



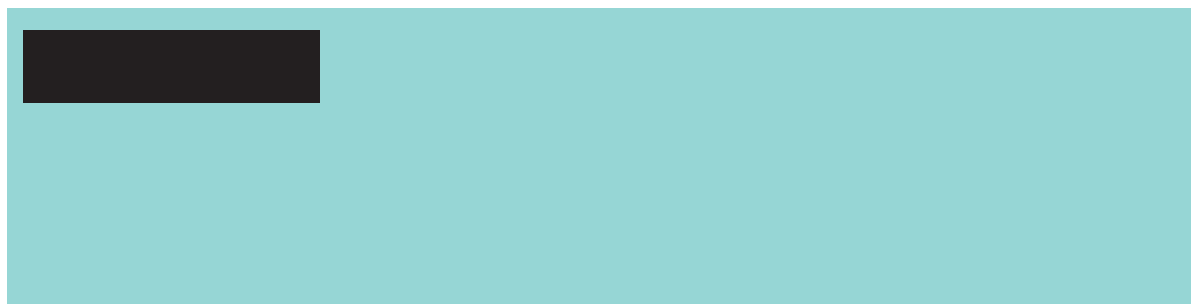
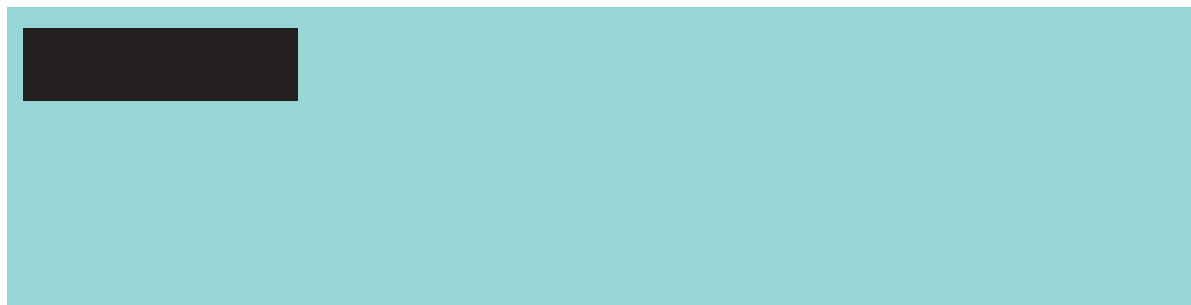
TALENT

Re-thinking recognition: Science prizes for the modern world

I d c c

In a world where global challenges and advances in technology bring both uncertainty and new possibilities, the chemical sciences have a critical role to play. But what will that role be? How can we maximise the impact we make across academia, industry, government and education? And what actions should we take to create a stronger, more vibrant culture for research that helps enable new discoveries?

Our perspectives series addresses these questions through four lenses: talent, discovery, sustainability and knowledge. Drawing together insights and sharp opinion, our goal is to increase understanding and inform debate – putting the chemical sciences at the heart of



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Foreword from Independent Review Group Chair

The Royal Society of Chemistry (RSC) has a proud heritage of recognising excellence in chemistry, extending back to its first Faraday Medal in 1869. However, science and society are continually evolving, and the RSC understands that its recognition portfolio needs to be responsive to the changing landscape. Over the decades there have been many additions — most recently, for example, the Inclusion and Diversity Prize first awarded in 2017 — but these have not been underpinned by a clear set of principles or priorities, so in 2018 I was asked to chair a review of recognition that might articulate a systematic strategic approach.

I was delighted that we were able to assemble an outstanding Review Group with expertise in academic and industrial chemistry, research and teaching, biotechnology, biology and psychology, so that we could examine basic principles and cover the entire range of interests of the Royal Society of Chemistry and its members. We have consulted widely, asked fundamental and difficult questions about the purposes of recognition, and have made some recommendations that may prove controversial.

We have concluded that it will be important for the RSC to decide on the primary aim of a particular prize; for example, it could be to boost the career of an individual, to recognise a team, to raise the profile of chemistry in society, or to support the activities of the organisation. We are clear that although the RSC should continue to recognise the research excellence of individuals, it should also do much more to recognise outstanding teams, teaching, innovation and leadership. It follows from this variety that the nature of the prizes and recognition mechanisms should also be diverse: one size does not fit all, and some recognition will necessarily have a higher public profile than others. Everyone wants to be recognised in some way but it is not possible to give everyone a prize, so it is important that the portfolio is designed to ensure that overall the benefits of prizes extend beyond the small number of winners.

This review sets out a strategic framework of recommendations. A substantial amount of work and discussion will be needed over time to convert the principles into a modernised portfolio of Royal Society of Chemistry prizes that can evolve into the future. We also hope this report might inform similar thinking in other scientific organisations.

Thank you to the Independent Review Group and the Royal Society of Chemistry team for their valuable contributions throughout the review.



Professor Jeremy Sanders CBE FRS FRSC

Independent Review Group

The review was overseen by an independent Review Group, which brought together individuals from within and outside chemistry with a range of experience and expertise. The group considered the literature, information about the current RSC prize and award portfolio and views articulated in a broad consultation process described in more detail in the Methodology section. Informed by this range of evidence and perspectives, the Review Group discussed the overall framework of principles, recommendations and options in a set of two full meetings as well as through phone conversations and email input.

The membership of the Review Group was:

- **Prof Jeremy Sanders CBE FRS** (Department of Chemistry, University of Cambridge) - Chair
- **Dr Angelo Amorelli** (Group Research, BP)
- **Prof Tom Brown** (Department of Chemistry, University of Oxford)
- **Prof Richard Catlow FRS** (Department of Chemistry, University College London)
- **Dr Roger Highfield** (Science Museum Group)
- **Prof Nazira Karodia** (Faculty of Science and Engineering, University of Wolverhampton)
- **Prof Anne Ridley FRS FMedSci** (School of Cellular and Molecular Medicine, University of Bristol)
- **Dr Kristy Turner** (School of Chemistry, University of Manchester / Bolton School)
- **Prof Essi Viding** (Clinical, Educational, and Health Psychology Research Department, University College London)
- **Prof Dr Helma Wennemers** (Department of Chemistry and Applied Biosciences, ETH Zurich).

Foreword from Royal Society of Chemistry

We commit to:

- 1 Place more emphasis on great science, not just top professors; this includes teams, technicians and multidisciplinary collaborations
- 2 Give greater recognition to the people who teach chemistry and inspire the amazing scientists of the future
- 3 Showcase leaders who go beyond their day job to break down barriers and open up new and extraordinary opportunities in science
- 4 Celebrate the scientific breakthroughs that transform our understanding of the world and solve major issues like climate change
- 5 Set conduct expectations and revoke prizes when those expectations are not met

A handwritten signature in black ink, appearing to read 'Helen Pain'. The signature is written in a cursive style with some digital artifacts (small black squares) overlaid on it.

Dr Helen Pain CSci CChem FRSC
Deputy Chief Executive, Royal Society of Chemistry

1

Executive summary

Our Review of Recognition sets out a vision for recognition in 21st century science and in the coming years we will evolve our recognition portfolio to achieve this vision. The review found many aspects of our existing prizes and awards that are valuable and valued, making clear that we have a strong foundation from which to build. There are also clear imperatives and opportunities for us to change.

Prizes can have different purposes, beneficiaries and audiences

Prizes are powerful tools that can validate the achievements of individuals and teams and support career progression. They also have the potential to inspire and support the wider scientific community, acting as a positive incentive. Recognition can be used to reach audiences beyond an immediate scientific community, and to celebrate the value of science to broader society.

Another purpose of recognition is to advance the mission of the awarding body itself. In that case, those being recognised may be expected to contribute in some way to the activities of the organisation, creating a two-way relationship between the awarder and awardee and a responsibility to give back to the community in an appropriate way. More broadly, the awarder may set expectations of winners in terms of their conduct and their service.

Given this range of purposes, there is clearly no 'one size fits all' mechanism for recognition. It is important to achieve clarity on the primary purpose, intended beneficiaries and audience for any prize, to ensure that the recognition mechanism is successful in achieving its defined purpose, and that any celebration is most meaningful to those being recognised.

