3R Research Foundation Switzerland

Annual Report 2016

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3R-Principles

The 3Rs are Replace, Reduce and Refine animal experimentation. The 3Rs must be the guiding principles behind animal experimentation; if a study can be carried out without using any laboratory animals then such a procedure must be used (Replace). If it is essential to use laboratory animals under the terms of animal protection legislation the number used must be kept to a strict minimum (Reduce). The third "R" requires that animals used for laboratory experiments be made to suffer an absolute minimum of pain and/or stress (Refine). The 3R Research Foundation funds research projects whose aim is to improve present-day experimental methods from the point of view of the 3Rs.

The 3R Research Foundation in 2016

In 2016 the Foundation provided a total of CHF 469,640.10 for 11 research projects that had been approved previously. The Administrative Board received the final reports for two completed projects. No new applications were approved owing to the fact that the Foundation now has funding only for ongoing projects. The last 3R Info Bulletin, no. 56, included the results of project 119/10, now completed. The Confederation and Interpharma together provided funding for the last time in the total amount of CHF 615,000. Since in the future, all the funding provided by the Confederation and Interpharma is to be paid to the 3R Competence Centre, the Administrative Board was obliged to take the decision to forego calling for outline projects to be submitted in 2016 for financial reasons.

Consequently the Foundation's activities were limited mainly to transferring funds to ongoing projects.

The Administrative Board

The Administrative Board of the Foundation is made up of nine members, two representing the Swiss parliament, two representing animal protection, two from Interpharma and two from the Federal Food Safety and Veterinary Office, as well as one representative of other interested circles. Current members are:

Joachim Eder
member of the Council of States, Unterägeri
Chairman
Dr. Peter Bossard
Horw, Deputy Chairman
Dr. Philippe Bugnon
Institute of Laboratory Animal Science, University of Zurich
Dr. Isabelle Chevalley
member of the National Council, St-George
Dr. Kaspar Jörger
Federal Food Safety and Veterinary Office, Berne-Liebefeld
Dr. Ingrid Kohler
Federal Food Safety and Veterinary Office, Berne-Liebefeld
Dr. Birgit Ledermann
Novartis Pharma Ltd, Basle
Claudia Mertens
biologist, Zurich Animal Protection Leage, Winterthur
Nathalie Stieger
economist, F. Hoffmann-La Roche Ltd, Basle

The Evaluation Committee

Prof. Ernst B. Hunziker
University Hospital, Berne, Chairman
Prof. Hans Acha-Orbea
Department of Biochemistry, University of Lausanne
Dr. Franziska Boess
F. Hoffmann-La Roche Ltd, Basle
Dr. Urban Deutsch
Theodor-Kocher-Institute, University of Berne
Prof. Robert R. Friis
University of Berne
Prof. Andrew Hemphill
Institute of Parasitology, University of Berne
Dr. Ingrid Kohler
Federal Food Safety and Veterinary Office, Berne-Liebefeld
Dr. Kurt Lingenhöhl
Novartis Pharma Ltd, Basle
Prof. Matthias Lutolf
Lausanne Federal Institute of Technology
Prof. Thomas Lutz
Institute of Veterinary Physiology, University of Zurich
Prof. Alex Odermatt
Department of Pharmaceutical Sciences, University of Basle
Prof. Tatiana Petrova
University of Lausanne
Prof. Barbara Rothen-Rutishauser
Adolphe Merkle Institute, University of Fribourg
Dr. Stefanie Schindler
Animalfree Research Foundation, Berne

Scientific Adviser

Prof. Ernst B. Hunziker
University Hospital, Berne

Administrator

Ernst P. Diener, lawyer, Münsingen

Auditors

DieWirtschaftsprüfer.ch AG, Thun

Supervisory body

Federal Department of Home Affairs

Articles and statutes of the Foundation

- Deed of foundation dated 13 February 1987, modified on 28 September 2011
- Regulations dated 30 March 2011 (latest update 4 December 2014)
- Guidelines for awarding research grants dated 15 May 1987 (latest update 4 December 2014)

Summary of the Year's Activities

The Foundation's website

Detailed information about all the Foundation's activities can be found on its website at www.forschung3r.ch.

