individuals is more often seen as negative, including negative impacts on personal relationships, isolation and loneliness.[45] Their study revealed that 70% of survey respondents indicated they felt stressed on an average working day, with higher stress levels reported amongst those working in academia compared to industry. Social and personal isolation were identified as particularly apparent during PhD study and this was echoed in the comments from many of the senior academics we interviewed, who were concerned about the health and wellbeing of postgraduate research students and early career researchers (ECRs).

These issues are not unique to the UK. Maintaining a work-life balance was the second biggest concern identified by respondents in *Nature's* global survey of PhD students[46] and a study across 56 Spanish universities also highlighted social isolation, long working hours and poor work-life balance as the main reasons why some doctoral students withdraw from a programme.[47]

Other factors which can influence whether a PhD candidate completes their studies include the quality of supervision (both intellectual and pastoral), the absence or presence of peer support and a sense of community, financial stability and mental health.[48] Ensuring we have an environment in which people feel supported and are able to thrive and achieve their full potential is important for the health and wellbeing of researchers and to ensure we can maintain a pipeline of new talent into research.

This chapter discusses challenges and ideas for improvement around the following themes:

- Wellbeing, management and support
- Visibility, sense of community and engagement

> “the relationship between student and supervisor is especially critical”

Wellbeing, management and support: what are the challenges?

PhD research is often associated with lone working and many study outside their home country, so they can be at risk of social isolation, without immediate access to the family or other networks usually relied on by individuals in times of stress.[49]

In addition to these pressures, interviewees for this project reflected on how the training and expectations attached to modern PhD programmes had grown in recent years. Whilst the development of professional training opportunities and industry exposure were seen positively to improve the employability of students, it was suggested that the average studentship, which typically lasts three years, is not long enough to allow PhD candidates to complete their professional training and research within their funded period. This was seen as especially problematic for students from widening participation backgrounds who may not have the means to self-fund any extension to their registration period.

Management and support

Many of those who embark on an academic career do so due to a desire to conduct research that can advance human knowledge, understanding and have a positive impact on the world. Whilst not all researchers will or should be required to become managers, many researchers, as a result of becoming more senior, find themselves in management positions at some point during their career.

The skills required to be a good manager or leader can vary from those required to be a good researcher. There is evidence that indicates the management skills of PIs is still inconsistent, with 42% of researchers in managerial roles surveyed by Wellcome across the UK and internationally reporting they had not received training on managing people.[50] New and established managers need to be both supported and held accountable to ensure they are performing well as managers.

As discussed in the chapter on research careers, funders and employers could learn from the examples of good practice where effective management, leadership and mentorship are better recognised and rewarded in hiring, promotion and funding process to motivate all researchers to prioritise the development of these skills.

For PhD students, the relationship between student and supervisor is especially critical, with the quality of this relationship found to be a significant factor in a student’s decision to continue or abandon their studies.[51]

Supported by funding from Research England, **Durham University** developed online educational resources designed to help PGRs and their supervisors understand the impact supervisory relationships can have on PGRs’ mental health and wellbeing.[52]

In the UK, the Quality Assurance Agency (QAA) publishes advice for research degree providers on the research environment and the supervisory process, one of the key guiding principles of which is to ensure each student has an appropriately skilled and knowledgeable supervisory team, which includes a main supervisor as the key contact. The guidance notes that if a student-supervisor relationship is not working well, students should have access to independent advice, with clear mechanisms for raising concerns.[53]

> providing high-quality mentoring, management and support takes time

Russell Group universities work hard to ensure high standards of PhD supervision and across the sector the quality of supervision has been found to be the highest rated aspect of the research degree experience, with 87% of PGRs reporting they are satisfied with the quality of their supervision.[54]

At the same time, providing high-quality mentoring, management and support takes time, and there was acknowledgement from those we interviewed for this project that PIs and supervisors could be better supported to help them focus on these duties. Interviewees described the multiple responsibilities managers were expected to take on in addition to their research and PhD supervision duties.

Some of these responsibilities were linked to project working, such as ongoing reporting to funders, other project administration or applying for new grants. Others were linked to university responsibilities which were considered important and worthwhile, but which take time away from the research team, such as Athena Swan applications and teaching. Fulfilling these roles, in addition to the other tasks often expected of researchers, such as refereeing academic articles or peer review, was seen to be adding to a culture of long working hours. This was believed to be negatively impacting managers' abilities to devote time to high-quality management, PhD supervision and team support.