Recognition should reflect the many types of excellence that are crucial for modern science

There are four areas where we should expand opportunities for recognition, to better reflect what we believe to be important in science today:

i. Teams and collaborations

The traditional focus for recognition and prizes in science has been on individuals. While recognising the individual has important purposes, collaboration and teams are integral to most areas of scientific activity across education, engagement, innovation and research. This should be reflected as a core component of our recognition portfolio.

ii. Leadership

Here, we can use recognition as a positive incentive, articulating what we believe good leadership in science looks like and why it is important. Leadership can take different forms, and any recognition mechanism should aim to highlight a range of role models.

iii. Education, engagement and innovation

These spheres are currently underrepresented in our recognition offering. Increasing recognition in these areas would reflect their importance in the modern world. Prizes could be used here to develop case studies, or share and highlight good practice. We should be creative and make sure that the 'prize' is relevant and meaningful for winners.

iv. Breakthroughs and emerging areas

Respondents to our survey named *significant breakthroughs* as the number one outcome meritorious of recognition by the RSC. It is also important to recognise contemporary and emerging science, including in areas that lie at or across interfaces between disciplines and sectors.

Recognition should demonstrate the many ways in which chemistry contributes to humanity

We have an opportunity to use recognition to increase the visibility of the chemical sciences beyond the scientific community. Prizes can be a mechanism to share exciting new advances with a range of different audiences, and to showcase the impact of research, innovation, engagement and teaching. Publicity and celebration activities should deliberately set out to engage the public, inspire the next generation, change perceptions, and enthuse us all about the value of chemistry in enriching our world.

Recognition should reflect the many facets of diversity

Diversity has a broad definition and encompasses factors such as socioeconomic background, place of employment, job role and career stage, in addition to protected characteristics such as gender, ethnicity and sexual orientation. Recognition should reflect not only this diversity of individuals and teams contributing to science, but also the diversity of ways in which people contribute to science and society.

Real change will require a holistic, sustained approach at multiple levels, and will take time to achieve. Increasing the diversity of nominations is a necessary condition for increasing the diversity of those who are recognised, and so it is important that nominee pools reflect the diversity of the community. We should continue to optimise our processes at all stages from promotion and nomination through to judging.

At a deeper level, by naming what we recognise and incentivise through our recognition programmes – as well as what we expect from those who are recognised – the Royal Society of Chemistry can be clear and confident about what we believe to be important, using recognition to reflect the chemical sciences at their very best.

2

Strategic vision for science prizes

Why do we give prizes?

The review found that, while it is not possible to recognise everyone who deserves it, there are many benefits of recognition. These include creating a feeling in individuals and teams of being valued through recognition by peers, supporting individuals in their careers and raising the profile of work deserving greater prominence. The Review heard that the positive feeling associated with recognition can spread beyond winners and be a morale-booster within winners' groups or places of employment. The benefits can also spread to society more broadly and include the potential to mobilise public advocacy, support policymaking, innovation and profession retention. Winning a prize can create a beneficial relationship between the awarder and awardees, rather than simply being a transaction.

There are pitfalls associated with recognition. Recognition can reinforce the status quo if particular groups are continually recognised. It can stifle creativity and originality.

There can be real or perceived unfair advantage through connections and also the problem of winner cohorts that do not reflect the many types of diversity in science.

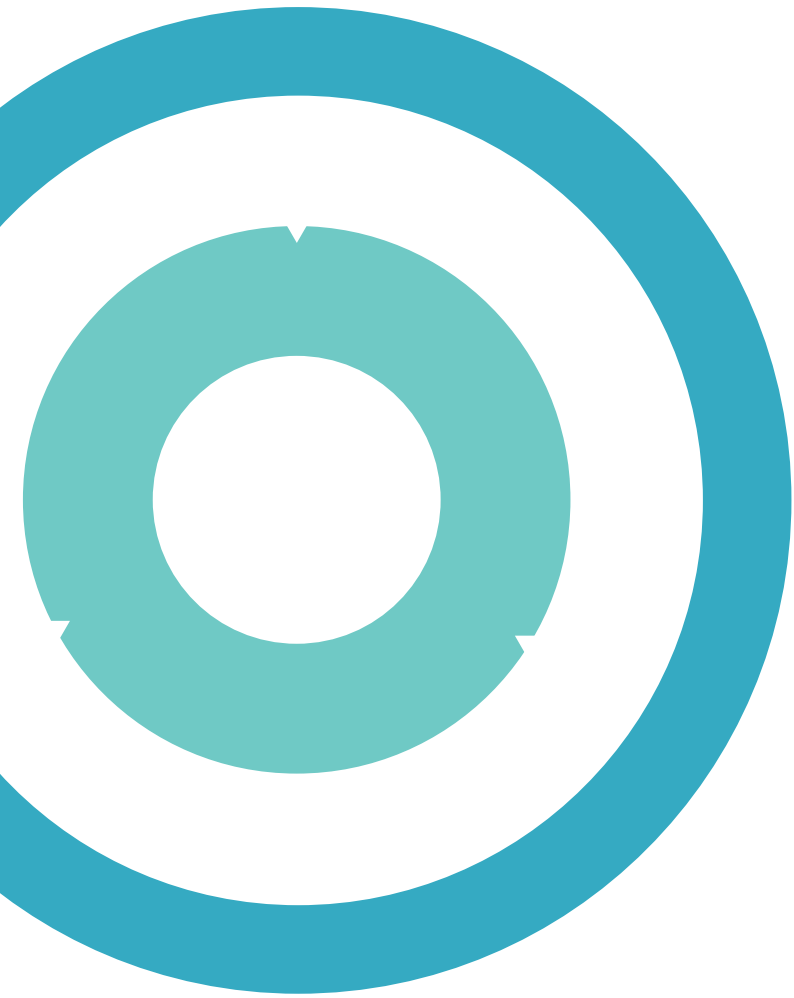
The focus of prizes is often individuals and, in combination with other aspects of the academic recognition and reward system in particular, this can lead to perverse incentives and negative impacts on academic research culture.

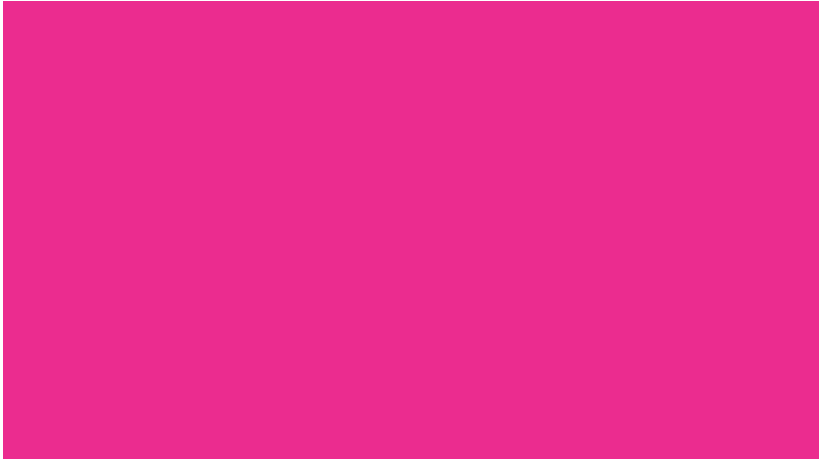
The review considered the literature on prizes and recognition generally, and on science prizes specifically. Informed also by workshops, roundtable discussions and interviews, the Review Group identified four important

Purpose	Intended primary beneficiary
	The awardee or awardees
	Scientific community and science
	Society and science
	The awarder and the groups it represents



◀
Figure 1: Dimensions of
excellence





▶ Figure 2: Strategic design of a recognition portfolio. Principles of recognition are embedded at each stage of the process

3

Perspectives on prizes: literature review

The review considered perspectives from a variety of literature sources including publications in peer-reviewed journals, reports and news items. Many of the publications focus on recognition in science specifically but the Review Group also considered wider perspectives on the psychology of the giving and receiving of prizes.

