The 3R Research Foundation in 2013

In 2013 the Foundation provided a total of CHF 568,479.35 for 15 research projects. The Confederation and Interpharma made a total contribution of CHF 730,000. The Administrative Board approved 4 new projects, while 3 projects were successfully completed. Out of the 39 project proposals submitted the Evaluation Committee selected 9 that were more relevant to the 3R principles and asked those applicants to submit a detailed description of their projects. A further selection process eliminated 5 projects whose relevance to the 3R principles was less evident, there being insufficient funds in the Foundation’s coffers for all nine. The 3R Info Bulletin 51 included the results of one project completed the previous year.

At the beginning of July 2013 the Scientific Advisor attended a conference organised by the Basle Declaration Society in London on the topic of “Transparency in animal research: Implementing openness in publication and communication”. Discussion centred around ways to improve awareness of the 3R principles. Furthermore, Prof. Hunziker coordinated a working group of interested scientists whose aim was to draw up a proposal for a national 3R research programme to be submitted to the State Secretariat for Education, Research and Innovation.

Following the resignation of various members, five new people were elected to the Administrative Board during the year under review. As a result, from 2014 on, the fate of the Foundation will be in the hands of a Board consisting almost exclusively of new members under a new Chairman, namely Joachim Eder, a member of the Council of States.

In March 2013 Prof. Ernst Hunziker took over the role of Scientific Advisor and head of the Evaluation Committee. In December three new people joined the Committee, thus extending the scope of its expertise.
The Administrative Board

The Administrative Board of the Foundation is made up of nine members, two representing the Swiss parliament (1 seat vacant), two representing animal protection, two from Interpharma and two from the Federal Food Safety and Veterinary Office, as well as a representative of other interested circles. Current members are:

Christine Eggerszegi
member of the Council of States, Mellingen
Chairwoman (until 31.12.2013)

Joachim Eder
member of the Council of States, Unterägeri
(Chairman as from 1.1 2014)

Dr. Peter Bossard
Horw, Deputy Chairman

Dr. Philippe Bugnon
Institute of Laboratory Animal Science, University of Zurich (as from 1.11.2013)

Dr. Kaspar Jörger
Federal Food Safety and Veterinary Office, Berne-Liebefeld (as from 1.1.2014)

Dr. Ingrid Kohler
Federal Food Safety and Veterinary Office, Berne-Liebefeld

Dr. Birgit Ledermann
Novartis Pharma Ltd, Basle (as from 1.6.2013)

Silvia Matile-Steiner
lawyer, Reinach (until 31.10.2013)

Claudia Mertens
biologist, Winterthur (as from 7.5.2013)

Dr. Markus Schmutz
Novartis Pharma Ltd, Basle (until 31.5.2013)

Nathalie Stieger
economist, F. Hoffmann-La Roche Ltd, Basle

Prof. Hans Wyss
Director of the Federal Food Safety and Veterinary Office, Berne-Liebefeld (until 31.12.2013)

The Evaluation Committee

Prof. Ernst B. Hunziker
University of Berne
Chairman (as from 1.3.2013)

Prof. Hans Acha-Orbea
Department of Biochemistry, University of Lausanne (as from 1.11.2013)

Dr. Franziska Boess
F. Hoffmann-La Roche Ltd, Basle

Prof. Clemens A. Dahinden
Institute of Immunology and Allergology, University Hospital, Berne (until 29.5.2013)

Dr. Urban Deutsch
Theodor-Kocher-Institute, University of Berne (as from 1.1.2014)

Prof. Marianne Geiser Kamber
Institute of Anatomy, University of Berne

Prof. Andrew Hemphill
Institute of Parasitology, University of Berne

Prof. Simon P. Hoerstrup
Swiss Centre for Regenerative Medicine (SCRM), University Hospital Zurich

Dr. Ingrid Kohler
Federal Food Safety and Veterinary Office, Berne-Liebefeld

Dr. Kurt Lingenhöhl
Novartis Pharma Ltd, Basle

Prof. Thomas Lutz
Institute of Veterinary Physiology, University of Zurich

Prof. Alex Odermatt
Department of Pharmaceutical Sciences, University of Basle (as from 1.11.2013)

Dr. Martin Reist
Sanisys Ltd, Biel (until 30.4.2013)

Dr. Stefanie Schindler
Animalfree Research Foundation, Berne
Scientific Adviser

Prof. Ernst B. Hunziker
University of Berne (as from 1. 3. 2013)

Administrator

Ernst P. Diener, lawyer, Münsingen

Auditors

Waber Treuhand GmbH, Einigen

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

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.