Eleven projects subsidised

A total amount of CHF 469,640.10 was paid out for 11 ongoing projects during 2016.

Two projects successfully completed

Development of an in-vitro system to grow and investigate vascular endothelial cells under physiological flow (133/12) Prof. Robert Rieben, Department of Clinical Research, University of Berne. Generally research into pathological processes in the cells of the walls of large blood vessels involves the use of laboratory animals, principally because it is not possible to simulate natural perfusion with blood in vitro, since entire blood coagulates on the inner surface (endothelium) of such blood vessels. The aim of this projet was to establish conditions for culturing blood vessel endothelial cells that would allow the main rheological parameters (physiological flow and pressure conditions, shearing strength, etc.) of the blood to be simulated in such a way that the inner surfaces of the blood vessel walls retain their physiological characteristics so that entire blood does not coagulate when coming into contact with them. This research team succeeded in setting up a micro-fluid system that enabled them to achieve their aims. It should be possible for other researchers to adopt this relatively simple concept without any problem. (http://www.forschung3r.ch/en/projects/pr_133_12.html)

Validation of a new human in-vitro model of microglia (137/13) Prof. Luis Filgueira, Department of Medicine, University of Fribourg. Many laboratory animals (mainly mice) are used in experiments involving microglia (immune cells between the nerve cells in the brain) for isolating such cells from the brain. A few years ago, the authors of this project demonstrated that it is possible to isolate microglia precursor cells from human blood and to subsequently develop them in vitro into fully functioning, immune-competent microglia cells. The aim of the present project was to validate this method and to publish further results in order to make the process known to a wider field. The researchers succeeded in obtaining convincing proof that such microglia cells obtained from human blood in vitro fulfilled their function as well as microglia cells obtained from mice or from human brain tissue (isolated from dead bodies). (http://www.forschung3r.ch/en/rpojects/pr_137_13.html)

3R-Info Bulletins

3R-Info Bulletins are published on the Foundation's website (www.forschung3r.ch/en/publications/index.html).

Non-invasive electrical monitoring of the population spiking activity in the central nervous system. (Bulletin no. 56, February 2016) Electroencephalographs (EEGs) measure electrical activity on the scalp. New EEG analysis models are being developed to identify the precise topographical location of pathological processes as well as to provide a better understanding of the implications and function of electrical activity in the brain. Experiments to provide high-resolution measurements of electrical activity in the brain are carried out in laboratory animals and involve trans-cutaneous and/or trans-cranial invasion which causes level 3 suffering in such animals. Dr. Gonzales Andino is proposing a new EEG analysis model that would permit such measurements to be made on the scalp. She has succeeded in demonstrating the basic validity of the new EEG model and has published her results.

Background of the Foundation

The Foundation is a cooperative institution set up by the Parliamentary Group for Animal Experimentation Questions (public organ), Interpharma (association of pharmaceutical companies that carry out research in Switzerland; http://www.interpharma.ch/thema/uberinterpharma) and the Animalfree Research Foundation (animal protection). The Foundation was entered in the commercial register on 18 August, 1987.

The funds for subsidising research are provided principally by the Federal Food Safety and Veterinary Office as well as Interpharma.

Purpose of the Foundation

The purpose of the 3R Research Foundation Switzerland 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 offer improvements vis-à-vis standard animal experimentation in line with the 3R motto, Replace, Reduce, Refine.

A broad range of projects is funded on the condition that they are likely to replace animal experimentation or to reduce the number of animals used or the stress and/or pain suffered. Accordingly, projects based on the Foundation's three principles and covering any of a broad selection of bio-medical disciplines will be taken into consideration.