Ideas for how to support wellbeing and high-quality management

It is increasingly common practice for PhD researchers to have a second supervisor who can provide them with additional pastoral and academic support during their studies. Second supervisors can also provide additional academic input and continuity if the primary supervisor becomes ill or has to withdraw for other reasons; this arrangement also helps to resolve problems if the student-supervisor relationship with the primary supervisor is not functioning optimally.

Research leadership and management

Russell Group universities provide management and leadership training for researchers, with many offering refresher courses and continued professional development for established managers and PhD supervisors.

All new early career researchers at the **University of Manchester** complete training as part of their employment probation period that helps improve understanding of effective PGR supervision and the range of challenges individual students might face. In addition to targeted training, academic supervision is also supported through a PGR supervisor toolkit and an online system that monitors progression against milestones, including year-end reviews.

Our universities are also developing training resources which can be used by others in the sector.

The **University of Edinburgh** is leading the Future Leaders Fellowships Development Network, working with five other Russell Group universities to provide training and development for fellows and early career researchers across the UK focused on leading teams and collaboration, transforming research cultures, and enterprise and self-leadership, amongst other areas. The university is committed to making training materials available to colleagues across the sector.[55]

At **UCL**, PGRs worked in collaboration with tutors and the Doctoral School to co-create online training resources for research supervisors. This included the Good Supervision Guide for new and experienced PhD supervisors, which was written by a PhD candidate based on interviews with UCL tutors and has been made available to staff at other UK universities.[56]

360-degree appraisals can help to promote the importance of positive, effective relationships with colleagues at all levels. The **Imperial College** Expectations 360 tool is one example, which is administered by an external organisation to allow comments to be processed confidentially and securely.[57]

Funders in turn can complement these efforts by supporting PIs to carry out management training if they have not had the opportunity to do so already when securing grants. For example, as part of grant applications, funders could require PIs to be able to demonstrate how they will support staff development and good management within the project team, where appropriate.

Although it is challenging to find workable solutions, more could be done to reduce the administrative burden on academics, freeing them up to devote more time to research and teaching, supporting those they manage, and improving their work-life balance for themselves and their teams. Universities and funders could work together in this area to streamline data collections and audits on similar topics, such as those related to EDI and culture. The UKRI Funders' Forum could consider how funders could collaborate to reduce bureaucratic demands on researchers. The reviews of research bureaucracy UKRI and BEIS are leading represent another opportunity to simplify administrative processes and reduce burden throughout the UK research system.[58] The Russell Group and our members will engage proactively with this work as it continues.

Funders could also help by supporting the costs of project managers and related posts to lessen the administrative burden of managing a project currently placed on PIs. Reducing the frequency with which PIs need to re-apply for grant funding could also help in this area, although the implications of this approach, as discussed in Chapter three, would need to be considered carefully.

Support networks

All researchers need access to support networks that reach beyond their immediate line manager or research group. These are especially important for PGRs. Universities can help by setting up and supporting student and ECR networks to foster a sense of community within the university, as well as a group of peers that can be supportive of one another, both informally and through peer buddying and mentoring arrangements. Those in smaller or specialist subjects (or institutions) could benefit from the creation of networks that span across several disciplines or multiple universities to build critical mass within a research area.

Queen Mary University of London (QMUL) ran a two-year project on PGRs' mental health and wellbeing which included weekly support groups for PhD students. The project showed that access to these groups improves wellbeing significantly, with participants reporting they felt less isolated and anxious, were more satisfied with their life and work-life balance, and felt more confident about completing their PhD within the institutional time frame. Queen Mary is committed to continuing offering the initiatives launched during the project.[59]

> “give early career researchers an effective voice alongside senior members of staff”

The **University of Cambridge**'s Postdoc Academy provides professional development, pastoral services and physical community-building spaces across the city for postdoctoral researchers. Mentoring is a key part of the Academy's approach to improving research culture and postdocs can access mentors from academia, business, industry and the charity sector to support career progression and personal development.[60]

More flexible approaches to PhD funding may also be needed given the demands of modern PhD programmes. Greater opportunities for students to extend their funding period, or the use of a four-year funding model, are some ideas which funders and universities could explore together.

