

Nurse Review of Research Councils: Call for Evidence Response Form

Please state whether you are responding as an individual, or on behalf of an organisation:

Response on behalf of the Nuffield Council on Bioethics.

Please write here your name/ the name of your organisation and contact details. This would help us to contact you if we have further questions.

Hugh Whittall, Director, Nuffield Council on Bioethics
28 Bedford Square, London WC1B 3JS

Email: Hwhittall@nuffieldbioethics.org

Tel: 0207 681 9619

Please provide evidence and views in relation to the following themes:

1. Strategic decision-making

The Council's 2012 report [Emerging Biotechnologies: technology, choice and public good](#) investigated the ethical issues and challenges raised by emerging biotechnologies and set out an approach to help guide improved practice in policy making, research and regulation.

Of particular relevance to this review, we examine the way in which research policy shapes the emergence of biotechnologies in the UK (Chapter 7).

Economic paradigm

Strategic advice to government on the 'big picture' of biotechnology has declined with the winding up of a number of high level bodies created at the beginning of the century, reducing opportunities for broad debate and public access. At the same time, government technology policy, including in the life sciences, has become increasingly framed by the dimension of economic growth. While economic benefits are important, they are not solely important, and they risk obscuring other important values, though these are more difficult to quantify. (Para 7.6-7.11)

The economic paradigm now dominates policy relevant to emerging biotechnologies in the UK, except the policy of charitable funders who continue to have a substantial role. Areas such as synthetic biology and personalised medicine often become a focus for funding by virtue of estimates of the market value that they promise to deliver. Such policies, however, lack relevant evidence to support a relationship between research expenditure and economic growth. (Para 7.12-7.19)

While there is certainly a need for better economic evidence in this area, we recommend that the determination of biotechnology policy should attend explicitly to diverse perspectives and bodies of evidence rather than privileging a quantitative frame of evaluation (such as economic costs and benefits, or costs and benefits reduced to economic values); this should feed in not only to government policy but also to funding bodies and, indeed, to research institutions. (Para 7.32)

Past research policies

To inform its work, the Council [commissioned a review of the sources and allocations of funding for research and development of biotechnologies](#).

We concluded that it is extremely difficult to identify where research on emerging biotechnologies is carried out, due to the paucity of data available or its ambiguity. We recommend that there is a need for serious evaluation and assessment of past research policies, both of Government as a whole and of particular public funding bodies, to understand in what conditions, if any, selective approaches to support for biotechnology are plausible. (Para 7.46)

Policy control of research councils

We examine the assumption that detailed priorities in basic research are set by researchers under a general strategic steer from government (loosely referred to as the 'Haldane principle') and find that the issue of who controls UK research policy is far from clear, although business and industry figures occupy prominent places in the key decision making bodies (advisory bodies such as the Technology Strategy Board, and the research councils). We take note of initiatives to include and even institutionalise broader societal perspectives in research strategy but find there is a persistent asymmetry of influence. (Para 7.51-7.54)

We therefore recommend that research policy should be framed not by received assumptions or by the same limited range of experts, but through continuous engagement with a broad range of societal interests and with the involvement of social actors who can bring understanding of these interests to the joint enterprise of constructing a public frame for research policy decisions. (Para 7.55)

To increase coordination and diversity of government support for research across disciplines, and to encourage the pursuit of public good that is not identified solely with economic performance, we recommend that consideration should be given to bringing Government research policy and funding bodies under a senior minister (i.e. of Cabinet rank) free from departmental responsibilities to ensure that research properly reflects all the objectives of Government, rather than those of a particular department. (Para 7.56)

Published policy

Furthermore, in order to increase openness about the way in which policy relates to social values, we recommend that there should be a clearly defined, written and published Governmental research policy against which detailed elements of departmental and other public research policies (such as the approach and methods of funding bodies) may be assessed. (Para 7.56)

