

## **How human relevant innovation can transform patients' lives and boost economic growth** ***Briefing for debate on [petition 611810](#)***

### **About Animal Free Research UK**

Animal Free Research UK is an innovative, solutions-focused charity that provides grants to scientists to develop and apply cutting-edge techniques that can replace the use of animals in biomedical research and offer the best possible chance of advancing medical progress. Since 1970, we have awarded £10 million to over 260 novel research projects into conditions including cancer, dementia and diabetes. This has resulted in important breakthroughs, such as creating an entirely new 3D model of human breast cancer – the first of its kind.

### **Regulation of animal experiments in Great Britain**

- ➔ [In 2021, over 3 million scientific 'procedures' were conducted on animals in Great Britain – an increase of 6% on 2020](#). The use of dogs increased by 3% year-on-year; cats by 6%; horses by 29% and monkeys by 17%. Only a small proportion of animal experiments are conducted to satisfy regulatory requirements (in 2021, around 21% of experimental 'procedures' fell into this category).
- ➔ The requirement in the Animals (Scientific Procedures) Act 1986 to use scientifically satisfactory non-animal methods wherever possible is not being adequately enforced. For example, [no applications for licences to conduct animal experiments have been refused permission between 2018 and 2021](#) (with no data available prior to 2018). Analysis of [licences granted during the first half of 2020](#) showed that researchers often failed to adequately explain their strategy in searching for non-animal methods, with a one-word answer being provided in one case.
- ➔ A recent [report from the Animals in Science Regulation Unit](#) described deeply troubling animal welfare failings in British laboratories between 2019–2021. These included a non-human primate dying after becoming trapped behind a restraint device, boxes of 112 live rats being moved in error to a compactor where they were crushed, and numerous incidents of animals being left without food or water.

### **How human relevant innovation can accelerate medical breakthroughs**

- ➔ There has been a lack of progress in addressing many key areas of disease, including Alzheimer's and Parkinson's diseases and many types of cancer. Animal experimentation plays a major role in this slow rate of progress, due to significant biological differences between species that prevent the translation of findings from animals to humans. For example, a [2019 scientific review](#) found that it could not recommend any animal 'model' that could reliably predict the efficacy of potential treatments for Alzheimer's.
- ➔ New Approach Methodologies (NAMs) have been defined as: '[New scientific approaches that focus on human biological processes to investigate disease and potential treatments, using human cells, tissues, organs and existing data.](#)' In practice, these include methods such as organ-on-a-chip technology and artificial intelligence. By providing results that are directly relevant to human patients, NAMs are much more likely to generate breakthroughs than outdated, animal-based techniques.
- ➔ There is growing evidence to show the ability of NAMs to predict potential harms to patients from new drugs that were not identified by animal tests. For example, a [recent study](#) found that Emulate's liver-on-chips were able to '*correctly identify 87% of drugs that caused drug-induced liver injury to patients despite passing through animal testing.*'

- ➔ Animal Free Research UK is funding a portfolio of inspiring research using NAMs. At the University of Oxford, for example, Dr Paul Holloway has developed a [new, animal free model of stroke](#). Using organ-on-a-chip technology, he was able to replicate the human blood-brain barrier and mimic stroke, enabling new possibilities to test stroke drugs in human cells.

### How human relevant innovation can boost the economy

- ➔ Research using NAMs can play a central role in tackling the public health challenges that place significant pressure on the NHS. For example, researchers at our Animal Replacement Centre of Excellence at the University of Exeter have used human cells to make a [ground-breaking discovery](#) in the treatment and prevention of diabetes. Diabetes UK estimates that the [NHS spends around 10% of its entire budget](#) on the disease each year.
- ➔ Britain is well-placed to become a world leader in the fast-growing global NAMs market. A [2021 report](#) by the Centre for Economics and Business Research predicted that the UK NAMs industry would contribute £2.5 billion to UK GDP by 2026 - an increase of 700% since 2017. One of the UK-based companies demonstrating global leadership in this field is CN Bio Innovations, which is [working with the US Food and Drug Administration \(FDA\) to assess how its lung-on-a-chip model can be used in regulatory evaluations](#).

### Global progress on the uptake of human relevant innovation

- ➔ Bold policy action will be needed if Britain is to keep pace with international progress in the field of human relevant life sciences. The Netherlands has long been at the forefront of this work, with the government supporting cross-sector collaboration to accelerate the uptake of NAMs. One example is the practical, hands-on support provided for researchers through 'helpathon' initiatives (Animal Free Research UK has recently led efforts to [pioneer this approach in the UK](#)).
- ➔ In the US, the FDA has published several roadmaps and strategies to support the [transition to human relevant science](#). In addition, Congress has now passed the [FDA Modernization Act](#), which facilitates the use of non-animal methods within the drug testing process.

### Policy changes to accelerate human relevant innovation

Enabling a committee of NAMs experts to review applications to conduct animal experiments would provide researchers with constructive, solutions-focused input that would empower them in transitioning to more human relevant techniques. In addition, we believe that the UK Government should:

- ➔ Produce an action plan for encouraging the widespread adoption of human relevant research techniques
- ➔ Launch a well-resourced programme of practical support and training to improve awareness and knowledge of human relevant techniques
- ➔ Provide funding to improve the human relevance of research - on a scale that reflects the urgency and importance of this issue
- ➔ Appoint a dedicated minister to coordinate and drive the uptake of human relevant techniques.

More detail and suggestions for further policy actions are provided in [Eight Steps to Accelerate Human Relevant Innovation](#). With bold and decisive action, Britain can lead the world in human relevant innovation, boosting economic growth and transforming the lives of patients.

### For further information

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