15 projects subsidised

A total amount of CHF 568,479.35 was paid out for 15 ongoing projects during 2013.

Four new projects

Four new projects were approved in 2013 for which a total of CHF 505,725 has been earmarked. These new projects are described in detail in the list of funded projects on the Foundation’s website (http://www.forschung3r.ch/en/projects/index.html).

In-vitro engineering of a human cell-based three-dimensional dynamic model of atherosclerosis (135/13) Dr. Benedikt Weber, Swiss Centre for Regenerative Medicine, University Hospital Zürich, Switzerland. Cardiovascular diseases are a leading cause of death in the western world. In most cases, the underlying lethal pathology is atherosclerosis, which targets the walls of the blood vessels. In addition to a genetic predisposition, the disease is often associated with obesity, excessive stress and nicotine addiction. To promote the development of novel therapeutic drugs for the treatment of atherosclerosis, it is necessary to understand the factors that contribute to its onset and progression, for which purpose various animal models are employed. In this project, the aim is to elaborate a clinically relevant in vitro model of atherosclerosis using human cells that are derived from surgical waste material. (http://www.forschung3r.ch/en/projects/pr_135_13.html)
Development of an in-vitro potency assay for Clostridium chauvoei vaccines: Replacement of the guinea-pig-challenge potency test (136/13) Prof. Joachim Frey, Institute of Veterinary Bacteriology, Vetsuisse Faculty, University of Berne, Switzerland. Blackleg is a bacterial disease that affects cattle and sheep. It leads to extensive tissue necrosis, particularly in the muscles of the limbs. For the development of new and/or improved vaccines to protect animals at risk, the efficacy of potential substances is tested in vivo. The process of screening is usually conducted on guinea pigs and is highly stressful for the animals involved. The aim of this project is to develop a safe in-vitro screening system for routine laboratory use that would render the ubiquitous guinea-pig-challenge potency test obsolete. (http://www.forschung3r.ch/en/projects/pr_136_13.html)

Validation of a new human in-vitro model of microglia (137/13) Prof. Luis Filgueira, Department of Medicine, University of Fribourg, Switzerland. The local resident defence cells of the brain are microglia. They are implicated in inflammatory responses of the brain and in protecting it against infection, as well as in the regenerative processes that follow injury or pathological degeneration (such as that associated with Alzheimer’s disease). With a view to elaborating new therapeutic approaches to the treatment of brain diseases, the roles played by microglia in their development must be understood. Various animal models have been established to achieve this goal. Regrettably, even in-vitro studies cannot be conducted without the loss of animal life, since the necessary microglia can be obtained only from excised brains. The investigators who are working on this project have discovered that cells (monocytes) originating from human peripheral blood can be transformed into microglia. This finding opens up the possibility of establishing a human in-vitro model of microglia and thus of obviating the need for the sacrifice of animal life. In this project, the human in-vitro model of microglia will be validated. (http://www.forschung3r.ch/en/projects/pr_137_13.html)

Optimization of the nerve-cell-mimicking liposome assay as an in-vitro alternative for detecting Clostridium botulinum neurotoxins and validating their presence in complex sample materials (138/13) Marc-André Avondet and Prof. Stephen Leib, Toxinology Group, Spiez Laboratory, FOCP, Switzerland. Neurotoxins that are derived from the bacterium Clostridium botulinum are used medicinally to treat various disorders, such as dystonia, hyperhidrosis, strabismus, chronic pain and headaches. More recently, a lucrative market for these toxins has been captured in the field of cosmetic surgery, in which they are applied as anti-wrinkle agents. For the quality control of new toxin batches, more than half a million mice per year are utilized in Europe and the USA alone. With the ultimate goal of entirely replacing such mouse-based assays, the investigators working on this project will further develop a new methodological approach that has been conceived using nerve-cell-mimicking liposomes. (http://www.forschung3r.ch/en/projects/pr_138_13.html)