Visibility, sense of community and engagement: challenges and ideas to address them

The mental health charity Mind highlights the importance of effective management and open dialogue, ensuring employees feel able to voice ideas and are listened to, and encouraging a good work-life balance as key factors in promoting wellbeing and creating a mentally healthy workplace.[61] Feeling visible and listened to within the workplace can be especially important in larger organisations where more junior staff can be at risk of feeling less seen or valued.

In our interviews, ECRs especially welcomed opportunities to increase their visibility within their institutions, take on leadership roles and contribute to institutional decision making.

To support staff to do this, many universities have specific forums, committees or networks to gather and promote ECRs' views, with representatives on decision-making committees at departmental and institutional level which give them an effective voice alongside senior members of staff.

At the **University of Exeter**, ECR Liaison Forums provide an opportunity for early career researchers to meet and discuss what their community needs from the university. They have representatives on the Research and Impact Executive Group, providing a direct link to senior staff and enabling ECRs to help shape the university's strategy on research, innovation and impact.[62]

At the **University of Southampton**, a survey across all five of the university's faculties examined the impact of the Covid-19 pandemic specifically on ECRs. The results are being used to identify areas of resilience and vulnerability and will be a valuable tool to help determine university strategies to support ECRs in the future.

Another way to make sure the views of research staff contribute to institutional decision-making is to co-create university initiatives that affect them.

Queen's University Belfast ran an anonymous online survey to get researchers' views on what the university could do to improve the research culture. The survey complemented workshops open to all academic and professional services staff, with this consultation helping shape a new institution-wide Research Culture Action Plan (RCAP). As part of the RCAP development process, staff had the opportunity to comment on an initial draft of the policy and additional researcher feedback was incorporated into the final plan.

Funders also have a role to play. In January 2021, UKRI put out a call for postdoctoral researchers, research associates and other early career researchers to join its new ECR Forum. The Forum aims to give researchers a voice in UKRI's strategy, policy development and decision making. It also hopes to help build a community for early career researchers to benefit from peer interactions, learning, support and other opportunities.[63]

Funding PGR studentships and fellowships as cohorts, for example in the Centre for Doctoral Training (CDT)/Doctoral Training Partnership (DTP) models, can help create a greater sense of community by providing an inbuilt network for researchers, as well as often having an associated package of support for career development. Of the PGRs we spoke to for this project, those who were part of CDTs or DTPs indicated they felt more supported than those who were self-funded, for example.

> "feeling visible and listened to within the workplace can be especially important in larger organisations"

5. Inclusive and respectful environments

Attracting and retaining talented people from a range of backgrounds, and with diverse views, is an important goal for all organisations, including universities. There is strong evidence that workforce diversity and inclusion is not only important for reasons of equal opportunities and social justice, but also because this enhances organisational productivity, innovation and decision-making.[64]

This applies to the quality and impact of research. Diverse perspectives are associated with a more heterogeneous array of research ideas, viewpoints and questions driving the creation of new knowledge and discoveries.[65] Studies have also found that a greater mix of nationalities and ethnicities is correlated with enhanced citation impact.[66,67] As noted by the Director of the National Institute of General Medical Sciences in the US, *"Diversity at all levels — from the kinds of science to the regions in which it is conducted to the backgrounds of the people conducting it — should lead to the best returns on the taxpayers' investment."*[68]

To foster a truly inclusive, respectful and supportive environment, elements of the workplace culture or structures which enable bullying and harassment or prevent staff from speaking up when they have concerns must be addressed.

Regrettably, incidents of bullying and harassment occur in every sector of our economy and society and remain far too common in workplaces. In a recent survey of employees from 131 different companies across the UK, 71% said they had been bullied or had witnessed bullying in the workplace, and over 35% that they had been bullied themselves within the last three years.[69]

However, the risks of bullying and harassment may be exacerbated by the research culture and environment in some organisations or teams. Six in 10 respondents to Wellcome's survey of over 4,000 UK and international researchers said they had witnessed bullying and harassment during their career, whilst 43% said they had experienced bullying and harassment themselves at some point.[70] In their work, Wellcome highlight one of the challenges in addressing poor research culture: research is an international endeavour, where workplace cultures and habits (good and bad) can move across countries. Hence it is even more important we ensure that our values and expectations of behaviour in the UK are communicated clearly to all staff, and that these are consistently enforced.

