Written submission by the British Pharmacological Society to the *Research Integrity inquiry* of the Science and Technology Committee, House of Commons

10 March 2017

1. Introduction

1.1 The British Pharmacological Society (BPS) is the primary UK learned society concerned with research into drugs and the way they work. The Society has around 4,000 members working in academia, industry, regulatory agencies and the health services, and many are medically qualified. The Society covers the whole spectrum of pharmacology, including laboratory, clinical, and toxicological aspects. Pharmacology is a key knowledge and skills base for developments in the pharmaceutical and biotech industries, and is therefore fundamental to a thriving UK industry and R&D. The Society publishes three scientific journals: the British Journal of Pharmacology, the British Journal of Clinical Pharmacology, and Pharmacology Research and Perspectives.

2. Key points

2.1 In summary:

- On the whole, the research community operates with the intention of performing and disseminating quality research – deliberate misconduct is rare
- Research culture and a 'pressure to publish' are key drivers when it comes to the main issue of 'inadvertent errors or questionable research'
- Academic endeavour should be allowed to operate freely and the academic community should lead on tackling issues of research integrity
- The Concordat to Support Research Integrity offers a platform for a community-led approach
- Whilst the research community has primary ownership over embedding the necessary cultural changes, research funders and publishers have a role to play in ensuring their standards of rigour and assessment support such practices
- The Society welcomes HEFCE's attempt to address these issues as part of the next Research Excellence Framework (REF) exercise

3. The extent of the research integrity problem

3.1 We broadly agree with the issues set out in POSTNote 544. We support the conclusion that poor practice is more likely to arise from "inadvertent errors or questionable research" than from deliberate misconduct. The Society would like to emphasise that, on the whole, the research community operates with the intention of performing and disseminating quality research. Therefore, we support a continuing focus on improving standards of rigour and reporting within the research, funding and publishing communities.

3.2 Academic endeavour should be allowed to operate freely and the academic community should lead on tackling these issues. The arrival of sites such as Retraction Watch and PubPeer and the increasing number of retractions is a reflection of the advances in web-based access to research and demonstrates that

the academic world, with the right facilities, can self-regulate. Additional government regulation, would not be helpful. However, leadership, advice and support, for example ensuring a high quality Research Excellence Framework exercise (REF; see paragraphs 3.5 and 5.4), would be welcome. We note that the Progress report on the Concordat to Support Research Integrity[1] suggests that the next phase of this Concordat is the appropriate channel for addressing these issues. The Society agrees that a community-owned approach is the best way forwards and that it is important that such measures filter through to research-active staff and are not only owned at a leadership level. We would support measures that embed compliance with research integrity into institutional assessment in the next REF.

4. Causes and drivers of recent trends

4.1 Research culture is such that an individual academic's success is inextricably linked to the success of their papers. A short-cut to assessing quality of an individual's outputs is the impact factor of the journals they publish in. High impact factor journals are more likely to publish data that claim a new direction in a particular research field, rather than so-called 'negative data'. However, the Society believes that this is often due to researchers' perceptions that such data are not publishable, so such work is often not submitted for publication in the first place. We believe that these papers should be submitted and not rejected if they are of high quality.

4.2 This drive to publish 'new' data leads to publication bias, which skews the literature and has implications for reproducibility. The Society believes that reproducibility is of central importance to high quality science. One of our journals, the *British Journal of Pharmacology*, is initiating a series of experiments that will be conducted by international laboratories designed to test certain aspects of reproducibility. We would be happy to discuss this with the Committee.

4.3 The 'pressure to publish' is a key driver. Researchers in the early years of their independent careers in particular are vulnerable to the perception that they must publish papers in journals with high impact factors, if they are to be eligible for fellowships and permanent positions. Universities foster this by encouraging publication in such journals. Rather than rewarding the results of experiments, promotion and progression should also factor in the quality of the scientist at hand: their rigour, productivity and commitment to nurturing the next generation of scientists. Ultimately, it is a question of long-term investment over potentially short-term gains.

4.4 A shift in the reward and recognition culture in academia will be fundamental. Moves to open access publication, the responsible use of bibliometrics, the value placed on non-research activities and drivers enforced at institutional and group levels will be key to achieving this. High quality research outputs are clearly important, but other contributions should be included in hiring and promotion criteria. Clearly rewarding broad contributions to teaching, administration, public engagement and a commitment to the next generation in addition to research outputs would help drive a more rounded academic culture.

[1] Universities UK (2016) The concordat to support research integrity: a progress report. Available online at: http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2016/concordat-research-integrity-progress-report.pdf

4.5 The Society is also responding to HEFCE's consultation on the second Research Excellence Framework (REF). We note that, in the culture described above, there is a pressure on institutions to return outputs that meet cultural expectations of quality. Even though sub-panels were advised to ignore impact factors, the Society has heard that it is practically impossible to do so, because the process relies on the experience of individuals. Individuals are subject to unconscious bias, which can influence their decisions. In our response, we note our support of the proposal to decouple individuals from submissions, so that all research-active staff are returned. We hope that this will lead to better security and support for development of early career researchers. We have also recommended consistent and responsible use of bibliometrics by sub-panels – and that this should be standardised across panels to minimise the effects of bias.