Recognition should be of excellence (Principle 1)

In 2014 the Nuffield Council on Bioethics reported on The

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Perspectives on prizes: consultation

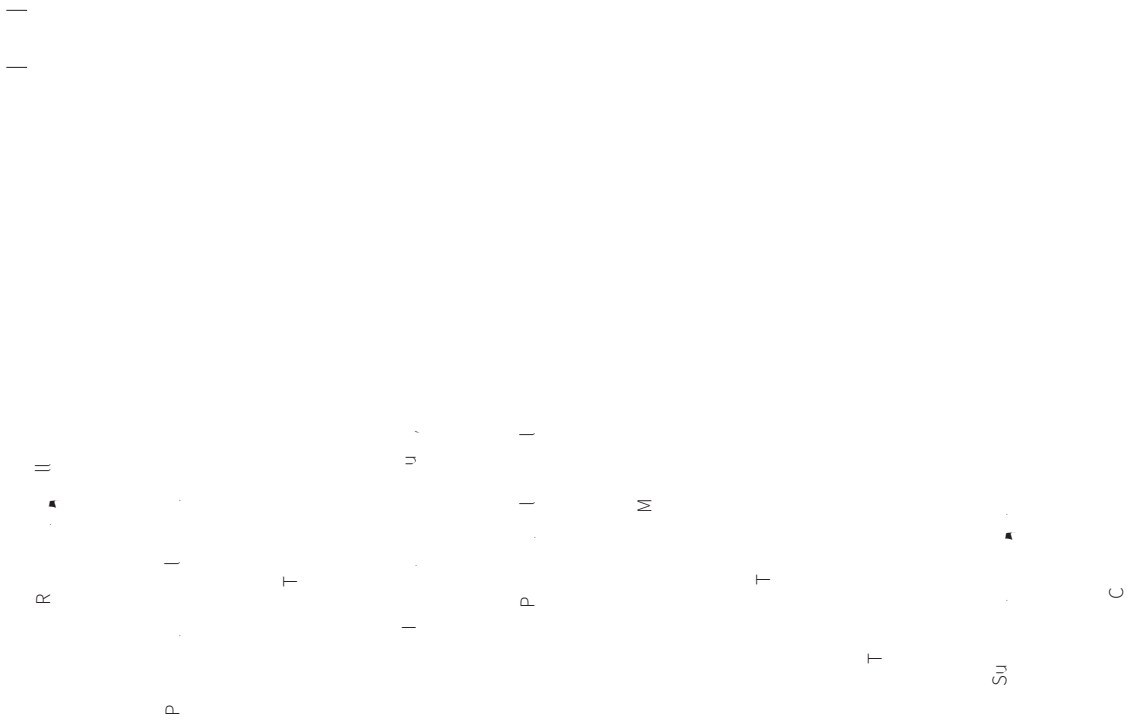
Extensive consultation with members of the RSC community formed a major strand of input to the review. Views were obtained through a combination of interviews, workshops, round-table discussions and an online survey.

Full details of the consultation methodology and participant demographics are given in Section 6.

Why might the RSC give prizes?

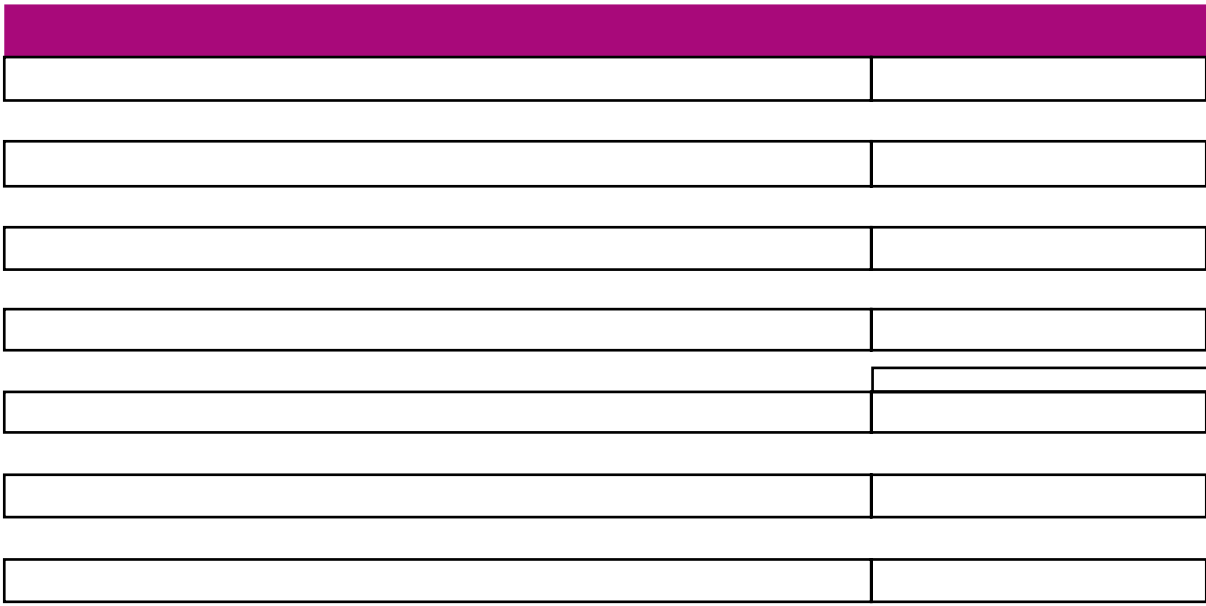
The survey provided important insights into what members of the RSC community consider to be purposes and drawbacks of recognition.

% respondents



The top ten intended purposes of recognition identified in the survey (Figure 3) are listed in Table 2 below, along with suggested links to the proposed primary beneficiaries of recognition.

The survey also provided valuable insights into perceived barriers to recognition, many of which the Review aimed to address through its recommendations.



◀ Table 3: Source: RSC Review of Recognition Programmes Survey, 2018. Survey question: What are the main drawbacks of recognition? Data shown from all who responded to the question (N = 1821). Survey respondents were asked to select all that apply.

Taking the survey data, literature review, workshop and interview perspectives together, the review proposed four important *Purposes of Recognition* by the RSC. For each purpose there is an intended primary beneficiary.

The purpose and objectives of recognition by the RSC			
Why have recognition?			
<p>Progression, validation, encouragement and reputation for individuals and teams</p> <p>(Awardee benefits)</p> <p><i>Recognising excellent chemical scientists across the spectrum including e.g. education, industry, outreach, policy research</i></p>	<p>Advance, incentivise, inspire and support</p> <p>(Wider benefits)</p> <p><i>Creating role models, incentivising behaviours and activities and supporting the next generation</i></p>	<p>Communicate, highlight and celebrate</p> <p>(Wider benefits)</p> <p><i>Celebrating winners and the chemical sciences</i></p>	<p>Raise visibility or serve the RSC and its mission</p> <p>(Awardee benefits)</p> <p><i>Promoting the chemical sciences and the RSC</i></p>
<ul style="list-style-type: none"> • Aiding career progression at all stages. • To recognise teams. • Provides credibility within and outside the chemistry community. • Provides an external validation of achievements. 	<ul style="list-style-type: none"> • For the advancement of a discipline or sub-field. • Building a community of advocates. • To inspire, be inclusive and promote the chemical sciences. • To encourage and nurture early- and mid-career chemists. • To encourage teachers in all settings. 	<ul style="list-style-type: none"> • Recognising excellence. • Recognise new and emerging areas. • Recognising the contributions of the wider community. • It is about the subject, advances in chemical sciences. • To highlight value of chemistry to diverse audiences (public, government and funders). 	<ul style="list-style-type: none"> • Raises the visibility of the RSC. • Facilitates the voice of the RSC. • Winners may contribute to the RSC and/or the community.

Diversity

Diversity in a very broad sense was a crosscutting theme throughout consultation. It included consideration of gender, ethnicity and socioeconomic background. It also included diversity of institutions or employers and diversity of career stages, roles and domains being recognised.

To achieve recognition reflecting diversity, the prevailing sense was that the RSC needs a holistic approach. The RSC is on a trajectory and change will take time, with not one but multiple approaches working together, from broadening the range of domains and types of excellence recognised, to increasing the number of nominations of people from under-represented groups. There were many specific views on encouraging and reflecting diversity through processes such as nominations and conventions such as the naming of awards.

The consultation found that there was limited appetite for the RSC to create prizes targeted at individuals with specific protected characteristics but rather that diversity should be reflected within the whole portfolio. In addition, there should be mechanisms to recognise those working towards improving diversity in science.

An important theme was broadening the pool of individuals making nominations and continuing to highlight to the community that the RSC does not share the identity of nominators with judging panels. Perceptions around nepotism or a sense that prize nominators and winners are a "club" act as a barrier to new nominators.

The RSC should provide clear guidance for nominators. Depending on their level of experience and skills development in preparing documents such as nominations, grant applications or reference letters, individuals and groups may also benefit from support or mentoring in preparing a nomination. Issues and opportunities related

to nominations are discussed further in the section on nominations below.

There was a view that some university chemistry departments could be more proactive in contributing to diversity; for example, in annually reviewing all possible nominees or all CVs in the department rather than those of individuals who proactively seek nomination.

In addition to dedicated mechanisms to award those working towards diversity, suggested approaches aimed at increasing the diversity of people recognised included the creation of a junior judging board incorporating a variety of race, gender, age, sexual orientation, *etc.*, an approach used by the Women's Engineering Society (WES)¹⁶. Other approaches include ensuring that judging panels are themselves as diverse as possible while being aware of the pressures that this can place on a limited pool of individuals, having a more diverse celebration event, and highlighting the diversity of award winners.

Not all respondents saw an issue around inclusion and diversity.

