

# THE 3Rs AND ALTERNATIVES TO THE USE OF ANIMALS



Statistics collected by the Home Office show that the number of scientific procedures involving animals in 2007 was just over three million. This is significantly less than 25 years ago, although the numbers fluctuate from year to year.

Overall, the numbers used by the pharmaceutical industry have fallen by one-third over the past 10 years. Yet, while the numbers of animals used in research varies by only a comparatively small percentage, the number of new medicines under development in the UK remains at record levels.

Some parts of the research process, which in the past required the use of many animals, now need comparatively few, thanks to advances in science. It must be remembered that these improvements arise from a larger body of R&D – indeed, contingent on advances spun off by research not directed primarily at the 3Rs – e.g. computer modelling, high throughput screening, in silico assays, magnetic resonance imaging.

The pharmaceutical industry collaborates with other researchers in academia, Government-funded organisations and charities to improve research methods, and best practice is widely shared. All research-based pharmaceutical companies must and do use alternative methods wherever possible – assessed in ethical review carried out before approval to proceed is granted. To do otherwise would not only be unethical but also far too expensive.

## THE '3Rs'

**REPLACE** the use of animals wherever possible

**REDUCE** the number of animals needed to a minimum

**REFINE** tests to cause animals the least possible distress



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The 3Rs are accepted as the basic principles for working towards good laboratory animal welfare and a reduction in the need for animal research. The pharmaceutical industry is committed to good animal welfare; good welfare is essential for good science.

The industry funds and works closely with the UK's National Centre for the Replacement, Refinement and Reduction on an active programme to support the 3Rs in research and embed them in daily practice. Companies have established a public-private partnership with government to develop stem cell tools for safety testing, expected to have a positive impact on the 3Rs through reducing and refining animal usage.

During the past ten years, the number of animal procedures in pharmaceutical research fell by a third in the UK. Within Europe, the industry participates in the Commission's European Partnership for Animal Alternatives.

Developing alternatives to animal research in medicines research is a long and difficult process. At the moment, there is always a point in the medicines research process where we meet barriers to our knowledge that computers and *in vitro* methods cannot yet help us to cross. As our biological, medical and technological knowledge grows, we look forward to a time when animal research may not be necessary. As this is impossible in the foreseeable future or our lifetimes, until then, the priority remains to develop safe and effective medicines involving the considered and compassionate use of animals when necessary.

Recent examples of advances in 3Rs made by industry include:

- Use of tissue culture models in testing for chemical irritants has replaced the use of animals since 2006
- Adopting a weight of evidence approach, which uses fewer animals per dose-tolerance study
- Developing a cell-based assay to replace guinea pigs to test asthma drug action
- Use of radio-telemetry devices (remote sensor implants) – 95 per cent reduction in number of dogs in 2005 in research to develop a bronchodilator agent for asthma
- The review of information required in conventional acute toxicology testing has the potential to reduce use by several thousands per year (cross-industry collaboration) - currently in consideration by regulators



For further information visit  
[www.nc3rs.org.uk](http://www.nc3rs.org.uk)