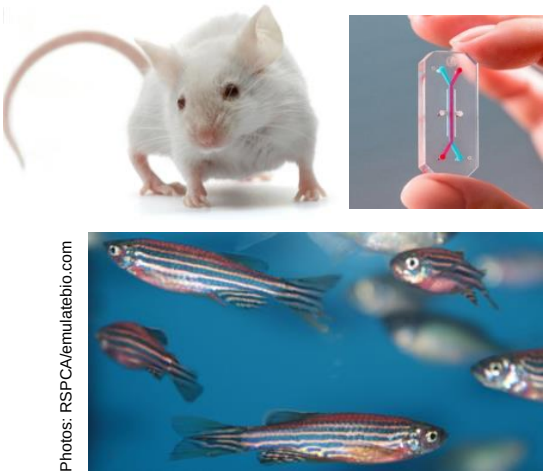
Could we achieve a phase-out of animal experiments in the UK?

Report of an RSPCA online debate



Photos: RSPCA/emulatebio.com

The RSPCA is opposed to the use of animals in research that causes pain, suffering or distress, and our ultimate goal is the replacement of animal experiments with humane alternatives such as Non-Animal Technologies (NATs). Whilst we work to achieve this, the Society promotes the 3Rs principle of Replacement wherever possible, Reduction (ensuring the minimum number of animals is used to answer the scientific question), and Refinement to minimise suffering and improve animal welfare. On 1st July we held an online debate to discuss how a phase-out of animal experiments could be achieved in the UK.

The discussion was chaired by Emma Slawinski, RSPCA Director of Advocacy and Policy. The panel comprised Dr Penny Hawkins, Head of the RSPCA Animals in Science Department; Professor Sir Chris Evans, Excalibur Healthcare Services; Professor Martin Knight, Queen Mary University of London and Emulate Organs-on-Chips Centre; Dr Julia Fentem, Unilever Vice President, Safety and Environmental Assurance Centre; Professor Andrew Jackson, Newcastle University; and Professor Dominic Wells, Royal Society of Biology.

This report is based on statements made by the panellists, each of whom had differing perspectives and backgrounds. For a full version of the discussion report, please see: rspca.org.uk/ukphaseout

Which research fields are most promising with respect to replacement? And which are the most challenging?

Animal experiments are done for many different purposes, including human and veterinary medical research, regulatory tests (toxicology), and fundamental (or 'basic biology') research. Broadly speaking, the potential for replacing animals varies between these different fields.

Regulatory testing shows particular promise. This is the risk assessment of chemicals that may be hazardous to human health, other animals or the environment. These include medicines, pesticides, agricultural and industrial chemicals and pollutants. Great progress has been made, for example, Unilever now believes that product safety can be effectively assessed without animal tests.

Obstacles relate to mindset and ambition, rather than science or the availability of NATs. Understanding of new technologies, and how to apply these, can be poor. There is also a lack of investment in building new research centres and laboratories that can develop NATs, validate them (prove that they work) and use them for regulatory tests.

Much **medical research** is already done *in vitro*, using cells or tissues kept alive outside a living animal. Advanced *in vitro* models, such as three-dimensional organs-on-chips made using human cells, are increasingly available. Using human cells makes it more likely that results will apply to humans. *In vitro* models can be used to see how drugs act on different tissues and organs in the body. For example, the lung-on-a-chip was one of the tests used to develop COVID treatments.

Fundamental research, done to study how human and animal bodies work while healthy or diseased, is more challenging than regulatory testing. For example, studies into how genes are turned on and off cannot currently be done *in vitro*. This is because an individual gene can become active at different times and in different organs within the body.

Recent developments in NATs are exciting, but there are still not enough NATs to replace all animal experiments. More models of different organs and diseases, and ways of joining organs together to better model living systems, are needed. In all fields, **NATs will need to be effective** at answering scientific questions and assessing safety.

Science is currently limiting the potential for replacement in fundamental and medical research, because not enough NATS have been developed and validated. The vision should be to develop medicines from 'bench to bedside' with no animal use, but this will require adequate time and funding. In regulatory toxicology, some laws would need to be changed.