The overall view from survey respondents was that recognition by the RSC was very or fairly diverse and inclusive. Some areas which were mentioned as lacking in diversity or as being uninclusive were socioeconomic background and status (14%), nationality (12%), age (12%), gender (12%), race/ethnicity (12%). Although these were not the majority views, they indicate some areas where the RSC should focus its thinking and effort on inclusion and diversity in the context of prizes and awards.

¹⁶ The Women's Engineering Society (WES) Junior Board
www.youtube.com/watch?v=rPhcHOTIDnQ

“Chemistry departments should have a committee

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Ethnicity

Consultation indicated scope for the RSC to increase the diversity of nominations by and for individuals from diverse ethnic backgrounds. The RSC could encourage scientists from

There was also a strong view through the workshops, roundtable discussions and interviews that the RSC should offer team awards as a core component of its awards programme.

In creating team awards, as for any award, the RSC should first decide what it wants to recognise and why, to ensure that for each objective team awards are compatible with the desired outcomes. This will include considering what might define a team, and an awareness that not all members of a team may be or should be chemists or members of the RSC.

The RSC will also need to decide the basis for team awards. Whereas individual awards are often based on "a body of work", often over a period of years, it would be more sensible for team awards to be based on a discrete piece of work, output or project. This would enable clear identification of who should be included in the recognition, enabling recognition of those involved at all levels and in all roles.

Recognising teams should also work in favour of diversity as it will naturally provide opportunities for a wider range of people at different career stages, in different roles and based at a variety of institutions or companies.

Individuals

Recognition of the individual is important, especially where the purpose of recognition is to benefit the awardee. This is important especially for early career chemists as they establish themselves. There was a sense that, in line with Principle 9 (that recognition is associated with certain duties or expectations of recipients) and noting that at later stages the career benefits are less significant, the expectations on prize and award winners should increase for later career stages. These could be associated with an expectation that the individual acts as a role model and supporter for earlier career chemists, acts as an advisor to the RSC in their area of expertise and/or as an ambassador for science beyond the individual's specific area of work.

The prevailing view from the consultation was that the RSC should continue to recognise individuals through its prizes and awards, keeping the valued elements of its current portfolio, and being mindful of both the benefits and drawbacks of recognising individuals.

Individual and team excellence are related because effective teams bring together its

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Departments and Employers

Among respondents based in industry and education, there was some variation in the level of recognition selected relative to the overall findings.

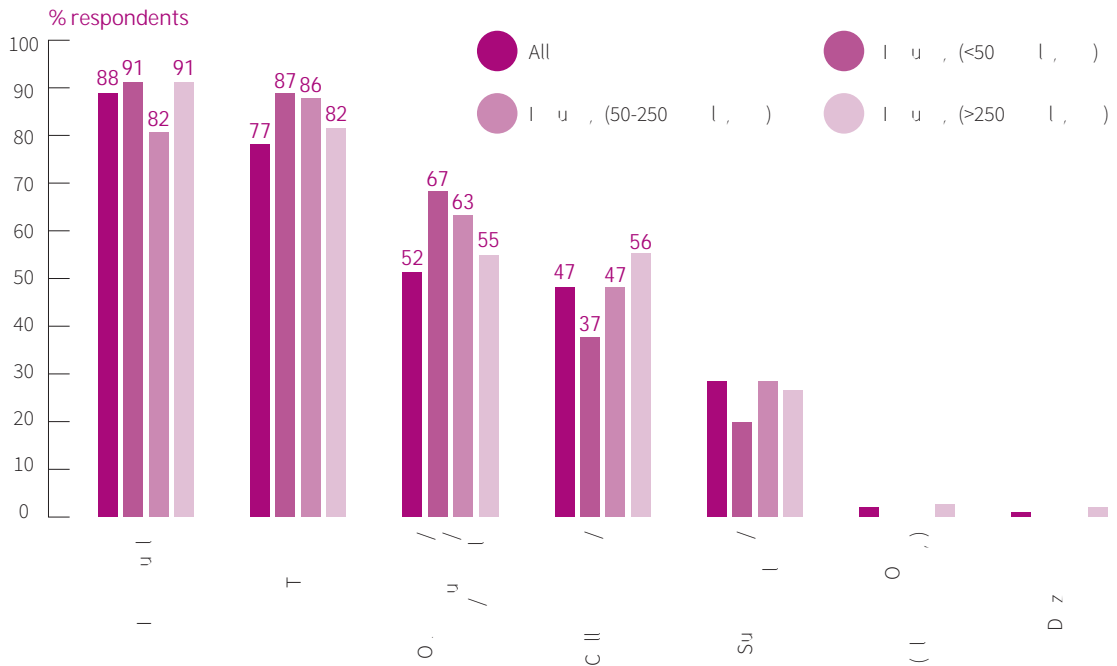


Figure 8: Source: RSC Review of Recognition Programmes Survey, 2018. Survey question: Who or what level should be recognised? Responses from individuals working in industry, segmented by company size, are shown alongside those averaged across all survey respondents. (All responses, N = 1965; Industry (<50 employees), N = 76; Industry (50-250 employees), N = 49; Industry (>250 employees), N = 304). Survey respondents were asked to select all that apply.

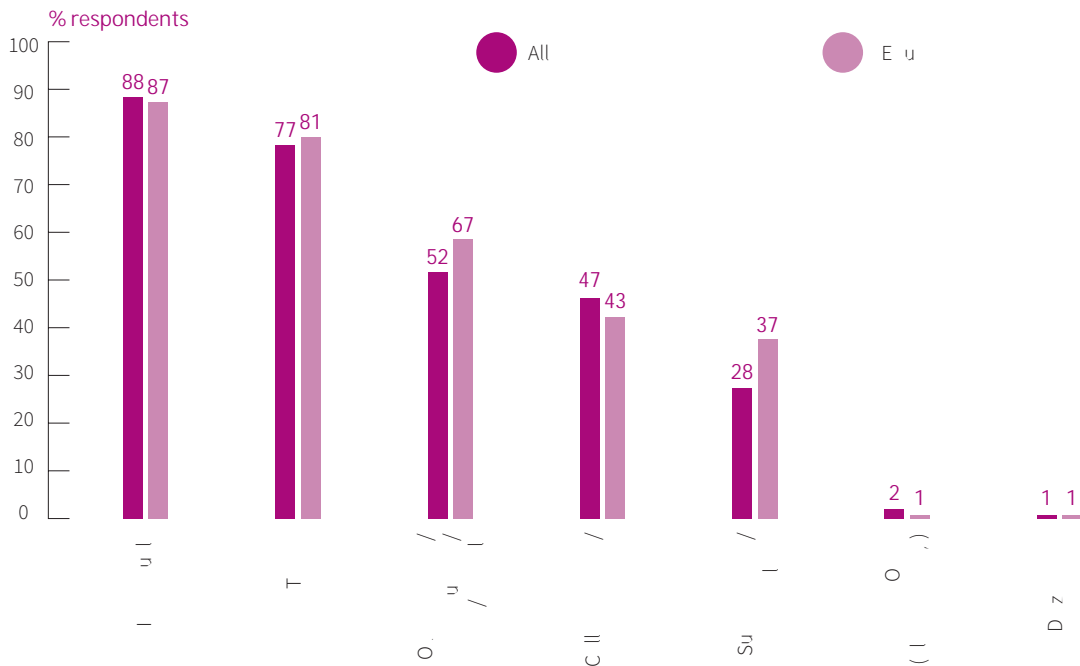


Figure 9: Source: RSC Review of Recognition Programmes Survey, 2018. Survey question: Who or what level should be recognised? Responses from individuals working in education are shown alongside those averaged across all survey respondents. (All responses, N = 1965; Education, N = 194). Survey respondents were asked to select all that apply.

67% of the survey respondents working in education (194 respondents) selected 'Organisations/institutions/companies/schools' as a level that should be recognised, compared with 52% of all survey respondents. There was also relatively higher support for recognition at company level from people working in smaller (<50 employees)

compared with larger (>250 employees) companies and the overall total.

Departments were not widely mentioned as an important unit for recognition in interviews and workshops, with the exception of supportive departments in schools.

"Supportive departments and schools should be/could be badged and recognised. Achieving this should not be a burden for the school – [it should be] part of doing what they already do."

RSC Review of Recognition Programmes workshop: Education Division Council

Leadership

Leadership was selected by 46% of survey respondents as meriting recognition, rising to 67% among the respondents who identified themselves as senior managers (see Figure 10). The question of leadership arose in different ways through interviews, roundtable discussions and workshops. There is an opportunity for the RSC to articulate its own view on what effective leadership in science looks like, why it is important and to recognise a diversity of leaders and achievements.

There was a sense through consultation that leadership is important because leading teams and collaborations and/or being an effective force for change and growth are so crucial for science itself. At the same time, leadership by scientists that extends beyond the immediate scientific sphere is crucial in the political domain and in ensuring that science delivers maximum impact for society.