Three projects successfully completed

Generic in-vitro evaluation assay for immunological correlates of protection, to replace animal challenge infection (113/08) Prof. Artur Summerfield, Institute of Virology and Immunology (IVI), Mittelhäusern, Switzerland. The aim of this project was to provide a reliable and fast in-vitro test to replace in-vivo testing by which live animals suffer considerably through being exposed to vaccines in order to match a potential vaccine to the current serotype of foot-and-mouth disease virus in the field. The researchers were able to measure a response specific to the virus type in cultures of specialised immune cells. By using genetically modified cells it was possible to further simplify and improve the test. This provides a scientific basis for developing reliable tests based on cell lines. The new test will now be further validated by a European consortium (FMD-DISCONVAC). (http://www.forschung3r.ch/en/projects/pr_113_08.html)
Engineering of an in-vitro hepatocyte tissue system for malaria liver infection research (118/10)
Dr. Dalu Mancama, CSIR, Biosciences Division, Pretoria, South Africa. With this project, the researchers aimed to develop a hepatocyte tissue culture system using human liver cells for the purpose of studying the primary infection process of malaria (infection with plasmodium sporozoites isolated from the Anopheles mosquito) and the proliferation of the parasites in cultured liver cells. The ultimate aim would be to develop vaccines, prophylactic medicines and an acute chemotherapy without using laboratory animals. The main stages of the study were successfully completed. The in-vitro culture (proliferation) of the asexual stage of Plasmodium falciparum with erythrocytes, the culture of human hepatocytes with sporozoites and the co-culture with infected erythrocytes were all successful. The rate of infection observed was low and was influenced by the culture conditions. Further verification of the results will be carried out. (http://www.forschung3r.ch/en/projects/pr_118_10.html)

Comparative in-vitro and in-vivo testing of biofilm formation on the surface of bone grafts (124/10) Dr. Martin Clauss, Cantonal Hospital Liestal, Switzerland. The formation of bacterial biofilms on the inner and/or the outer bodily surfaces of humans and animals is a significant clinical problem, also in orthopaedics. Within such multilayered carpets, bacteria can establish a system of communication whereby the power of resistance to antibiotics is transmitted from one microbe to another. Moreover, the innermost parts of such biofilms are almost impenetrable to antibiotics, which greatly hampers the therapeutic fight against pathological bacteria. To date, research in this field has been conducted using animal models. With the ultimate goal of replacing experiments of this kind, the investigators engaged on this project wished to elaborate a novel in-vitro system to measure the efficacy of vaccines against foot-and-mouth disease, thereby obviating the need for conventional serological testing in animals. (http://www.forschung3r.ch/en/publications/bu51.html)
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, comprising at present AbbVie Ltd, Actelion Ltd, Amgen Switzerland Ltd, Bayer (Switzerland) Ltd, Biogen Idec Switzerland, Boehringer Ingelheim (Switzerland) Ltd, Bristol-Myers Squibb (Switzerland), Gilead Sciences Switzerland Ltd, Janssen-Cilag Ltd, Merck Serono International Ltd, Novartis Pharma Ltd, Pfizer Ltd, Hoffmann-La Roche Ltd, Sanofi-Aventis (Switzerland) Ltd, UCB Pharma Ltd and Vifor Ltd), 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 and 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.

Activities during 2013

In the Foundation’s twenty-seventh year of existence the Administrative Board met three times, namely in May, October and December, for a half-day meeting. Apart from the statutory business concerning the end of the business year 2012, the Board addressed the following issues.

In May, the Board focused on the financial statements for 2012 and the earmarking of research funds for ongoing projects. In addition, it took note of the final reports on three completed projects. Claudia Mertens and Birgit Ledermann were elected to fill the two vacancies on the Board.

At its meeting in October, the focus was on funding for new projects. Out of a total of 9 project proposals selected by the Evaluation Committee from the 39 applications received, 4 were finally approved. As far as concerns funding for the Foundation’s activities, the Administrative Board were delighted to learn that Interpharma has renewed its promise of future financial support, which will ensure the further work of the Foundation in the coming years.

At the Administrative Board’s December meeting, which was also attended by members of the Evaluation Committee, the focus was on the outgoing Chairwoman Christine Egerszegi and Prof. Hans Wyss, who also left the Administrative Board at the end of the year, as well as the election of Joachim Eder as the Foundation’s new Chairman. The meeting finished with a review of activities in 2013, followed by a convivial dinner.

