

## **Nuffield Council on Bioethics project on the culture of scientific research.**

### **Submission from the Medical Research Council (MRC)**

#### **Introduction**

Although the MRC was not invited to submit evidence to the Nuffield Council for this project, we felt that it would be useful to do so in order to set out our approach, as a funder and as an employer of researchers, to this issue, and to clarify some possible misperceptions of MRC policy, guidance or processes.

The MRC strongly supports and actively promotes a culture of good practice, research integrity and openness. This is reflected in our policies and in the guidance developed for the scientists we fund or employ, and also in other practical support we provide to the scientific community. In some areas we aim to use our influence as a funder to promote what we consider to be positive changes in scientific culture, for example, by the introduction of an Open Access publishing policy or as the main funder of the National Centre for the Replacement, Refinement and Reduction of Animals in Research ([NC3Rs](#)).

#### **Ethics and Good Practice Guidance and support**

The MRC publication [Good Research Practice](#), aimed at all researchers that we fund, sets out key principles and MRC's expectations across a number of areas including planning and conducting research, data management, publication (see below) and supporting training and skills, and provides links to up-to-date guidance and codes of conduct. Other publications in the MRC Ethics Series provide more detailed guidance for researchers on ethical and legal requirements and good practice in particular areas, for example research [involving adults who cannot consent](#). Often these publications have been developed to help researchers when legislation changes or new ethical issues emerge.

The [MRC Regulatory Support Centre](#) (RSC) supports researchers in meeting the requirements of good governance for clinical research and provides training, tool kits, easy links to up to date guidance, facilitates sharing of best practice and provides advice on an individual basis to researchers working with human participants.

The MRC has for many years worked with other funders to improve standards in animal research, promoting best practice in laboratory animal welfare and the implementation of the 3Rs, for instance through our guidance '[Responsibility in the use of animals in bioscience research](#)'.

#### **Publishing**

The MRC's 'Good Research Practice' states that "The MRC encourages the publication of all research findings, including findings that do not support the initial hypotheses, to allow others to benefit from the work and to avoid unnecessary repetition". Also that "The outcomes of MRC-funded research should normally be published as a coherent entity rather than as part of a series, unless there is a legitimate need to demonstrate first discovery by publishing preliminary data. Quality is paramount and the proliferation

of papers to increase the quantity of publications is discouraged. Duplicate or redundant submission or publication is not acceptable as it may distort the evidence base upon which meta-analyses rely”.

## **Openness**

The MRC has been a champion of "open access" publishing in science for some time. The first MRC policy on open access was introduced in October 2006, and the MRC supported and funded the establishment of UK PubMed and now supports [Europe PubMed Central](#). The aim is to widen the accessibility of the published results of medical research. A new joint [RCUK Open Access policy](#) came into force on 1 April 2013, and MRC funded researchers are now expected to comply with this. For some time the MRC has required registration of all clinical trials that we fund on a trials database, and compliance with this requirement has been high in recent years.

The MRC also aims to promote a culture of wider [sharing of scientific data](#), in order to maximise the value of the data for research and for eventual patient and public benefit, currently focussing on improving access to [data from patient and population studies](#). Also, at the time of writing, we are working with others to explore the reasons why some published research is not reproducible and to identify ways in which we can promote better reproducibility of the research we fund.

The MRC was recently involved in the development of the [Concordat on Openness on Animal Research](#) and actively supports researchers in talking to the public and the media about the use of animals in medical research.

## **Research Integrity and Scientific Misconduct**

The MRC expects the highest standards of scientific integrity from our staff and the researchers we fund in universities and other research organisations. The MRC developed and published its first [policy and procedure](#) for handling allegations of scientific misconduct in the late 1990s and many other organisations have used this as a model. We provided financial support to establish the UK Research Integrity Office in order to provide support to the wider biomedical and health research community in handling and investigating allegations of scientific misconduct. We were involved (via RCUK) in the development of the [Concordat to support Research Integrity](#) and were a founding signatory. Researchers we fund are expected to follow the [RCUK Policy and Guidelines on Governance of Good Research Conduct](#). The MRC is developing an e-learning module to raise awareness of our Good Research Practice guidance, which will soon be made freely available online via the MRC Regulatory Support Centre web pages.

## **Support for research careers**

The MRC invests in the future generation of research leaders via a range of mechanisms, including studentships, fellowships, grants targeted at early career researchers, and support to develop new programme leaders in our Units and Institutes. The Research Councils recognise that it is essential that early career researchers receive appropriate support and have recently agreed and published statements of expectations for [doctoral training](#) and [fellowships](#). For students, we expect, for example, that the Research Organisation attracts and recruits outstanding applicants, provides excellent supervision, management and mentoring, provides career advice for a range of sectors and broad training opportunities, including professional and transferable skills training. Similarly, we expect that Research Organisations recognise and value our fellows, providing the necessary support and guidance to ensure success for their fellowship and their professional, career and leadership development. We further expect that students and fellows take responsibility for their own career and development, making active use of mentoring and advice. The MRC, as part of Research Councils UK (RCUK) is a signatory

to and committed to ensuring implementation of the *Concordat to Support the Career Development of Researchers*, including the emphasis on recognising the contributions and development needs of all research staff.