5. The effectiveness of controls/regulation (formal and informal), and what further measures, if any, are needed

5.1 The research community keeps a watching brief on issues of research integrity through such sites as Retraction Watch[2] and PubPeer[3].

5.2 Clear reporting requirements have a direct, positive impact on publication ethics. The Society has been a key supporter of the ARRIVE guidelines (Animals in Research: Reporting In Vivo Experiments), with the aim of increasing transparency in reporting experiments involving animals. These reporting requirements incentivise high standards of animal welfare in experimental design. High welfare standards are important from both an ethical perspective and in ensuring high quality, reproducible data. Holding researchers accountable for research practice in this way will minimise misleading or spurious research findings. The *British Journal of Pharmacology* has published an editorial detailing its criteria for research to be considered for publication in the journal[4].

5.3 The *British Journal of Pharmacology* has also published guidelines on experimental design and analysis[5]. The guidelines have become 'part of the senior editors' psyche' and inform decisions on individual submissions and through the peer review process. For instance, the Journal offers a full induction for editors to ensure that they are supported to integrate these and other guidance through their activities.

5.4 It is critically important to register clinical trials in advance of a study, and to publish all data pertaining to those trials as quickly as possible, or within a year of the trial taking place. This is so that researchers can be seen to have done what they set out to do; any further amendments to protocols have to be specified in advance, to reduce the risk of *post hoc* manipulation of data. The Society, which is a signatory of the AllTrials[6] campaign, believes that a regulated approach to publishing trial data openly and transparently can have a positive impact on trial and publications ethics, and ultimately on human health. The OpenTrials collaboration[7]) may provide a framework for the archiving and interrogation of such data in future. The Society's journals also publish so-called 'negative data', perhaps

[2] Available online at: http://retractionwatch.com/
[3] Available online at: https://pubpeer.com/
[4] McGrath JC *et al* (2010) British Journal of Pharmacology 160(7): 1573-76. Available online at: http://onlinelibrary.wiley.com/doi/10.1111/j.1476-5381.2010.00873.x/full
[5] Curtis MJ *et al* (2015) British Journal of Pharmacology 172(14):3461-71. Available online at: http://onlinelibrary.wiley.com/doi/10.1111/bph.12856/full
[6] Available online at: http://www.alltrials.net/
[7] Available online at: https://opentrials.net/

more accurately described as data that do not confirm the research hypothesis, in order to mitigate a culture in which researchers feel the need to publish sensational or 'headline' results to make an impact. Notably, the Society's journal Pharmacology Research & Perspectives has issued a call for papers on target validation, and created a flexible submission process to encourage authors to publish 'negative' findings[8].

5.5 The Society believes that HEIs could look to instil better awareness of these issues and a 'culture of integrity' at the earliest stages of an individual's research career, e.g. through modules on research ethics and practice. It is important that students and staff should be aware of such principles and that the research culture empowers them with the confidence to act accordingly.

6. What matters should be for the research/academic community to deal with, and which for Government

6.1 The root of the issue lies within academic culture, when it comes to perceptions or realities of what is needed to succeed in a research career. The Society believes that Higher Education Institutions have a core role in setting the expectations and standards of a culture for integrity. For instance, we are aware that some institutions have a clear whistleblowing policy, but we are not sure how widespread this is. If such policies were the norm, and clearly communicated during induction processes and day-to-day leadership, this would represent a huge step forward. Similarly, moving promotion and reward criteria away from short-term impact and towards long-term investment in researchers (see paragraph 3.4) is necessary to ensure that the real causes are addressed – and that such policies are not merely lip service.

6.2 The Society believes that some responsibility lies with the funders of research and the processes they have in place to ensure that work is carried out to the highest standards of rigour, and published to open access standards. The introduction of initiatives such as Researchfish are an attempt to do this. However, whilst the collection of outcomes data is important the funders have placed the burden of reporting again at the feet of the academic. The experience of researchers that we have heard from would suggest that such initiatives are cumbersome and we would suggest that greater thought on behalf of the funders is needed to address the issues in a shared manner that does not lay the entire burden with the academic.

6.3 As outlined in paragraphs 4.2 and 4.3, publishers have a role in implementing good practice guidelines through their submission and peer review processes.

6.4 Government has a role to play in ensuring that national assessment processes, e.g. the Research Excellence Framework, are planned and carried out with awareness of these challenges, including the contribution of the exercise itself. HEFCE must ensure mechanisms to remove bias in assessment processes and irresponsible/inconsistent use of bibliometrics whenever possible. The Research Excellence Framework represents a significant draw on the time and minds of researchers and institutions because of the impact on funding, reputation and career progression. An exercise that is conducted in an impartial and fair way, as well as rewarding institutional good practice through the environment assessment, will show leadership and help shape culture. The Society welcomes the attempt by HEFCE to address this in their consultation on REF2021.

[8] PR&P website. Available online at: http://olabout.wiley.com/WileyCDA/Section/id-825966.html