In the context of academia specifically, there were views that there is an opportunity for the RSC to use recognition as a positive incentive to highlight leadership and share examples of leadership attributes and skills that are often not part of traditional academic career development.

The recognition and celebration mechanisms for leadership will likely differ from traditional prizes, and should aim to showcase different types of leadership, demonstrated at different career stages and in different domains. For example: initiating and sustaining transformation with, for and through others; building enduring interdisciplinary, cross-sector or international partnerships and structures; successfully championing emerging areas of importance; achieving change on the ground or beyond a person's direct area of responsibility or benefit.

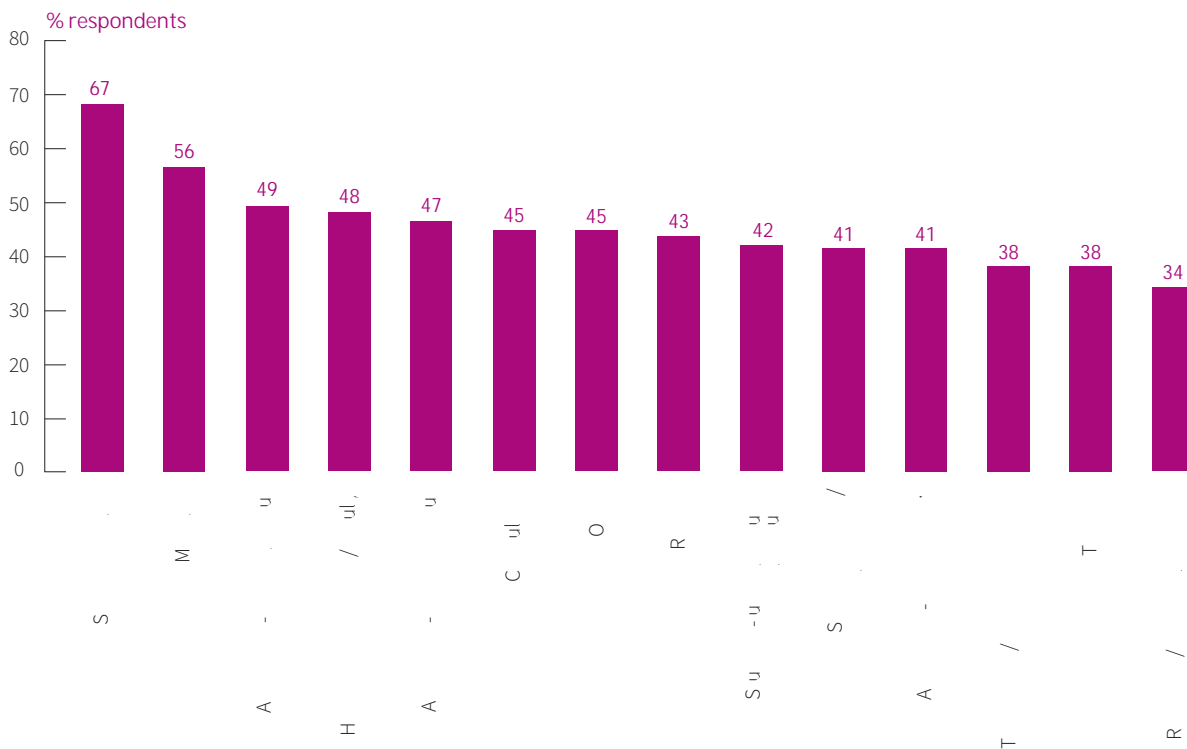


Figure 10: Source: RSC Review of Recognition Programmes Survey, 2018. Survey results showing the percentage of respondents who selected "leadership" as meriting recognition, segmented by job role.

"Advocating/rewarding people who challenge the limits and make real societal changes, not just the science itself."

Review of RSC Recognition Programmes survey response

"They should be recognising more broadly, for example, leadership, mentoring and innovation."

Review of RSC Recognition Programmes interview

"The RSC does not currently have a mechanism for recognising an individual's standing within the community, and that recognising attributes such as mentoring and 'academic citizenship' more generally may help to drive wider cultural change."

Review of RSC Recognition Programmes interview

Citizenship & service

In interviews and workshops people raised the idea of “citizenship” in different ways. One emphasis was on behaviours like treating other people respectfully or well, supporting others and supporting the chemical sciences. Another strand was on contribution, for example to places of employment and as members of the wider scientific community in activities like serving on committees and panels, advising and mentoring or supporting early career staff.

The focus on citizenship did not come through as strongly in the survey.

There was a strong feeling that the RSC should seek to find a way to ensure that prize winners are role models in terms of behaviour. In interviews and workshops some people suggested that the RSC identifies an approach for recognising “good citizenship”, in the sense of behaviour and contribution, in its own right. Some held the view that

“good citizenship” should be a criterion for all prizes. Others felt that this would not be implementable as all nominees, if asked, would be able to provide evidence of contribution and positive impact for others, making it impossible to use good citizenship as either a baseline or differentiating criterion between nominees.

28% of survey respondents selected service as a category that should be recognised. The Review Group noted that the RSC is considering service as part of its Volunteer Review and so did not pursue developing recommendations regarding service.

This was a complex area for the Review Group to consider. The recommendations regarding leadership and conduct relate to varying degrees to behaviours. They are specific ways in which recognition can be designed to incentivise and to discourage positive and negative behaviour respectively.

Education: schools and colleges

The view from consultation was that the limited recognition of teaching in schools and colleges in the current RSC prize and award portfolio does not reflect the importance of teaching as part of science.

There was a sense that recognition of teaching should begin with primary education and that, in devising any new recognition mechanisms, there is an opportunity to link with other RSC initiatives related to primary science teaching and learning.

When designing and promoting recognition schemes it is important to be aware that individuals may see themselves as teachers first and chemists or scientists second. It is important to appreciate that within schools many teachers are non-specialists, which means that there should not be an expectation that winners are members of the RSC.

There is also scope to recognise and support a wider range of activities undertaken by teachers, including innovation in teaching methods, involvement in research, outreach,

building teaching collaborations and mentoring. Related to this was a view that teachers will particularly value awards that enable them to have more time for specific projects and professional development.

There is a place for recognising individual teachers. Such recognition may be particularly meaningful if the nominations are made by students, for example for an “Inspirational Chemistry Teacher of the Year” award. There may also be scope for developing other recognition mechanisms such as professional qualifications for teachers of chemistry, analogous to the chartered chemist route.

In addition to recognising individuals, there was a view that teachers would often welcome recognition of their department or school. This could be done in many different ways; for example, by badging supportive departments and schools with outstanding chemistry teaching, or through financial prizes for the science department in a school.

“[Recognise] the unsung heroes/teachers and education: the RSC has a role to promote the chemical sciences in education.”

Review of RSC Recognition Programmes interview

“Consider all contributions to chemical education e.g. primary teachers.”

Review of RSC Recognition Programmes survey response

“Go beyond universities and industry; don’t ignore the role school teachers have.”

Review of RSC Recognition Programmes survey response

Engagement and outreach

There was a strong view in the consultation that engagement with a variety of different audiences is important for science. People used the word "outreach" to cover a range of activities from sustained outreach partnership projects between schools and universities to public and policy engagement activities by individual researchers in universities or companies. Some individuals are employed in specialist educational outreach or science communication roles, others

Innovation

The review heard that the RSC already recognises innovation, but that there is scope to do this more effectively. The RSC *Emerging Technologies Competition* is itself an innovative recognition mechanism giving profile to individuals and companies. Participants range from small companies participating in the competition to large companies who sponsor the competition and provide mentoring and advice for participants and winners.

There are some RSC prizes and awards for innovation and/or for industry, but the sense from the consultation was that the objectives for these prizes and awards are unclear. Related to this is the view that the criteria for these awards are broad, ambiguous and not always relevant to the area being recognised.

Research

The majority of RSC prizes and awards are for individuals for retrospective achievements or contributions to research. The scientific scope of these prizes and awards ranges from

Currently within the RSC portfolio, only the prizes and awards for research have career stage stratification. A recurring theme in the consultation was that the RSC should extend opportunities at different career stages to other domains, particularly for early career chemists.

There was universal agreement on the importance of supporting and encouraging early career chemists. The overall sense was that this is working well for the prizes for research.

How should the RSC recognise?

This section summarises findings from the literature and consultation about various aspects of how the RSC should recognise different domains and dimensions of excellence.

Legacy and clarity of portfolio

Prizes and awards are a very visible way in which the RSC recognises individuals and teams. Many RSC prizes and awards are named after individuals, of which only two are named solely after women.