It was with regret that the Foundation was obliged to turn down all applications for new projects in 2016 since it will no longer receive funding from the Confederation and Interpharma from 2017 on. The Confederation and Interpharma have adopted a new strategy and in the future will provide financial support for the new 3R Competence Centre to be set up in collaboration with Swiss universities. This means that the 3R Research Foundation will cease to operate once the ongoing projects have been completed.

Activities during 2016

In the Foundation's thirtieth year of existence the Administrative Board met twice, namely in April and December, for a half-day meeting. Apart from the statutory business concerning the end of the business year 2015, the Board addressed the following issues.

In April, the Board focused on the financial statements for 2015 and earmarking research funds for ongoing projects. In addition, it took note of the final reports on two completed projects. Since no more projects are to be evaluated, the tasks of the Scientific Advisor have been drastically reduced. A consulting contract with remuneration on an hourly basis was therefore put in place to cover his remaining tasks until all ongoing projects are completed.

At the December meeting, the Administrative Board were given a progress report on the creation of the 3R Competence Centre. Since, in view of its current aims and activities there is no future for the 3R Research Foundation, the Administrative Board decided to dissolve the Foundation once its obligations in relation to research grants have been fulfilled. The existing funds will suffice to meet all current obligations. The meeting finished with a review of activities during 2016 and those planned for 2017, which was followed by way of a thank-you for the work carried out in 2016 by a dinner for the whole Board.

In view of the decision not to call for any further applications, the Evaluation Committee did not meet during 2016. The Scientific Advisor organised the review of the annual reports and final reports by mail. We should like to take this opportunity to thank the members of the Evaluation Committee for their voluntary work in this connection.

Overview of the number of applications and approvals

During 2016 two projects were completed (133/12 and 137/13). Together with those projects completed earlier, this brings the total of finished projects to 134 out of 146.

Personnel

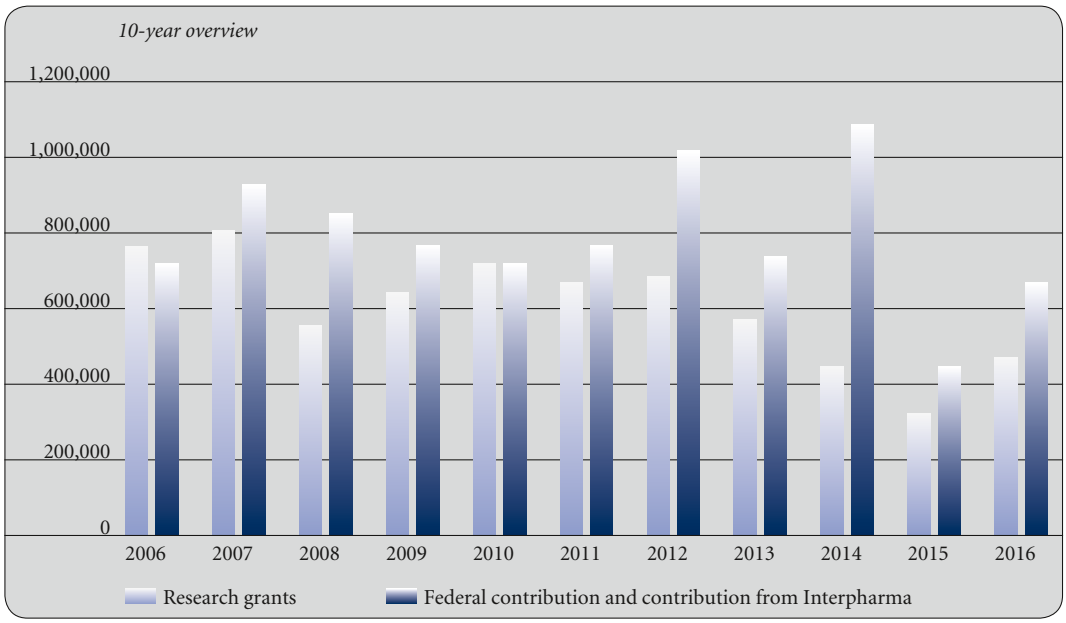
In 2016 there were no changes in the Administrative Board nor the Evaluation Committee.