## **Evaluation of outputs and impact**

The MRC's online system for collecting information on outputs and impact of MRC funded research, Researchfish, is designed to collect information not just on scientific publications but on all types of outcomes relevant to the MRC's mission, for instance new products or interventions, patents, influence on policy or public engagement activities. Evaluation of publication output and citation impact in the annual report on outputs, outcome and impact of MRC research is done collectively across all awards or by year of award as a measure of the overall impact of MRC funding rather than as a means of assessing outputs of individual projects or researchers. Citation impact is estimated using Normalised Citation Index, which is considered to be the most consistent and robust bibliometric measure available, and compared to other UK Clinical, health and medically related research and biological sciences research published across the same time period.

## **Peer Review, funding and appointment decisions**

Competition in funding and in making appointments is essential to maintaining high quality, and the MRC makes no apology for this, although it necessarily leads to more disappointed applicants than delighted ones, and also to a lot of work put into applications that prove to be unsuccessful.

The MRC recognises the importance of longer funding periods to allow researchers to develop novel and ground breaking research, and that stand-alone 3 year grants are often insufficient and result in more time spent in writing and assessing grant and other applications. More than half of MRC's overall funding is to [Units, Institutes and Centres](#) or via Programme Grants, all of which have the expectation of long-term funding subject to successful review every 5 years. MRC Career Development Awards and Senior Clinical Fellowships are for 5 years, and MRC Senior Non-Clinical Fellowships are for 7 years, in recognition of the importance of long-term support in developing a career.

MRC's Boards, Panels and reviewers are encouraged to focus on the quality of individual pieces of past work and of future proposals and not to use numbers of publications, journal impact factors or other bibliometric indices to assess an applicant's track record, although this can be difficult to prevent in practice. Applicants for MRC funding have to provide only short CVs, and the [guidance](#) states "The publications list should highlight relevant and recent publications, which should fit on one side of A4." The guidance on making Programme Leader appointments in MRC Units states, in relation to reviewers "...their judgements should not be based on simply the number of their papers or journals in which the candidate's work appears, but on their originality, and the significance and potential of their work".

## **Impact**

Each year the Research Councils invest around £3bn in research and research training in the UK. This is public money and the Councils have a duty to explain to the public and the Government what impact this investment has. Mostly this is done retrospectively, using several mechanisms, but the MRC mainly relies on data collected via the research outputs tool, [Researchfish](#). Researchfish enables researchers to report once across multiple funders, re-use their data for their own use and have control on who sees and

accesses their data. We use this information to explain how research funding has benefitted the public.

In order to maximise the opportunities for impact, RCUK encourages researchers to be actively involved in thinking about how they will achieve impact and to explore in ways that are appropriate given the nature of the research they are proposing to conduct, potential '[Pathways to Impact](#)', for example through engagement or collaboration with partners. Researchers are asked in their applications to consider and demonstrate how they would achieve excellence with impact, but at the application stage, applicants (or peer reviewers) are not expected to be able to predict the economic or societal impacts that research will achieve. The primary criterion for RCUK funding remains excellent research. Beyond that, there are a number of other considerations taken into account, of which 'Pathways to Impact' is one.

### **The balance between strategic/thematic and fully response mode funding**

Over the past 15-20 years, there has been a shift towards larger and longer-term awards, and an increase in strategically-driven funding. The reasons for this have been several-fold, eg:

- Increased co-operation and partnership working eg funders' consortia (Lifelong Health and Wellbeing, National Prevention Research Initiative, UK Biobank) and researchers' consortia (eg in stratified medicine).
- More strategic approaches to funding – big initiatives from funders addressing particular problems or gaps (although identifying the areas for such initiatives is often driven bottom-up by involving the research community in reviews or strategy setting).
- More 'translational' emphasis (eg after the [Cooksey Review](#) of UK health research funding), greater focus on impact and more industry links.
- Universities are taking a more strategic approach and setting standards internally.
- Other things being equal, in terms of process and administrative overhead, it is more efficient to fund fewer, larger grants. Longer-term grants also provide more stability and flexibility for researchers.

In 2013/14 the split between strategic and pure response mode new grant awards (commitments)\* was as follows:

	<b>Total</b>	<b>Calls and targeted funding (strategic)</b>		<b>Research grants (response mode)</b>	
Number	306	107	35.0%	199	65.0%
Value (£m)	281.8	141.3	50.1%	140.5	49.9%

\*from MRC Annual Report. These figures exclude funding for MRC units and institutes, fellowships and studentships.

The average success rate was 21.6%.

The MRC has had a Strategic Plan since 1986 (this was, and still is, a Government requirement). This is renewed every 4-5 years. The current Plan, '[Research Changes Lives, 2014-2019](#)' sets out the MRC's aims to support excellent discovery science across the spectrum of biomedical research and strengthen partnerships to accelerate the pace of improvements in health and wealth through four strategic aims. The Plan includes: "Our strategy is to support excellent research in areas that are poised to deliver substantive progress in tackling health challenges facing the UK and the world. While aiming for maximum impact, we also support excellent science in areas that would be

otherwise neglected or under-funded. To achieve this, the MRC supports research across the biomedical spectrum, from basic science to clinical studies. The MRC will continue to fund high quality research through response-mode grants". The MRC does not normally commission research; all is investigator-led, including that in response to strategic initiatives.

Thus the MRC continues to believe that the best research can be optimally supported through a variety of funding schemes, depending on the strategic importance and the nature of what is required.

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