The publication of the [Government's "Plan for Growth: Science and Innovation"](#), is, to that extent, to be welcomed. But we also note the conclusions of the Commons Science and Technology Committee in its report on [Advanced Genetic Techniques for Crop Improvement](#) that **"we recognise the need for society to remain open to a variety of innovation trajectories and for policy-makers to look beyond the single dimension of economic growth when considering the potential costs and benefits of any emerging technology..... In this respect, we endorse many of the recommendations of the Nuffield Council's recent report on this subject and reiterate our previous conclusion that the Government Office for Science is not best located in the Department for Business, Innovation and Skills, where its frame of evaluation risks being invariably dominated by economic considerations.** In its response to this report, the Government should set out how the Nuffield Council's work on emerging biotechnologies has informed its research policy. We are particularly interested in how it has responded, or intends to respond, to the Council's call for structural reorganisation."

2. Collaborations and partnerships

In 2014, the Nuffield Council on Bioethics embarked on a series of engagement activities to inform and advance debate about the ethical consequences of the culture of scientific research. The report [The Culture of Scientific Research in the UK](#) makes a number of suggestions for action to research funders, professional bodies, journals, universities and researchers themselves. The activities of the project included an online survey that received 970 responses, 15 discussion events around the UK with around 740 speakers and participants and evidence gathering meetings.

General observations

In the context of what scientists told us motivates them in their work and what they believe to be important for the production of high quality science, we make some general observations:

- In some cases the culture of scientific research does not support or encourage scientists' goals and the activities that they believe to be important for the

production of high quality science.

- There seem to be widespread misperceptions or mistrust among scientists about the policies of those responsible for the assessment of research.
- Among all the relevant stakeholders, concerns about the culture of research are often on matters that they think are outside their control or are someone else's responsibility.

We believe there is a **collective obligation** for the actors in the system, including research funders, to do everything they can to ensure the culture of research supports good research practice and the production of high quality science. As such, we provide a number of suggestions for action for funding bodies, research institutions, publishers and editors, professional bodies and individual researchers. The suggestions for funding bodies have been highlighted below.

What is high quality science?

When survey respondents were asked to select five words from a list that best describe their understanding of high quality research, the five most frequently selected words were:

1. Rigorous
2. Accurate
3. Original
4. Honest
5. Transparent

During the project activities it emerged that several other components are thought to be particularly important in the production of high quality science: collaboration, multidisciplinary, openness and creativity.

Collaboration

Increased collaboration was the most common answer given when survey respondents were asked what feature of the UK research environment is having the most positive effect on science. The respondents (a quarter) who raise this think collaboration is leading to better communication between researchers, greater sharing of data and methodologies, less competition between different research teams, and reduced feelings of isolation among researchers. This, respondents perceive, results in an "explosion of ideas" and more innovation in research.

Multidisciplinary

The potential for multidisciplinary research to address some of the major questions facing society was highlighted at several of the discussion events. Researchers who have trained in completely different ways need to work together, it was suggested, and the wide gaps between disciplines that existed in the past are now becoming much narrower.

Support by funding providers for multidisciplinary and collaborative work was also particularly praised by survey respondents. Forty-one per cent of respondents believe that how multidisciplinary and collaborative research is supported is having a positive or very positive effect overall on scientists in terms of encouraging the production of high quality science (compared to 26 per cent who think it is having a negative or very negative effect).

Openness

Sixty-one per cent of survey respondents think that the move towards open access publishing is having a positive or very positive effect overall on scientists in terms of encouraging the production of high quality research. Researchers in the field of

computing were particularly positive. Reasons given for this positive effect include making research more accountable to the public, and helping to correct exaggerated or inflated claims made in the media.

In addition, almost two thirds of respondents believe data sharing policies in the UK are having a positive or very positive effect overall on scientists in terms of encouraging the production of high quality science. Respondents believe increased transparency and data sharing are facilitating the dissemination of results, enabling research to be accomplished more quickly and cost effectively, and allowing greater scrutiny of research findings.

Creativity

The importance of creativity in the scientific process was raised during the project in a number of contexts. When asked how different features of the UK research environment are having a positive effect on scientists, academic freedom and variety in research were among the most common answers given by survey respondents. Respondents report that these features encourage creative thinking, leading to diversity in research and innovation as well as encouraging researchers and institutions to follow more ambitious projects.