Financial business

Research funding for the 11 ongoing projects amounted to CHF 469,640.10 in 2016. The sum of CHF 2,532.80 was used for participation in meetings where projects funded by the 3R Foundation were presented. Together with expenditure on project supervision (CHF 77,758.60) and the balance of provisions for project funding (-CHF 205,481.45), made up of CHF 381,841.35 for provisions for 2017 minus CHF 587,322.80 for provisions for 2016), total expenditure for research projects amounted to CHF 344,450.05. Administrative costs totalled CHF 59,637.20. Total expenditure therefore amounted to CHF 404,087.25.

On the income side, the equal financial commitment of the Confederation and Interpharma has thus far constituted the basis for the Foundation's activities. In 2016 the Federal Food Safety and Veterinary Office provided the Foundation with CHF 365,000 while Interpharma transferred the sum of CHF 250,000. Together with other income (CHF 61.60), total income for 2016 amounted to CHF 615,061.60.

The balance therefore shows an excess of income over expenditure of CHF 210,974.35. On the balance sheet this amount has been shown as an addition to capital funds. Consequently, capital funds or unused research funding rose from CHF 25,261.17 at the end of 2015 to CHF 236,235.52 at the end of 2016.



At the end of the year under review the sum earmarked by the Administrative Board in principle on the basis of project approvals but as yet not paid out amounted to CHF 381,841.35. This amount is fully covered by provisions. Consequently, as at 31.12.2016, there remained no contingency commitments that are not shown in the financial statements.

The budget for 2017 includes CHF 381,841.35 for ongoing projects.

Overview of grants awarded between 1987 and 2016

Together the federal authorities and Interpharma have contributed CHF 23,826,000.00 to the Foundation since 1987. At the end of 2016 a total of CHF 19,628,418.65 had been granted for projects and other subsidies, of which CHF 19,249,110.10 had been paid out so far. Expenditure for project evaluation and supervision amounted to CHF 2,329,800.08 and the accumulated administrative costs totalled CHF 2,018,566.37 (8.5% of total expenditure or 10.4% of grants paid).

Annual financial statements

Profit and loss account	*2016*	*2015*
Federal contribution	365,000.00	365,000.00
Interpharma contribution	250,000.00	80,000.00
Contributions to the Foundation	*615,000.00*	*445,000.00*
Research grants	–472,172.90	–329,507.25
Reimboursement of research grants	0.00	24,782.75
Adjustment reserves for research grants	–205,481.45	–187,538.90
Project supervision and information	–77,758.60	–93,134.47
Balance for current projects	*270,549.95*	*–140,397.87*
Administrative costs	–59,637.20	–92,992.35
Intermediate balance	*210,912.75*	*–233,390.22*
Financial income	61.60	46.50
Financial result	*61.60*	*46.50*
Allocation to capital funds	-210,974.35	
Withdrawal from capital funds		233,343.72
Balance	*0.00*	*0.00*

Balance as per 31 December	*2016*	*2015*
Assets		
Liquid assets	620,632.57	616,992.37
Accounts payable		
Accounting apportionment assets	1,778.80	2,367.60
Current assets	*622,411.37*	*619,359.97*
Liabilities		
Accounting apportionment liabilities	3,334.50	5,776.00
Reserves for research grants	381,841.35	587,322.80
Borrowed capital	*385,175.85*	*593,098.80*
Capital		
– Carried forward 1 January	25,261.17	258,604.89
– Change in capital	210,974.35	–233,343.72
Balance as at 31 December	*236,235.52*	*25,262.17*
Foundation's capital	1,000.00	1,000.00
Organisational capital	**237,235.52**	**26,261.17**
	622,411.37	619,359.97

Contingency liabilities

None.