This chapter discusses challenges and ideas for improvement around the following themes:

- Equality, diversity and inclusion (EDI)
- Bullying and harassment

EDI: what are the challenges?

Historically, efforts to advance EDI within the research base have tended to focus on gender representation, specifically the challenges faced by women. More recently other characteristics, particularly race and ethnicity, and the role of intersectionality, have received more attention.[71] The UK's Equality Act prohibits discrimination on the grounds of a specific list of protected characteristics.[72] Other characteristics, such as socio-economic background (social class) and political viewpoint, are not protected by the legislation.

Many of the barriers faced by those from underrepresented groups have come about due to long-standing practices, behaviours and policies across the research ecosystem.[73] Barriers are likely to be unintended in design and even invisible to those who do not experience them.

Variations in the collection, comparison and use of EDI data across research and innovation sectors also hamper efforts to understand and improve representation and evaluate the effectiveness of EDI activities.[74]

The challenges faced vary between different groups, research disciplines and research environments. For example, gender imbalances are particularly pronounced in science, technology, engineering and maths (STEM) subjects.[75]

In addition to some of the challenges discussed elsewhere in this report – such as limitations on mobility for researchers with families and/or caring responsibilities, and the impact of short-term contracts particularly for those from lower socio-economic backgrounds – some of the other main obstacles to EDI in the research process include:

- **Long working hours:** a culture of long working hours to meet a succession of short deadlines, high levels of bureaucracy and reporting, and a pressure to publish scientific outputs regularly can pose particular barriers for those who are constrained from working long hours for caring responsibilities, health or other reasons.

- **Bias in funders' grant review processes:** studies from several countries, including the Netherlands, Canada, the US and Australia, have shown that bias can exist within the research funding process, with applicant characteristics (such as gender and ethnicity), career stage, research field, institution and the characteristics of reviewers identified as factors potentially affecting research grant evaluations.[76]

- **Bias in publishers' peer review processes:** there is some evidence of peer reviewers preferencing certain groups over others in terms of acceptances for publication, for example those of the same gender.[77,78] Other studies have also found evidence that peer reviewers can favour established researchers over lesser-known authors.[79]

- **Role models:** A lack of visible, successful and diverse role models, especially at senior leadership level, can discourage under-represented groups from considering, or continuing an academic career.[80]

Ideas for how to support EDI in research

Many of the ideas presented in Chapters three and four – with regards to enhancing career stability and progression, recognition and reward, and effective supervision and management – could help to dismantle long-standing barriers and foster EDI in the research culture and environment, including:

- Ensuring appropriate part-time and flexible working options are available.
- Taking account of career breaks when assessing productivity.
- Requesting evidence of and rewarding contributions to EDI in hiring and promotion criteria and application processes for funding and awards.

Universities are working to ensure that commitments to improving EDI are embedded across their institutions and accompanied by concrete actions to realise practical and meaningful changes on the ground.

Imperial College London's Inclusive Excellence strategy has been developed in consultation with the College's community and has seen the appointment of the College's first Assistant Provost for EDI. The strategy includes commitments to: refresh the membership of its Council to reflect the diversity of its stakeholders, ensure those with significant management responsibility receive appropriate EDI training, identify and nurture talent from under-represented groups and incorporate consideration of EDI in the design of research projects that have a direct impact on people.[81]

Effective EDI action plans recognise that different approaches are required to advance EDI objectives for different groups, taking account of variation in the research culture and environment across different research disciplines. They also entail a suite of coordinated interventions accompanied by monitoring, evaluation and adjustments to the action plan. Within the university context, progress can variously be accredited through the Advance HE Athena Swan awards (currently held by over 160 institutions and nearly 800 departments), Race Equality Charters and others such as the Business Disability Forum.