With its input over the last few years concerning questions about the Foundation’s activities, the Strategy Committee set up by the Administrative Board now considers its role fulfilled. At its May meeting, the Administrative Board warmly thanked the member of the Committee for all their hard work and officially declared the Committee disbanded.
During the year, the Administrator provided support for the new Scientific Advisor in taking over his tasks. His role is to deal with all matters concerning the Foundation that cannot be passed on to anyone else. In particular, he prepares all the necessary information for the Administrative Board to take their decisions, as well as dealing with correspondence with applicants and project managers. He also deals with payments, bookkeeping, closing the books at the end of the financial year and the budget. In addition, he prepares the Annual Report as well as texts for the Foundation’s website.

Under the chairmanship of the Scientific Advisor, the Evaluation Committee held two meetings during the year, where in particular they examined 39 new applications for funding of which they chose 9 likely projects; finally 4 were approved. In addition they examined the final reports on 3 completed projects and submitted them to the Administrative Board. We should like to take this opportunity to thank the members of the Evaluation Committee for their voluntary work in this connection.

The new Scientific Advisor duly took over his tasks, which include preparing the meetings of the Evaluation Committee, publishing the 3R-Info Bulletins (on the Foundation’s website at www.forschung3r.ch), writing the brief scientific reports in English which present the projects receiving funding on the Foundation’s website and regularly updating these reports. He was also kept busy assessing project proposals, reading intermediate reports, advising applicants and project managers, dealing with enquiries and explaining why projects had been rejected, as well as coordinating a working group set up to prepare a proposal for a national 3R research programme. Finally, he represented the Foundation at a conference organised by the Basle Declaration Society in London on the topic of: Transparency in animal research: Implementing openness in publication and communication.

Personnel

In May 2013 Claudia Mertens, a biologist who works with the Zurich Animal Protection League, was elected to the Administrative Board to replace Dr. Franz Gruber, who resigned at the end of 2012 for reasons of age. June 2013 saw the election to the Board of Dr. Birgit Ledermann, Animal Welfare Officer at Novartis Pharma in Basle, as the representative of the pharmaceutical industry. She replaces Dr. Markus Schmutz, who also retired for reasons of age and received the Board’s best wishes. At the end of October, the Foundation was pleased to welcome Dr. Philippe Bugnon, an expert with a proven track record in laboratory animal science, to the Administrative Board to represent other areas. He replaces Silvia Matile-Steiner, who took retirement. She had been on the board since 2008 and was warmly thanked for her hard work in relation to the Foundation’s strategic concerns. Joachim Eder, a member of the Council of States, joined the Administrative Board as its new Chairman on 1 January 2014, accompanied by Dr. Kaspar Jörger, representing the Federal Food Safety and Veterinary Office. Their predecessors, Christine Eggerszegi, who had been on the Administrative Board since 1999 and held the position of Chairwoman since 2008, and Prof. Hans Wyss, who joined the board in 2003 as the Director of the Federal Veterinary Office, were warmly thanked for their hard work and commitment by the Deputy Chairman.

In March 2013, Prof. Ernst Hunziker from the University of Berne took over as the Scientific Advisor and Chairman of the Evaluation Committee. The year under review saw the resignation of Prof. Clemens Dahinden from the Institute of Immunology and Allergology, University Hospital of Berne and Dr. Martin Reist from the Evaluation Committee; both were thanked for their contribution to the work of the Foundation. Three new faces joined the Evaluation Committee over the year, namely Prof. Hans Acha-Orbea from the Institute of Biochemistry at the University of Lausanne, Dr. Urban Deutsch from the Theodor-Kocher-Institute of the University of Berne, and Prof. Alex Odermatt of the Department of Pharmaceutical Sciences, University of Basle.
Overview of the number of applications and approvals

During 2013 three projects were completed (113/08, 118/10 and 124/10). Together with those projects completed earlier, this brings the total of finished projects to 120 out of 138.

The bar-chart shows that the number of project proposals increased considerably in 2013. In 2012, the call for projects was restricted to one deadline only, namely in February 2012, and a new two-stage application procedure was introduced. Initially, applicants submit a project proposal, 39 such proposals being received in 2013. After the proposals have been examined by the Evaluation Committee, the latter then asks those whose proposed projects are relevant to the 3R principles to draw up detailed applications, 9 such detailed descriptions being submitted in 2013. Out of these 9 proposals, the Administrative Board finally approved 4 applications. Regardless of the many project proposals received, there is little fluctuation in the number of projects approved for funding owing to the limited means available to the Foundation.