Münsingen, 23 March 2017

3R RESEARCH FOUNDATION

The Chairman sig. Joachim Eder

The Administrator sig. Ernst P. Diener

Auditors' report to the Administrative Board

DieWirtschaftsprüfer.ch AG in Thun audited the financial statements for the year according to standards of limited auditing and did not find any indication that the accounts and statements do not correspond to current legislation or the principles and regulations of the Foundation.

3R-Info Bulletins

In 2016 one new 3R-Info Bulletin (ISSN 1421-6590) was published in English and added to the Foundation's website (www.forschung3r.ch/en/publications/index.html).

The latest 3R Info Bulletin

№ 56, February 2016
Non-invasive electrical monitoring of the population spiking activity in the central nervous system.

List of Projects

A complete list of projects with summaries of each can be found on the Foundation's website (http://www.forschung3r.ch/en/projects/index.html).

This platform for presenting research work enables research teams worldwide to find out about new 3R methods very quickly.

List of current projects and those completed in 2016

122/10 Dr. Helene Rohrbach
Department of Clinical Veterinary Medicine, University of Berne
Improved perioperative analgesia and reduced stress during recovery for the experimental animal: ultrasound-guided sciatic and femoral nerve block in sheep and quantitative assessment of block quality

133/12 Prof. Robert Rieben
Department of Clinical Research, University of Berne, Switzerland
Development of an in vitro system to grow and investigate vascular endothelial cells under physiological flow
Completed in 2016

135/13 Dr. Benedikt Weber
Swiss Centre for Regenerative Medicine, University Hospital Zürich, Switzerland
In vitro engineering of a human cell-based three-dimensional dynamic model of atherosclerosis

136/13 Prof. Joachim Frey
Institute of Veterinary Bacteriology, Vetsuisse Faculty, University of Berne, Switzerland
Development of an in-vitro potency assay for Clostridium chauvoei vaccines: Replacement of the guinea-pig-challenge potency test

137/13 Prof. Luis Filgueira
Department of Medicine, University of Fribourg, Switzerland
Validation of a new human in-vitro model of microglia
Completed in 2016

139/14 Dr. Marietta Herrmann
AO Research Institute Davos, Switzerland
A new in vitro microvascular model of the endothelial barrier

140/14 Dr. Marianne Schmid Daners
Institute for Dynamic Systems and Control, Zurich Federal Institute of Technology, Switzerland
Hydrocephalus simulator for testing of active ventriculoperitoneal shunts

141/14 Prof. Helmut Segner
Centre for Fish and Wildlife Health, University of Berne, Switzerland
In-vitro alternatives to in vivo bioconcentration testing with fish: restricted to rainbow trout or broadly applicable?

142/14 Prof. Christian de Geyter
University Hospital Basle, Switzerland
Validation of human stem-cell pluripotency using a bioreactor-based culturing system instead of a murine model to effect the development of embryoid bodies into teratomas

143/15 Prof. Olivier Guenat
ARTORG Centre, Lung Regeneration Tech, University of Berne
An advanced in-vitro model of pulmonary inflammation based on a novel lung-on-chip technology

144/15 Prof. Curzio Rüegg
Department of Medicine, Chair of Pathology, University of Fribourg
Development of in-vitro three-dimensional multi-cellular culture models to study the role of heterotypic cellular interactions in colorectal cancer invasion

145/15 Prof. Kristin Schirmer
EAWAG, Dübendorf
Combining computational modelling with in-vitro cellular responses in order to predict chemical impact on fish growth

146/15 Dr. Gerasimos Sykiotis
Endocrinology, Diabetology and Metabolism Service, Vaud University Hospital, Lausanne
Validation of a novel cell-based approach to study thyroidal physiology: Reduction and/or replacement of experiments with rodents

Office | Südstrasse 1 | P.O. BOX 1372
CH-3110 Münsingen | Switzerland
Phone 031 722 08 30 | Fax 031 722 08 34 | secretary.3r@bluewin.ch | www.forschung3r.ch