



The 3R Research Foundation celebrates its 25th anniversary

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The origins of the Foundation

This year the 3R Research Foundation, which saw the light of day in 1987, is looking back over 25 years of research in the interests of animal welfare. The impulse for the founding of the organisation was the long and heated public debate concerning the popular initiative "For the banning of vivisection" launched by Franz Weber, which was rejected by the electorate on 1 December 1985. A working group was formed in the federal parliament in autumn 1987, in particular on the initiative of National Councillor Susi Eppenberger (Radical Democrats) and National Councillor Hugo Wick (Christian Democrats). These two politicians were looking for a way to bring together interested parties in politics, the federal administration, animal protection organisations and private industry to find a practical solution to this problem.

Finally, on 13 February 1987 three members of parliament, Interpharma and the FFVFF Foundation (today Animalfree Research) set up the Foundation; the Federal Veterinary Office and Interpharma agreed to provide equal annual contributions for funding research and an Administrative Board was appointed, made up of representatives of the federal parliament, the Federal Veterinary Office, private industry and animal protection groups.

The aim of the Foundation

The aim of the 3R Research Foundation is to promote alternative research methods through grants for research projects as well as to implement and promote the 3R principles. The organisation supports first and foremost projects aimed at developing new methods or refining accepted methods (validation) which improve on current animal experimentation practice in line with the 3R motto, Replace, Reduce, Refine.

The 3R principles

The 3R principles are: replace, reduce and refine in relation to laboratory experiments involving live animals. These internationally recognised guiding principles concerning animal experimentation are based on Humane Experimental Techniques, published in 1959 by the zoologist W. M. S. Russel and the microbiologist R. L. Burch, both from the UK. In this work

they describe how experiments using laboratory animals can be carried out in a humane way. As the title implies, the publication describes experimental methods and the use of live animals in experiments (reduce, refine) and shows how vivisection can be avoided as long as an equally valid method is available (replace).

The principle of replacing the use of live animals requires the true purpose of the experiment to be carefully considered by researchers and the authorities that issue research permits. Is the experiment really necessary? Is there no alternative method that does not require the use of live animals? If the experiment is absolutely essential under the terms of the law on animal protection, the number of animals used must be kept as low as possible (reduce). The third principle – refine – requires that the suffering caused to the animals used is to be reduced to an absolute minimum.

The 3R principles are illustrated in the Foundation's brochure entitled "Good science with less animal experimentation", available at: http://www.forschung3r.ch/data/3r_bro_e.pdf.

The project selection process

On the basis of the annual call for proposals, interested researchers can submit a project outline by 1 February. The Foundation's Evaluation Committee, which consists at present of 11 experienced scientists, then examines the proposed projects in relation to their relevance to the 3R principles. If their conclusions are positive the applicant is asked to submit a detailed description of the project.

The Evaluation Committee's second step is to look at the detailed description of the project and to propose to the Administrative Board that promising projects are awarded a certain sum for their realisation.

What the 3R Foundation does

Since it was set up the Foundation has provided a total of 17 million francs to fund 130 projects, out of 450 applications, which are aimed at developing 3R-relevant research methods. The funds for these grants are provided in equal parts by the Federal Veterinary Office and Interpharma. Each year the Foundation has at its disposal around Fr. 500,000, enabling it to fund 3-5 projects.

The project proposals come mainly from the field of life sciences. It is in this area that approximately 60% of all laboratory animals used in research are involved, while about 10-15% of animals are used for toxicity and safety research for chemicals and pharmaceutical products. The Foundation's policy of funding research is based on these statistics.

Developing alternative methods for biomedical research is one of the focal points of the Foundation's financial support. In this area little funding is available and newly developed 3R-relevant methods can be put into practice immediately in laboratory research. In the case of alternative methods for safety testing under official conditions, however, they are recognised by the authorities only after a lengthy validation process, which means that their practical use

can be delayed for a considerable time. In this field, research into 3R-relevant methods is being encouraged throughout Europe through massive funding.

The Foundation's achievements to date

The efforts made to improve the lot of the laboratory animal can be seen in the statistics: between 1983 and 2000 the number of animals used in laboratory research in Switzerland fell from around 2 million to 761,675. The figures also show a drop in the suffering of these animals (see the statistics of the Federal Veterinary Office under Animal Experimentation in Switzerland in 2010 at <http://www.tv-statistik.bvet.admin.ch/BasicStatistics.php>). It must be said, however, that the number of animals used in biomedical research in academic institutions has risen, while research in private industry is now using considerably fewer laboratory animals than before.

Have methods developed from projects funded by the Foundation contributed towards this statistically proven success? This is difficult to conclude purely from the figures. Project leaders can, however, supply answers in relation to individual projects. In the meantime, the Foundation emphasises the importance of researchers' publishing their results in scientific journals. A publication that is examined by external referees can be consulted on databases all over the world and is thus available to all researchers.

In practice, a single project funded by the Foundation is only a drop in the ocean, since there are a large number of different questions and areas of investigation in biomedical research. Each of the 3R principles is applied in a different way, depending on the area of research, which can be clearly seen in the list of projects funded and the detailed descriptions on the Foundation's website.

Successful research requires persistence

Descriptions of 6 research projects

The descriptions below are intended to provide the reader with an idea of the work of the 3R Research Foundation and the research projects it funds. The projects selected are typical of the variety of questions and challenges faced by researchers and their continuing commitment to achieving success.

Reduce and refine:

Nicolau Beckmann (Project 82-02) helped to achieve a breakthrough in imaging methods. His project resulted in a marked level of refinement and reduction. Ten years later this method has become standard practice in laboratories.

Refine:

Margarete Arras (Project 71-00) started investigating the problem of recognising pain in laboratory animals more than ten years ago. This aspect of animal research has now become topical since products are now being sought to treat medium levels of pain.

Replace:

Marianne Geiser Kamber (Project 89-03) took up the challenge of a new environmental problem involving nanoparticles. The use of complex cell culture methods and a process by which cells such as in the lungs are exposed to nanoparticles has resulted in a research method that can be applied in practice.

Reduce and replace:

Stephen Leib (Project 103-06) addressed a highly topical problem in his research project, namely how to reconcile stem cells, brain damage and regenerative therapy with the demands and aims of the 3R principles.

Reduce and replace:

Nicolas Ruggli (Project 105-06) succeeded in demonstrating that 3R methods could also be helpful in discovering ways of combatting classical swine fever. He was able to identify the degree of virulence from a combination of tests involving cell cultures instead of using infected animals.

Reduce and refine:

Hans Rufli (Projects 114-08 and 123-10) made use of his long experience in his study of toxicity in fish and achieved astonishing results with regard to apparently incontestable regulations. He showed that it is well worth looking critically at old research protocols.

These projects are typical of the wide field of application of the 3R principles:

- pharmaceutical projects (Beckmann);
- veterinary medicine in animal experimentation (Arras);
- environmental toxicology, mechanisms of toxic effects (Geiser);
- basic biomedical research (Leib);
- virology, animal health (Ruggli);
- regulatory toxicity testing, environmental toxicology, testing of chemicals (Rufli).

The projects are also representative of the criteria applied by the Foundation for the selection of projects to be funded:

- current issues that have been recognised early,
- projects that are sustainable, i.e. the research work should lead to further studies as well as providing an incentive for other researchers in the same field to apply the 3R-relevant results.

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