There is a view, expressed also in the literature, that eponymous naming of prizes should be mindful of diversity, at the very least reflecting diversity. In the consultation there was agreement that being proactive in considering diversity will be essential for any new eponymous prizes and awards, and that any such prizes should include both forename and surname.

There is a degree of arbitrariness in eponymous naming of prizes. Every generation has many distinguished scientists so it is hard to establish criteria for selecting individuals after whom prizes are named. Historically prizes have often been named in association with donations and bequests as a way of commemorating an individual, rather than based on a strategic decision to inaugurate a prize for a particular purpose.

It is also important from the point of view of accessibility to ensure that the name of every prize, eponymous or not, makes clear what the prize is for. This is so that there are no tacit assumptions about what potential nominators know already about the RSC prizes and awards.

Views on the question of renaming existing RSC prizes and awards were mixed, but the overall sense from the consultation was that the current eponymous prizes and awards reflect the history and heritage of chemistry and should mostly be kept as they are, with the addition of a description of what the prize is for. The fact that many existing awards use an individual's surname only and that in most cases people considering making a nomination are unfamiliar with that individual mean that in fact very few of the awards are associated with specific individuals in the minds of nominators.

The prevailing sense from the consultation was that what is most important is the diversity in the winners each year and the profile given to those winners. Many of the current eponymous prizes are very prestigious and a collective goal for the RSC and its community should be that the "lineage" on the winner lists becomes more and more diverse.

There may however be opportunities for some renaming after an individual or individuals and by introducing double-barrelled naming for prizes and awards currently named after just one individual.

In eponymous naming or renaming of prizes and awards it is also important to be mindful of the potential pitfall of reinforcing unhelpful differences in perception regarding status and prestige associated with different domains and types of excellence.

In considering future naming there is an opportunity to break with the tradition of posthumous naming as a way of widening the diversity of the pool of individuals after whom a prize is inaugurated. An example is the RSC Materials Chemistry Division's *Stephanie L K olek A ard*, first awarded in 2010.

One suggestion is that having a larger group of people looking at prize names in "batches", rather than having an individual or small group looking at them one at one time, will enable more effective consideration of diversity in the choice of names for eponymous prizes and awards. This approach allows for flexibility and inclusiveness, creates a sense of collective responsibility, and can involve people with different perspectives and expertise in informing and making the decision.

While it makes sense to decide about creating or re-naming eponymous prizes in batches, it would be advisable for the RSC to wait until it has decided on any actions related to creating, stopping or evolving its prizes and awards before naming or renaming awards. This would then create an opportunity to decide the names associated with a larger set of awards at one time.

"The purpose of the award is an historical thing; the names reflect the history of chemistry, which is fine."

[Review of RSC Recognition Programmes interview](#)

"Change the name of the awards, the majority are male."

[Review of RSC Recognition Programmes survey response](#)

Hierarchy & portfolio structure

Ideas about hierarchy and recognition in a general sense arose in different ways in the consultation. One idea is that of bronze, silver and gold prizes corresponding to excellence at different levels of contribution defined by, for example, increasing breadth across a domain or increasing scale of impact. There can also be hierarchy associated with advancing career stages, allowing also more prizes at the early career stages for the purpose of supporting careers.

Views about the importance of hierarchy were, for some, related to perceptions about prestige. The latter can arise in different ways, including from the profile given to winners with different audiences, in some cases as the result of deliberate efforts by the organisation awarding the recognition. Alternatively, a prize may be considered

to be very prestigious within a small community and the prestige associated with recognition by expert peers. Views on the desirability of hierarchy in prestige naturally depend somewhat on individual motivations and preferences.

The overall sense was that hierarchy of different types may be useful within the RSC portfolio, but

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Lecture tours

Feedback from winners was that university lecture tours are a very positive and valued aspect of the prize, although not all prizes have associated university lecture tours.

For prizes where the RSC arranges university lecture tours, winners saw their visits as beneficial for making connections, raising their profile and also learning about different universities around the UK. Lecture tours are also beneficial to the departments that host winners.

There was a view that international winners should visit a wide range of institutions because part of the purpose of the lecture tours is to give students, faculty and other staff at universities the opportunity to hear presentations by and to interact with leading international scientists. Winners also reported valuing the opportunity to meet with early-career scientists including PhD students and post-doctoral researchers.

“[The most valuable element of winning was] the opportunities for networking and also the lecture tour.”

Review of RSC Recognition Programmes survey response

“When I won the award there was no travel fund for lectures, I felt that was a bit of a shame.”

Review of RSC Recognition Programmes interview

Lists

The Review heard some support for the idea of publishing lists of shortlisted nominees for prizes and awards as a way of broadening recognition to a greater number and more diverse group of people each year. Overall the view was that for individual prizes this may deter people from putting

“Not shortlists, I am against this, just show the winner – [it’s] not good to be on the shortlist for 2-3 years!”

Benefits included making links with potential post-docs and the opportunity to advise UK-based PhD students and post-docs about research systems in other countries.

Whilst the lecture tours were widely valued, flexibility is important. The RSC should be mindful that for some individuals the requirement of a lecture tour that can extend over one week may be limiting the diversity of nominations, for example for individuals with caring responsibilities or people with disabilities for whom travel is challenging.

Depending on the purpose of the prize, there may be opportunities to extend the concept of lecture tours beyond universities to schools, science museums and companies. There may also be opportunities to make prize lectures available more widely, for example by streaming, broadcasting and recording them.

“Speaking opportunities are valuable: both for a department bringing in a prize winner, and also visiting institutions as a prize winner.”

Review of RSC Recognition Programmes interview

themselves forward, but that it would be sensible to publish non-ranked shortlists for team or project awards based on collective input.

There was some appetite for the idea of recognising cohorts such “top 10” or “top 20” lists, although a view that it would need to be clear how nomination and judging would work.

Prospective and retrospective prizes

RSC prizes and awards currently recognise past achievement, which was considered important in interviews, workshops and the survey (Figure 13).

There was also support in the survey for the idea of recognising potential and incentivising behaviours or projects, although this did not emerge as strongly in

interviews and workshops. The recognition mechanisms are likely to be different and the RSC may wish to amplify current schemes such as its *Emerging Technologies Competition Outreach Fund* and *Researcher Mobility Grants*. There was little support for challenge-based large cash prizes, but several consultees referred to prospective prizes such as the Royal Society *Rosalind Franklin Award*.

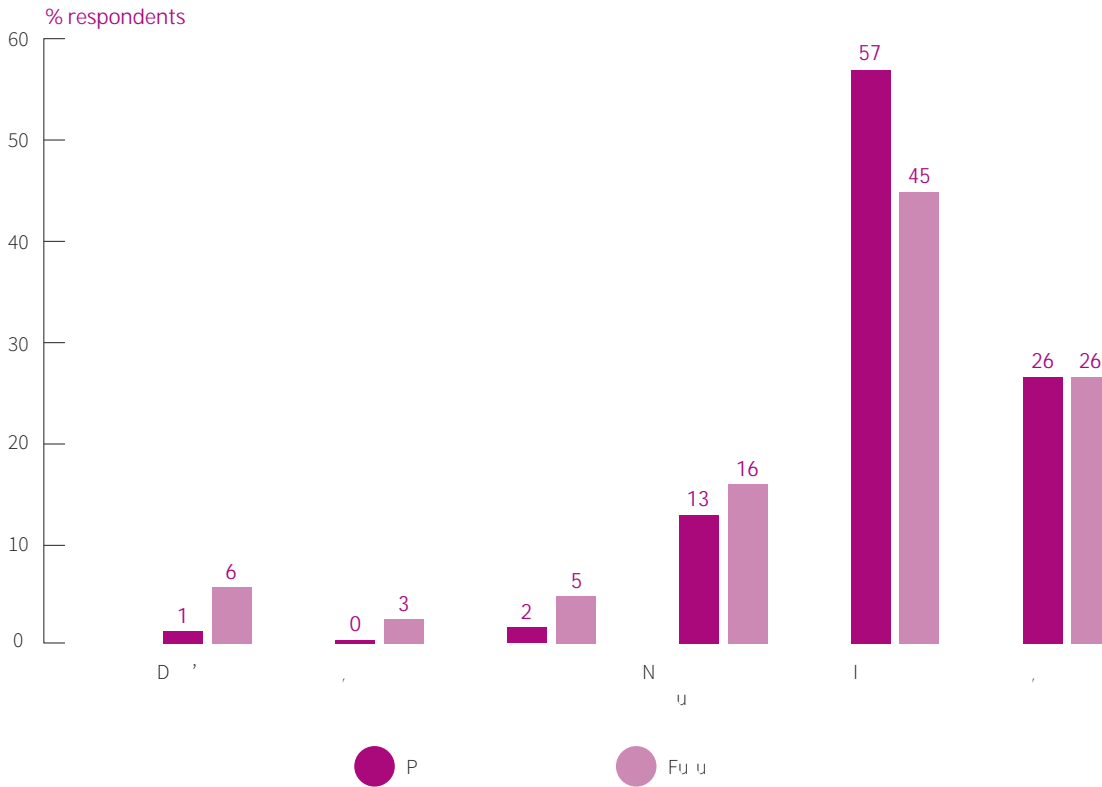
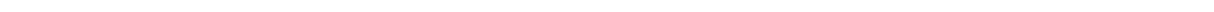


Figure 13: Source: RSC Review of Recognition Programmes Survey, 2018. Survey questions: How important or unimportant are prizes and awards that recognise past achievements; How important or unimportant are prizes and awards that recognise future achievements? Data shown from all who responded to the question (N = 1823).