EDI targeted support for the talent pipeline

Dedicated PhD and fellowship schemes for women, those from black, Asian and minority ethnic backgrounds and those returning from a career break have been used by some funders as a way of targeting support to improve representation throughout the researcher pipeline. For example, UK Research Councils offer Daphne Jackson fellowships for those looking to return to a research career after a break of two years or more for family, health or caring reasons.[82]

Many universities support the development of peer groups and targeted mentoring and leadership programmes for those from underrepresented backgrounds. These can help individuals build social capital, advance into leadership positions and improve their visibility and representation in the research community to inspire the next generation of researchers.

> "targeted programmes can help individuals build social capital, advance into leadership positions and improve visibility and representation"

> “Better data can help us understand where efforts need to be targeted”

At the **University of Warwick**, staff networks provide an opportunity for staff to connect, socialise, support one another, and discuss issues of relevance to their communities. They are run by and for the members, with administrative support from the university's Equality, Diversity and Inclusion team. The university has a Black, Asian and Minority Ethnic Staff Network, Carers Staff Network, Disabled Staff Network, LGBTQUA+ Staff Network, Menopause Staff Network and Working Parents Staff Network.[83]

The **University of Sheffield** offers a mentoring scheme which aims to support the career development of black, Asian and other minority ethnic (BAME) staff members. It is a six-month programme where mentees who would like to receive support and guidance from more experienced members of staff can discuss professional issues in a safe and supportive environment. The scheme aims to help improve access to professional networks, create an increased sense of belonging and improve the confidence and progression of BAME staff.[84]

Some funders also offer similar types of schemes. Cancer Research UK, for example, runs the Women of Influence initiative, a mentorship scheme which pairs exceptional female scientists with leading businesswomen to provide early career researchers with support from outside of academia at a critical time in their development.[85]

Better data can help us understand where efforts need to be targeted to improve representation. Data reports, such as UKRI's publication of application and success rates by gender, ethnicity, age and disability, are helpful in this respect.[86] The Royal Society has also commissioned a report on the diversity of researchers eligible to apply for their early career researcher fellowships, which they can use as a benchmark with which to assess the diversity profiles of applicants and successful awardees (and they will be publishing the results of these comparisons).[87]

Publishers could do the same for the outcomes of peer review and more widely on publication and citation trends. Elsevier's reports on gender in research, for example, provide useful insights into the role gender plays in the global research enterprise and the international scope of the work can help the UK identify other countries from which we may be able to learn lessons.[88] The Royal Society of Chemistry has also published reports on the gender profile at each stage of the publishing pipeline within their journals, alongside recommendations on how to tackle gender bias in the publishing system.[89]

Initiatives to address bias

To address potential biases in the assessment of research grant applications and review of scholarly outputs, funders and publishers could consider how to broaden the composition of their funding panels, journal editorial boards and other committees to include a more diverse mix of people from a wider range of backgrounds. Name blind application processes could also be useful in helping underrepresented groups reach interview stage.

Providing clear, standardised guidance to applicants on topics such as what to expect during panel interviews and how topics will be assessed and scored helps support those who may not have experience of the grant assessment process or the same networks to tap into for support and guidance. Funders and universities could also consider providing targeted support and guidance to those from underrepresented groups to help them prepare for interviews with grant panels.

Many organisations, including those across the research sector, are increasingly providing information and training on unconscious bias. For example, prior to the start of each Royal Society journal Editorial Board meeting, members are briefed on the impact of unconscious bias and urged to take unconscious bias into account when making decisions.[90]

The introduction of unconscious bias observers within the **University of York**'s chemistry department helped lead to significant increases in the percentage of female researchers employed within the department. There have also been improvements in the recruitment ratio of women to men for teaching and scholarship staff. Analysis of recruitment trends since the introduction of unconscious bias observers has shown female and male appointment rates are now equivalent, indicating a gender-neutral recruitment process.

The **University of Nottingham** has implemented a range of measures to promote and support diversity across the staff body, including new recruitment diversity guidelines, greater use of anonymised applications and moves to develop bespoke mandatory equalities and unconscious bias training for all staff involved in recruitment.

Publishers are adapting and adopting different models of peer review and they should continue to test and evaluate ways in which they can tackle potential bias in the peer review system. Some of the models include publication of reviewer reports or comments to authors alongside articles, and/or giving authors and reviewers the option to disclose their identities. It has been noted that whilst some of the models show promising results, they still need careful consideration to ensure robustness and fairness in the process.[91]

Bullying and harassment: what are the challenges?

