

Written Evidence Submitted by the Biochemical Society (RRE0075)

- **The breadth of the reproducibility crisis and what research areas it is most prevalent in:**

Our respondents noted personal experience with being unable to reproduce research from peer-reviewed publications in the molecular bioscience field.

- **The issues in academia that have led to the reproducibility crisis:**

It was the opinion of some of our respondents that a number of these problems are caused by poor reporting of experimental methods – either too little detail or inaccurate information. These problems are most prevalent in older publications (greater than 5 years old), because most journals now mandate the publication of more detailed Methods sections online or as supplementary information.

It was felt that another major contributing factor is the high workload of academics and the lack of time that universities allocate them to supervise their research team, alongside short-term research contracts which make it extremely difficult to maintain continuity in research teams. Lab members, such as post-docs, technicians or lab managers, are often forced to leave a group once a grant ends because there is no funding in place to extend their contracts. This can result in turnover of the entire research team between grants and thus the loss of most of the technical expertise and knowledge that has been accumulated.

- **The role of the following in addressing the reproducibility crisis:**

- **research funders, including public funding bodies**
- **research institutions and groups**
- **individual researchers**
- **publishers**
- **Governments and the need for a unilateral response / action**

Our respondents noted that all of the above have a role to play in helping to develop better research culture and practices in academia, but it was suggested that funding bodies hold the key to compelling universities to implement meaningful change. Funding bodies could specify (and enforce) how much time academics spend supervising awarded grants and look at the structure of research grants to find ways of bridging the inevitable funding gaps to help retain knowledge and expertise in academic research groups.

It was also suggested that journals could require submissions be accompanied by the raw data as supplementary - eg RT-qPCR CT values and standard curves, full blots from Western blots, Mycoplasma negative reports, cell line authentication reports, etc. This could be a very simple way to ensure all data is of a high quality and didn't involve any more work for the researchers or publishers and could be considered as a legal requirement for British publishers.

- **What policies or schemes could have a positive impact on academia's approach to reproducible research:**

Our respondents highlighted the work of the journal *Bio-protocol*, whose mission is to improve reproducibility in life science research (<https://bio-protocol.org>), and suggested publishers should be positively encouraged to partner with this type of organisation. Methodology and protocol papers need to be recognised as valuable research outputs by funding bodies, and included in frameworks such as REF, to encourage authors to publish their work in this way.

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