How should the RSC organise its recognition programmes?

Nominations

Figure 14 shows the results of the survey on the question of barriers to being nominated.

The Review heard that removing some of these barriers may involve raising awareness of and confidence in aspects of the nomination and judging process rather than changing the process itself. A specific example is the identity of nominators. Following guidance from its Awards Working Group, the RSC has for several years had a strict policy that the identity of nominators is not shared with any members of its judging panels, including panel chairs. The Review heard however a widespread perception that the identity of nominators is important. This can deter individuals who do not have networks or supporters who they think, or are advised, are "suitably senior" nominators.

Another example, specific to academia, is the role of departments. Nominations for RSC prizes and awards are formally made by individuals. In practice, many departments decide who they wish to be nominated. It is important for everyone to be clear that any individual can be nominated by any RSC member and that the nomination does not require agreement from their employer.

The review heard widespread support for the decision by the RSC to track and publish the gender diversity statistics for nominees and winners of its prizes and awards.¹⁹ This has facilitated discussion about the importance of the diversity of the nominee pool.

There was almost universal agreement that there is an issue regarding diversity of winners and that a key factor in changing this is the diversity of the people nominated. However, views differed on the aspects of diversity in the nominations that are most important in the context of prizes and awards and on how to change the demographics of nominee lists.

There were divergent views on the question of quotas applied to all prizes and awards. Some people think that

the RSC should apply a baseline gender quota to all awards, below which an award does not run in a given year. Even if inconvenient, uncomfortable or unpopular with some people, this approach would trigger an intervention and enable an understanding of and decision about diversity in the context of that award; for example, deciding to proactively canvass nominations or that the scope of the award is too narrow. Another view is that it is important to understand and accept that the demographics of the potential nominee pool for different prizes will vary and therefore to consider each one separately. This may be the case, for example, for established or late career awards. From a pragmatic point of view, quotas may be challenging to implement because diversity data is provided on a voluntary basis by nominees and therefore the RSC does not know the actual gender distribution of nominees.

Another perspective is that focussing solely on increasing the proportion of people from under-represented groups in a nominee pool is not enough and in fact, if pursued in isolation, can lead to tokenism or disappointment as people are nominated "just to fill quotas on nominee lists".

Prizes are by definition competitive and winners are selected by panels who are judging against specified criteria. Therefore, in the absence of conscious or unconscious bias, in order to win any nominee will be competing against other people on an equal basis according to those criteria. It will also serve any nominee well if their nominator addresses the criteria and any other guidance associated with the prize.

The review also heard that where there has been an under-representation of certain groups in winner lists relative to the associated demographics in the nominee pool, the RSC may expect to see an over-representation of those groups in the nominee and winner pool for some time as there will be a backlog of previously-unrecognised excellence.

19 2019 RSC Prizes & Awards Gender Diversity: www.rsc.org/globalassets/07-news-events/rsc-news/news-articles/2019/04-april/prizes-and-awards-2019/inclusion-and-diversity-data-prizes-and-awards-2019.pdf

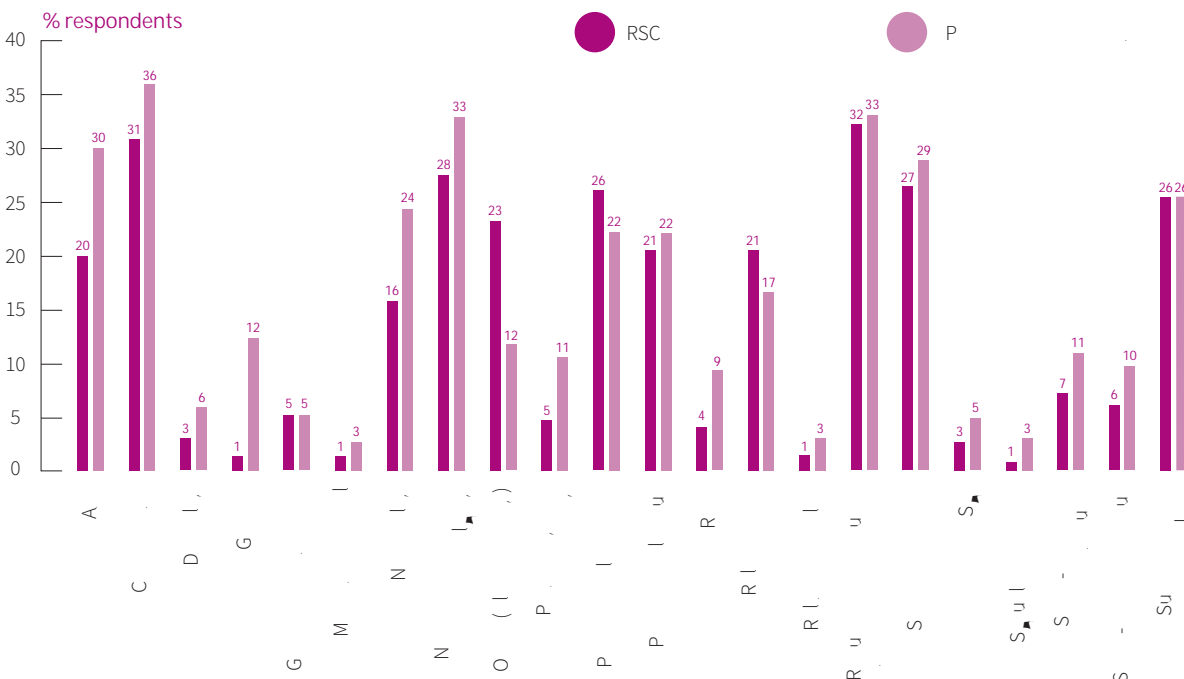


Figure 14: Source: RSC Review of Recognition Programmes Survey, 2018. Survey questions: In your experience, are there any barriers to being nominated for RSC prizes and awards (asked of those familiar with RSC prizes and awards, N = 871); In your experience, are there any barriers to being nominated for prizes and awards in general (asked of those unfamiliar with RSC prizes and awards, N = 508)? Survey respondents were asked to select all that apply.

The review also heard mixed views on the idea of self-nomination, currently not allowed by the RSC. There are some views in favour of introducing self-nomination in combination with the policy of not sharing the nominator's identity with judging panels. This could provide a nomination route for people who do not know any RSC members who they feel they could approach and ask to nominate them, which can be an issue for foreign nationals who have recently moved to the UK and for individuals based in environments where there are few RSC members.

There was also a sense that self-nomination may be a way of addressing the issue, often associated with under-represented groups but also dependent on personality and environment, that some people are reluctant to approach someone to ask them to write a nomination. The Review heard, however, the counterargument that individuals who are reluctant to ask to be nominated are even less likely to nominate themselves or to prepare a nomination that confidently evidences their excellence. There was also a concern that allowing self-nomination may have the unintended consequence of increasing the number of nominations of individuals who need no encouragement to put themselves forward.

There was more convergence on the question of self-nomination for prizes for teams. There was a sense that, much like short-lists, the collective nature of the nomination changes the dynamic and may make self-nomination the most appropriate nomination mode for some team prizes.

One suggestion, as a way of addressing the related issues of lack of access to potential nominators and of reticence in proactively seeking nomination for individual prizes, is to raise awareness among managers, and in particular heads of department in universities, about techniques to consider all potential nominees in their unit. These can include developing mechanisms to review all CVs annually, expand the pool of people within departments who are willing to make nominations and provide support for individuals who are preparing a nomination for the first time.

There was also a sense that it is the responsibility of the community, individually and collectively, to be proactive in broadening the pool of both nominators and nominees. Division councils have an important role to play in encouraging and supporting nominations, although there needs to be a very strict separation, in reality and in perception, between canvassing and judging. RSC interest groups, local sections and industry representatives could all play a role in raising awareness about the opportunity to nominate and in encouraging and supporting nominations.