Financial business

A total of CHF 572,162.35 was paid out for research in 2013. Operational expenditure for the year amounted to CHF 196,028.10 (project monitoring and information CHF 89,014.10, administrative costs including office infrastructure CHF 107,014). Total expenditure therefore amounted to CHF 768,190.45.

On the income side, the equal financial commitment of the federal authorities and Interpharma represent the basic funding for the Foundation’s activities, each providing in 2013 an amount of CHF 365,000. Further income of CHF 1,680.85 was accrued.

Total income was therefore CHF 731,680.85 while total expenditure amounted to CHF 768,190.45, giving an excess of expenditure over income of CHF 36,509.60. The unused funds item fell from CHF 287,870.96 at the end of 2012 to CHF 251,361.36 at the end of 2013, the latter figure constituting the Foundation’s new reserve of liquid assets.
At the end of 2013 the total earmarked for projects approved by the Board but not yet paid out amounted to CHF 835,239.35. This future liability is covered by Interpharma’s promise of funding VI together with the contribution from the Confederation. The Foundation’s credit with Interpharma amounted to CHF 2,747,000 at the end of 2013.

The budget for 2014 includes CHF 409,046.35 for current projects and a maximum amount of CHF 600,000 for new projects.

**Overview of grants awarded between 1987 and 2013**

At the end of 2013 a total of CHF 18,852,941 had been granted for projects and other subsidies, of which CHF 18,017,701.65 had been paid out so far. Together the federal authorities and Interpharma have contributed CHF 21,696,000 to the Foundation since 1987.

**Auditors’ report to the Administrative Board**

Waber Treuhand GmbH in Einigen 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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Research grants</th>
<th>Federal contribution and contribution from Interpharma</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>200,000.–</td>
<td>0.–</td>
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<tr>
<td>2004</td>
<td>400,000.–</td>
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</tr>
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<td>2005</td>
<td>600,000.–</td>
<td>0.–</td>
</tr>
<tr>
<td>2006</td>
<td>800,000.–</td>
<td>0.–</td>
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</tr>
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<td>2008</td>
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<td>0.–</td>
</tr>
<tr>
<td>2009</td>
<td>1,200,000.–</td>
<td>0.–</td>
</tr>
<tr>
<td>2010</td>
<td>1,200,000.–</td>
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<td>2011</td>
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</tr>
<tr>
<td>2012</td>
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<tr>
<td>2013</td>
<td>1,200,000.–</td>
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</tr>
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</table>
### Annual financial statements

**Profit and loss account 2013**

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenditure</th>
<th>Income</th>
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</thead>
<tbody>
<tr>
<td>Federal contribution</td>
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<td>365,000.00</td>
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<tr>
<td>Contribution from Interpharma</td>
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<tr>
<td>Total contributions</td>
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<td>730,000.00</td>
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<td>Capital yield</td>
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<tr>
<td>Reimbursement of research grants</td>
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<tr>
<td>Other income</td>
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<td>1,305.70</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td></td>
<td><strong>731,680.85</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Expenditure</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Research grants</td>
<td>572,162.35</td>
</tr>
<tr>
<td>Project supervision and information</td>
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<tr>
<td>Administrative expenses</td>
<td>107,014.00</td>
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<tr>
<td><strong>Total expenditure</strong></td>
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</tr>
<tr>
<td><strong>Excess expenditure over income</strong></td>
<td>–36,509.60</td>
</tr>
<tr>
<td></td>
<td><strong>731,680.85</strong></td>
</tr>
</tbody>
</table>

**Balance as per 31st December 2013**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
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<td>Liquid Assets</td>
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<td>Accounting apportionment assets</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Liabilities</td>
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<tr>
<td>Accounting apportionment liabilities</td>
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<tr>
<td>Unused research funds</td>
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<tr>
<td>– Carried forward 1. 1. 2013</td>
<td>287,870.96</td>
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<tr>
<td>– Excess expenditure over income</td>
<td>–36,509.60</td>
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<tr>
<td>Capital of the Foundation</td>
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<tr>
<td></td>
<td>261,644.16</td>
</tr>
<tr>
<td></td>
<td>261,644.16</td>
</tr>
</tbody>
</table>

**Contingent liabilities**

Approved research grants not yet paid out CHF 835,239.35.