The causes of bullying and harassment are complex, but organisational cultures and structures play a key role in either deterring or enabling these behaviours.[92]

There are some challenges which are common across many different workplaces. A cross-sectoral survey on managing conflict in the workplace revealed that more than half of those who had experienced bullying and harassment in the last three years did not report it and noted that formal processes for resolving conflicts are often "adversarial and drawn out and can add further stress for people".[93]

However, there are some elements of the research culture and environment which may be conducive to negative behaviours and/or prevent people from raising concerns. Only 37% of researchers responding to Wellcome's research culture survey said they would feel comfortable speaking out about bullying and harassment.[94]

Rigid hierarchical dependencies can discourage victims from reporting their experiences, whilst also encouraging a bystander effect, where those who witness bullying and harassment do not feel able to report it for fear of repercussions.[95] Individuals interviewed for this project reported that researchers can feel more reliant than people in other careers on senior colleagues or PIs for future roles and job opportunities. This can lead to unhelpful power dynamics, where more junior staff feel pressured to engage in negative behaviours, such as giving senior staff inappropriate or disproportionate credit for research outputs.

More junior researchers, especially those based in locations which are physically distant from central university structures and support, can also feel isolated and as if behaviours in their team are less visible to other senior managers.

In our discussions, we heard there were cases where researchers had reported issues of bullying or harassment by senior colleagues on a project, which then resulted in funders withdrawing funding awarded to a PI, inadvertently leading to job losses for those who had raised their concerns. This makes it incredibly important that employers and funders work together to prevent the introduction of perverse incentives in policies around bullying and harassment.

While few of those we interviewed believed bullying and harassment complaints were ignored within their organisations, a range of views were expressed over the processes through which cases are dealt with and resolved. Some researchers were concerned that bullying and harassment cases appeared to take a very long time to resolve, with the outcome of cases not always clear to colleagues. This is a challenge because the legal complexities of some cases, which can involve the gathering of evidence and investigation of counter-claims, can impact the length of time it can take to resolve an accusation of bullying or harassment.

Some researchers also suggested investigations were secretive, or unclear in terms of outcome, but this needs to be balanced with institutions' legal duties to ensure that investigations and any disciplinary actions are confidential.

> "employers and funders must work together to prevent the introduction of perverse incentives in policies around bullying and harassment"

Ideas to prevent and address bullying and harassment

Some of the ideas discussed elsewhere in this report could also help to address some of the cultural factors associated with bullying and harassment, for example:

- Effective training for managers and supervisors.
- Ensuring researchers have broad, robust support networks.
- Facilitating realistic workloads.
- Ensuring adequate funding to prevent unhealthy levels of competition for resources.
- Considering the use of group grant funding to reduce researchers' dependence on a single PI.

In addition, universities could trial alternative models of research group structure. The intention here would be to reduce the disparity between the responsibilities of different positions within a research group. A team structure that has greater delegation of responsibility, accountability and recognition might help to counter this disparity.

There is a role for funders to work with each other and with universities to align policies on bullying and harassment and, ideally, they should consult universities on draft policies to identify and prevent unintended consequences. This can make it much easier for institutions to implement policies and prevent the development of perverse incentives in the system.

Supporting and empowering staff to report issues

Staff need to have access to clear information and advice about policies and arrangements to enable them to raise their concerns and they need to feel empowered by senior leadership if they are going to report incidents of bullying and harassment.

One element is to have a clear, well-advertised reporting and complaint system, supported by specialist advisors and mediators. The **University of Leeds** provides information online and in its Policy on Dignity and Mutual Respect about the range of services to support staff experiencing bullying, harassment or victimisation. For example, through the university's Mediation Service, trained and impartial professionals can help staff to discuss disputes or problems and find a mutually agreeable way forward. The university's Equality and Inclusion Unit also provides specific advice when issues are raised relating to harassment or discrimination on grounds of gender, race, sexual orientation, religion, age or disability, for example.[96]

From the outset of a person's employment, at induction, most employers will provide researchers with information on their employment rights, institutional policies (including for career development and family leave), what they can expect of their line manager, and how to report any concerns, including in relation to discrimination, bullying and harassment.