However, we observed that in some cases the culture of scientific research does not support or encourage scientists' goals and the activities that they believe to be important for the production of high quality science. High levels of competition for jobs and funding, and certain features of researchers' careers, for example, are thought to be contributing to poor quality research practices, less collaboration and a loss of creativity in science.

Competition

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.

Of the survey respondents who provided a negative comment on the effects of competition in science, 24 out of 179 respondents (13 per cent) believe that high levels of competition between individuals discourage research collaboration and the sharing of data and methodologies. This concern was echoed during several of the discussion events.

3. Balance of funding portfolio

The following findings are from [The Culture of Scientific Research in the UK](#) (published December 2014)

We note that the Research Councils offer a range of research grants, fellowships, studentships, training and other programmes, and support a wide range of research through short and long-term grants, initiatives to support 'high risk' science, and schemes targeted at supporting early career researchers.

However, when asked which features of the UK research environment are having the most negative effect, the most common answer given by survey respondents (31 per cent) was the lack of funding available. These respondents believe that the amount of available funding has decreased recently and that too much of their time is wasted applying for what they believe is a shrinking pot of money.

Strategically-directed funding

The survey respondents who think the lack of funding available is having the most negative effect on scientists also comment that researchers are tailoring their work in order to meet strategically-directed funding calls, rather than applying for the original research they had in mind. They believe that creativity and innovation are being lost within the scientific community as a result. This point of view was echoed in the discussion events, with participants commenting that the use of themes and strategic priorities by funders may induce researchers to pursue research they perceive as more 'fundable', which over the long term may exert a distorting influence on what research is conducted.

Short-term funding

The potential negative effects of short-term funding were raised in several contexts by survey respondents and event participants. Twenty-eight per cent of respondents commenting on how different features are having a negative effect on scientists point to a general culture of 'short-termism', which they believe results in fewer new ideas, a decrease in the time available to plan good research, greater adherence to safer research topics (where results are almost guaranteed in advance) and people cutting corners in research. The factors cited as causing short-termism include short-term employment contracts caused by short-term project funding and a focus on short-term research outputs and impact. Respondents, particularly postdoctoral researchers and professors, believe the current system encourages short-term research proposals and safe research, which may be geared towards commercial development, rather than high risk research in unexplored areas.

Funding for riskier projects

When asked what they would like to change about the UK research environment, over 42 per cent of respondents comment on funding issues, with some expressing a desire for more funding for 'riskier' projects. There is a feeling that funding bodies have become more conservative and favour safer research projects, where results are almost guaranteed in advance, but this approach, respondents believe, can hamper scientific development. This concern was echoed at the discussion events, with participants expressing a belief that funders are reluctant to take risks with research and tend to fund the same projects or research teams repeatedly.

Positive aspects of the current funding landscape were also raised by some participants. When asked which features of the UK research environment are having the most positive effect on scientists in terms of encouraging high quality science, access to funding for projects was raised by a fifth of respondents, particularly when respondents were comparing the UK situation to that of other countries. Support by funding providers for multidisciplinary and collaborative work was also particularly praised by survey respondents.

We make the following suggestions to funding bodies to:

- **Maintain a funding portfolio that provides opportunities for diverse research approaches for researchers at different stages of their careers and for research projects at different stages of development.**
- **Communicate clearly to research institutions and researchers about funding strategies, policies and opportunities, and information about past funding decisions, particularly in areas where there are common misconceptions.**

4. Effective ways of working

The following findings are from [The Culture of Scientific Research in the UK](#) (published December 2014)

Assessment of research

In a competitive system, the criteria used by funding bodies, journals and research institutions to assess the quality and value of science influences what science is pursued and how scientists behave.

The perception that publishing in high impact factor journals is the most important element in assessments for funding, jobs and promotions is creating a strong pressure on scientists to publish in these journals. This is believed to be resulting in important research not being published, disincentives for multidisciplinary research, authorship issues, and a lack of recognition for non-article research outputs.

