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Letter to the Editor

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Letter

Dear Editor,

As the primary author of a comprehensive critical review of the use of non-human primates (NHPs) in neuroscience research published in *ATLA* in 2016,[1] I very much welcomed issue 45.2 of the journal, which contained papers of note that asked questions of biomedical experiments involving NHPs.

One of the main motivations for my 2016 review was my frustration at the repeated, unsound case put forth by many of those who advocate for continued, and greater, invasive neuroscience on our primate cousins. In my view, this case is multiply and seriously flawed. It overlooks the opposition of the public to animal experiments, in particular to NHP neuroscience; it skews the balance of associated harms and proposed benefits by understating the former and overstating the latter; it assumes a default human relevance without critically questioning this assumption and without appreciating the abundant evidence against it; it plays down the capabilities of non-animal alternatives, seeking shortcomings and imperfections to defend resistance to them, while ignoring those impacting monkey research. Its advocates claim that their field of research underpins various past biomedical breakthroughs where it does not, as well as asserting that NHP-based basic neuroscience *must* continue, 'just in case' it generates human-relevant data that are not obtainable by any other means, that will lead to human clinical benefit — all without evidence.

Professor Beuter's *ATLA* paper[2] on the development of electrical brain stimulation is particularly welcome, because, while it makes no detailed argument against animal neuroscience *per se*, it is one of a relatively rare breed of papers written by a neuroscientist that does none of the above. Instead, it argues *for* the adoption and greater use of alternatives to animal use in one specific area of neuroscience with a positive, scientific, evidence-based outlook. Rather than seeking to justify the *status quo* of animal use, and to highlight perceived shortcomings of alternatives, as many animal neuroscience papers do, it does what ethics demand: the opposite. The author, using her considerable experience of the field, summarises reasons to move on and away from animal use, and toward a scientifically and ethically superior approach to furthering the development of electrical brain stimulation treatments — an area which has been especially controversial with regard to the role and necessity of animal experiments.[3,4] Professor Beuter does address the issue of whether or not animal experiments have made an essential contribution to some neuroscience breakthroughs, though does so briefly, because this is chiefly of academic interest, rather than having any bearing on the current need for animal methods. She also mentions some important inter-species differences that confound the translation of non-human neuroscientific data to humans, and which must be at the forefront of any serious consideration of the likelihood that animal-based breakthroughs would be realised in humans, too. She concentrates, however, on the benefits of cutting-edge imaging and computational methods of unprecedented and ever-increasing power, and how computational and mathematical modelling will facilitate and drive forward human-specific neuroscience on microscopic, mesoscopic, and macroscopic scales. She not only outlines a careful and detailed argument for their greater use in place of animals, but also discusses reasons why there is intransigence and reluctance to change (largely due to institutional, behavioural, technological and financial lock-in), and how these obstacles may be overcome.

In the same issue, I found Robert Combes's editorial[5] on Parkinson's disease to be fascinating, with its device of James Parkinson travelling forward two centuries in time to see what progress had been made. One is bound to agree with the author that Parkinson would be shocked to appreciate the little return seen over that time from such monumental — and often misleading — research efforts, largely focused on animal models, and that he would therefore be an advocate of the human, *in vitro*, and *in silico* studies that have underpinned recent, belated, advances in the field.

Finally, Grimm and Eggel's Comment[6] on striving for a realistic view of animal research contained much that opponents of it would agree with: the importance of animal welfare and robust, honest harm–benefit analyses; the failure of some researchers to meet high scientific standards and to be realistic in the postulated human benefits of their work; that animal experiments are licensed based on confidence rather than scientific rigour, and so on. These are all issues that would benefit both animals and humans, given some significant attention. However, their assertions that good science primarily produces good data, with societal benefit secondary, I feel cannot, and should not, be applied to animal research. Knowledge acquisition *per se* may well be valuable, and speculative research must occasionally give rise to information that translates to human benefit. However, when that comes at huge ethical cost, as it does, for instance, in the case of NHPs, any knowledge

gained must be pyrrhic in nature. Furthermore, good data (with regard to human medicine) can only be derived from good (human relevant) models — which, I believe, animals are demonstrably not, and never can be.

It seems clear that heeding the opinions and recommendations of experienced neuroscientists such as Professor Beuter, the well-argued probable opinion of the time-travelling Parkinson, and Grimm and Eggel's demands for high animal welfare and honest and realistic harm–benefit analyses, will be of paramount importance for the advancement and evolution of experiments involving NHPs, particularly in neuroscience. This will benefit animals and humans alike.

Sincerely,

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References

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[2] Beuter, A. (2017). The use of neurocomputational models as alternatives to animal models in the development of electrical brain stimulation treatments. *ATLA* **45**, 91–99.

[3] Bailey, J. (2015). Letter to the Editor. *ATLA* **43**, 206–207.

[4] Bailey, J. (2015). Letter to the Editor. *ATLA* **43**, 428–431.

[5] Combes, R. (2017). No time like the present — two hundred years of Parkinson's disease. *ATLA* **45**, 57–59.

[6] Grimm, H. & Eggel, M. (2017). White paper and colourful language: Toward a realistic view of animal research. *ATLA* **45**, 101–103.