To enhance this, many universities have trained staff who provide confidential consultations and advice to staff and students on potential bullying and harassment situations.

At **Cardiff University** a network of Dignity and Wellbeing Contacts has been created to help staff who feel that they have been the subject of harassment, bullying or victimisation to feel supported by providing them with a better understanding of their rights and options, directing them to the appropriate procedures/guidance and providing information to help staff decide how best to handle the situation.[97]

Many Russell Group universities and others have introduced "Report and Support", an online tool that brings together resources for tackling bullying and harassment in one place and allows members of university communities to access advice and support. Through the platform, staff and students can request contact from a university adviser or report incidents anonymously if they wish. The option to report bullying and harassment anonymously requires careful consideration and clear communication about what can and cannot be done with information provided in this way as an anonymous allegation can only be investigated if the relevant information is provided.

Ensuring transparency of the processes for handling bullying and harassment

Once conflicts have been reported, any organisations involved need to handle cases sensitively and take action where appropriate. Appointing a trained individual in a mediating role can support resolution of conflicts between research staff/students fairly and neutrally.

While investigations must be thorough, they should be carried out in a timely way to avoid causing further distress, and it would be helpful to provide information on the standard/expected stages and timelines where possible.

It is crucial that the senior leadership sends a strong message within the institution that unacceptable behaviour will not be tolerated. By demonstrating that issues will be taken seriously, universities can encourage other staff to report issues they encounter and discourage others from behaving unprofessionally.

> “ ensure we can continue to attract and retain talented individuals from all backgrounds ”

6. Conclusion

Up and down the country, individual researchers and research teams are undertaking creative and impactful work which will make the UK healthier, greener and more prosperous. Working in a country which is a world leader in research and innovation offers many opportunities. But we cannot ignore the challenges which researchers can face and which need to be addressed – from job insecurity and poor wellbeing to the barriers preventing a more diverse and inclusive workforce – if we want researchers and research in the UK to thrive.

Unless all stakeholders in the research and innovation ecosystem take these issues seriously and act collectively and collaboratively, we will be limited in what we can achieve. By working together, we can learn from each other and foster nurturing environments that will ensure we can continue to attract and retain talented individuals from all backgrounds and support them to flourish.

The challenges, examples and suggestions we have identified in this report - and collated with additional ideas in our accompanying **Research Culture and Environment Toolkit** - are by no means exhaustive, but we hope they can play a useful part in developing a good practice community where ideas and lessons can be shared freely. We want to continue the constructive dialogue we have had with so many stakeholders and encourage them to talk to each other about what works and how they are addressing specific challenges.

Over the course of the next year, our members are committed to using the toolkit to test and share ideas to enhance a supportive and positive research culture. Some of these may be easier to introduce in the short term, but for others, incremental progression is more feasible over several years based on commitment, shared learning and regular evaluation of progress. In a year’s time, we will take stock of how the toolkit is being used and consider how we can continue to take this work forwards in the most effective way. In the meantime, we hope that funders, publishers and other stakeholders will join us in helping to strengthen all aspects of the UK research culture and environment.

Glossary of terms

10 days' professional development training: This is one of the principles of the *Concordat to Support the Career Development of Researchers*, which explains that the 10 days' professional development training is an allowance for researchers to develop their professional competencies and gain experience to support their future career. Examples might include attending a training course or workshop, workplace shadowing, participating in a mentoring scheme (as mentor or mentee), committee membership, participating in policy development, public engagement, or knowledge exchange activities.

Bridging support/funds: As defined in the *Concordat to Support the Career Development of Researchers*, bridging funding supports continuity of employment where current funding is ending, but there is a strong likelihood of additional funding being available in the near future.

Bullying and harassment: The Advisory, Conciliation and Arbitration Service (ACAS), defines bullying as a behaviour from a person or group that is unwanted and makes someone feel uncomfortable, including feeling: frightened, less respected or put down, made fun of or upset. In the Equality Act 2010, harassment has a specific meaning: 'unwanted conduct related to a relevant protected characteristic, which has the purpose or effect of violating an individual's dignity or creating an intimidating, hostile, degrading, humiliating or offensive environment for that individual'. These protected characteristics include age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.