Münsingen, 15 March 2014

3R RESEARCH FOUNDATION

Chairman

Administrator

signed Joachim Eder

signed Ernst P. Diener
3R Info Bulletins

In 2013 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 BULLETINS are:

No 51, November 2013
Generic in-vitro assays for immunological correlates of protection against foot-and-mouth disease to replace animal challenge infections

List of the other 3R-INFO BULLETINS

No 1, June 1994
Foundation Research 3R
No 2, September 1994
mAbs without mice?
No 3, December 1994
Prof. Gerhard Zbinden and 3R
No 4, April 1995
Predicting human drug metabolism
No 5, August 1995
Human recombinant antibodies
No 6, September 1995
Call for 3R research proposals
No 7, March 1996
The three ‘R’s of Russell and Burch, 1959
No 8, August 1996
Regulation of digestion in cell culture
No 9, October 1996
Permanent fish cell cultures as novel tools in environmental toxicology
No 10, August 1997
10 years 3R Research Foundation
No 11, March 1999
Immunization of laboratory animals
No 12, September 1999
Leishmaniasis: development of an in vitro assay for drug screening
No 13, January 2000
Identification of neurotoxic chemicals in cell cultures
No 14, May 2000
Transgenic protozoa as an alternative to transgenic animals
No 15, September 2000
Aggregating brain cell cultures: Investigation of stroke related brain damage
No 16, January 2001
Housing and husbandry conditions affect stereotypic behaviour in laboratory gerbils
No 17, May 2001
Fever in the test tube – towards a human(e) pyrogen test
No 18, September 2001
Prevention of adverse effects in pigs after vaccination
No 19, January 2002
Phenotype characterisation and welfare assessment of transgenic mice
No 20, May 2002
Animal-free screening of biological materials for contamination by rodent viruses
No 21, September 2002
Identification of new human skin irritation markers for tests with human skin reconstructs
No 22, January 2003
Environmental enrichment does not affect the variability of animal experimentation data in the Light/Dark test
No 23, May 2003
Simulation of stroke related damage in cultured human nerve cells
No 24, September 2003
Generation of parasite cysts in cultured cells instead of living animals
No 25, January 2004
Formation of new blood vessels in the heart can be studied in cell cultures
No 26, May 2004
Immune cells in the liver: The generation and use of a mouse Kupffer cell line
No 27, September 2005
The tick blood meal: From a living animal or from a silicone membrane?
No 28, January 2005
Bone metabolism and bone-biomaterial interactions can be studied ex vivo
No 29, May 2005
Computer-based quantification of (adverse) effects triggered by drugs and chemicals
Environmental enrichment does not disrupt standardization

Improvement of Pain Therapy in Laboratory Mice

Non-Invasive Methods: Investigation of Airways Diseases by MRI in Rats

Predicting drug hypersensitivity by in vitro tests

Exploring natural anticoagulation by endothelial cells: A novel in vitro model

From blood to brain and vice versa: Transport Processes in Choroid Plexus can be studied in vitro

Host pathogen interactions can be studied in amoebae instead of laboratory animals

The bioconcentration of chemical substances in fish can be determined in vitro

An in-vitro system for detecting the health effects of inhaled particles and gases

Detection of Pain in Laboratory Animals via Gene Expression?

Refined ex-vivo rodent heart model reduces in vivo experimentation

A novel in-vitro cell model of the human airway epithelium

The blood-brain barrier in a dish: a new multicellular in vitro model

Fish, Acute Toxicity Test: The number of animals can be reduced

From pigs to cells: Virulence of classical swine fever virus is predictable in cell cultures

Serum-free defined media, a largely unsolved problem in cell culture

Toxoplasma gondii virulence is predictable in cultured human cells

Metabolism as part of alternative testing strategies in fish

A novel ex vivo mouse aorta perfusion model

Bacterial Meningitis: Investigating Injury and Regenerative Therapy in vitro

Still relevant twenty-five years on; 25 years of Funding the 3Rs – past accomplishments and future prospects
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).

The brief scientific project reports in English indicate that almost all projects have progressed well. This platform for presenting research work enables research teams worldwide to find out about new 3R methods very quickly.

