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Dr Fiona Godlee
Editor in Chief
The BMJ

A [response](#) posted on *The BMJ's* website

Dear Dr Godlee,

Re: How predictive and productive is animal research?

I read the editorial 'How predictive and productive is animal research?' (5th June 2014) with concern.

Study integrity is crucial for producing high-quality biomedical research. Research using animals — as with other fields — has suffered from many of the issues that afflict the robustness and reproducibility of research. This is a greatly troubling issue that needs to be looked at across the biomedical sciences and the training of all biomedical scientists in these matters is paramount. Robustness could even be considered as a fourth 'R' alongside the current 3Rs that should be followed in pursuit of responsible animal research.

However, I was disappointed to see the editorial's concluding assertion arising from Pound and Bracken's research — namely that preclinical animal research should not be endorsed or funded because results produced by animal models poorly predict human drug responses.

Pound and Bracken's analysis addresses only a small sub-set of studies using animals. It is not appropriate to extrapolate from their findings to give an indictment of all outputs from animal research. The authors' publication and the accompanying editorial both fail to account for the wider benefits that animal research provides beyond preclinical drug testing. Research using animals is essential for furthering our knowledge of molecular and biological pathways that underpin human physiology in health and disease. It has preceded, or directly led to, a large proportion of our groundbreaking discoveries in medicine. And of course studies on animals have in many instances been of direct relevance to animal health. Without a combination of animal and human studies, we would be largely ignorant of many existing treatments and many promising frontiers for developing more, including gene therapy, stem cell applications, and neuroprotection. Furthermore, the impressive economic return garnered from investment in medical research is reliant on expenditure in large part on basic research (including the use of animals), in addition to clinical research.

Predicting human outcomes from animal research is an undoubted challenge because of the extreme complexity of biological pathways being studied, as well as their inter-species differences. Efforts should be accelerated to develop model systems that better reflect human physiology and safe in vivo systems to test proof of concept in man. Nonetheless, soundly conducted animal research is a vital precursor to clinical research in many respects, and it is essential that it continues to be supported in our efforts to improve human and animal health.

Yours sincerely,