Diversity: The International Labour Organisation (ILO) refers to diversity as a commitment to recognising the full range of characteristics that make individuals unique in an atmosphere that embraces and celebrates individual and collective achievement.

Early career researcher (ECR): There is no single definition of an early career researcher. Whilst the Research Excellence Framework defines ECRs as members of staff who started their careers as independent researchers no more than four years ago, the Research Councils have sought to move away from a definition linked to a defined period of time, towards one more closely linked to the skills and experiences associated with a researcher in the early stages of a research career.

Equality: The Equality and Human Rights Commission (EHRC) define equality as being about ensuring every individual has an equal opportunity to make the most of their life and talents. The UK's Equality Act (2010) defines protected characteristics that have historically been the focus of discrimination, including, but not limited to: age, disability, gender assignment, race, religion and belief and sexual orientation.

Equity: The World Health Organisation (WHO) defines equity as the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically. The Chartered Institute of Personnel and Development (CIPD) states that an equity approach emphasises that everyone should not be treated the same, but according to their own needs.

Inclusion: The CIPD defines an inclusive approach as one where people's differences are valued and used to enable everyone to thrive at work. An inclusive working environment is one in which everyone feels that they belong without having to conform, that their contribution matters and they are able to perform to their full potential, no matter their background, identity or circumstances. An inclusive workplace has fair policies and practices in place and enables a diverse range of people to work together effectively.

Principal Investigator (PI): A Principal Investigator is the primary individual responsible for the overall preparation, management and administration of a research project.

Postdoctoral researcher/'postdoc': There is no single definition of a postdoctoral researcher, often shortened to 'postdoc'. However, the American National Postdoctoral Association defines a postdoctoral scholar as an individual holding a doctoral degree who is engaged in a temporary period of mentored research and/or scholarly training for the purpose of acquiring the professional skills needed to pursue a career path of his/her/their choosing.

Postgraduate researcher (PGR)/postgraduate research student: Postgraduate researchers are those undertaking research degrees at masters level (e.g. MPhil, MMus, MRes, MLitt) and doctoral level (e.g. PhD, MD, EngD, DDS and other Higher and Professional Doctorates).

Research culture: As defined in the *Concordat to Support the Career Development of Researchers*, research culture encompasses the behaviours, values, expectations, incentives, attitudes and norms of a research community. It determines the way that research is conducted and communicated and can influence researchers' career paths and mental wellbeing.

Research environment: As defined in the *Concordat to Support the Career Development of Researchers*, this typically refers to tangible aspects of the environment, including legal requirements, physical settings, availability of facilities and other resources, and opportunities to interact with a wide range of researchers, but it can be used to include the cultural aspects outlined above.

Research Excellence Framework (REF): The REF is the system for assessing the quality of research in UK higher education institutions. It is a process of expert peer review of the quality of research outputs (e.g. publications, performances, and exhibitions), their impact beyond academia, and the environment that supports research. It is used to inform the selective allocation of funding for university research, amongst other purposes.

Research integrity: The *Concordat to Support the Career Development of Researchers* defines research integrity as demonstrating high standards in the conduct of research to maintain and enhance confidence in the ethics and rigour of research outcomes. Core elements include honesty, rigour, transparency and care and respect for all participants in research: www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/research-concordat.aspx

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Cover: Thomas Angus, Imperial College London
Molecular Bioscience: PhD student Noura Zamzam working on ultrafast measurements of photosynthesis.

Page 2: University of Sheffield

Page 5: Thomas Angus, Imperial College London
Imperial College London's Department of Aeronautics is researching the inter-person transmission risk of Covid-19 during outdoor exercise.

Page 16; University of Nottingham
Postgraduate student working in the University of Nottingham's Hounsfield Centre, Sutton Bonington Campus

Page 22: Thomas Angus, Imperial College London
Professor Robin Shattock and research technician Leon Mcfarlane in Imperial College's Covid-19 vaccine lab.

Page 26: Thomas Angus, Imperial College London
The Glycosciences Laboratory at Imperial College London

Page 30: Thomas Angus, Imperial College London
Discussing the influence of wildfires on air pollution and cloud formation using satellite images at the Global Data Observatory in Imperial College London's Data Science Institute.

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