

Media release 21 December 2018

Researchers in Switzerland are committed to the replacement, reduction and refinement of animal experiments, a survey shows

Researchers working with animals in Switzerland are committed to applying the so-called 3Rs principle aiming to replace, reduce and refine animal experiments, because they are concerned about animal welfare and because they want to improve the scientific quality of their research. Legal requirements in the Swiss Animal Welfare Act (AWA) to comply with the 3Rs principle are not their main motivation, according to a recent survey conducted by the recently created Swiss 3R Competence Centre ([3RCC](#)), a joint initiative from academia, the industry, government agencies and animal welfare groups.

According to the Swiss AWA researchers who work with animals must apply the 3R principle, which not only means that they must seek alternatives to animal testing, but also explore ways to improve animal welfare and scientific quality where the use of animals cannot be avoided. The Swiss 3RCC conducted a survey that shows Swiss scientists to be well aware of the 3Rs concept and to apply them in their daily work. The survey also identifies areas where the scientists see scope for improvement.

The 3RCC contacted 183 groups working with and/or having an interest in the 3Rs at Swiss universities, hospitals, non-profit organisations, the industry, regulators and the government. The vast majority of the 176 responders are working on one of the 3Rs, and all the Rs have a similar weighting. As many as 103 said they use *in vitro* methods i.e., cells or tissues cultured on a dish that do not require the use of a living animal, 97 said they employ strategies to reduce the number of animals used for scientific purposes, and 95 work on refining experiments to improve the welfare of animals. The survey shows that most researchers are using more than one approach in parallel, combining the use of non-animal and animal procedures, a strategy that allows limiting the use of animals only to the necessary. Indeed, more than 120 say their motivation for applying the 3Rs and using alternative methods is animal welfare, with half of them giving it as primary reason, followed by their care for scientific quality including better reproducibility, mechanistic understanding and higher human relevance. Legal requirements and regulatory test guidelines are reported to be only secondary or auxiliary reasons for applying the 3Rs principle.

"We are pleased to see that many researchers in Switzerland are already committed to working on all 3Rs, but our goal is to further promote the optimisation and implementation of the existing 3Rs procedures in Switzerland. And we also want to reach out to those scientists who are not yet aware of the contributions their research can have to the 3Rs," said 3RCC Director Chantra Eskes. "We also learned that a large majority of researchers who currently work on replacement methods also use animals in their research. The main bottleneck to further implement the use of non-animal alternative methods are the currently existing scientific

knowledge and technological gaps, so that optimized and validated alternatives are not yet available in many areas of life sciences. Although Swiss scientists are concerned about animal welfare and willing to explore alternatives, they currently do not have the necessary technologies and methods that would allow to fully replace their animal experiments."

Methods to replace animal experimentation to study diseases and test products include *in vitro* experiments, for example on cell lines, lab-grown tissues or three-dimensional organ-on-a-chip models. Other options include computer simulations, so-called *in silico* models as well as non-testing methods such as new biostatistics approaches or systematic reviews. Researchers are keen to develop, validate and use such non-animal methods that seek to understand the underlying mechanisms, which promise to generate results that can be more reliable, better reproducible and if possible, more predictive to humans.

For those areas where validated replacement alternatives are not yet available, researchers are also investigating ways to reduce the number of animals they must use and to refine their experiments to minimise the animals' distress. A majority of those surveyed work with animals at least once a month, most of them several days a week. Those who work with animals frequently are particularly interested in reduction and refinement. Approaches that help reduce the number of animals used are for example optimised breeding programmes, the sharing of animals and animal material or improving the study design or the statistical analysis. The refinement of experiments applies to all aspects of animal care and use, including the improvement of housing conditions, handling procedures, anaesthesia, pain management and euthanasia.

The vast majority of respondents agree that use of 3Rs in research, regulatory processes and education can be further improved. When asked about the best means to promote 3R methods, participants mentioned better training at all levels, research funding opportunities, improved communication and the availability of educational events.

"We set up the new Swiss 3RCC to promote research, education and communication and facilitate the implementation of the 3Rs in life science research. The survey showed that the 3RCC is positioned well to meet the needs of researchers who seek to explore alternatives to animal experimentation and ways to reduce animal suffering," said Kathy Riklin, member of the National Council and President of the 3RCC Strategic Board. "One of the most important activities is our grant programme, which supports researchers by financing promising projects that in the past struggled to get funding. The aim is to promote the optimization and implementation of methods that have the potential to overcome the currently existing gaps and result in more reliable, relevant and enhanced welfare procedures that allow replacing, reducing and/or refining the use of animals for scientific purposes."

In November 2018, the 3RCC opened its first call for funding worth CHF 1.2 million to support research projects having high impact in the implementation of the 3Rs, and

that bring scientific benefits as compared to existing methodologies. 3RCC aims to fund at least one project for each of the 3Rs.

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About the 3RCC

The Swiss 3R Competence Centre was founded in March 2018 by the Swiss Federal Food Safety and Veterinary Office (FSVO), the major 11 universities and higher education institutions working in life sciences in Switzerland as well as Interpharma, the Swiss association of the pharmaceutical industry, and the Swiss Animal Protection (SAP). As a scientific centre of national importance, the non-profit organisation benefits from the support of the Swiss State Secretariat for Education, Research and Innovation (SERI), which together with the Swiss Federal Office of Public Health (FOPH) act as observer members. The 3RCC has taken over all activities of the 3R Research Foundation and the 3R Network.

The mission of the 3RCC is to promote the principles of 3R (reduction, refinement and replacement of animal experimentation) in Switzerland and to facilitate their implementation in life sciences, focusing on research, education and communication. In line with this mission, the 3RCC promotes high-quality research and care for animals by subsidizing scientific projects of excellence and quality on the 3Rs principle. It also develops an education strategy to improve training and builds a network and communication platform to providing up-to-date information on the 3Rs. Finally, the centre monitors the progress made in the implementation of the principles of 3Rs in Switzerland and offers its services to authorities, teaching bodies and any other interested parties willing to gain additional information on the principles of 3Rs and on alternative methods to animal experimentation.

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