References are currently requested for early and mid-career awards, and the identity of the referee is shared with judging panels. There are some concerns that this works against people who do not have a network, in particular when there is a perception that the seniority or status of the referee is important.

In recent discussions, judging panels have taken the view that references are important and also beneficial for nominees, especially for early career researchers where their specific contribution to a body of work may not be clear from their publication record or nomination. This is particularly important for early career researchers who have always worked collaboratively. The value of a reference letter is the referee's ability to comment in detail on the specific contributions made by an individual. This means that the identity of the referee may be evident anyway as the nominee will, for example, have worked as a postdoctoral researcher in their lab.

Putting the range of views on referees together suggests that the RSC should clarify the purpose of reference letters and make clear that it is the content and authenticity of the reference that are important in supporting a nominee.

For most of the RSC prizes and awards, nominators use an online system to submit a one-page nomination letter and a one-page CV.

The survey indicated that, particularly in education and industry, the nominations process is a barrier to nominations. In interviews, workshops and roundtable discussions, some people expressed the view that the nominations process is complex and time-consuming. Some people consider that simplifying and streamlining the process may improve accessibility and increase the diversity of nominations.

The review heard that there may be opportunities for standardisation, for example moving to a standard nomination form with signposting to relevant rubrics and criteria for each section. This could reduce the time taken to make nominations, ensure that the information provided is the same for everyone and that it addresses the criteria.

There was also some resistance to the idea of standardisation and a sense that it may in fact take more time because nominators could not "recycle" letters and CVs used for other purposes.

Smaller nomination packs would also reduce the time required for judges to review the nominations, although it is important for nominees that judges have sufficient information to meaningfully form a judgement against criteria.

There is room for the RSC to provide more guidance on writing nominations. In some cases, this guidance is in fact available but there may be ways of making it more prominent to ensure that all nominators read it.

One option, used by some organisations, is that the RSC could rollover nominations for up to three years, with an opportunity each year for nominators to update their nomination. In addition to reducing the time associated with making nominations, this could also ensure that individuals remain on the nominee list and are not deterred or disheartened if they do not win the first time.

“Not passing on the name of the nominator to awards committees was a positive development.”

Review of RSC Recognition Programmes workshop – RSC Division Council

“On self-nomination – the plus side is that it may mean that someone who doesn't want to ask to be nominated may feel they can nominate themselves.”

Review of RSC Recognition Programmes workshop – RSC Division Council

“I wouldn't allow self-nomination or nomination from a home institution.”

Review of RSC Recognition Programmes survey response

“It is not just up to the departments to encourage more nominations, the community should take responsibility.”

Review of RSC Recognition Programmes interview

“Judges will not be immune to the power of additional letters after a name, as much as we would like them to be so. This definitely adds to the exclusive nature of an awards process and we have seen proof that it will mean that the best person for the job is not writing the reference as they are not seen as being important enough. It also creates the horrible situation where it is who you know (community C 1 (2 1 Tf 7 0 0 7 34.5921 343.954

Judging

The review heard that judging and eligibility criteria should be clear, transparent and relevant to the domain and type of excellence being recognised. In particular, the RSC should continue to its work to ensure criteria are relevant for awards aiming to recognise people working in education and industry, and in a range of different roles.

There was a strong view that criteria should not be based on metrics.

Eligibility criteria for career-stage related prizes should provide clear guidance regarding career breaks and non-traditional career paths, encouraging and normalising nominations from individuals with diverse career trajectories.

The review heard some concerns about judging panels in connection with diversity. Some people expressed the view that the composition of judging panels should prioritise diversity, others that it should prioritise expertise in the area of excellence being judged, and others that panels should balance both insofar as is practical or possible.

There was also a concern that prioritising diversity on judging panels may make the pool of individuals from under-represented groups eligible to nominate or be nominated even smaller because panel members can neither make nominations nor be nominated for awards.

Recommendations

The recommendations should be viewed as a whole, working in concert with one another and with the *Principles of Recognition*

A first step could be that the RSC asks nominators to declare that to the best of their knowledge there is no confirmed or potential impediment to their nominee winning from the point of view of that individual's professional standing. Winners could be asked a similar question. There may be opportunities for the RSC to work in partnership with other scientific organisations in this area. For example, the American Geophysical Union has introduced self-reporting requirements for recipients of AGU awards.²⁰

Recommendation 5: the RSC should increase its recognition of education in schools and colleges.

The RSC should increase and tailor recognition of teaching in schools and colleges to effectively recognise excellence, taking into consideration views and suggestions gathered during the consultation. The review sets out a number of suggested approaches for the RSC's recognition of teaching in schools from recognising and badging supportive departments through to awards to enable teachers to have more time to spend on professional development or projects. The RSC should be mindful in developing these suggestions that individuals might consider themselves to be teachers first and chemists or scientists second.

Recommendation 6: the RSC should increase its recognition of education in higher education providers.

The RSC should increase and tailor recognition of education and educational research in higher education. The review sets out a number of suggested approaches for the RSC's recognition of teaching in higher education, including recognition for people at different career stages and in different roles, including teaching fellows, and recogni

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Recommendation 11: in line with Principle 8, future recognition by the RSC should respect the history of the current RSC prizes and awards, but the structure of the recognition portfolio should be rationalised and clearly articulated.

The review has identified a number of recommendations relating to the size, structural clarity and naming of prizes of the portfolio.

- The RSC should reduce the size of its recognition portfolio.
 - The RSC should clarify its recognition portfolio structure.
 - Hierarchy of different types within the RSC recognition portfolio should be deliberate and the rationale for it clearly communicated.
 - The names of prizes should specify the domain and type of excellence they seek to recognise.
 - The RSC should generally retain eponymous naming of prizes and awards where the existing prize or award is part of the history and heritage of chemistry. If
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6

Methodology

Scope

1. Scope and develop theme cluster framework

- Literature review
- Data from current RSC Prizes & Awards
- Workshops with RSC Awards Working Group and RSC Science Education & Industry Board

2. Expand theme clusters

- Workshops with RSC divisions and Inclusion and Diversity Committee
- Initial interviews

3. Define purpose and overarching principles

- Review Group discussion of initial findings and themes
- Agree purpose and overarching principles

4. Expand evidence

- Expand evidence through detailed qualitative and quantitative feedback from interviews and survey

5. Analysis and synthesis to formulate draft recommendations

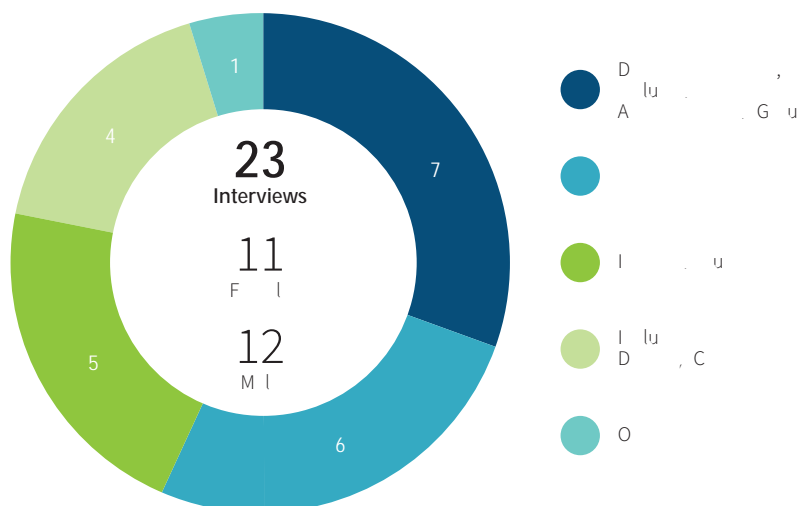
- Draft recommendations discussed and refined by Review Group

6. Develop final recommendations and options

- Final recommendations reviewed and agreed by Review Group

Extensive communication and consultation with members of the RSC community formed a major part of the review, summarised as follows:

- Workshop with Science, Education and Industry Board (Jun 2018)
- Workshop with Awards Working Group (Jul 2018)
- Email to interest group chairs seeking feedback (Sept 2018)
- Roundtable discussion with Inclusion & Diversity Committee (Oct 2018)
- Roundtable discussions with RSC division councils (Oct 2018)
- Workshop with Education Division Council (Oct 2018)
- Telephone and in-person interviews (Aug – Dec 2018)
- Teleconference with regional education co-ordinators (Nov 2018)



We issued the survey via email to RSC members and non-members. Key target audiences included teachers, academics (including heads of university chemistry departments), individuals working in industry, technicians, previous RSC prize and award winners and members of RSC divisions and interest groups. 2,130 individuals responded to the survey.