The value of many animal 'models' has been questioned, but some have, and do, lead to medical progress. Using animals is not an 'easy option' for scientists, because licences are required from the Government, but more information also needs to be shared about NATs and alternative approaches.

What would a feasible 'phase-out' plan look like for the UK?

The RSPCA is currently considering what a realistic and constructive UK phase-out plan would look like. This was a key reason for holding the debate. We recognise that many different stakeholders will have roles to play, including the Government, regulators that currently require animal tests, funding bodies, industry, ethics committees (known as Animal Welfare and Ethical Review Bodies, or AWERBs) and individual scientists.

The primary driver for a UK phase-out would be a clear statement, and commitment, from the Government.

This will require a clear ambition, strategic roadmaps and action plans in key areas likely to be most successful. This will also need investment in developing, validating and using NATs. It could not (and should not) be an instant 'ban', but a clear process with stretching, yet realistic, milestones. It is also essential that milestones will not risk unintended, negative consequences for animal welfare. For example, just calling for reduced animal numbers could lead to individual animals suffering more, if experiments are then designed to obtain more data from each animal.

These actions were identified in the discussion as **important aspects that should be included** in a phase-out strategy:

- **More funding to develop and validate NATs.** There are some replacement (or 3Rs)-specific funding bodies such as the NC3Rs, AFRUK and FRAME[1], but other funders should also prioritise the development and validation of NATs. For example, UK Research and Innovation (UKRI, an organisation which includes all the major UK funding bodies) could build the development of NATs into its funding strategy, potentially through further support for the NC3Rs.
- **A phase-in of NATs to match the phase-out of animal use.** There should be a focus on most 'urgently needed' areas for replacement, with greatest likelihood of success.
- **Government follow up to the Innovate UK NAT Roadmap.** The Government agency Innovate UK published a Non-Animal Technologies Roadmap for the UK in 2015, but the Government did not go on to provide adequate leadership or support for the Roadmap. It should be revisited, updated (ideally led by the NC3Rs) and used to focus a refreshed strategic plan.
- **Learning from initiatives in other countries**, such as the Netherlands Transition Programme for animal-free innovation and the US Environmental Protection Agency (EPA) ambition to eliminate its requests for, and funding of, tests using mammals by 2035.
- **Immediately enforcing a legal principle that animal testing is a last resort for chemicals regulatory testing.** The UK could set a challenging milestone to end testing chemicals on animals for regulatory purposes by 2025.
- **An immediate end to the use of animal testing for consumer products** (such as cosmetics, toiletries and novel foods). Using animals for testing ingredients used in consumer products is neither scientifically necessary, nor ethically justified.
- **Mentoring for the regulatory community** by early career scientists, to achieve radical change by encouraging creative use of available NATs. This would be combined with challenging regulatory requirements for those animal tests that are outdated, and where it is not clear how they protect human health or the environment.
- **Better training for life scientists** in searching for NATs and using new techniques. For those working in regulatory toxicology, training and encouragement to challenging regulatory requirements for data from animal tests.

[1] National Centre for the 3Rs, Animal Free Research UK, Fund for the Replacement of Animals in Medical Experiments.

A serious UK vision and strategy to phase out animal use, incorporating all of the above elements and more, would require political will and commitment from Government departments, industry, academia, research funders and individual scientists, as well as adequate funding and resources.

In the interests of animal welfare, better science, economics, and addressing legitimate public concerns about animal use, the RSPCA believes that it is time to create that vision.

> "The RSPCA is right to lead the charge for the Government, leading funders and investors in the UK to speed up the move to the use of Non-Animal Technologies in science. Make it a priority and it can happen, but it needs bold and ambitious leadership which this government could deliver."
>
> Professor Sir Chris Evans

The RSPCA is opposed to scientific procedures that cause animals pain, suffering, distress or lasting harm, and our ultimate goal is the replacement of animal experiments with humane alternatives such as Non-Animal Technologies. The Society's Animals in Science Department works to help ensure animals are replaced wherever possible, animal numbers and suffering are reduced, and welfare improved, for as long as animal use continues. For further information, please see rspca.org.uk/animalsinscience