List of new projects approved in 2013

138/13 Marc-André Avondet and Prof. Stephen Leib
Toxinology Group, Spiez Laboratory, FOCP, Switzerland
Optimization of the nerve-cell-mimicking liposome assay as an in-vitro alternative for detecting Clostridium botulinum neurotoxins and validating their presence in complex sample materials

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

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

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

List of current projects and those completed in 2012 and 2013

113/08 Dr. Artur Summerfield/
Dr. Kenneth McCullough
Institute of Virology and Immunoprophylaxis (IVI), Mittelhäusern
Generic in vitro evaluation assay for immunological correlates of protection to replace animal challenge infections
Completed in 2013

115/09 Dr. Olivier Preynat-Seauve
Department of Pathology and Immunology, University of Geneva
Engineering of a human brain tumor model to replace animal experimentation
Completed in 2012

116/09 Dr. Anna Oevermann
Neurocenter, DCR-VPH, Vetsuisse Faculty, University of Berne
Organotypic slice cultures derived from brains obtained from slaughterhouses as an in vitro alternative for the investigation of neuroinfectious diseases in ruminants

117/09 Prof. Maria Wartenberg
Workgroup for Molecular Cardiology, Friedrich-Schiller University, Jena
Development of an in vitro model from embryonic stem cells for identifying tissue inflammation as a reaction to implanted material (INFPLANT)

118/10 Dr. Dalu Mancama
CSIR, Biosciences Division, Pretoria, South Africa
Engineering of an in vitro hepatocyte tissue system for malaria liver infection research
Completed in 2013

119/10 Dr. Sara Gonzalez Andino
Department of Clinical Neurosciences, University of Geneva
Non-invasive electrical monitoring of the population spiking activity in the central nervous system

120/10 Prof. Denis Jabaudon
Department of Basic Neurosciences, University of Geneva
Development of non-invasive strategies to study spinal cord disease, injury and repair
Completed in 2012
121/10 Prof. Roman Chrast and
Prof. Josef Kapfhammer
Department of Medical Genetics, University of Lausanne, and Anatomical Institute, University of Basle
A new in vitro model to study therapeutic approaches to improve spinal cord regeneration and repair after injury
Completed in 2012

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

123/10 Dr. Hans Rufli
ecotoxsolutions, Basle
Use of “moribund” stage in the fish acute toxicity test according to OECD guideline 203 and its effect on LC50 values
Completed in 2012

124/10 Dr. Martin Clauss
Orthopaedics Department, Cantonal Hospital Liestal
Comparative in vitro and in vivo testing on biofilm formation on the surface of bone grafts
Completed in 2013

125/11 Dr. Oliver G. Weingart
Institute of Food Sciences, Nutrition and Health, Zurich Federal Institute of Technology, Switzerland
Nerve-cell mimicking liposomes as an in vitro alternative for demonstrating the potency of toxins with multistep pathways such as Botulinum neurotoxins (BoNT)

126/11 Dr. Charaf Benarafa
Theodor Kocher Institute, University of Berne, Switzerland
Model development and validation to investigate myeloid cell homeostasis

127/11 Prof. Thomas Kaufmann
Institute of Pharmacology, University of Berne, Switzerland
Establishing A Novel System For Quantitative Production of Marine Basophils In Vitro

128/11 Dr. Volker Thiel
Institute of Immunobiology, Cantonal Hospital St. Gallen, Switzerland
Genetic modification of the human airway epithelium – a paradigmatic system to study host responses to human respiratory viruses

129/11 Prof. Zhigang He
Children’s Hospital, Boston, USA
Using microfluidic chamber to study mitochondrial transport in PTEN and SOCS3 dependent axonal regeneration

130/11 Prof. Ernst B. Hunziker
Center of Regenerative Medicine for Skeletal Tissues, University of Berne, Switzerland
Establishment of an in-vitro organ-slice defect model for meniscal repair in orthopaedic research

131/12 Prof. Christian Heinis
Laboratory of Therapeutic Peptides and Proteins, EPFL, Swiss Federal Institute of Technology Lausanne, Switzerland
Antibody phage selection strategy for application in non-specialized laboratories

132/12 Prof. Matthias P. Lutolf
Institute of Bioengineering, EPFL, Swiss Federal Institute of Technology Lausanne, Switzerland
Identification of predictive in vitro markers for hematopoietic stem cell function

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

134/12 Prof. Stijn Vandenberghe
ARTORG Center for Biomedical Research, University of Berne, Switzerland
Development of a cardiovascular simulator with autoregulation