The Research Excellence Framework (REF) is thought to be a key driver of the pressure to publish in high impact journals, with many unaware or untrusting of the instructions given to REF assessment panels not to make any use of journal impact factors in assessing the quality of research outputs. Attempts to assess the societal and/or economic impact of research are welcomed by some, but others believe this is creating a culture of short-termism and is pushing aside interest in curiosity-driven research, as well as resulting in researchers exaggerating the potential application of research in grant proposals.

It was suggested during the discussion events that research organisations should pay closer attention to and value the hard-to-measure and often invisible ways in which researchers contribute to the production of high quality science. This may include mentoring, training, teaching, peer review, university administration, public engagement and contributing to the work of national bodies and policy makers.

Peer review is thought to be having a positive effect on science but concerns were raised about unconstructive reviewer comments and shortages of peer reviewers. The importance of peer reviewers being given training, time and recognition for their work was emphasised.

We make the following suggestions to funding bodies to:

- **Ensure that the track record of researchers applying for funding is assessed broadly, without undue reliance on journal impact factors.**
- **Provide training and/or guidance for peer reviewers and grant assessment committee members to ensure they are aware of and follow assessment policies.**
- **Recognise and reward high quality peer review and committee service.**

Career progression

Concerns about the challenges of career progression and heavy workloads for researchers on the production of high quality science were raised frequently during the project, such as:

- Short-term contracts and job insecurity for post-doctoral researchers

- Reliance on external funding for job retention, which drives the 'pressure to publish'
- Pressure to progress but high competition for jobs and funding
- The need to keep relocating in order to take up the next position
- Limited opportunities for women in particular to have career breaks
- Heavy workloads and long hours
- High 'drop out' rates

Almost twice as many female survey respondents as male respondents raise issues related to career progression and the short-term culture within UK research when asked which features of the research environment are having the most negative effect on scientists.

In terms of how issues relating to careers and workloads affect the production of high quality science, survey respondents believe that they contribute to a culture of short-termism, high levels of stress, a lack of time to think and the loss of talented individuals from academia, which in turn results in a loss of creativity and innovation. Respondents also raise the possibility that high levels of competition for jobs may encourage poor quality research practices.

Suggestions for improvements include: fair and consistent recruitment processes, better provision of mentoring and career advice, tackling negative attitudes towards those who leave academic science, and good employment practices for women.

In the report, we make a specific suggestion to funding bodies to:

- **Support early career researchers to plan their future careers and expand their skills and experience outside of the research environment, and tackle negative attitudes towards those leaving academia.**

Research integrity

Fifty-eight per cent of respondents to the survey are aware of scientists feeling tempted or under pressure to compromise on research integrity and standards, although evidence was not collected on any outcomes associated with this. Twenty-six per cent of respondents have themselves felt tempted or under pressure to compromise on research integrity and standards. A higher proportion of respondents aged under 35 years (33 per cent) stated they had felt tempted or under pressure in comparison with those aged above 35 years (21 per cent).

Thirty-eight percent of the survey respondents who comment on research integrity and standards think the 'pressure to publish' can encourage the fabrication of data, altering, omitting or manipulating data, or 'cherry picking' results to report. Thirty-one per cent of respondents think there is pressure to focus on and report positive results, rather than negative results, and that researchers rushing to publish results may not conduct appropriate replications and scrutiny of their work.

5. Any other comments?

The closing date for responses to this call for evidence is **Friday 17 April 2015 at 23:45**.

Please provide your response in Microsoft Word format. In order to be considered, submissions should be no longer than 3000 words.

Please email or post the completed response form to:

Email: nursereview@bis.gsi.gov.uk

Postal Address:

Nurse Review Secretariat

Research Councils Unit

5/ Victoria 1

Department for Business, Innovations and Skills

1 Victoria Street

London SW1H 0ET

Information provided in response to this call for evidence, including personal information, may be subject to publication or release to other parties or to disclosure in accordance with the access to information regimes.



© Crown copyright 2015

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/ This publication is also available on our website at www.gov.uk/bis

BIS/15/126RF